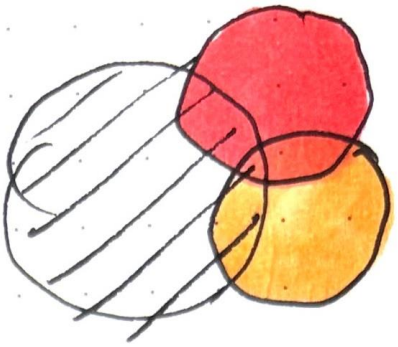


Appendix A

BDAR requirements compliance

Table A.1 Assessment of BDAR compliance with BAM minimum information requirements

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
Introduction	Chapters 2 and 3	**Information**	
		Introduction to the biodiversity assessment including:	–
		☒ brief description of the project	Section 1.1.1 Section 1.1.2 Section 1.1.4
		☒ identification of subject land boundary, including: ☒ operational footprint ☒ construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure	Section 1.1.3 Figure 14.5
		☒ general description of the subject land	Section 1.1.3 Section 1.1.4
		☒ sources of information used in the assessment, including reports and spatial data	Section 1.5 Chapter 13 (References)
		☒ identification and justification for entering the BOS	Section 1.2
		Maps and tables	
		☒ Map of the subject land boundary showing the final project footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure	Figure 14.1 Figure 14.2 Figure 14.5 Figure 14.6 Figure 14.14

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
Landscape	Sections 3.1 and 3.2, Appendix E	**Information**	
		Identification of site context components and landscape features, including:	–
		☒ general description of subject land topographic and hydrological setting, geology and soils	Section 3.2.2
		☒ per cent native vegetation cover in the assessment area (as described in BAM section 3.2)	Section 3.3
		☒ IBRA bioregions and subregions (as described in BAM subsection 3.1.3(2.))	Section 3.2.1
		☒ rivers and streams classified according to stream order (as described in BAM subsection 3.1.3(3.) and Appendix E)	Section 3.2.3
		☒ wetlands within, adjacent to and downstream of the site (as described in BAM subsection 3.1.3(3.))	Section 3.2.3
		☒ connectivity of different areas of habitat (as described in BAM subsection 3.1.3(5–6.))	Section 3.2.4
		☒ karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing projects, soil hazard features (as described in BAM subsections 3.1.3(7.) and 3.1.3(12.))	Section 3.2.5
		☒ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM subsection 3.1.3(8–9.))	Section 3.2.6
		☒ any additional landscape features identified in any SEARs for the project	Section 3.2.8
		☒ NSW (Mitchell) landscape on which the subject land occurs	Section 3.2.7
		☒ details of field reconnaissance undertaken to confirm the extent and condition of landscape features and native vegetation cover (as described in Operational Manual Stage 1 Section 2.4)	Section 2.1 to Section 2.6

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Maps and tables	
		☒ Site Map ☒ Property boundary ☒ Boundary of subject land ☒ Cadastre of subject land (including labelling of Lot and DP or section plan if relevant) ☒ Landscape features identified in BAM subsection 3.1.3	Figure 14.1
		☒ Location Map ☒ Digital aerial photography at 1:1,000 scale or finer ☒ Boundary of subject land ☒ Assessment area (i.e. the subject land and either 1500 m buffer area or 500 m buffer for linear development) ☒ Landscape features identified in BAM subsection 3.1.3 ☒ Additional detail (e.g. local government area boundaries) relevant at this scale	Figure 14.2
		Landscape features identified in BAM subsection 3.1.3 and to be shown on the Site Map and/or Location Map include:	–
		☒ IBRA bioregions and subregions ☒ rivers, streams and estuaries ☒ wetlands and important wetlands ☒ connectivity of different areas of habitat ☒ karst, caves, crevices, cliffs, rocks and other geological features of significance and if required, soil hazard features ☒ areas of outstanding biodiversity value occurring on the subject land and assessment area	Figure 14.1 Figure 14.2

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ any additional landscape features identified in any SEARs for the project ☒ NSW (Mitchell) landscape on which the subject land occurs	
		Data	
		☐ All report maps as separate jpeg files	To be submitted once BDAR is finalised
		Individual digital shape files of:	–
		☐ subject land boundary	To be submitted once BDAR is finalised
		☐ assessment area (i.e. subject land and 1500 m buffer area) boundary	To be submitted once BDAR is finalised
		☐ cadastral boundary of subject land	To be submitted once BDAR is finalised
		☐ areas of native vegetation cover	To be submitted once BDAR is finalised
		☐ landscape features	To be submitted once BDAR is finalised
Native vegetation	Chapter 4, Appendix A and Appendix H	**Information**	
		☒ Identify native vegetation extent within the subject land, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery (as described in BAM section 4.1(1–3.) and subsection 4.1.1)	Section 4.1 Figure 14.8
		☒ Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM subsection 4.1.2)	Section 4.1.2
		☒ Review of existing information on native vegetation including references to previous vegetation maps of the subject land and assessment area (described in BAM section 4.1(3.) and subsection 4.1.1)	Section 2.2.1 Section 4.1

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM section 4.2	Section 2.2.3 Section 2.2.4 Section 2.3
		☒ Where relevant, describe the use of more appropriate local data, provide reasons that support the use of more appropriate local data and include the written confirmation from the decision-maker that they support the use of more appropriate local data (as described in BAM subsection 1.4.2 and Appendix A)	Section 5.6
		For each PCT within the subject land, describe:	–
		☒ PCT name and ID	Section 4.2
		☒ vegetation class	Section 4.2
		☒ extent (ha) within subject land	Section 4.2
		☒ evidence used to identify a PCT including any analyses undertaken, references/sources, existing vegetation maps (BAM section 4.2(1–3.))	Section 4.2
		☒ plant species relied upon for identification of the PCT and relative abundance of each species	Section 4.2 Appendix D (Vegetation survey data)
		☒ if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM subsection 4.2.2(1–2.))	Section 4.2
		☒ estimate of per cent cleared value of PCT (BAM subsection 4.2.1(5.))	Section 4.2
		Describe the vegetation integrity assessment of the subject land, including:	–
		☒ identification and mapping of vegetation zones (as described in BAM subsection 4.3.1)	Section 4.4 Figure 14.12

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ description of vegetation zones within the subject land (as described in Operational Manual Stage 1 Table 2 and subsection 3.3.2)	Section 4.4
		☒ area (ha) of each vegetation zone	Section 4.4
		☒ assessment of patch size (as described in BAM subsection 4.3.2)	Section 4.4
		☒ survey effort (i.e. number of vegetation integrity survey plots) as described in BAM subsection 4.3.4(1–2.)	Section 4.4 Section 4.5
		☒ use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM subsection 4.3.3(5.))	Section 4.4
		Where use of more appropriate local benchmark data is proposed (as described in BAM subsection 1.4.2, BAM subsection 4.3.3(5.) and BAM Appendix A):	–
		☐ identify the PCT or vegetation class for which local benchmark data will be applied ☐ identify published sources of local benchmark data (if benchmarks obtained from published sources) ☐ describe methods of local benchmark data collection (if reference plots used to determine local benchmark data)	Not applicable.
		☐ provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	Not applicable.
		☐ provide written confirmation from the decision-maker that they support the use of local benchmark data	Not applicable.

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Maps and tables	
		☒ Map of native vegetation extent within the subject land at scale not greater than 1:10,000 including identification of all areas of native vegetation including areas that are ground cover only, cleared areas (as described in BAM Section 4.1(1–3.)) and all parts of the subject land that do not contain native vegetation (BAM subsection 4.1.2)	Figure 14.8
		☒ Map of PCTs within the subject land (as described in BAM section 4.2(1.))	Figure 14.9
		☒ Map of vegetation zones within the subject land (as described in BAM subsection 4.3.1)	Figure 14.12
		☒ Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	Figure 14.7
		☒ Map of TEC distribution on the subject land and table of TEC listing, status and area (ha)	Figure 14.11 Table 4.79 and Table 4.81
		☒ Map of patch size locations for each native vegetation zone and table of patch size areas (as described in BAM subsection 4.3.2)	Figure 14.12 Table 4.90, Table 4.91 and Table 4.92
		Table of current vegetation integrity scores for each vegetation zone within the site and including:	–
		☒ composition condition score ☒ structure condition score ☒ function condition score ☒ presence of hollow bearing trees	Section 4.5.2 Table 4.93, Table 4.94 and Table 4.95
		Data	
		☐ All report maps as separate jpeg files	To be submitted once BDAR is finalised
		☒ Plot field data (MS Excel format)	Appendix D (Vegetation survey data)

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ Plot field datasheets	Appendix D (Vegetation survey data)
		Digital shape files of:	–
		☐ PCT boundaries within subject land	To be submitted once BDAR is finalised
		☐ TEC boundaries within subject land	To be submitted once BDAR is finalised
		☐ vegetation zone boundaries within subject land	To be submitted once BDAR is finalised
		☐ floristic vegetation survey and vegetation integrity plot locations	To be submitted once BDAR is finalised
Threatened species	Chapter 5	**Information**	
		Identify ecosystem credit species likely to occur on the subject land, including:	–
		☒ list of ecosystem credit species derived from the BAM-C (as described in BAM subsection 5.1.1 and section 5.2(1.))	Section 5.1.3
		☒ justification and supporting evidence for exclusion of any ecosystem credit species based on geographic limitations, habitat constraints or vagrancy (as described in BAM subsections 5.2.1 and 5.2.2)	Section 2.3.2 Section 2.4.3
		☒ justification for addition of any ecosystem credit species to the list	Not applicable, no ecosystem credit species were added
		Identify species credit species likely to occur on the subject land, including:	–
		☒ list of species credit species derived from the BAM-C (as described in BAM subsection 5.1.1)	Section 5.1.4
		☒ justification and supporting evidence for exclusions based on geographic limitations, habitat constraints or vagrancy (as described in BAM subsections 5.2.1 and 5.2.2)	Section 2.3.2 Section 2.4.3 Section 5.1.1

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ justification and supporting evidence for exclusions based on degraded habitat constraints and/or microhabitats on which the species depends (as described in BAM subsection 5.2.2)	Section 5.1.4
		☒ justification for addition of any species credit species to the list	Section 5.1.4 Section 5.2
		From the list of candidate species credit species, identify:	–
		☒ species assumed present within the subject land (if relevant) (as described in BAM subsection 5.2.4(2.a.)) ☒ species present within the subject land on the basis of being identified on an important habitat map for a species (as described in BAM subsection 5.2.4(2.d.)) ☒ species for which targeted surveys are to be completed to determine species presence (BAM subsection 5.2.4(2.b.)) ☒ species for which an expert report is to be used to determine species presence (BAM subsection 5.2.4(2.c.))	Section 5.1.4 Section 5.2 Section 5.3 Section 5.4 Figure 14.7 Figure 14.13
		Present the outcomes of species credit species assessments from:	–
		☒ threatened species survey (as described in BAM section 5.2.4)	Section 5.2 Section 5.3 Figure 14.7 Figure 14.13
		☒ expert reports (if relevant) including justification for presence of the species and information used to make this determination (as described in BAM subsection 5.2.4, Section 5.3, Box 3)	Not relevant.

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Where survey has been undertaken include detailed information on:	–
		☒ survey method and effort (as described in BAM Section 5.3)	Section 2.3 Section 2.4 Section 5.3 Figure 14.7
		☒ justification of survey method and effort (e.g. citation of peer-reviewed literature) if approach differs from the department's taxa-specific survey guides or where no relevant guideline has been published	Section 2.3 Section 2.4 Section 5.3
		☒ timing of survey in relation to requirements in the TBDC or the department's taxa-specific survey guides. Where survey was undertaken outside these guides include justification for the timing of surveys	Section 5.3
		☒ survey personnel and relevant experience	Declarations ii
		☒ describe any limitations to surveys and how these were addressed/overcome	Section 2.6
		Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include:	–
		☒ justification of the use of an expert report ☒ identify the expert, provide evidence of their expert credentials and departmental approval of expert status ☒ all requirements of Box 3 have been addressed in the expert report	Not relevant.

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Where use of local data is proposed (BAM subsection 1.4.2):	–
		☒ identify relevant species ☒ identify data to be amended ☒ identify source of information for local data, e.g. published literature, additional survey data, etc. ☒ justify use of local data in preference to VIS Classification or TBDC data	Not relevant.
		☒ provide written confirmation from the decision-maker that they support the use of local data	Not relevant.
		Species polygon completed for species credit species present within the subject land (assumed present or determined on the basis of survey, expert report or important habitat map) ensuring that:	–
		☒ the unit of measure for each species is documented	Section 5.7
		for species assessed by area:	–
		☒ the polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM subsection 5.2.5)	Section 5.7 Figure 14.13
		☒ a description of, and evidence-based justification for, the habitat constraints, features or microhabitats used to map the species polygon including reference to information in the TBDC for that species and any buffers applied	Section 5.2 Section 5.7
		for species assessed by counts of individuals:	–
		☒ the number of individual plants present on the subject land (as described in BAM subsection 5.2.5(3.))	Section 5.2 Section 5.7

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ the method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken	Section 2.3 Section 5.2 Section 5.7
		☒ the polygon includes all individuals located on the subject land with a buffer of 30 m around the individuals or groups of individuals on the subject land	Section 2.3 Section 5.2 Section 5.7 Figure 14.13
		☒ Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4)	Section 5.7
		Maps and tables	
		☒ Table showing ecosystem credit species in accordance with BAM subsection 5.1.1, and identifying:	–
		☒ the ecosystem credit species removed from the list	Table 5.4
		☒ the sensitivity to gain class of each species	Table 5.4
		☒ Table detailing species credit species in accordance with BAM Section 5.2 and identifying:	Table 5.5 and Table 5.6
		☒ the species credit species removed from the list of species because the species is considered vagrant, out of geographic range or the habitat or microhabitat features are not present	Table 5.1, Table 5.2, Table 5.3, Table 5.4, Table 5.5 and Table 5.6
		☒ the candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map	Table 5.7 to Table 5.12
		☒ Table detailing species credit species recorded or assumed as present within the subject land, habitat constraints or microhabitats associated with the species, counts of individuals (flora)/extent of suitable habitat (flora and fauna) (as described in BAM subsection 5.2.6) and biodiversity risk weighting (BAM Section 5.4)	Table 5.20 and Table 5.21

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ Map indicating the GPS coordinates of all individuals of each species recorded within the subject land and the species polygon for each species (as described in BAM subsection 5.2.5)	Figure 14.13
		Data	
		☐ Digital shape files of suitable habitat identified for survey for each candidate species credit species	To be submitted once BDAR is finalised
		☐ Survey locations including GPS coordinates of any plots, transects, grids	To be submitted once BDAR is finalised
		☐ Digital shape files of each species polygon including GPS coordinates of located individuals	To be submitted once BDAR is finalised
		☐ Species polygon map in jpeg format	To be submitted once BDAR is finalised
		☒ Expert reports and any supporting data used to support conclusions of the expert report	Not applicable
		☐ Field datasheets detailing survey information including prevailing conditions, date, time, equipment used, etc.	To be submitted once BDAR is finalised
Prescribed impacts	Chapter 6	**Information**	
		Identify potential prescribed biodiversity impacts on threatened entities, including:	–
		☒ karst, caves, crevices, cliffs, rocks and other geological features of significance (as described in BAM subsection 6.1.1) ☒ occurrences of human-made structures and non-native vegetation (as described in BAM subsection 6.1.2) ☒ corridors or other areas of connectivity linking habitat for threatened entities (as described in BAM subsection 6.1.3) ☒ waterbodies or any hydrological processes that sustain threatened entities (as described in BAM subsection 6.1.4)	Chapter 6 (Identifying prescribed impacts)

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ protected animals that may use the proposed wind farm development site as a flyway or migration route (as described in BAM subsection 6.1.5)	Not applicable
		☒ where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community (as described in BAM subsection 6.1.6)	Chapter 6 (Identifying prescribed impacts) Table 6.1
		☒ Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	Chapter 6 (Identifying prescribed impacts) Table 6.1
		☒ Describe the importance of habitat features to the species including, where relevant, impacts on life cycle or movement patterns (e.g. subsection 6.1.3)	Chapter 6 (Identifying prescribed impacts) Table 6.1
		Where the proposed development is for a wind farm:	–
		☒ identify a candidate list of protected animals that may use the development site as a flyway or migration route, including: resident threatened aerial species, resident raptor species and nomadic and migratory species that are likely to fly over the subject land (as described in BAM subsection 6.1.5)	Not applicable.
		☒ provide details of targeted survey for candidate species of wind farm developments undertaken in accordance with BAM subsection 6.1.5(2–3.)	Not applicable.
		☒ predict the habitual flight paths for nomadic and migratory species likely to fly over the subject land and map the likely habitat for resident threatened aerial and raptor species (BAM subsection 6.1.5(4.))	Not applicable.
		Where the project may result in vehicle strike:	–
		☒ identify a list of threatened fauna or protected fauna species that are part of a TEC and at risk of vehicle strike due to the project	Chapter 6 (Identifying prescribed impacts Table 6.1

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Maps and tables	
		☒ Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	Figure 14.1 Figure 14.2
		☒ Map showing location of potential vehicle strike locations	Figure 14.1
		☒ Maps of habitual flight paths for nomadic and migratory species likely to fly over the site and maps of likely habitat for threatened aerial species resident on the site (for wind farm developments only)	Not applicable.
		Data	
		☐ Digital shape files of prescribed impact feature locations	To be submitted once BDAR is finalised
		☐ Prescribed impact features map in jpeg format	To be submitted once BDAR is finalised
Avoid and minimise impacts	Chapter 7	**Information**	
		Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the project location in accordance with Chapter 7, including an analysis of alternative:	–
		☒ modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology	Section 7.1
		☒ routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route	Section 7.1
		☒ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	Section 7.1

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ alternative sites within a property on which the project is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site	Section 7.1
		☒ Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through project design (as described in BAM sections 7.1 and 7.2)	Section 7.1 Section 7.2 Section 7.3 Section 7.4 Section 7.5
		☒ Identification of any other site constraints that the proponent has considered in determining the location and design of the project (as described in BAM subsection 7.2.1(3.))	Section 7.1
		☒ Detail measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints)	Section 7.1 Section 7.2 Section 7.3 Section 7.4 Section 7.5
		Maps and tables	
		☒ Table of measures to be implemented to avoid and minimise the impacts of the project, including action, outcome, timing and responsibility	Table 8.23 Table 7.4
		☐ Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final project footprint, including construction and operation	Figure 14.23 Figure 14.24
		☐ Maps demonstrating indirect impact zones where applicable	Figure 14.14

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Data	
		Digital shape files of:	–
		☐ alternative and final project footprint	To be submitted once BDAR is finalised
		☐ direct and indirect impact zones	To be submitted once BDAR is finalised
		☐ Maps in jpeg format	To be submitted once BDAR is finalised
Assessment of impacts	Chapter 8, Sections 8.1 and 8.2	**Information**	
		☒ Determine the impacts on native vegetation and threatened species habitat, including a description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM section 8.1)	Section 8.1
		Assessment of indirect impacts on vegetation and threatened species and their habitat including (as described in BAM Section 8.2):	–
		☒ description of the nature, extent, frequency, duration and timing of indirect impacts of the project	Section 8.2 Table 8.20
		☒ documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications	Section 8.2 Table 8.20
		☒ reporting any limitations or assumptions, etc. made during the assessment	Section 2.6
		☒ identification of the threatened entities and their habitat likely to be affected	Section 8.2 Table 8.20

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Assessment of prescribed biodiversity impacts (as described in BAM section 8.3) including:	–
		assessment of the nature, extent frequency, duration and timing of impacts on the habitat of threatened species or ecological communities associated with:	–
		☒ karst, caves, crevices, cliffs, rocks and other features of geological significance	Section 8.3.1 Table 8.21
		☒ human-made structures	Section 8.3.2 Table 8.21
		☒ non-native vegetation	Section 8.3.3 Table 8.21
		☒ connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	Section 8.3.4 Table 8.21
		☒ movement of threatened species that maintains their life cycle	Section 8.2 Section 8.3
		☒ water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities	Section 8.3.5 Table 8.21
		☒ assessment of the impacts of wind turbine strikes on protected animals	Not applicable
		☒ assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC	Section 8.3.6 Table 8.21 Table 8.22
		☒ evaluate the consequences of prescribed impacts	Section 8.3
		☒ describe impacts that are uncertain	Section 8.5

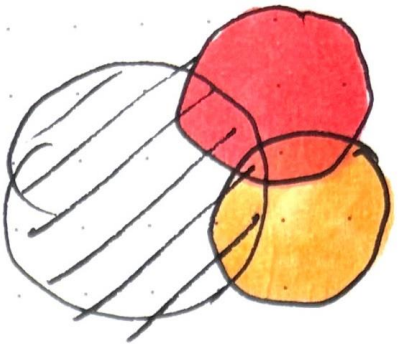
BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ document limitations to data, assumptions and predictions	Section 2.6
		Maps and tables	
		☒ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	Table 8.6 Table 8.7 Table 8.8 Table 8.9
		Data	
		N/A	–
Mitigation and management of impacts	Chapter 8, Sections 8.4 and 8.5	**Information**	
		Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM sections 8.4 and 8.5 including:	–
		☒ techniques, timing, frequency and responsibility ☒ identify measures for which there is risk of failure ☒ evaluate the risk and consequence of any residual impacts	Section 8.4 Table 8.23
		☒ document any adaptive management strategy proposed	Section 8.5

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Identification of measures for mitigating impacts related to:	–
		☒ displacement of resident fauna (as described in BAM subsection 8.4.1(2.)) ☒ indirect impacts on native vegetation and habitat (as described in BAM subsection 8.4.1(3.)) ☒ mitigating prescribed biodiversity impacts (as described in BAM subsection 8.4.2)	Section 8.4.4 Table 8.23
		☒ Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM section 8.5)	Section 8.5
		Maps and tables	
		☒ Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the project, including action, outcome, timing and responsibility	Table 8.23
		Data	
		N/A	–
Impact summary	Chapter 9	**Information**	
		Identification and assessment of impacts on TECs and threatened species that are at risk of a serious and irreversible impacts (SAII, in accordance with BAM section 9.1) including:	–
		☒ addressing all criteria in subsection 9.1.1 for each TEC listed as at risk of an SAII present on the subject land	Section 9.1
		☒ for each TEC, report the extent of the TEC in NSW	Section 9.1 Section 9.1.1
		☒ addressing all criteria in subsection 9.1.2 for each threatened species at risk of an SAII present on the subject land	Sections 9.1.1, 9.1.2 and 9.1.3
		☒ for each threatened species, report the population size in NSW	Sections 9.1.2 and 9.1.3

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☒ documenting assumptions made and/or limitations to information ☒ documenting all sources of data, information, references used or consulted ☒ clearly justifying why any criteria could not be addressed	Section 9.1
		☒ Identification of impacts requiring offset in accordance with BAM section 9.2	Chapter 10 (Impact summary)
		☒ Identification of impacts not requiring offset in accordance with BAM subsection 9.2.1(3.)	Chapter 10 (Impact summary)
		☒ Identification of areas not requiring assessment in accordance with BAM Section 9.3	Section 10.2
		Maps and tables	
		☒ Map showing the extent of TECs at risk of an SAII within the subject land	Figure 14.15
		☒ Map showing location of threatened species at risk of an SAII within the subject land	Figure 14.15
		Map showing location of:	–
		☒ impacts requiring offset	Figure 14.16
		☒ impacts not requiring offset	Figure 14.16
		☒ areas not requiring assessment	Figure 14.16
		Data	
		Digital shape files of:	–
		☐ extent of TECs at risk of an SAII within the subject land	To be submitted once BDAR is finalised
		☐ location of threatened species at risk of an SAII within the subject land	To be submitted once BDAR is finalised
		☐ boundary of impacts requiring offset	To be submitted once BDAR is finalised
		☐ boundary of impacts not requiring offset	To be submitted once BDAR is finalised

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		☐ boundary of areas not requiring assessment	To be submitted once BDAR is finalised
		☐ Maps in jpeg format	To be submitted once BDAR is finalised
Impact summary	Chapter 10	**Information**	
		Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:	–
		☒ future vegetation integrity score for each vegetation zone within the subject land (Equation 25 and Equation 26 in BAM Appendix H) ☒ change in vegetation integrity score (BAM subsection 8.1.1) ☒ number of required ecosystem credits for the direct impacts of the project on each vegetation zone within the subject land (BAM subsection 10.1.2)	Section 8.1.2 Table 8.6 Chapter 11 (Biodiversity credit report)
		☒ biodiversity risk weighting for each	Chapter 10 (Impact summary)
		☒ number of required species credits for each candidate threatened species that is directly impacted on by the project (BAM subsection 10.1.3)	Chapter 10 (Impact summary) and Chapter 11 (Biodiversity credit report) Section 11.3
		Maps and tables	
		☒ Table of PCTs requiring offset and the number of ecosystem credits required	Chapter 10 (Impact summary) and Chapter 11 (Biodiversity credit report) Table 11.4, Table 11.5, Table 11.6, Table 11.7, Table 11.8, Table 11.9
		☒ Table of threatened species requiring offset and the number of species credits required	Chapter 10 (Impact summary) and Chapter 11 (Biodiversity credit report) Table 11.10, Table 11.11, Table 11.12

BDAR section	BAM ref.	BAM requirement	Reference(s) in the BDAR
		Data	
		☐ Submitted project in the BAM Calculator	To be submitted once BDAR is finalised
Biodiversity credit report	Chapter 11	**Information**	
		☒ Description of credit classes for ecosystem credits and species credits at the development or clearing site or land to be biodiversity certified (BAM Section 10.2)	Chapter 11 (Biodiversity credit report) Appendix E (BAM-C credit reports)
		☒ BAM credit report in pdf format	Appendix E (BAM-C credit reports)
		Maps and tables	
		☒ Table of credit class and matching credit profile	Appendix E (BAM-C credit reports)
		Data	
		☒ BAM credit report in pdf format	Appendix E (BAM-C credit reports)



Appendix B

Determination of excluded impacts

B1 Determination of excluded impacts

In accordance with section 6.8 (3) of the BC Act, the BAM excludes the assessment of impacts on category 1-exempt land (within the meaning of Part 5A of the *Local Land Services Act 2013* (LLS Act)), other than any impacts prescribed by the regulations under section 6.3.

The LLS Act publishes maps (the 'native vegetation regulatory map) that show areas of the State to which Part 5A of the LLS Act applies, which are designated as Category 1 – exempt land. A native vegetation regulatory map is being developed by Conservation Programs, Heritage and Regulation (CPHR); however this is currently incomplete (in draft).

Section 60F of the LLS Act provides transitional requirements which identify how the relevant categorisation of land is to be determined pursuant to section 60H of the LLS Act in the absence of a native vegetation regulatory map. Accredited assessors may determine the categorisation of land during the transitional period in accordance with section 60F. The method applied to determine the categorisation is provided below.

The methodology outlined in the BDAR was determined through consultation with the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) and Conservation Programs, Heritage and Regulation (CPHR). Details of the consultation undertaken between WSP and CPHR to date are outlined in Table B.1, below.

Table B.1 Details of consultation regarding category 1-exempt land

Date of correspondence	Type	Details
September 2024	Meeting	Meeting undertaken with WSP, CPHR, DPE and Energy Co which discussed the current status of the category 1 exemption application and next steps for inclusion of category 1 land within WSP BDAR.
19/11/2024	Letter	Letter from WSP to CPHR outlining how the parts of the project alignment can be considered to be Category 1 – exempt land, as per the NSW Land Management Framework and the *Local Land Services Act 2013* and requesting a determination from the Environment Agency Head to confirm that the land can be classified as exempt land.
10/2/2025	Meeting	Meeting undertaken with WSP, CPHR, DPE and Energy Co which discussed the category 1 exemption application and next steps for inclusion of category 1 land within WSP BDAR.
18/09/2025	Workshop	Collaborative workshop between CPHR, EnergyCo and WSP to resolve vegetation mapping and category 1 land mapping.
24/09/2025	Submission on exhibited BDAR	Submission advice on exhibited BDAR by NSW DCCEEW and CPHR in relation to the application of category 1 land for the HTP project.

WSP has included mapping of category 1-exempt land in this BDAR based on recommendations provided from CPHR during the collaborative workshop and submission advice documentation.

Background to category 1 – exempt land

Under the NSW Land Management Framework, the categorisation of land determines the native vegetation management options available to landholders. Rural land in NSW is categorised into 3 main categories:

- Category 1 – exempt land is land where native vegetation can be cleared without approval from Local Land Services.
- Category 2 – land (category 2 lands) is divided into:
  - category 2 – **regulated land** is land that is not vulnerable or sensitive regulated land. This may require authorisation from Local Land Services to clear native vegetation from rural zoned land in this category
  - category 2 – **vulnerable regulated land** is land where clearing of native vegetation may not be permitted under the NSW Land Management (Native Vegetation) Code 2018, and a limited range of allowable activities are permitted
  - category 2 – **sensitive regulated land** is land where clearing is not permitted under the NSW Land Management Code (Native Vegetation) Code 2018, and a limited range of allowable activities is permitted.
- Excluded land – is land where the NSW Land Management (Native Vegetation) Code 2018 and allowable activities do not apply.

Land category criteria

Each land category is determined by various criteria as outlined in the LLS Act. Category 1 – exempt land is defined in 60H of the LLS Act as the below:

1 Land is to be designated as category 1 – exempt land if the Environment Agency Head reasonably believes that:

a the land was cleared of native vegetation as of 1 January 1990, or

b the land was lawfully cleared of native vegetation between 1 January 1990 and the commencement of this Part.

2 Land is to be designated as category 1 – exempt land if the Environment Agency Head reasonably believes that:

a the land contains low conservation value grasslands, or

b the land contains native vegetation that was identified as regrowth in a property vegetation plan referred to in section 9 (2) (b) of the NSW *Native Vegetation Act 2003*, or

c the land is of a kind prescribed by the regulations as category 1 – exempt land.

3 Land is to be designated as category 1 – exempt land if the land is biodiversity certified under Part 8 of the BC Actor under any Act repealed by that Act.

4 However:

a land described in subsection (1) or (2) is not to be designated as category 1 – exempt land if section 60I (2) requires the land to be designated as category 2 – regulated land, and

b land described in subsection (1) (a) is not to be designated as category 1 – exempt land if the land was unlawfully cleared of native vegetation after 1 January 1990, and

c land described in subsection (2) (a) is not to be designated as category 1 – exempt land if the land was unlawfully cleared of native vegetation after 1 January 1990.

5 The regulations may make provision for the purposes of determining whether grasslands are low conservation value grasslands for the purposes of this Division.

Determination of mapped category of land

The matters relating to determination of mapped category of land are outlined in 60J of the LLS Act. Section 60J of the LLS Act is reproduced below:

1 This section makes provision relating to the mapping of land under this Division as category 1 – exempt land or category 2 – regulated land.

2 Native vegetation that comprises grasslands or other non-woody vegetation is taken to have been cleared if the native vegetation was significantly disturbed or modified. The regulations may make provision for the purposes of determining whether native vegetation has been significantly disturbed or modified for the purposes of this Division.

3 Determinations may be made by the Environment Agency Head that land was unlawfully cleared of native vegetation only if compliance or enforcement action of a kind prescribed by regulations was taken in relation to the clearing.

4 Determinations may be made by the Environment Agency Head that land was cleared of native vegetation as of 1 January 1990 or between that date and the commencement of this Part only on the basis of the best available aerial photographs or satellite imagery before and after the relevant date, and any evidence provided by the landholder under section 60K (8).

5 Determinations made (or taken on appeal to have been made) by the Environment Agency Head as to whether land was or was not unlawfully cleared of native vegetation does not affect any decision made with respect to compliance or enforcement action taken under this or any other Act in relation to the clearing.

Assessment of critically endangered ecological communities and species

Critically endangered ecological communities (CEECs) and flora species are designated as category 2 – sensitive regulated land. Therefore, areas of potential category 1 – exempt land require consideration of the potential presence of critically endangered communities and species.

There are no critically endangered flora species considered to occur within areas mapped as category 1 – exempt land. This assessment is supported by detailed seasonal surveys and verified vegetation mapping.

There is one CEECs within the biodiversity study area being:

- Central Hunter Valley Eucalypt Forest and Woodland.

No areas of this CEEC occur within any draft native vegetation regulatory map category 1 area.

Existing transmission line approvals

The project has specifically co-located the alignment and infrastructure where possible with existing transmission infrastructure to minimise impacts to biodiversity and fragmentation. Some of this infrastructure is zoned SP2 Infrastructure and is therefore excluded from the application of the LLS Act, subsequently requiring assessment under the BAM. Several existing transmission lines are mapped as category 1 – exempt and category 2 – regulated land and therefore require further assessment.

These existing transmission lines are maintained by Transgrid and are subject to existing approvals, some of which pre-date the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). A summary of the relevant transmission lines intersected by the project include:

- Line 5A3: Bayswater – Mt Piper 500 kV
- Line 5A4: Bayswater – Wollar 500 kV
- Line 31: Bayswater – Regentville 330 kV
- Line 32: Bayswater – Sydney West 330 kV
- Line 81: 330 kV: Newcastle – Liddell 330 kV
- Line 5A1 and 5A2: Eraring – Kemps Creek 500 kV.

Many of the above existing transmission lines incorporate areas of category 1 – exempt land as mapped by the draft 'native vegetation regulatory map' and are consistent with the 'Australian Land Use and Management Intensive Use Classification -5.6.5. not subject to requirements for rehabilitation/or conservation obligations'. The draft 'native vegetation regulatory map' consist of the following categories:

- Category 1-exempt land (blue) (draft)
- Category 2-regulated land (yellow) (draft)
- Category 2-vulnerable regulated land (orange) (in-force)
- Category 2-sensitive regulated land (pink) (in-force)
- Areas where category 2-vulnerable and category 2-sensitive regulated lands overlap (brown) (in-force)
- Land excluded from the LLS Act (grey)

Given these approved transmission lines pre-date the EP&A Act, no regulatory exclusion is currently identified for the development of CSSI projects. As such, the draft NVR map land categorisation has been applied across all existing transmission lines and assessed accordingly. BAM has been applied on category 2 – regulated land and excluded land, and these areas have been sampled using vegetation integrity plot surveys that were run through the plot to PCT tool and assigned to the nearest PCT.

Proposed assessment methodology for identifying category 1 – exempt land on HTP

In determining category 1 land in accordance with 60J of the LLS Act, the project adopted the draft native vegetation regulatory map, incorporating the mapping of category 1 – exempt land.

The only amendments to this category 1 – exempt land mapping were where field verification identified native vegetation. Where this occurred, the draft mapping was amended and the patch assigned to a native vegetation PCT. No areas were added to mapping of category 1 – exempt land.

Amendments to category 1 – exempt land mapping are shown below:

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Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map

Legend

- Biodiversity study area

Existing transmission line

- 500 kV transmission line
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
- Category 2-regulated land (draft)
- Category 2-vulnerable regulated land (in-force)
- Category 2-proposed

0 0.25 0.5
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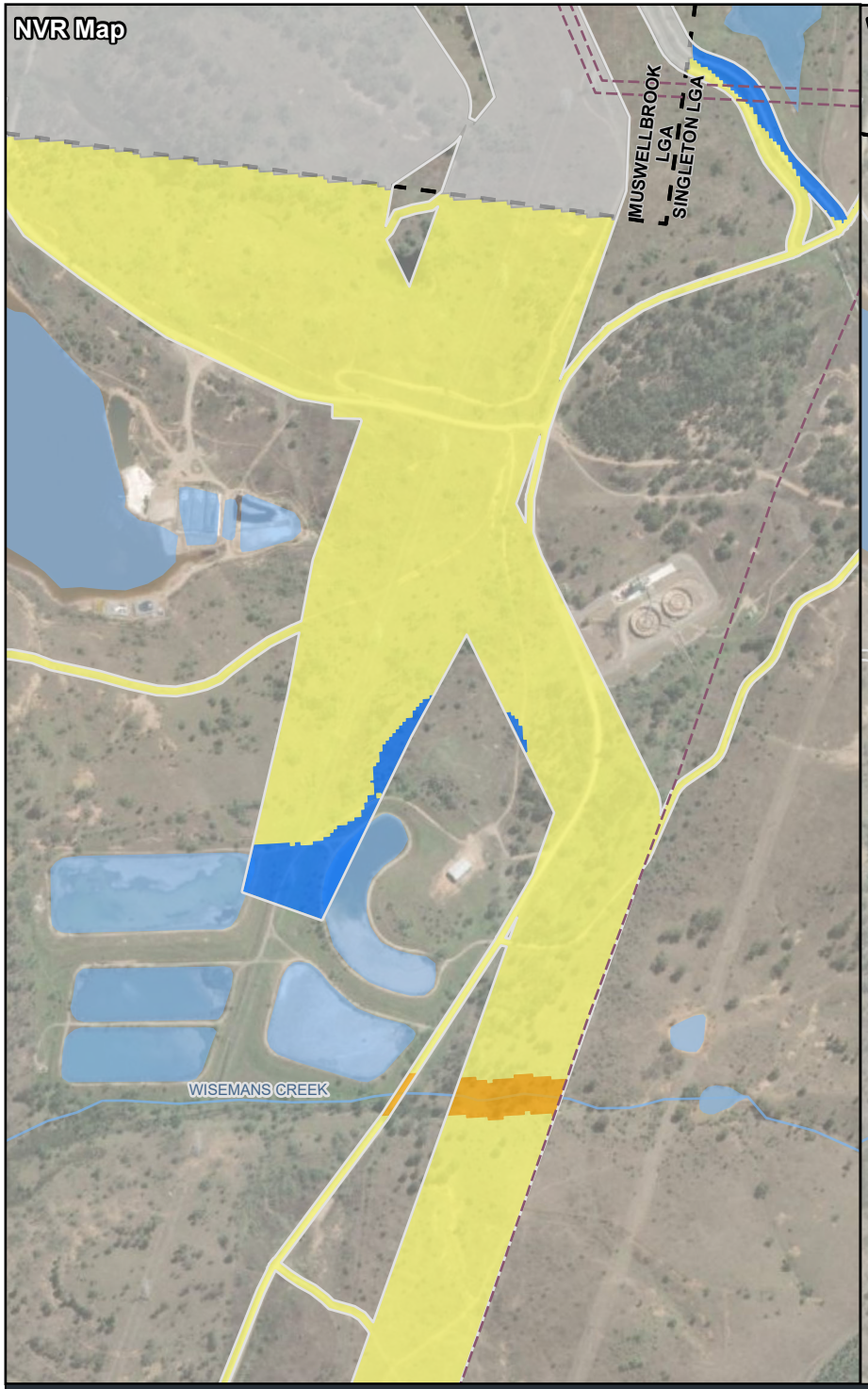

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Proposed NVR Map
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Legend

- Biodiversity study area

Existing transmission line

- 330 kV transmission line
- Named watercourse
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
- Category 2-regulated land (draft)
- Category 2-vulnerable regulated land (in-force)
- Land excluded from the LLS Act
- Category 2-proposed

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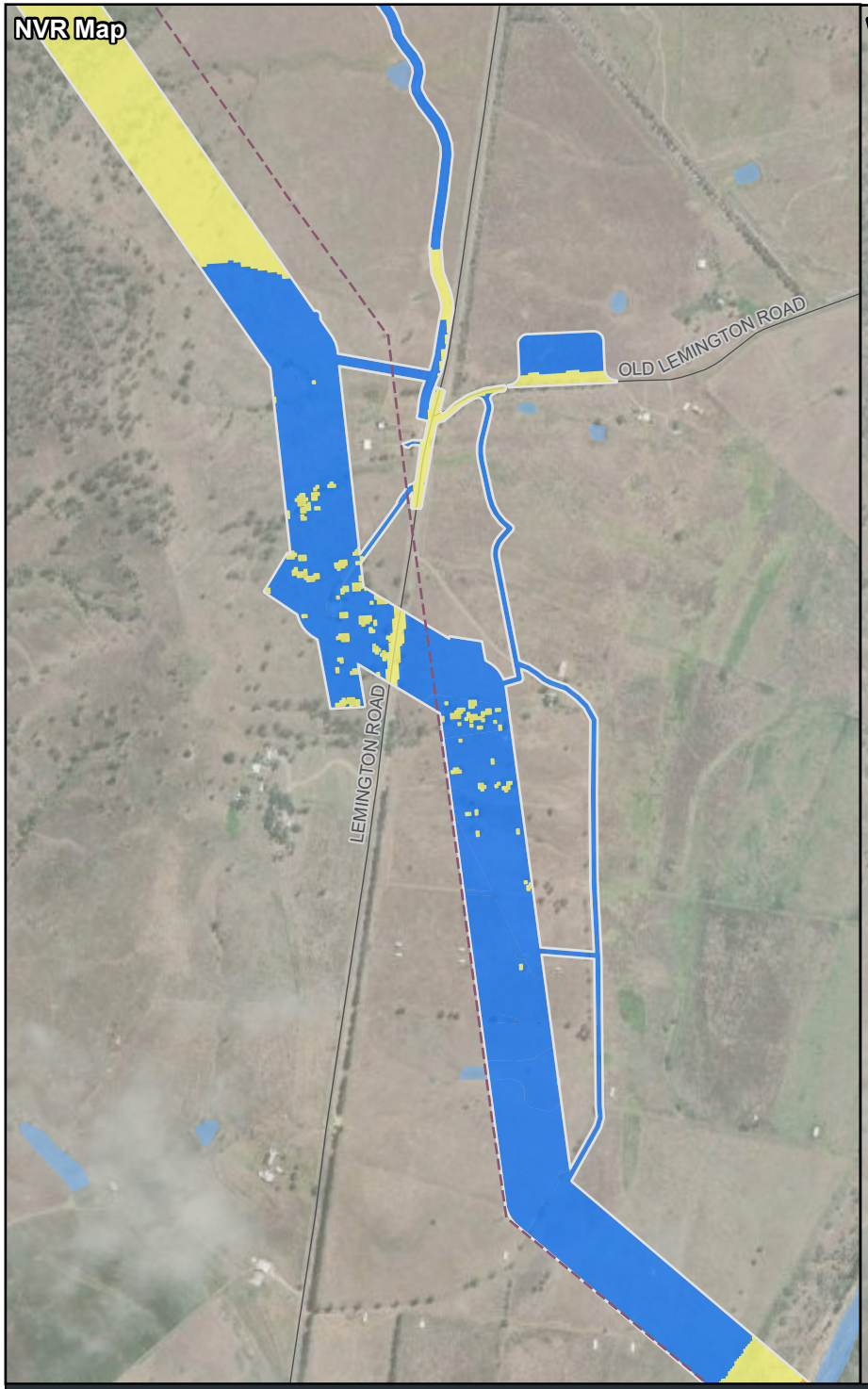

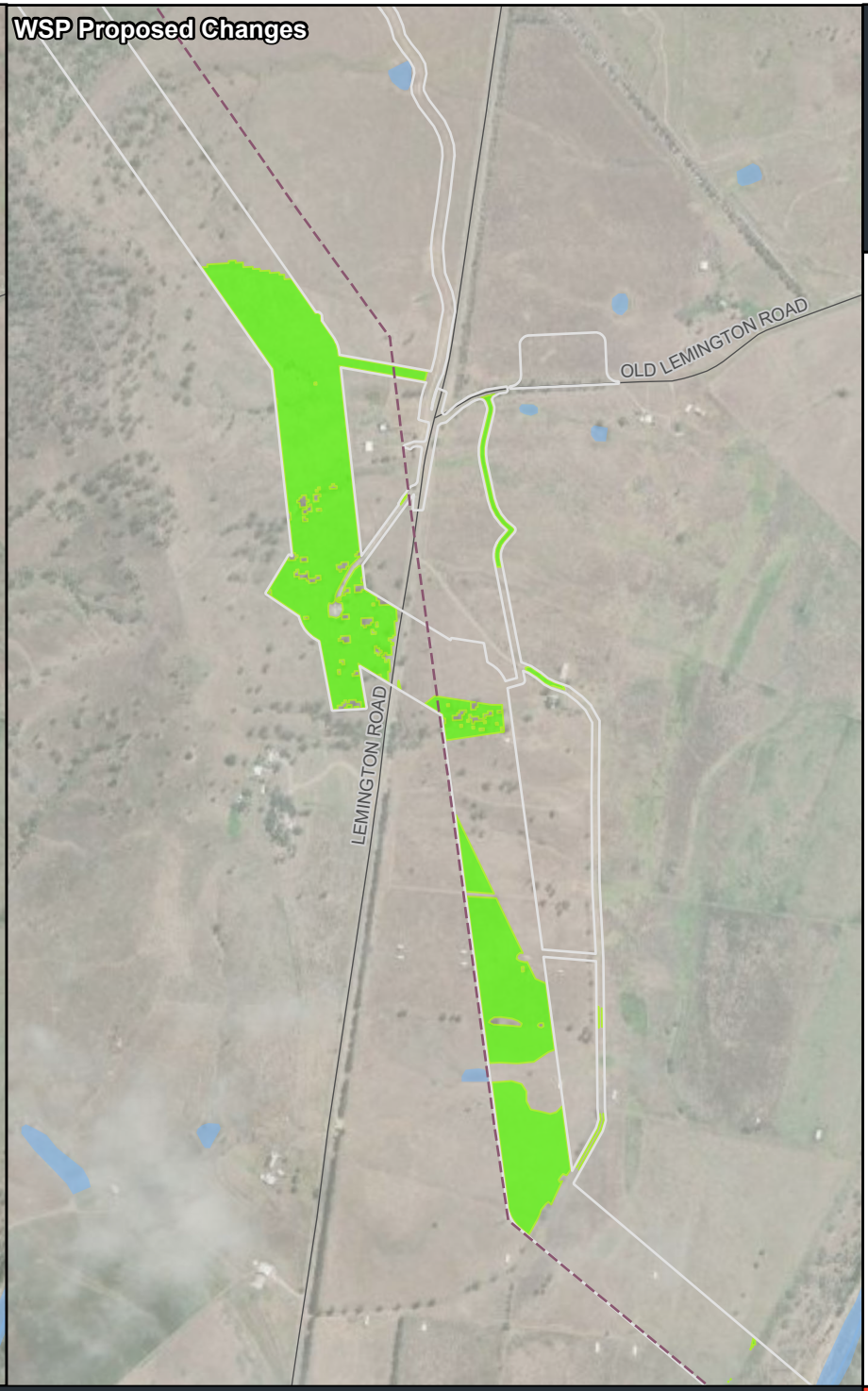

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Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map

Legend

- Biodiversity study area

Existing environment

- Road

Existing transmission line

- 330 kV transmission line
- Named watercourse
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
- Category 2-regulated land (draft)
- Category 2-vulnerable regulated land (in-force)
- Category 2-proposed

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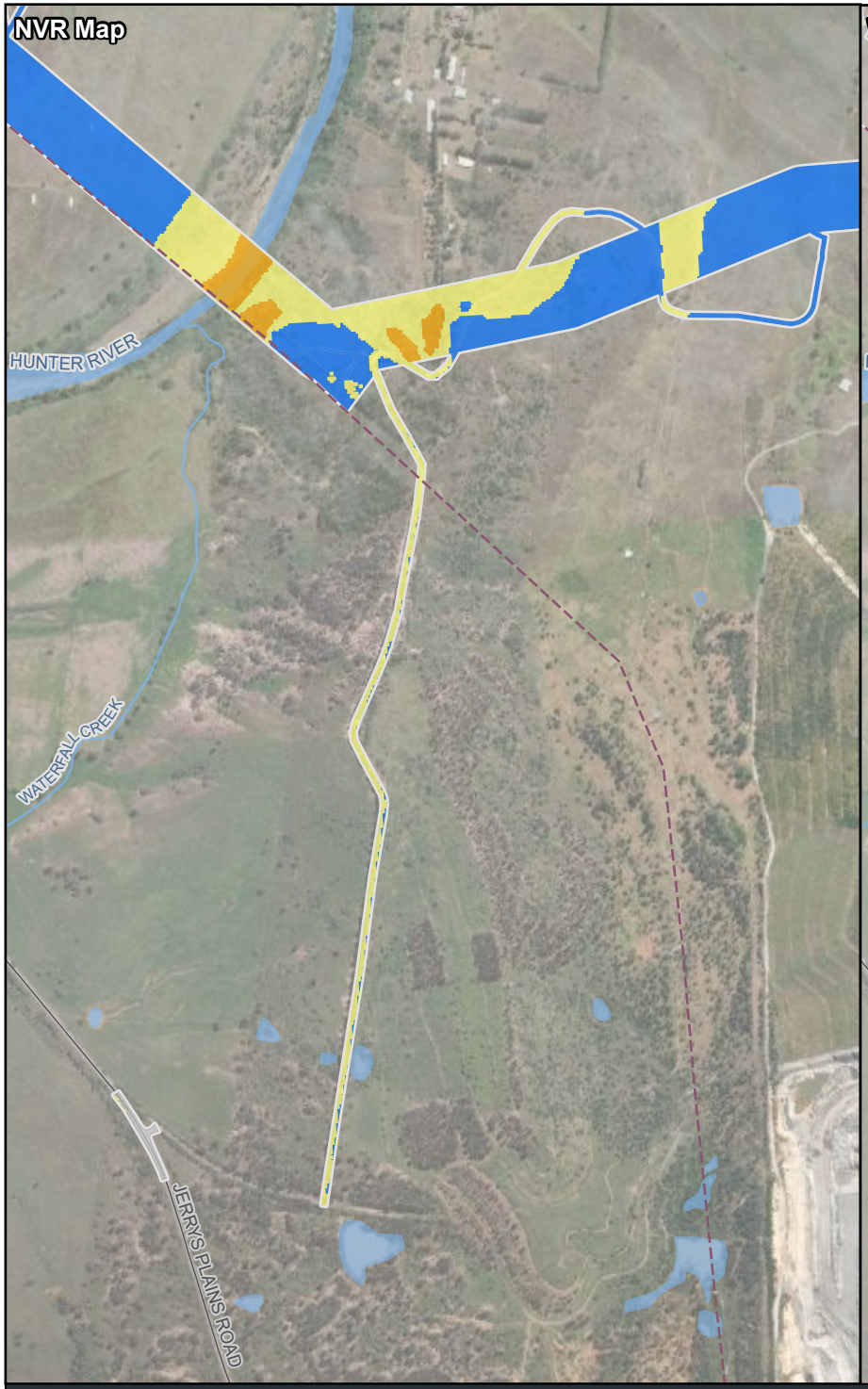

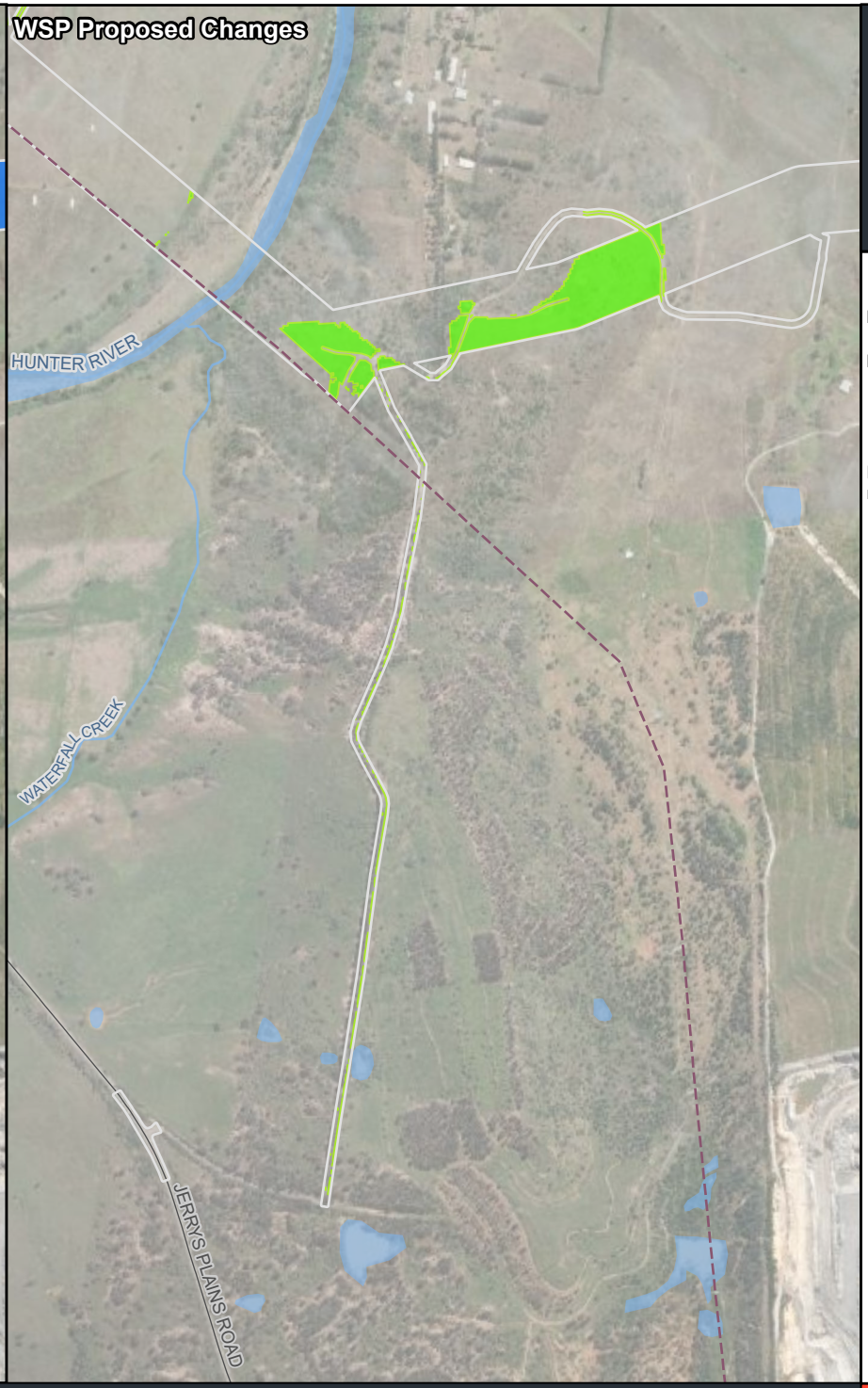

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- Biodiversity study area

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Existing transmission line

- 330 kV transmission line
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- Local government area

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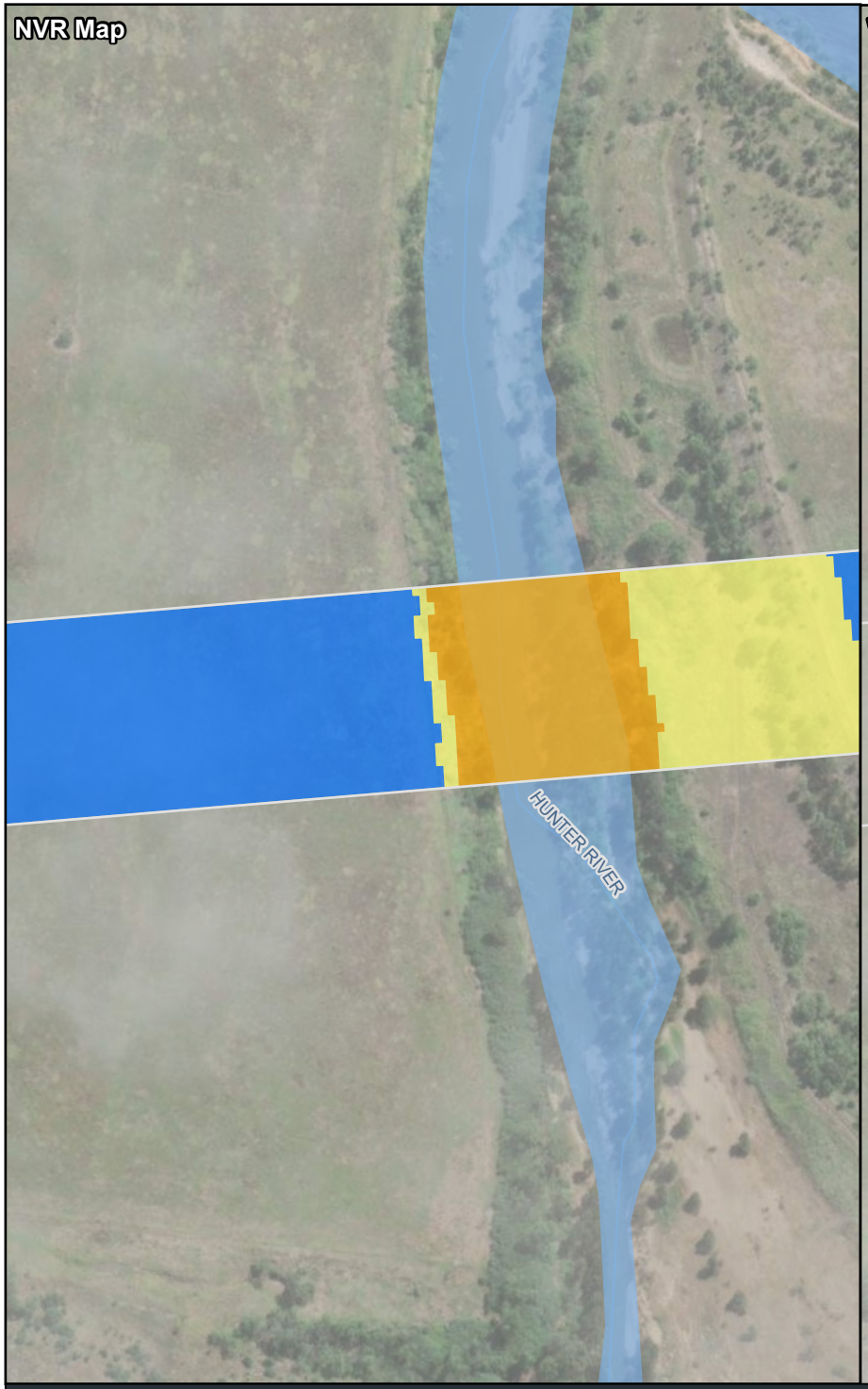

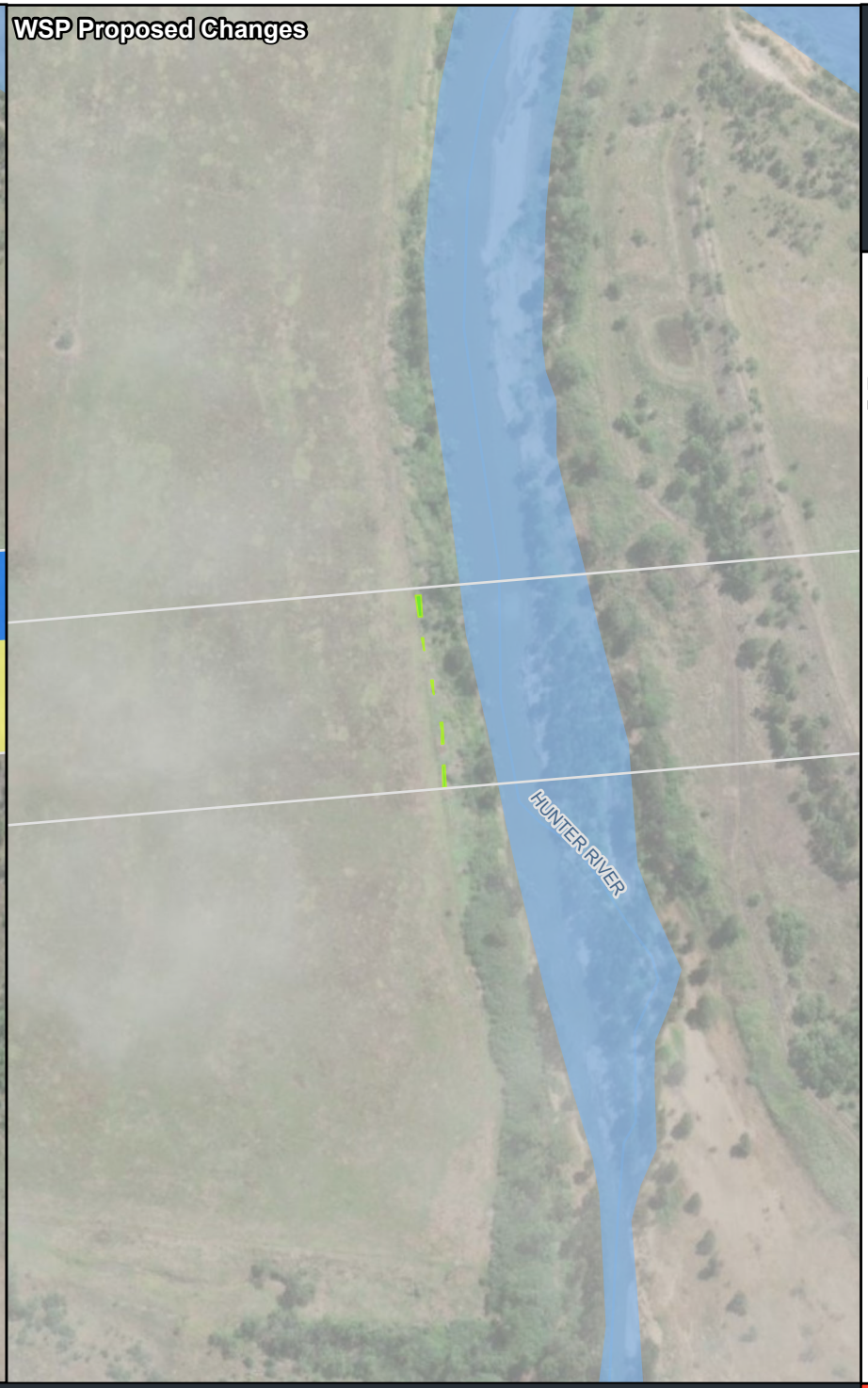

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- Waterbody
- Local government area

Native vegetation regulatory mapping

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- Category 2-proposed

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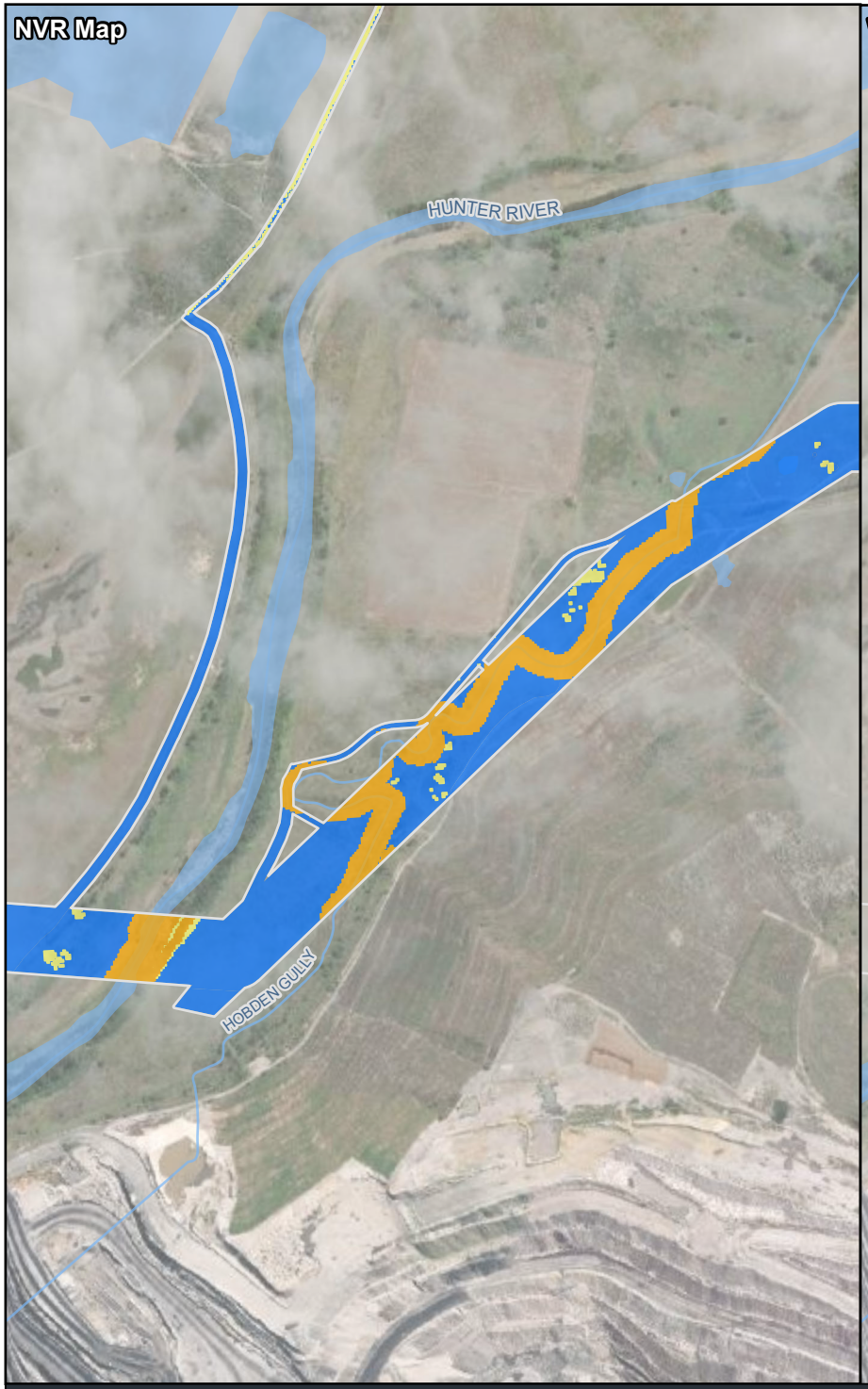

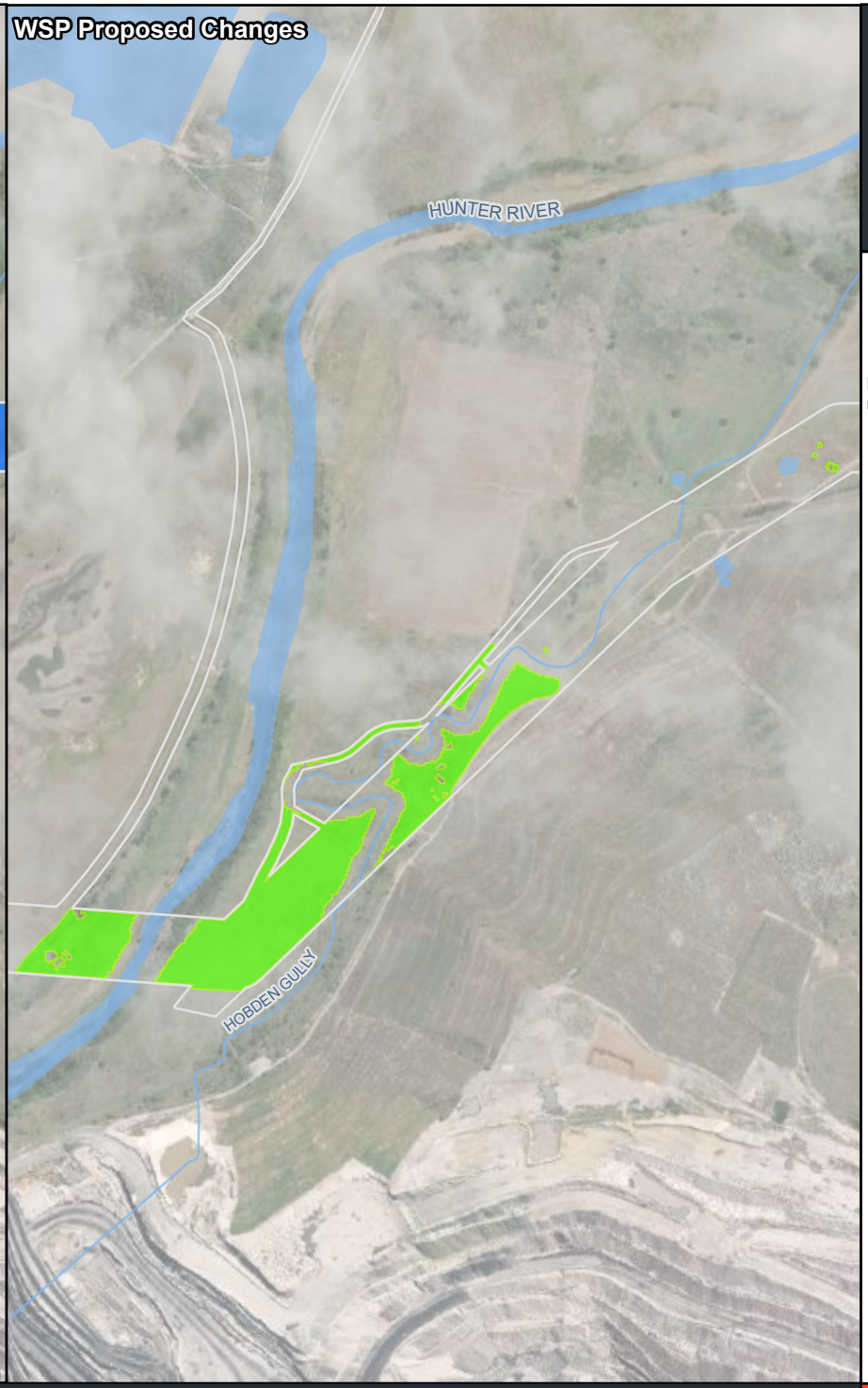

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Appendix B
Proposed NVR Map

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- Named watercourse
- Waterbody
- Local government area

Native vegetation regulatory mapping

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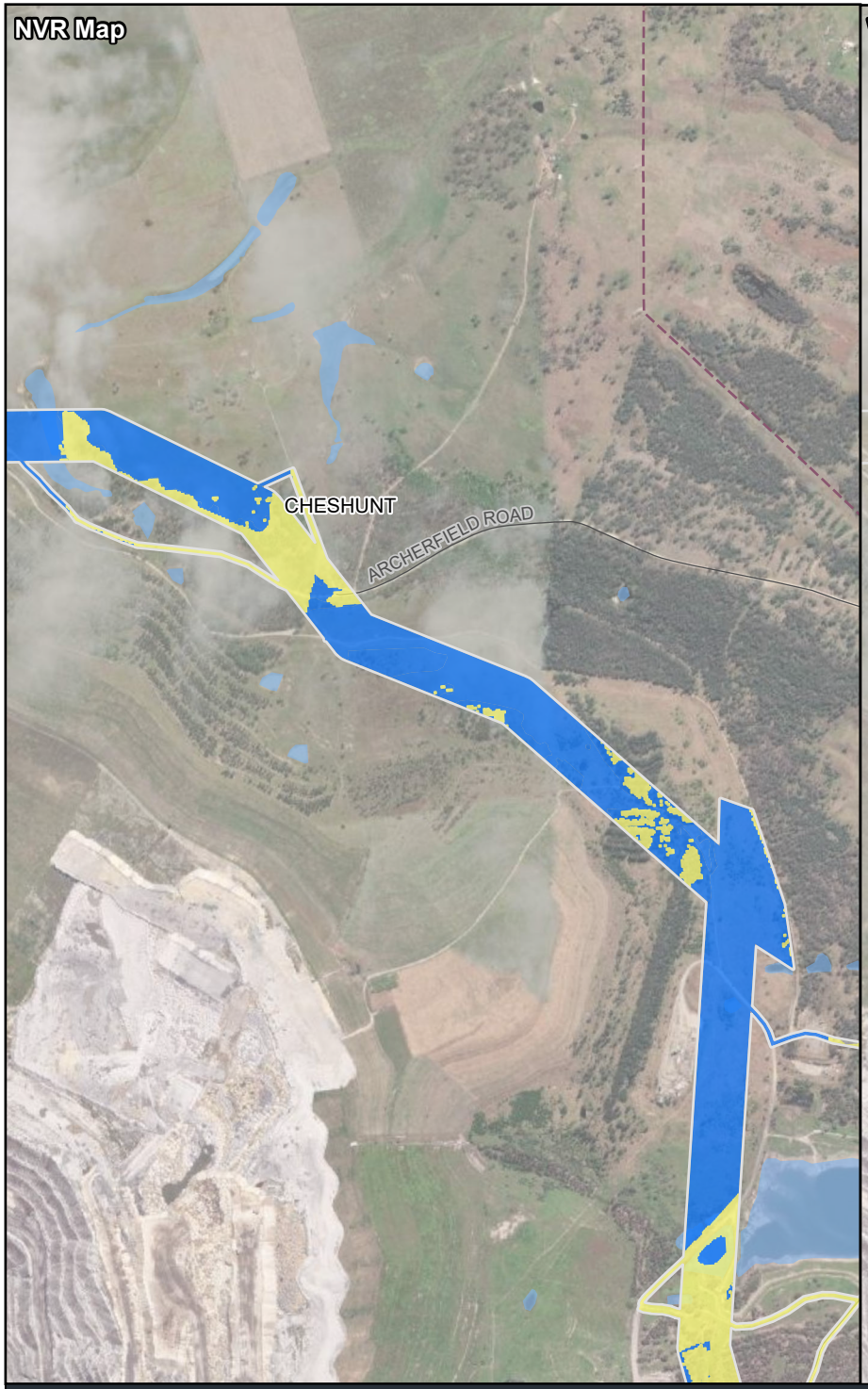

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Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map
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Legend

- Biodiversity study area

Existing environment

- Road

Existing transmission line

- 330 kV transmission line
- PlacePoint
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
- Category 2-regulated land (draft)
- Land excluded from the LLS Act
- Category 2-proposed

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Legend

- Biodiversity study area

Existing environment

- Road
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
- Category 2-regulated land (draft)
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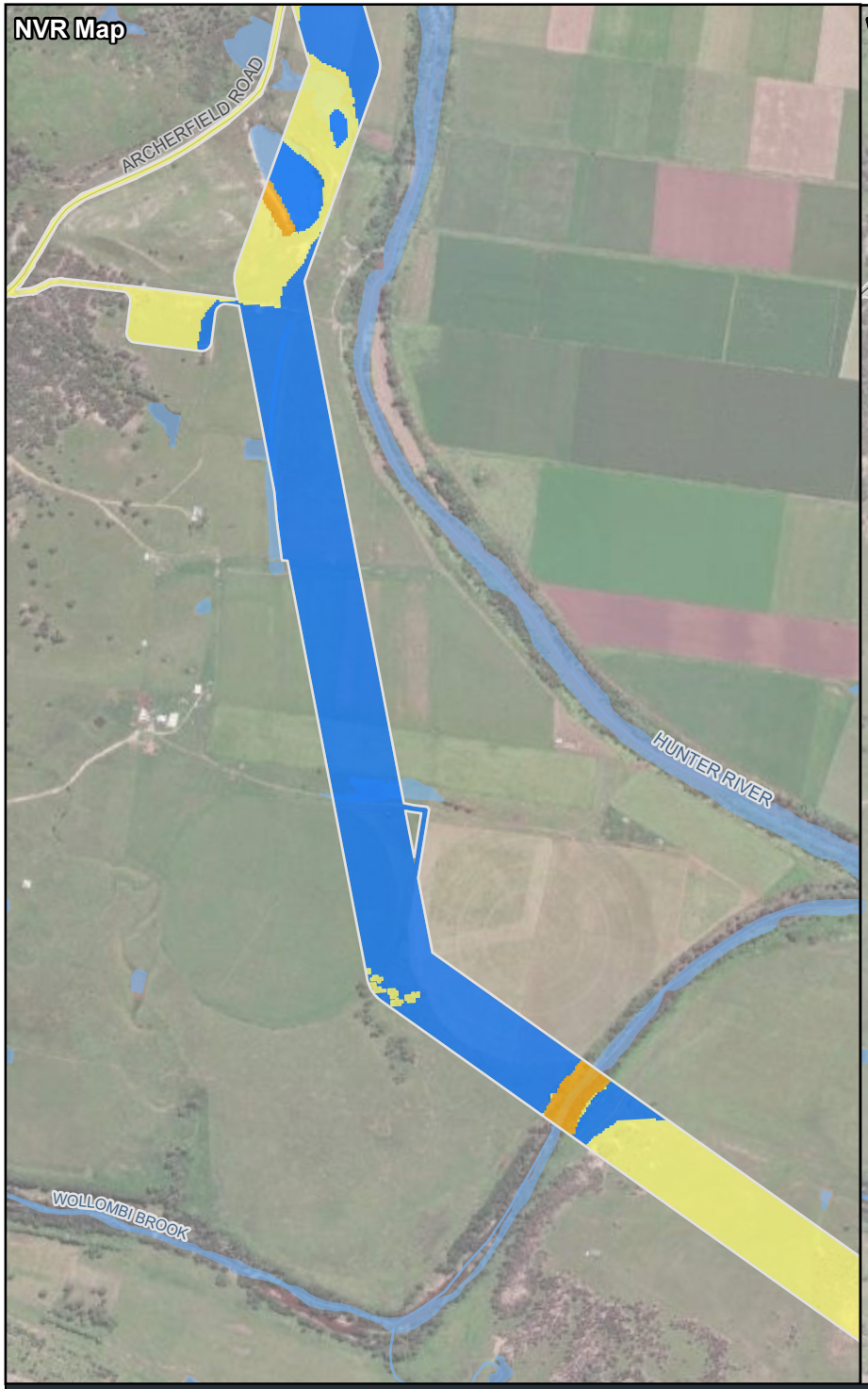

Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map

Legend

- Biodiversity study area

Existing environment

- Road
- Named watercourse
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
- Category 2-regulated land (draft)
- Category 2-vulnerable regulated land (in-force)
- Category 2-proposed

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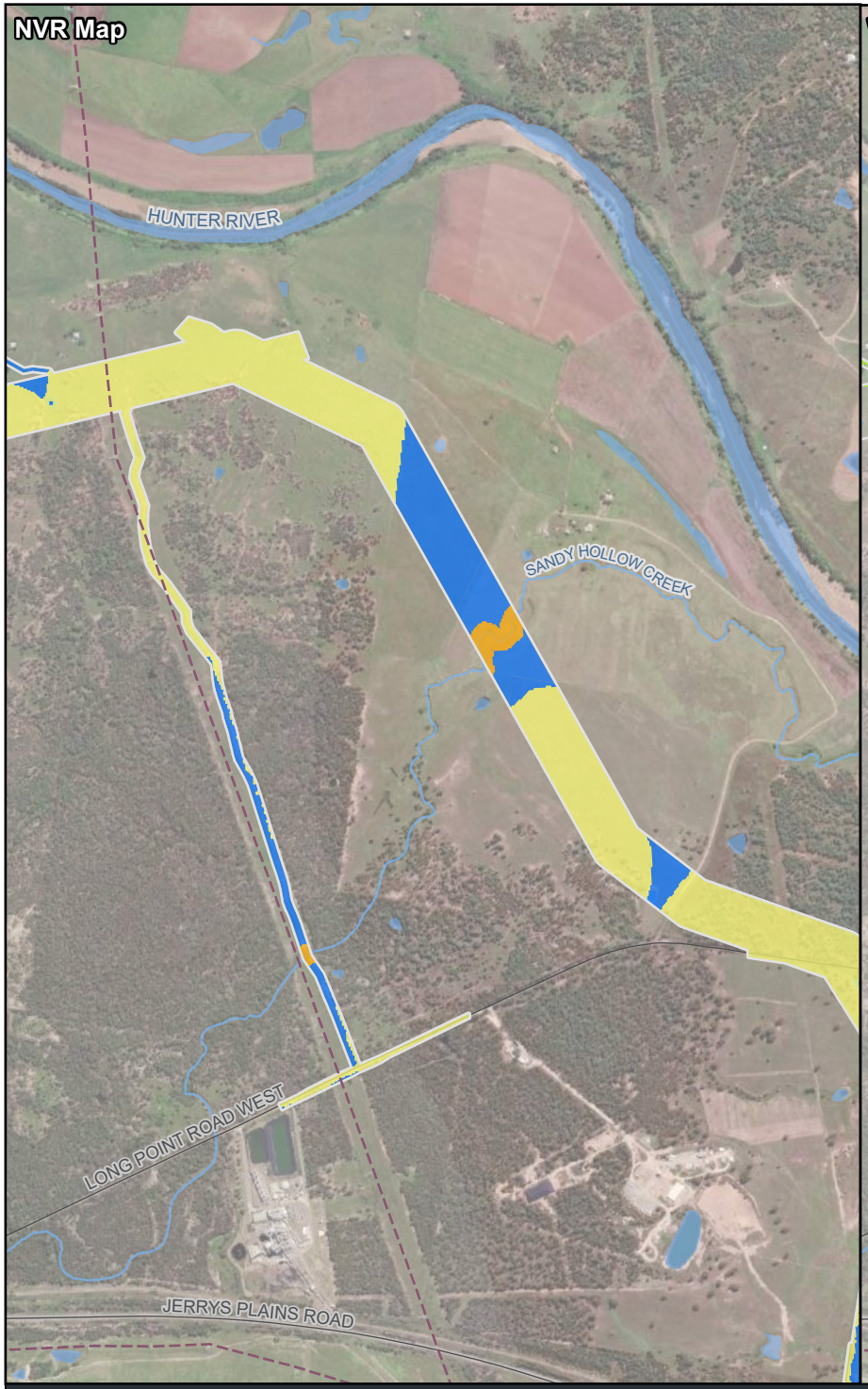

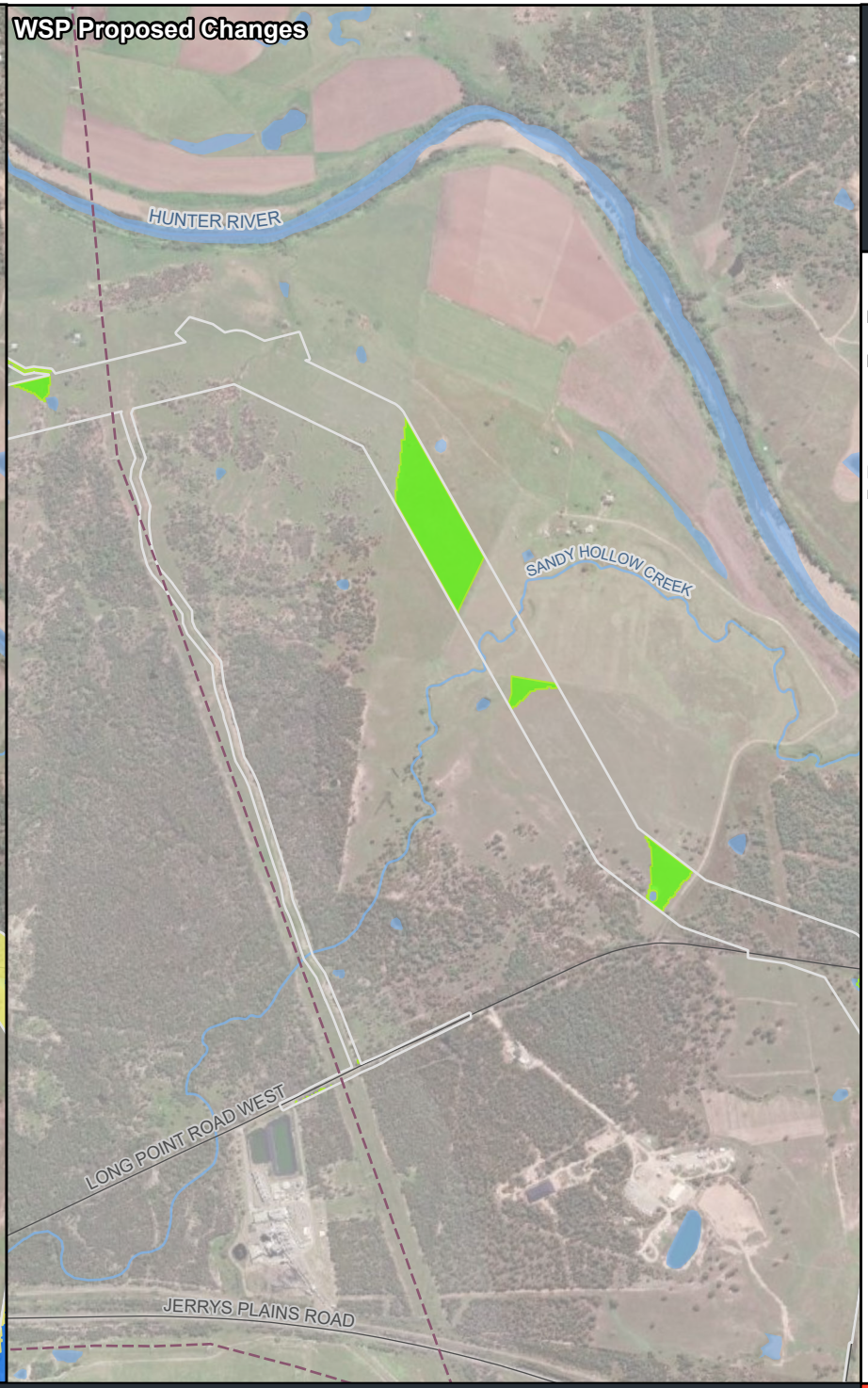

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Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map

Legend

- Biodiversity study area

Existing environment

- Road

Existing transmission line

- 330 kV transmission line
- Named watercourse
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
- Category 2-regulated land (draft)
- Category 2-vulnerable regulated land (in-force)
- Category 2-proposed

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Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map
Page 11 of 15

Legend

- Biodiversity study area

Existing environment

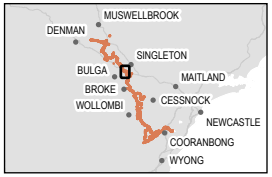
- Road

Existing transmission line

- 330 kV transmission line
- PlacePoint
- Named watercourse
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
- Category 2-regulated land (draft)
- Category 2-sensitive regulated land (in-force)
- Category 2-vulnerable regulated land (in-force)
- Land excluded from the LLS Act
- Category 2-proposed



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Kilometres

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GDA 2020

Date: 26/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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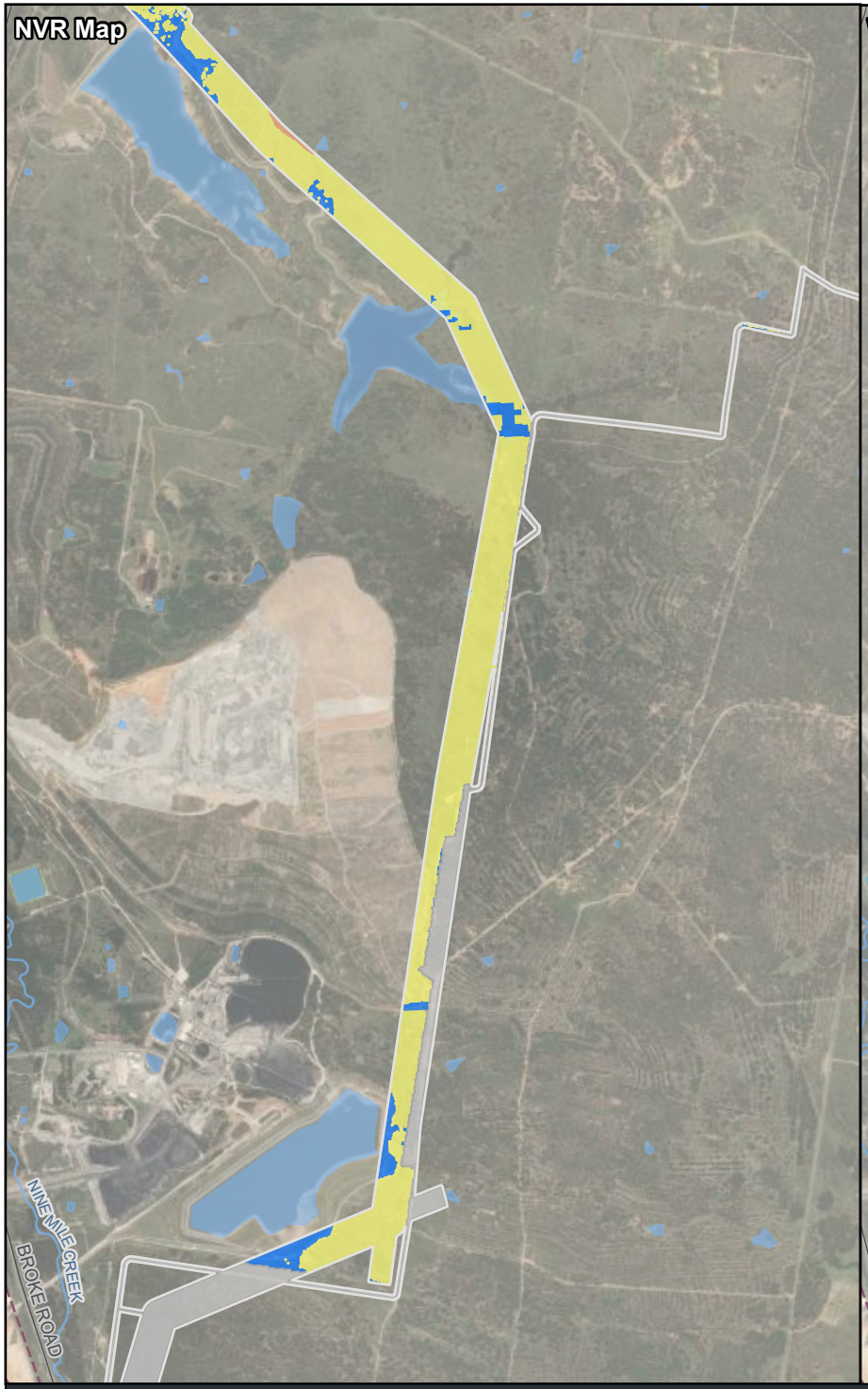

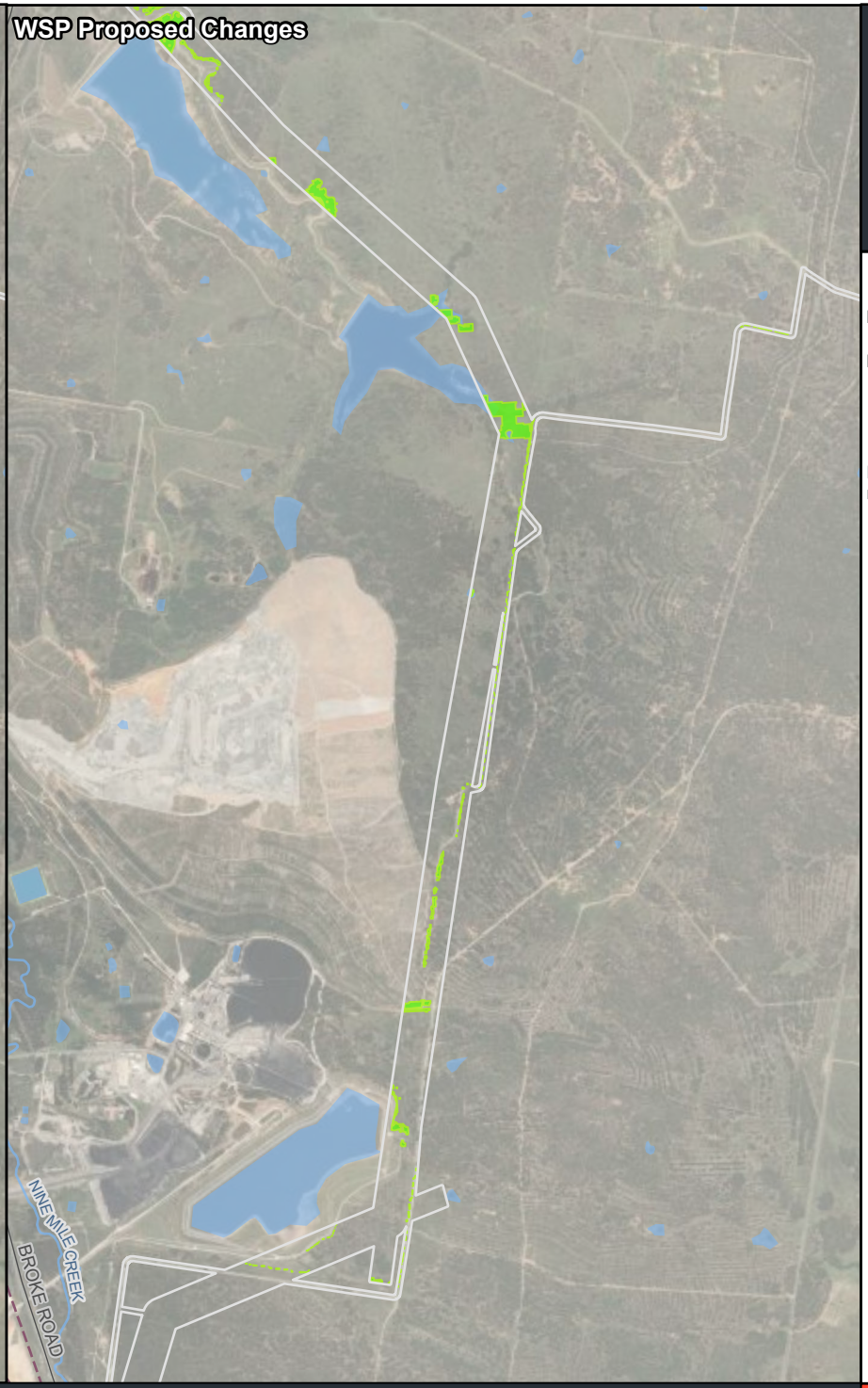

Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix B
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Existing transmission line

- 330 kV transmission line
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Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map
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Legend

- Biodiversity study area

Existing environment

- Road
- Named watercourse
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
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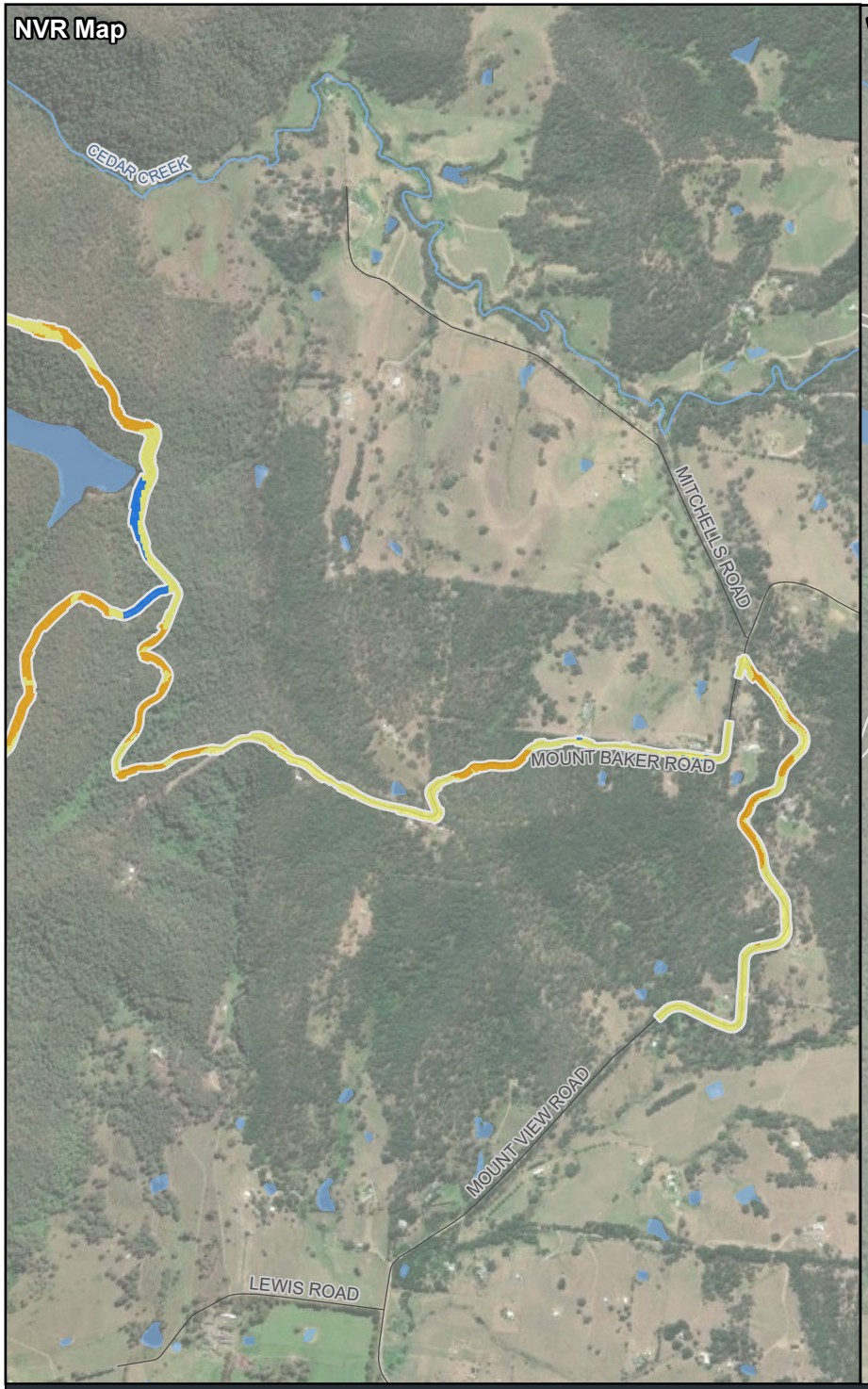

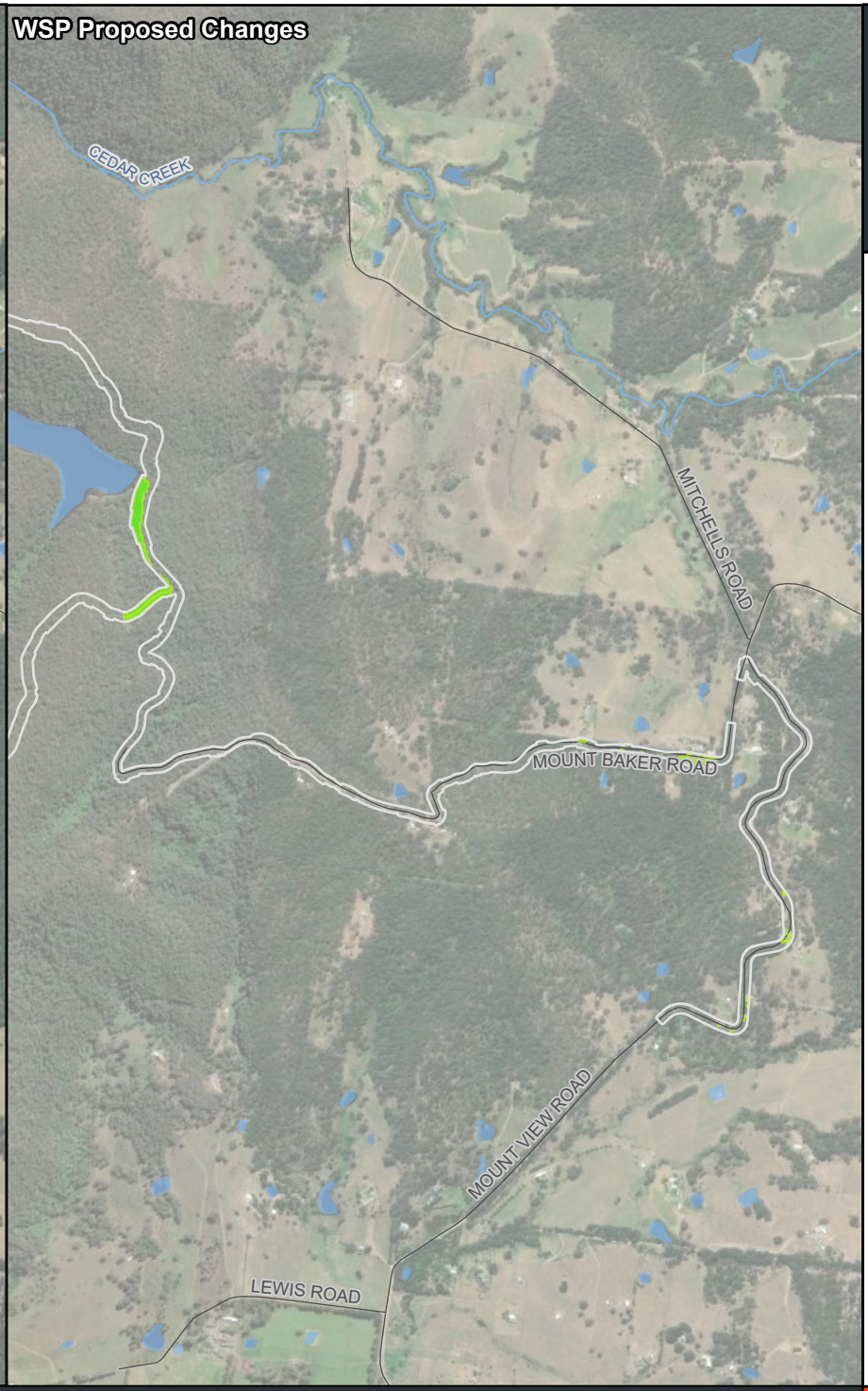

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Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map
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Legend

- Biodiversity study area

Existing environment

- Road
- Named watercourse
- Waterbody
- Local government area

Native vegetation regulatory mapping

- Category 1-exempt land (draft)
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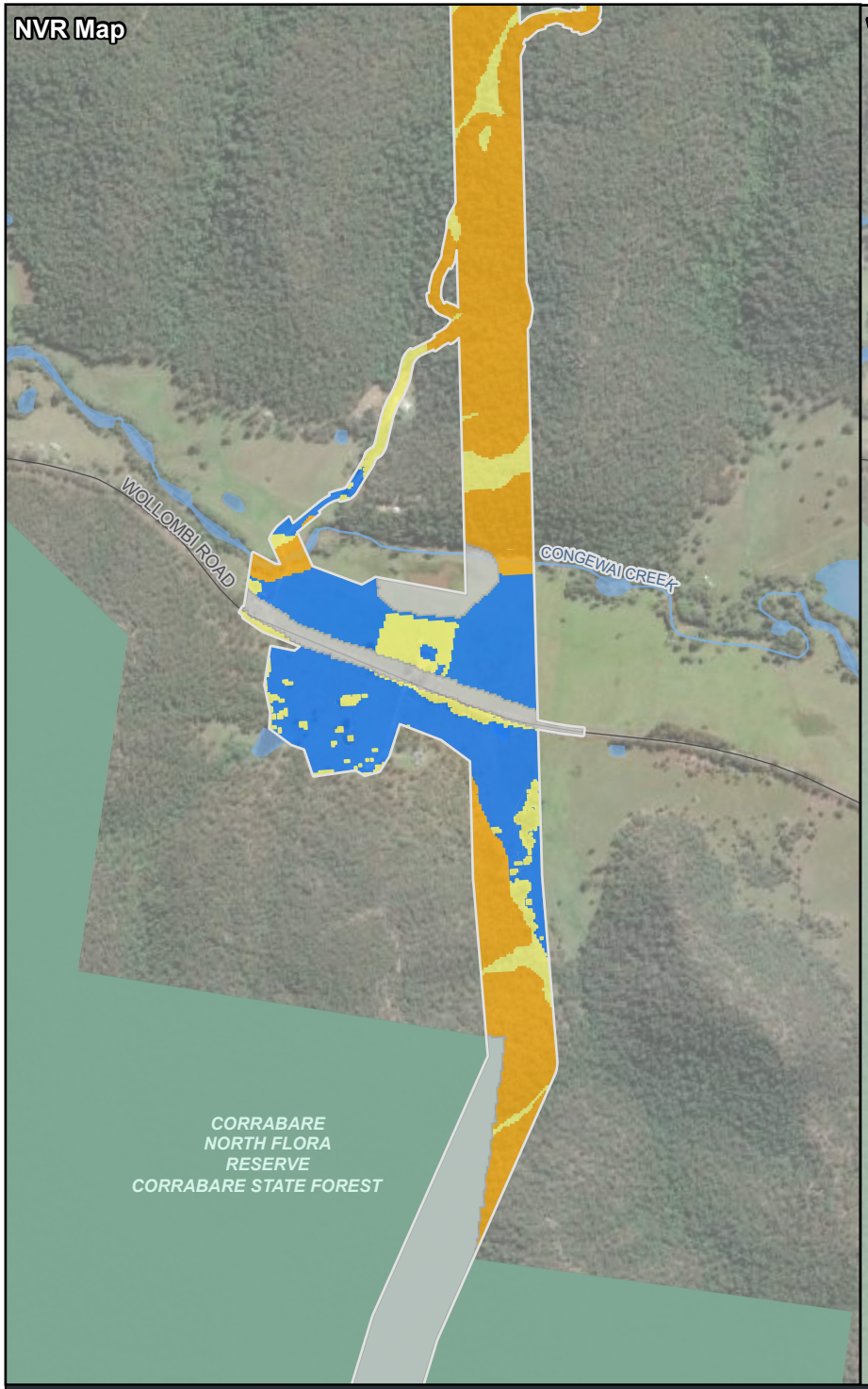

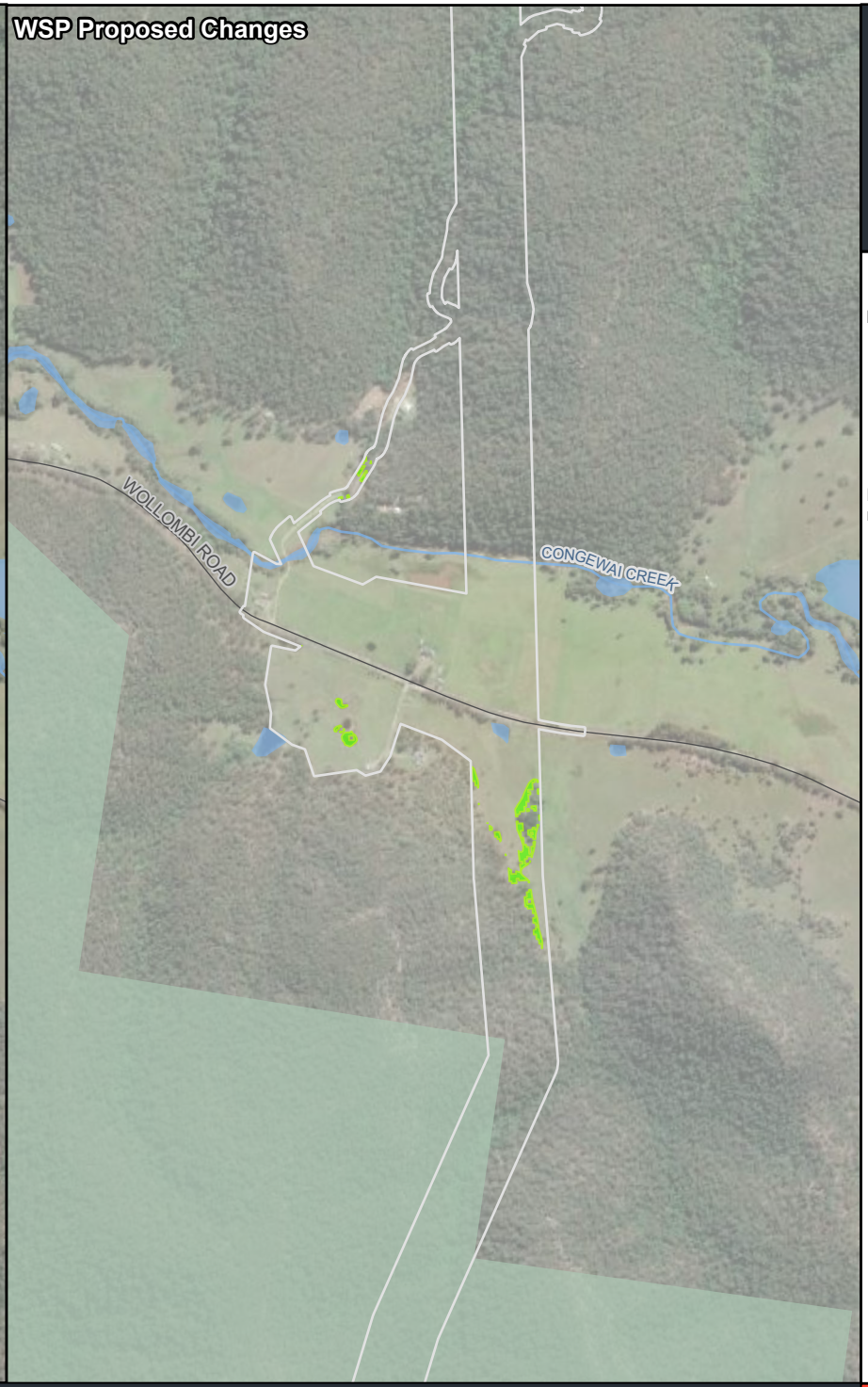

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Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix B
Proposed NVR Map

Legend

- Biodiversity study area

Existing environment

- Road
- Named watercourse
- Waterbody
- Local government area
- State forest
- NPWS reserve
- Flora reserve

Native vegetation regulatory mapping

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- Category 2-proposed

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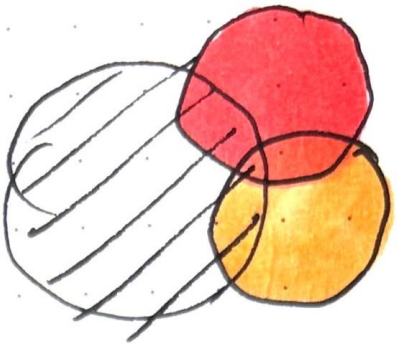

Appendix C

Matters of national environmental significance

Design
for a better
future /

EnergyCo

Hunter Transmission Project

Matters of National Environmental Significance

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February 2026

Question today
Imagine tomorrow
Create for the future

Hunter Transmission Project
Matters of National Environmental Significance

EnergyCo

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Final	13/02/2026	Final report

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Reviewed by:	Alex Cockerill	13/02/2026	
Approved by:	Alex Cockerill	13/02/2026	

WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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Attachment B Significant impact assessment

Summary tables for the 'Assessment of predicted impacts on EPBC Act-listed Threatened Species and Communities' and the 'Completion Checklist for BDAR Appendix E, relating to assessment of predicted impacts on EPBC Act-listed Threatened Species and Communities' are provided below in accordance with the *Guidance for Accredited Assessors on the assessment of MNES* (attachment 1 and 2) (Department of Planning Housing and Infrastructure 2016).

Table ES.1 Summary table for assessment of predicted impacts on EPBC Act-listed Threatened Species and Communities

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[(1)]
Threatened ecological community						
Central Hunter Valley Eucalypt Forest and Woodland	3314_Thinned 3315_Thinned 3431_Thinned 3431_Poor 3431_Plantation 3438_Mod-good 3446 Mod-good	164.19	5,087	Ecosystem	EnergyCo intends to enter into a Strategic Offset Delivery Agreement (SODA) with the Secretary of the NSW Department of Climate Change, Energy, Environment and Water (NSW DCCEEW) for the project. Further detail on the offset requirements and approach are provided in Section 8.6 of the BDAR	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	4044_Mod-good	0.12	6	Ecosystem		Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
River-Flat Eucalypt Forest on coastal floodplains of southern New South Wales and eastern Victoria	3328_Mod-good 4039_Mod-good	2.24	67	Ecosystem		Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Threatened species						
Botaurus poiciloptilus (Australasian Bittern)	4015, 4039, 4042, 4044, 4072 & 4089.	26.03	528	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Brachyscome brownii	3239 and 3241	12.85	3,256	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Climacteris picumnus victoriae (Brown Treecreeper (eastern subspecies))	3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 & 4089.	877.19	19,320	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Dasyurus maculatus (Spotted-tail Quoll)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4042, 4044, 4072 & 4089.	871.78	19,298	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Gallinago hardwickii (Latham's Snipe)	4015	10.59	298	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Grantiella picta (Painted Honeyeater)	3151, 3152, 3230, 3242, 3244, 3489, 3599, 3605, 3617 & 4015.	255.72	6,660	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Hirundapus Caudacutus (White-throated Needletail)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 & 4089.	900.56	19,660	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Melanodryas cucullata cucullata (South-eastern Hooded Robin)	3151, 3152, 3230, 3242, 3244, 3489, 3599, 3605, 3617 & 4015.	255.72	6,660	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Nyctophilus corbeni (Corben's Long-eared Bat)	3315, 3438 & 4039.	36.94	812	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Petaurus australis (Yellow-Bellied Glider)	3086, 3087, 3150, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3433, 3436, 3438, 3444, 3446, 3581, 3582, 3599, 3605, 3617, 3621, 4042 & 4044.	521.47	13,342	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Pseudomys novaehollandiae (New Holland Mouse)	3244, 3250, 3315, 3433, 3436, 3446, 3581, 3582 & 3583.	59.73	1,187	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Pteropus poliocephalus (Grey-headed Flying fox)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4039, 4042, 4044 & 4089.	775.27	17,976	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Pycnoptilus floccosus (Pilotbird)	3152, 3238, 3239, 3250, 3599, 3605, 3617 & 3621.	227.91	528	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Rostratula australis (Australian Painted Snipe)	4015, 4039, 4042, 4044, 4072 & 4089.	26.03	528	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Stagonopleura guttata (Diamond Firetail)	3239, 3244, 3250, 3314, 3315, 3431, 3433, 3446, 3489, 3605, 3617, 3621, 4042 & 4089.	571.85	11,257	Ecosystem	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Ecosystem credit requirements in EIS Section 8.6 and BDAR Section 11
Acacia bynoeana	3315, 3433, 3436, 3582, 3583, 3617 & 4039.	5.79	174	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Angophora inopina	3244, 3250, 3315, 3433, 3436, 3581, 3582, 3583, 4042 & 4044.	3.70	142	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Anthochaera phrygia (Regent Honeyeater)	3230, 3238, 3239, 3241, 3244, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3621, 4039, 4042, 4044, 4072 & 4089	96.91	5,172	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Asperula asthenes	3086, 3241, 3242, 3244, 3250 & 3436	2.75	100	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Callocephalon fimbriatum (Gang-gang Cockatoo)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4072 & 4089	41.71	1,515	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Calyptorhynchus lathami lathami (South-eastern Glossy Black-Cockatoo)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 & 4089	18.52	669	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Chalinolobus dwyeri (Large-eared Pied Bat)	3086, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621 & 4042	574.24	28,631	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Cryptostylis hunteriana	3250, 3582 & 3583.	7.13	117	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Cynanchum elegans	3029, 3086, 3087, 3151, 3152, 3237, 3239, 3244, 3250, 3489, 3617 & 3621.	2.67	100	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Delma vescolineata (Hunter Valley Delma)	3241, 3244, 3314, 3315, 3431, 3438, 3444, 3605, 4015, 4039, 4072 & 4089.	353.53	6,571	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Eucalyptus glaucina (Slaty Red Gum)	3152, 3239, 3241, 3314, 3315, 3431, 3433, 3438, 3446 & 3605.	34 (count)	68	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Genoplesium branwhiteorum	3581, 3433, 3582 & 3583.	6.12	205	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Genoplesium insigne	3433, 3581, 3582, 3583, & 4042.	10.67	389	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Grevillea parviflora subsp. parviflora	3244, 3433, 3436, 3444, 3446, 3581, 3582, 3583 & 4044.	11.87	280	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Heleioporus australiacus (Giant Burrowing Frog)	3150, 3151 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3263, 3436, 3438, 3439, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4039, 4044, & 4072.	73.62	2,123	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Lathamus discolor (Swift Parrot)	3029, 3086, 3087, 31503151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3438, 3439, 3444, 3446, 3599, 3605, 3617, 4015, 4042, 4044 4039, 4072 & 4089	45.32	2,394	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Litoria littlejohni (Littlejohn's Tree Frog)	3150, 3230, 3237, 3238, 3239, 3250, 3263, 3433, 3581, 3605, 3617, 3621 & 4039.	70.34	2,702	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Melaleuca biconvexa	3029, 3150, 3241, 3242, 3244 & 3250	6.05	203	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Mixophyes balbus (Stuttering Frog)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3433, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4042, 4044 & 4072.	191.99	11,133	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Mixophyes iteratus (Giant Barred Frog)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3581, 3582, 3583, 3605, 3617, 3621, 4042, 4044 & 4072.	10.76	319	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Notamacropus parma (Parma Wallaby)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3242, 3244, 3250, 3263, 3433, 3489, 3581, 3582, 3605, 3617, 3621 & 4042.	390.74	13,386	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Olearia cordata	3151, 3152, 3238, 3239, 3605 & 3617.	2.24	83	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Ozothamnus tesselatus	3315 & 3431.	0.65	16	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Petauroides volans (Southern Greater Glider)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3599, 3605, 3617, 3621, 4039, 4042, 4044 & 4072	560.39	21,081	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Petrogale penicillata (Brush-tailed Rock-wallaby)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015 & 4039.	163.96	8,454	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Phascolarctos cinereus (Koala)	3029, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4042, 4044 & 4089	625.71	23,314	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Potorous tridactylus (Long-nosed Potoroo)	3150, 3230, 3242, 3244, 3250, 3433, 3436, 3581, 3582, 3583, 3617, 4042 & 4044.	168.33	5,923	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Prasophyllum petilum (Tarengo Leek Orchid)	3314, 3315, 3431, 3438 & 3444.	11.82	375	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Prasophyllum sp. Wybong	3314, 3315, 3431, 3438 & 3444.	11.82	561	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Prostanthera cineolifera (Singleton Mint Bush)	3239, 3315, 3438, 3444, 3446, 3489 & 3605.	65.88	2,452	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Pterostylis gibbosa (Illawarra Greenhood)	3431 & 3438.	13.62	463	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[1]
Rhizanthella slateri (Eastern Australian Underground Orchid)	3029, 3086, 3087, 3150, 3230, 3237, 3242, 3244, 3250, 3263, 3581, 3599, 3617 & 3621.	81.37	3,988	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Rhodamnia rubescens (Scrub Turpentine)	3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3446 & 3617.	1,528 (count)	4,584	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Rhodomyrtus psidioides (Native Guava)	3029, 3086, 3087, 3150, 3151, 3152, 3242, 3250, 3621 & 4072	17.87	1,080	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Rutidosis heterogama	3244, 3250, 3315, 3433, 3444, 3446, 3581, 3582, 3583, 3605 & 4039.	0.66	15	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Syzygium paniculatum	3029, 3087, 3150, 3241, 3242, 3244, 3250, 3433, 4042 & 4044.	61 (count)	122	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

Description of Threatened Species/ Community listed under EPBC Act	Description of PCTs associated with the ecosystem credit species/ ecological community (if applicable)	Area of predicted impact (ha)	Credits required	Credit type	Offsetting approach	Reference to EIS and BDAR[(1)]
Tetratheca juncea	3241, 3242, 3244, 3250, 3433, 3436, 3581, 3582, 3853 & 3617.	14.68	417	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Thelymitra adorata	3244, 3433, 3436, 3582, 3853 & 4042.	0.79	21	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Velleia perfoliata	3152, 3239, 3605 & 3617.	2.24	75	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11
Zieria involucrata	3151, 3152, 3238, 3239, 3605 & 3617.	2.24	75	Species	EnergyCo intends to enter into a SODA as described above	Impact assessment in EIS Section 8.4 and BDAR Section 8 Species credit requirements in EIS Section 8.6 and BDAR Section 11

(1) Section numbers have been provided to ensure accuracy, since page numbers are subject to change across both the EIS and BDAR

Table ES.2 Completion checklist for BDAR Appendix E, relating to assessment of predicted impacts on EPBC Act-listed Threatened Species and Communities

Initial when complete	Information required to be included in Appendix E	Comments
Part A		
Confirm that general information in Appendix E (MNES) of the BDAR is complete/sufficient		
X	Appendix E clearly shows how operational and construction footprints , including clearing boundaries, structures to be built and elements of the action, are situated with regard to MNES (and/or references to where this detail is provided within the body of the BDAR).	Listed in Appendix C, Section 6. Impacts which contains link to relevant figure in BDAR (BDAR Figure 14.12).
X	Appendix E includes a map(s) of the subject land boundary showing the proposal/disturbance footprint with respect to location of MNES, including links to or directory locations of GIS shape files (and/or references to where this detail is provided within the body of the BDAR).	Appendix C sections contain references to BDAR figures for MNES as required including: — Section 4 (Threatened biodiversity): Figure 14.1, Figure 14.13 — Section 6 (Impacts): Figure 14.12.
X	Appendix E identifies any other site constraints in selecting the location and design of the proposed development (such as bushfire protection requirements, flood planning levels, servicing constraints) (and/or references to where this detail is provided within the body of the EIS or BDAR).	Project siting constraints and design alternatives considered are discussed in Appendix C, Section 2 (Project). References to relevant sections in BDAR Section 1.1.
X	Appendix E clearly depicts stages and timing of the action that may impact on MNES (and/or references to where this detail is provided within the body of the BDAR).	Listed in Appendix C, Section 2.1 and Section 6 (Impacts) References to relevant sections in BDAR (Chapters 6, 8 and 10) are provided in Appendix C, Section 6 and Appendix C, Section 8.
X	The BDAR Declarations (Section i) include an explicit statement that all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the BDAR/EIS including those that are ecosystem credit species.	Provided in BDAR Declarations (Section i). Also included in Appendix C, Section 1 (Introduction).
X	Appendix E contains a completed Summary Table	This summary table has been included as part of Appendix C.

Initial when complete	Information required to be included in Appendix E	Comments
X	Appendix E contains sufficient general information regarding the project's predicted impact on MNES	Impacts are discussed in detail in Appendix C, Section 6 (Impacts) with residual impacts after mitigations discussed in Appendix C, Section 8 (Threatened biodiversity assessment). Further detail is provided in the BDAR which are referenced in Appendix C, this is consistent with *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (Department of Planning Housing and Infrastructure 2016)
X	Appendix E contains (or references) a separate assessment for each threatened species and community that occurs on or near the site (containing minimum information requirements).	Provided in Appendix C, Attachment B (Significant impact assessment). Further detail is provided in the BDAR which are referenced in Appendix C, this is consistent with *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (Department of Planning Housing and Infrastructure 2016)
X	Appendix E contains appropriate analysis and justification for any species and communities identified in the referral documentation (provided by the Australian Government) that have been ruled out because they don't occur on or near the site.	Provided in Appendix C, Attachment A (Likelihood of Occurrence). Further detail is provided in the BDAR which are referenced in Appendix C, this is consistent with *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (Department of Planning Housing and Infrastructure 2016)
X	Appendix E identifies any relevant Commonwealth guidelines and policy statements applicable to the proposed development, including but not limited to: — international environmental obligations — Recovery Plans — Approved Conservation Advice, and — Threat Abatement Plans.	Provided in Appendix C, Attachment B (Significant impact assessment), with applicable Commonwealth guidelines and policy statements listed as part of the assessment for each TEC or threatened species.

Initial when complete	Information required to be included in Appendix E	Comments
X	Appendix E includes relevant information on the identification of [name of the species/community] on the site or in the vicinity via: — field based survey effort — published peer reviewed literature — local data, and — supporting databases (such as the NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, Commonwealth Species Profile and Threats Database search results).	Summarised in Appendix C, Section 4 (Threatened biodiversity) with identification methods provided in Appendix C, Attachment A (Likelihood of occurrence) and additional detail for each threatened entity provided in the assessments in Appendix C, Attachment B (Significant impact assessment). Additional detail is provided in the which is referenced in Appendix C, this is consistent with *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (Department of Planning Housing and Infrastructure 2016)
X	Appendix E includes appropriate mapping of [species/community] in accordance with the relevant Commonwealth Listing Advice.	Appendix C sections contain references to BDAR figures for MNES as required including: — Section 4 (Threatened biodiversity): Figure 14.1, Figure 14.13 — Section 6 (Impacts): Figure 14.12. This is consistent with *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (Department of Planning Housing and Infrastructure 2016)
X	Appendix E includes consideration of important populations and critical habitat as defined in Approved Listing Advice, Approved Conservation Advice, Threat Abatement Plans and Recovery Action Plans that relate to [species/community].	Important populations and critical habitat relevant to each threatened entity are discussed in detail in Appendix C, Attachment B (Significant impact assessment).

Initial when complete	Information required to be included in Appendix E	Comments
X	Appendix E identifies feasible alternatives and efforts to avoid and minimise predicted impacts on [species/community] (including direct, indirect and prescribed impacts) including an analysis of the following alternatives: — designs and engineering solutions — modes or technologies — routes and locations of facilities, and — sites within the subject site.	Chosen project design and alternatives are discussed in Appendix C, Section 2 (Project). Mitigation measures to minimise impacts are discussed in Appendix C, Section 7 (Mitigation measures). Specific impacts and efforts to avoid and minimise impacts for each threatened entity are discussed in Appendix C, Attachment B (Significant impact assessment). Additional detail is provided in the which is referenced in Appendix C, this is consistent with *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (Department of Planning Housing and Infrastructure 2016)
X	Appendix E identifies feasible measures to mitigate and/or manage predicted impacts on [species/community] (including direct, indirect and prescribed impacts) including: — techniques, timing, frequency and responsibility — identify measures for which there is a risk of failure — evaluate the risk and consequence of any residual impacts, and — any adaptive management strategy proposed to monitor and respond to impacts.	Impacts on threatened entities and measures to mitigate and manage impacts are discussed in detail in Appendix C, Section 6 (Impacts) and Appendix C, Section 7 (Mitigation measures). Any specific measures for threatened entities discussed in Appendix C, Attachment B (Significant impact assessment). Further detail is provided in the which is referenced in Appendix C, this is consistent with *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (Department of Planning Housing and Infrastructure 2016).
X	Appendix E identifies the residual adverse impacts likely to occur to [species/community] after the proposed avoidance and mitigation measures are taken into account, including: — nature and consequences of impacts (i.e. direct and indirect) — duration of impact (e.g. construction, operation, life of project) — quantum of impact, and — consequences of impacts on the species, the population and/or extent of the community at local, state and national scales.	Provided in Appendix C, Section 8 (Threatened biodiversity assessment). Specific impact assessment and consequences for each threatened entity are provided in Appendix C, Attachment B (Significant impact assessment).

Initial when complete	Information required to be included in Appendix E	Comments
X	Appendix E identifies the level of predicted residual impact, and provides adequate justification and evidence for the predicted level of impact, with reference to the Commonwealth's Significant Impact Guideline. Note. This will mean that the level of predicted impact is described as either: — high likelihood of significant residual impact (requiring offsets) or — low likelihood of significant residual impact (not requiring offsets).	Summary of predicted residual impact provided in Appendix C, Section 8 (Threatened biodiversity assessment). Evidence and justifications for residual impact to each threatened entity are provided in Appendix C, Attachment B (Significant impact assessment).
X	Appendix E identifies plans for offsetting, including: — whether the MNES has been offset using the BAM — how impacts requiring offsets correlate to MNES impacts — whether ecological rehabilitation and/or biodiversity conservation actions are proposed for offsetting, and — whether any other offsetting approach is proposed, such as land-based offsets, retiring credits by payment into the Biodiversity Conservation Fund and/or through supplementary measures.	Summary of offsetting requirements in regard to MNES is provided in Appendix C, Section 8 (Threatened biodiversity assessment). Further detail is provided in the which is referenced in Appendix E, this is consistent with *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (Department of Planning Housing and Infrastructure 2016)
X	Appendix E identifies the number and type of (species/ecosystem) credits required for predicted residual adverse impacts to MNES.	Provided in Appendix C, Section 8 (Threatened biodiversity assessment).
X	Appendix E contains an explicit statement that confirms that the BAM (and BAM calculator) has been used correctly to identify the number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity.	This is stated in Appendix C, Section 8 (Threatened biodiversity assessment).

1 Introduction

The EPBC Act establishes a requirement for Commonwealth environmental assessment and approval for actions that are likely to have a significant impact on any matters of national environmental significance (MNES) protected under the EPBC Act, including:

- world heritage properties
- national heritage places
- wetlands of international importance (listed under the Ramsar convention)
- listed threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef marine park
- nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development.

Other matters protected under the EPBC Act include the environment where:

- actions proposed are on, or will affect Commonwealth land and the environment
- Commonwealth agencies are proposing to take an action.

When a proponent proposes to take an action that they believe may need approval under the EPBC Act, they must refer the project to the Australian Government Minister for the Environment (the Minister). The purpose of the referral is to determine whether a project requires further assessment and approval under the EPBC Act.

An EPBC Act referral for the Hunter Transmission Project (HTP, the project) was determined a controlled action on 5 February 2025, due to impacts on listed threatened species and ecological communities (sections 18 and 18A) and Commonwealth land (sections 26 and 27A). The project will be assessed under a bilateral agreement between the Australian Government and the State of New South Wales (in accordance with section 45 of the EPBC Act).

This appendix provides an assessment of potential impacts to EPBC listed threatened species and ecological communities from the project in accordance with the *Significant Impact Guideline 1.1– Matters of National Environmental Significance* (Significant Impact Guidelines) (DoE, 2013a).

Under the EPBC Act the assessment on Commonwealth Land must consider the environment on Commonwealth Land. The EPBC Act defines environment to include:

a ecosystems and their constituent parts, including people and communities
b natural and physical resources
c the qualities and characteristics of locations, places and areas
d heritage values of places; and
e the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b), or (c).

In accordance with the *Significant Impact Guidelines 1.2*: *Actions on, or impacting upon, Commonwealth Land and actions by Commonwealth agencies* (DoE, 2013b) the component of the environment considered in relation to this BDAR is vegetation/plants and animals. This includes common plants and animals, threatened species and ecological communities listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the EPBC Act.

This appendix accompanies the Biodiversity Development Assessment Report (BDAR) and the Environmental Impact Statement (EIS) for the Hunter Transmission Project (HTP). It addresses the Secretary's Environmental Assessment Requirements (SEARs) issued on 13 August 2024 and *Guidelines for Preparing Assessment Documentation Relevant to the Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for proposals assessed under the NSW Assessment Bilateral Hunter Transmission Project (EPBC 2024/09874) (EPBC Guidance) issued as Supplementary SEARs. This assessment should be read in conjunction with the BDAR and the EIS.

In line with the *Guidance for Accredited Assessors on the Assessment of Matters of National Environmental Significance* (DPHI, 2016) (the Guidance Note) document, this MNES chapter references the detailed information contained in the BDAR and EIS rather than reproducing it. This approach is consistent with NSW guidelines and avoids unnecessary duplication while meeting the requirement SEARs and EPBC Act.

1.1 Policy, standards and guidelines

Policy, standards and guidelines applied to the assessment of MNES include:

- Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (Significant Impact Guideline) (DoE, 2013a).
- Significant Impact guidelines 1.2 – Actions on, or impacting upon, Commonwealth Land and actions by Commonwealth agencies (DoE, 2013b)
- Relevant listing advice(s), conservation advice(s), recovery plan(s) and threat abatement plan(s) from the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Species Profile and Threats Database (SPRAT) for the relevant listed threatened species and ecological communities assessed (Commonwealth of Australia). These documents are referenced in the species profiles (Appendix B) and have been considered in the Significant Impact Assessments (SIAs).

2 Project

The title of the project is the Hunter Transmission Project, Bayswater Power Station, Muswellbrook to Eraring Power Station, Earring, NSW (EPBC 2024/09874).

2.1 Project description

The Hunter Transmission Project (HTP, the project) involves the construction of a new overhead 500 kilovolt (kV) double circuit transmission line of around 100 kilometres connecting the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring in the Hunter region of New South Wales (NSW).

Due to its strategic importance, the NSW Minister for Planning and Public Spaces has declared the HTP to be critical State significant infrastructure (CSSI) under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act).

Under this process, the Energy Corporation of NSW (EnergyCo, the proponent) is required to prepare an environmental impact statement (EIS) in accordance with the NSW Environmental Planning and Assessment Regulation 2021.

This revised biodiversity development assessment report (BDAR) accompanies the Amendment Report for the project and addresses the Secretary's environmental assessment requirements (SEARs) issued on 13 August 2024.

2.1.1 Location

The HTP involves development across 5 local government areas (Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie). The HTP corridor extends generally west to east and consists of a transmission line corridor connecting a new Bayswater South switching station to the existing 500 kV transmission line near the Baywater Power Station and the Olney switching station to the existing 500 kV transmission line between Eraring and Kemps Creek. The project also includes adjustments and upgrades to existing transmission lines connecting Bayswater and Eraring power stations. The location of the project is shown in Figure 14.1 Site Map and Figure 14.2 Location Map in the BDAR.

2.1.2 Timing and sequencing

Construction of the project would commence in 2027, subject to NSW Government and Commonwealth planning approvals, and is expected to become operational by the end of 2029.

2.1.3 Key definitions

The following terms are defined as they are used in the BDAR and are included to ensure alignment between the BDAR and this MNES assessment.

Project impact area	The area that has been assumed for the purpose of this Amendment Report to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation. This term is equivalent to Development Site under the BAM. The boundary of the biodiversity study area aligns with (or is within) the project impact area as defined in the EIS, with the exception of access tracks that do not require upgrades or ground disturbance, which have been excluded from the biodiversity study area.

Biodiversity study area	A minimum 140 m wide transmission line corridor focused on the planned infrastructure that was surveyed in accordance with Stage 1 of the BAM. This approach enables a level of flexibility for future design refinement of the transmission line. Where impacts were likely to be larger, the biodiversity study area was widened to accommodate the larger area. The biodiversity study area incorporates the subject land and is within the assessment area as defined in the BAM. The boundary of the biodiversity study area aligns with (or is within) the project impact area as defined in the Amendment Report, with the exception of access tracks that do not require upgrades or ground disturbance, which have been excluded from the biodiversity study area.
Subject land (referred to as Disturbance area in the Amendment Report)	The subject land is land subject to a development, activity, clearing, biodiversity certification or a biodiversity stewardship proposal. It excludes the assessment area which surrounds the subject land (i.e. the area of land in the 1500 m buffer zone around the subject land or 500 m buffer zone for linear projects). This is a subset of the project impact area and is used primarily to assess potential impacts on biodiversity values in the revised BDAR. Includes the following categories: — disturbance area A — disturbance area A (centreline) — disturbance area B — disturbance area HZ.

2.1.4 The project (as exhibited)

The Hunter Transmission Project (HTP, the project) is critical State significant infrastructure (CSSI). It must be built by the end of 2029 to protect energy security in NSW as the remaining coal-fired power stations close.

The HTP includes:

- a new overhead 500 kilovolt (kV) double circuit transmission line of around 110 kilometres
- 2 new switching stations (Bayswater South and Olney)
- upgrades to the existing Bayswater and Eraring substations
- adjustments and upgrades to existing transmission lines
- property adjustment works to facilitate access to the transmission lines and switching stations
- utility adjustments required for the construction of the transmission network infrastructure
- ancillary works to support construction including road upgrades, establishment of new access tracks and upgrades to existing access tracks, construction support sites (some with temporary worker accommodation), and other construction facilities such as laydown areas.

The HTP corridor runs mostly through power station, mining and government land between Bayswater and Broke. It then traverses the Pokolbin, Corrabare, Watagan and Olney State forests where it joins the existing 500 kV transmission line running between Eraring and Kemps Creek in western Sydney.

2.1.5 The project (as amended)

The proposed amendments and refinements to the exhibited project are collectively referred to in this revised BDAR as the ‘amended project’.

The key proposed amendments include:

- realignment of the transmission line at Mount Thorley
- realignment of the transmission line at Gouldsville
- localised easement widening for conductor swing
- changes at Eraring substation

- changes to access tracks
- minor adjustments to the project impact area for intersection upgrades
- adjustments to the proposed access routes for construction
- reconfiguration of construction support sites and temporary worker accommodation facilities
- changes to laydown areas within State forests
- reconfiguration of the Flick Road emergency helicopter landing area
- removal of stringing site in Olney State Forest
- changes to construction plant and equipment types and locations.

The key refinements include:

- minor changes at Bayswater substation
- changes to the disturbance area at Olney.

2.2 Project design and alternatives

Section 7.1 of the BDAR outlines the design of the project. There are no alternatives to the project, and the project has been designed in a sympathetic manner. There are no alternative modes or technologies, alternative routes, alternative locations, or alternative sites that would reduce prescribed biodiversity impacts.

The following strategic alternatives have been considered against their ability to deliver on the strategic project objectives:

- Strategic option 1: Base case ('do nothing') (Section 7.1.1 of BDAR)
- Strategic option 2: Battery storage (Section 7.1.2 of BDAR)
- Strategic option 3: Network solutions (Section 7.1.3 of BDAR).

These project alternatives are described in detail in within the EIS Chapter 3.

2.2.1 Strategic option 1: Base case ('do nothing')

This alternative is to do nothing to the existing transmission network that forms part of the 'Sydney Ring' and supplies the Sydney, Newcastle and Wollongong (SNW) load centres. The alternative would rely on the existing transfer capacity of the network and other augmentations by Transgrid to meet future load demands and accommodate the energisation of the REZs as part of the wider network.

Power flowing into the SNW load centre is measured by a cut-set limit, adding together all the transfer capacity of the transmission lines bringing power from regional NSW to the SNW load centres. The current Central NSW (CNSW) – SNW cut-set limit is 7525 megawatts. As coal fired power stations close, this limit will decrease to 6125 megawatts.

Further, Transgrid's 2022 Transmission Annual Planning Report has identified high line utilisations for the existing 330 kV transmission lines between Liddell and Tomago/Newcastle for both N and N-1 utilisation, where N utilisation refers to the condition with all network elements in service and N-1 utilisation refers to the most critical credible contingency.

Modelling results show that these loadings will increase to beyond 100% post Eraring Power Station retirement. As such, the do nothing alternative has been rejected as unacceptable because it will not address the overall energy system needs and will hamper delivery of the NSW Electricity Infrastructure Roadmap.

The do nothing alternative would adversely impact on:

- the ability to provide NSW consumers with affordable, clean and reliable power
- NSW's transition to renewable power generation, by impacting the implementation of REZs across NSW, particularly in the Central West Orana, New England and Hunter Central Coast regions as alternatives to the current coal fired power stations

- future opportunities for economic growth, particularly with regard to a further use of electrically powered transport, plant, equipment and devices.

2.2.2 Strategic option 2: Battery storage

In late 2021/early 2022, the Australian Energy Market Operator (AEMO) conducted consultation on non-network options for reinforcing supply to Sydney, Newcastle and Wollongong ('Sydney Ring') project. Submissions received generally comprised battery storage, battery storage with automated control schemes and power flow controllers. These proposals were assessed as to whether each solution met or was reasonably likely to deliver net market benefits for consumers by increasing capability to supply the SNW load centres, following coalfired power station closures in the Newcastle area.

AEMO's assessment findings indicate that the large scale of the SNW area means that non-network options such as battery storage and System Integration Protection Schemes (SIPS) on their own cannot fully provide the required capacity increase and instead could form part of a hybrid solution. As such, a long-term network solution that can provide the required improvement of transfer capacity is required.

Acknowledging that the proposed early closure of Eraring Power Station is unlikely to allow sufficient time to deliver a long-term network solution prior to closure, EnergyCo in its capacity as Infrastructure Planner under the EII Act is delivering the Waratah Super Battery (WSB) project to ensure that the SNW region continues to have a reliable energy supply following the closure of the Eraring Power Station until a longer term network solution is delivered.

2.2.3 Strategic option 3: Network solutions

EnergyCo engaged Transgrid to conduct a transfer limit study to assess the electricity transfer limit based on thermal and voltage constraints between the CNSW sub-region and the SNW sub-region post Eraring Power Station and Vales Point Power Station retirement. The study assessed a series of Hunter to Sydney transmission augmentation options including:

- uprate the existing 330 kV lines Bayswater – Sydney West via Regentville and Liddell – Tomago/Newcastle to high temperature conductor
- uprate the existing 330 kV line Bannaby – Sydney West to a higher operating temperature
- 500 kV double circuit from Bayswater to Eraring and substation upgrades as needed
- 500 kV double circuit from Bayswater to Kemps Creek
- install power flow controller on 330 kV line Liddell – Newcastle/Tomago
- battery option with SIPS that operate as a Virtual Transmission Line.

Transgrid's transfer limit study results show that minor augmentations such as transmission line uprating, the installation of power flow controllers and the battery SIPS option can increase the CNSW – SNW transfer level by about 200–1000 MW, while major augmentations such as a 500 kV double circuit from Bayswater to Eraring or Bayswater to Kemps Creek can increase the CNSW – SNW transfer level by 3000–4000 megawatts.

2.2.4 Preferred strategic alternative

Based on assessments conducted by AEMO and Transgrid, a 500 kV double circuit transmission line will be required to support the future load demands as a long-term solution. In addition, when considering the preferred connection for a new transmission line, a new connection between Bayswater and Eraring is preferred to the connection between Bayswater and Kemps Creek, due to the higher transfer level achieved and the overall shorter transmission line distance.

The longer distance of a Bayswater and Kemps Creek transmission line would require significantly greater area of impact on native vegetation and habitats for threatened species, including unavoidable impacts to conservation reserve estate.

2.2.5 Avoidance

Informed by the results of field surveys and desktop assessments, the project has specifically avoided and minimised impacts on key areas with high conservation value by undertaking the following:

- avoiding Watagans National Park, Werakata National Park, Warrawolong Flora Reserve and Jilliby State Conservation Area. Design refinements further minimised the impacts to Jilliby State Conservation Area
- avoiding and minimising impacts to threatened ecological communities (TECs), in particular minimising clearing of woodland remnants and scarce valley floor vegetation such as the critically endangered Central Hunter Valley eucalypt forest and woodland
- avoiding and minimising the removal of critical habitat for key threatened species, such as the critically endangered Regent Honeyeater and Swift Parrot
- avoiding and minimising impacts to threatened species at risk of serious and irreversible impact (SAII) such as the Sooty Owl, Brush-tailed Rock Wallaby and Scrub Turpentine.

With the refinement of the project's design within the preferred corridor the following additional considerations were incorporated into the alignment and project assessment:

- Co-location: placing sections of the transmission line alongside existing infrastructure or in disturbed areas, such as mining sites, forestry operations or cleared lands, where native vegetation and habitat quality are low. Key examples of adopting this principle are shown in Sites A, B and C of Figure 14.23 and Figure 14.24 which have resulted in reduced direct impacts (approximately 5 ha) to remnant native vegetation and TECs and threatened species habitats and minimisation of indirect and fragmentation.
- Relocation: adjusting the corridor route to avoid impacts on listed ecological communities and species following fields surveys, particularly avoiding known populations of threatened species, such as significant SAII species of Brush-tailed Rock Wallaby, microbats and threatened flora habitats.
- Spanning and retention of forested gullies: within the project impact area the extent of clearing in the State forests has been reduced further by spanning steep ravines, avoiding clearing vegetation in the valleys and partially clearing the easement in other areas, similar to the clearing for the existing 500 kV Eraring-Kemps Creek transmission line in Olney State Forest.
- Partial clearing: implementing controlled vegetation clearing within and adjacent to the transmission line easement, focusing only on vegetation taller than 2 metres.
- Project design and alterations:
  - Olney 500 kV switching station: relocating the eastern switching station from Eraring to Olney State Forest to minimise vegetation clearing through Olney State Forest, Martinsville and Eraring
  - Olney switching station to TG 5A1/5A2 tie-ins: realignment within Olney State Forest to minimise extent of native vegetation clearing
  - Watagan State Forest: realignment within Watagan State Forest to avoid significant Brush-tailed Rock Wallaby and threatened frog breeding habitats, Warrawolong Flora Reserve, 'old growth' stands of vegetation and rainforest maximising the use of existing disturbed areas of the State forest hardwood plantation without impacting harvest operations
  - Corrabare State Forest: realignment within Corrabare State Forest to avoid the SAII Sooty Owl breeding location
  - Pokolbin State Forest: realignment within Pokolbin State Forest to avoid the significant Brush-tailed Rock Wallaby microbat and threatened flora populations
  - Singleton Military Area: avoiding further fragmentation of large, intact areas of important Regent Honeyeater and Swift Parrot habitat within the Singleton Military Area through co-location with existing transmission lines

  - Hunter Valley: minimising impacts on high-quality remnant Central Hunter Valley eucalypt forest and Warkworth Sands Woodland by prioritising location of the project on derived and disturbed grassland and low-quality vegetation areas. Project design within the Hunter Valley involved locating most of the transmission line along valley floors dominated by active coal mines and existing transmission easements, thereby avoiding national park estates
  - Olney State Forest Frog avoidance: the project has made significant refinement to the proposed project design between the Olney Substation and Corrabare State Forest. These changes were made to further avoid and minimise impact to the important breeding habitats for a number of frog species.
- Access: using existing access tracks where possible to minimise additional vegetation clearing and minimising construction of new access tracks.
- Site selection: strategically placing substations and ancillary infrastructure to largely avoid impacts on listed communities and species, including potential SAII entities.
- Micro-siting: mechanisms to adjust project features during the detailed design phase to avoid areas with high biodiversity value when on the ground works commence.

Cumulatively, the implemented measures to avoid and minimise impacts on biodiversity have resulted in a reduction in clearing of native vegetation by >200 hectares. Significantly, this includes >100 hectares of impact to TECs and habitat for a range of species.

Section 7.2 and section 7.3 of the BDAR provides further detail impacts on biodiversity. Section 7.3 provides further detail on the design process that was undertaken to minimise impacts on biodiversity.

3 Methodology

The methodology was undertaken in accordance with the NSW Biodiversity Assessment Method (BAM) and the requirements of the BAM 2020 Operation Manual 1 (DPIE 2020a). This section provides a summary of the methodology with further detail provided in section 2 of the BDAR.

3.1 Desktop assessment

The following sources were used in the preparation of this report:

- aerial photographic imagery (Maxar (Vivid) imagery captured at various dates between 2014 and 2024)
- Commonwealth Species Profiles and Threats Database (SPRAT) (DCCEEW 2024a)
- EPBC Protected Matters Search Tool (PMST)
- BioNet (NSW) Mitchell Landscapes – Version 3.1 (DPIE 2021a)
- NSW Interim Biogeographic Regionalisation of Australia (IBRA region and subregion – Version 7.0) (DEE 2018)
- Atlas of Groundwater Dependent Ecosystems (GDE) (Bureau of Meteorology 2024)
- Directory of Important Wetlands of Australia (DAWE 2021a)
- BioNet Threatened Biodiversity Data Collection (TBDC) (DCCEEW 2024b)
- BioNet Atlas (DCCEEW 2024c)
- BioNet Vegetation Classification Database (DCCEEW 2024d)
- BAM Important Area Maps for threatened species (DCCEEW 2024e)
- Register of Declared Areas of Outstanding Biodiversity Value – Critical habitat declarations in NSW (DCCEEW 2024f)
- Biodiversity Assessment Method 2020 (DPIE 2020)
- PlantNET NSW Database (Royal Botanic Gardens and Domain Trust, Sydney, 2024).

Existing information was also used to identify habitat constraints and microhabitats for threatened species within the subject land. A review of habitat constraints, geographic limitations and microhabitats for candidate threatened flora (species credit) species as listed within the NSW Threatened Biodiversity Data Collection was undertaken prior to survey.

A number of existing BDARs and other biodiversity reports were reviewed to obtain existing information on biodiversity in the locality with specific focus placed on areas assessed in previous BDARs that overlap with the Project. The reports reviewed included:

- *Hunter Valley Operations Continuation Project – Biodiversity Development Assessment Report* (Umwelt 2022)
- *Mt Pleasant Optimisation Project – Appendix E – Biodiversity Development Assessment Report* (Hunter Eco 2021)
- *Mangoola Coal Continued Operations Project – Biodiversity Assessment Report* (Umwelt 2019)
- *Ecology Report for the Continuation of Rix's Creek Mine, Singleton LGA* (Bell 2015)
- *Warkworth Coal Mine Continuation Project – Biodiversity Assessment Report* (Cumberland Ecology 2014a)
- *Bengalla Mine Continuation – Biodiversity Assessment Report* (Cumberland Ecology 2014b)
- *Bulga Coal Mine Optimisation – Ecological Impact Assessment* (Umwelt 2013).

3.2 Likelihood of occurrence assessment

Threatened species, populations and ecological communities and migratory species identified in the desktop assessment were assessed for likelihood of occurrence against the criteria outlined in Table 3.1.

Field surveys and habitat assessments were also utilised to inform the likelihood of occurrence assessments. Assessments were based on the habitat profile for the species and other habitat information in the Threatened Biodiversity Data Collection (TBDC), the Species Profile and Threats Database (SPRAT), and relevant approved conservation advice and recovery plans.

Table 3.1 Likelihood of occurrence assessment key terms

Likelihood of occurrence	Criteria
Low	— Have not been recorded previously in the subject land and surrounds and/or the subject land is beyond the current known geographic range of the species. — Are dependent on specific habitat types or resources that are not present. — Are considered extinct in the locality.
Moderate	— Have been recorded previously in the subject land and surrounds infrequently (i.e. vagrant individuals). — Use habitat types or resources that are present, although generally in a poor or modified condition. — Are unlikely to maintain sedentary populations, however, may seasonally utilise available resources opportunistically during variable seasons or migration.
High	— Have been recorded previously within the subject land. — Are dependent on habitat types or resources that are abundant and/or in good condition. — Are known or likely to maintain resident populations within/surrounding the subject land. — Are known or likely to visit during regular seasonal movements or migration.
Recorded	— Have been recorded within the subject land during surveys.

A risk assessment was also applied to listed threatened species to determine if further assessment was required. The risk assessment is based on the potential extent of habitat loss resulting from the project, and considers the following:

- the value of the impacted habitat to each respective species
- the amount of habitat to be lost against that to be retained
- potential fragmentation of a population into two or more populations
- increased fragmentation of wildlife corridors traversing the subject land
- risk of operational impacts
- each species ability (e.g. fauna) or inability (e.g. flora) to move away from areas of direct impact into retained habitats.

The likelihood of occurrence assessment is provided in Attachment A.

3.3 Residual impact assessment

Residual impacts are impacts of the project that may remain after the mitigation measures have been considered. The residual significant impact was determined by applying the relevant significant impact criteria set out in the *Significant Impact Guidelines (1.1)* (DoE 2013a) to listed threatened species and ecological communities that were either recorded within the subject land or identified as having a moderate to high likelihood of occurrence.

The following factors have been considered in assessing the residual impacts on the environment and listed threatened species and ecological communities:

- nature of the impacts such as direct, indirect, cumulative and facilitated
- magnitude of the impact, taking into account the severity and scale of the impact when compared with baseline condition timing, duration and frequency of the impact (temporary or permanent) and the extent of habitat resources within the immediate vicinity of the subject land
- likelihood that any given impact would occur
- whether any impacts are unknown, unpredictable or irreversible.

3.4 Field surveys

Threatened flora and fauna surveys completed within the subject land were carried out in accordance with the methodology detailed in:

- *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (Working Draft) (DEC 2004)
- *Survey Guidelines for Australia's Threatened Mammals* (DSEWPC 2011)
- *Koala (Phascolarctos cinereus) Biodiversity Assessment Method Survey Guide* (DPE 2022a)
- *NSW Survey Guide for Threatened Frogs* (DPIE 2020b)
- *Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method* (DPIE 2021b)
- *Survey Guidelines for Australia's Threatened Birds* (DEWHA 2010)
- *Threatened Reptiles Biodiversity Assessment Method Survey Guide* (DPE 2022b)
- BioNet Threatened Biodiversity Data Collection (TBDC) (DCCEEW 2024b).

A detail description of the survey methods can be found in section 2 of the BDAR, including:

- Section 2.2 – native vegetation, threatened ecological community and vegetation integrity methods
- Section 2.3 – threatened flora surveys methods
- Section 2.4 – threatened fauna survey methods.

4 Threatened biodiversity

4.1 Threatened ecological communities

Based on the results of the EPBC Protected Matters Search Tool along with existing mapping, 10 threatened ecological communities (TECs) were known or predicted to occur within a 10 kilometre radius of the subject land:

- Central Hunter Valley eucalypt forest and woodland (Critically Endangered)
- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community (Endangered)
- Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland (Endangered)
- Hunter Valley Weeping Myall (*Acacia pendula)* Woodland (Critically Endangered)
- Kurri sand swamp woodland of the Sydney Basin bioregion (Endangered)
- Lowland Rainforest of Subtropical Australia (Critically Endangered)
- River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria (Critically Endangered)
- Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions (Endangered)
- Warkworth Sands Woodland of the Hunter Valley (Critically Endangered)
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered).

Only 3 of the listed TECs were recorded in the subject land (see Table 4.1). The remaining TECs were not recorded and therefore are not considered further in this assessment. Detailed assessments of each of these TECs have been undertaken in the BDAR in Section 4.3 and deemed absent where TEC hasn't met its key diagnostic criteria.

Table 4.1 EPBC Act listed TECs within the subject land

TEC name	EPBC Act Status[1]	IBRA subregion	Associated vegetation zones within the subject land (Plant Community Type/s)	Area within the subject land (ha)
Central Hunter Valley eucalypt forest and woodland	CE	Yengo Hunter	3314_Thinned (50.02 ha) 3315_Thinned (9.56 ha) 3431_Thinned (71.14 ha) 3431_Poor (8.40 ha) 3431_Plantation (15.18 ha) 3438_Mod-good (8.76 ha) 3446 Mod-good (1.13 ha)	164.19
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	E	Yengo Hunter	4044_Mod-good (0.12 ha)	0.12
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	CE	Yengo Hunter	3328_Mod-good (1.08 ha) 4039_Mod-good (1.16 ha)	2.24
Total				**166.55**

(1) CE = Critically Endangered under the EPBC Act

4.1.1 Central Hunter Valley eucalypt forest and woodland

The Central Hunter Valley eucalypt forest and woodland TEC is dominated by one or more of the following four eucalypt species: *Eucalyptus crebra* (Narrow-leaved Ironbark), *Corymbia maculata* (Spotted Gum), *E. dawsonii* (Slaty Gum) and *E. moluccana* (Grey Box) (DoE, 2015a). Under certain circumstances a fifth species, *Allocasuarina luehmannii* (Buloke), may be part of the mix of dominants, in sites previously dominated by one or more of the above four eucalypt species (DoE, 2015a). Derived native grasslands and shrublands are not included in the nationally protected ecological community (DoE, 2015a).

The Central Hunter Valley eucalypt forest and woodland TEC occurs in the Hunter Valley region (primarily in the Central Hunter) which is mostly in the northeast of the Sydney Basin interim biogeographic regionalisation for Australia (IBRA) Bioregion (DoE, 2015a). The ecological community generally occurs on soils derived from the Permian sedimentary bedrock found on the valley floors and on lower hillslopes and low ridges (DoE, 2015a). The occurrence of the Central Hunter Valley eucalypt forest and woodland TEC within the subject land is within the central distribution for the TEC (see Figure 4.1 for the mapped distribution of the TEC).

The approved conservation advice (including listing advice) for the Central Hunter Valley eucalypt forest and woodland ecological community (DoE, 2015a) provides key diagnostic characteristics and condition threshold required to meet the TEC listing criteria. The key diagnostic characteristics for the TEC are:

- it occurs in the Hunter River catchment (typically called the Hunter Valley region); AND
- it typically occurs on lower hillslopes and low ridges, or valley floors in undulating country; on soils derived from Permian sedimentary rocks; AND
- it does not occur on alluvial flats, river terraces, aeolian sands, Triassic sediments, or escarpments; AND
- it is woodland or forest, with a projected canopy cover of trees of 10% or more; or with a native tree density of at least 10 native tree stems per 0.5 hectares (at least 20 native tree stems per hectare) that are at least 1 metre in height; AND
- the canopy of the ecological community is dominated by one or more of the following four eucalypt species: *Eucalyptus crebra* (Narrow-leaved Ironbark), *Corymbia maculata* (Spotted Gum), *E. dawsonii* (Slaty Gum) and *E. moluccana* (Grey Box); OR
    - a fifth species, *Allocasuarina luehmannii* (Buloke) dominates in combination with one or more of the above four eucalypt species, in sites previously dominated by one or more of the above four eucalypt species; AND
- *Allocasuarina torulosa* (Forest Oak/She-oak, Rose She-oak/Oak), *Eucalyptus acmenoides* (White Mahogany) and *E. fibrosa* (Red/Broad-leaved Ironbark) are largely absent from the canopy of a patch; AND
- a ground layer is present (although it may vary in development and composition), as a sparse to thick layer of native grasses and other native herbs and/or native shrubs.

Based on the field surveys it was determined that PCTs 3314, 3315, 3431, 3438 and 3446 within the subject land met the key diagnostic characteristics for the TEC. However, areas mapped under the derived native grassland condition class did not meet the key diagnostic characteristics for the TEC. Further details on the assessment of the key diagnostic characteristics for the TEC are provided in Section 4.3.2.1 of the BDAR.

An assessment against the TEC conditions threshold identified that patches of PCT 3314 (poor) had less than 50% of perennial native understorey vegetation cover and therefore do meet the condition threshold for the TEC. A summary of each of the PCTs and condition thresholds is shown in Table 4.82 of the BDAR.

4.1.2 Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland

Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland is characterised by a layered canopy, dominated by melaleucas and/or *Eucalyptus robusta*, with an understory and ground layer of species tolerant of regular inundation and are adapted to sandy soils. In an intact forest, the canopy can be layered, with a sub-canopy of melaleuca grading into a taller mixed melaleuca and/or eucalypt canopy. Canopy density, light availability, water regime, salinity level and soil fertility influence the development and composition of the understorey flora.

The ecological community is defined as patches of native vegetation meeting the following key diagnostic characteristics (DAWE, 2021b):

- occurs on the mainland and islands near to the coast (within 20 km) from SEQ to south-eastern NSW
- occurs in coastal catchments typically below 20 m ASL, but occasionally up to 220 m ASL
- occurs on hydric soils with inundation patterns ranging from intermittent to episodic
- the vegetation structure varies from tall closed to open forest to woodland, to dense (closed) shrubland or scrub forest. Minimum crown cover is at least 10%, but it is more typically in the range 50% to 70%
- from South East Queensland to the Sydney Basin Bioregion, the canopy is typically dominated or co-dominated by *Melaleuca quinquenervia* and/or *Eucalyptus robusta*. In some areas, the canopy may be locally dominated by other melaleuca species including *M. dealbata* (SEQ bioregion) (rarely); *M. biconvexa* (mid-NSW coast to south of Sydney); *M. decora* (north of Shoalhaven), frequently with *Parsonsia straminea* climbing on the trunks of canopy species. In the SEC bioregion, M. ericifolia may occur as a dominant canopy or sub-canopy species.
- other tree species may occur in the canopy (or sub-canopy) in some areas, but they are not dominant across a patch, including Casuarina glauca, Banksia spp., Callistemon salignus, *Corymbia intermedia* (Pink Bloodwood), *E. tereticornis*, (Forest Red Gum/Queensland Blue Gum), *E. longifolia* (Woollybutt), *E. botryoides* (Southern Mahogany/Bangalay), *E. ovata* (Swamp Gum), *Livistona australis* and/or *Lophostemon spp*.
- the understorey typically includes a variable ground layer, depending on the canopy cover and inundation rate/period. Tall sedges (typically *Gahnia spp*.) and/or ferns often dominate the ground layer, mixed with graminoids and other herbs, especially *Imperata cylindrica* (Blady Grass)
- while they can occur regularly in the ground layer, the ecological community is not present if halophytic species, more typically associated with estuarine/saltmarsh areas, dominate the ground layer of a patch, for example, *Appium prostratum*, *Atriplex cineria*, *Chenopodium glaucum*, *Rhagodia candolleaus* and *Samolus repens*.

Due to the ecological community's occurrence on flat and fertile soils, it has been extensively cleared for agriculture and intact remnants, including both trees and unmodified understorey, are now extremely rare. Changed hydrological regimes have occurred from altering or increasing drainage and runoff of urban and rural areas. Clearing and fragmentation for urban, rural residential, agricultural and infrastructure development remain on-going threats to this ecological community, while degradation resulting from inappropriate management and weed invasion by introduced perennial grasses continues to erode the conservation value of remnant areas. Despite these previous land uses and associated degradation, field surveys determined that PCT 4044 meets the diagnostic criteria to form part of the EPBC Act listed Coastal Swamp Sclerophyll Forest of NSW and South East Queensland ecological community. Further details on the assessment of the key diagnostic characteristics for the TEC are provided in Section 4.3.2.2 of the BDAR.

4.1.3 River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria

The River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria TEC is found in the South East Corner (SEC) and Sydney Basin (SYB) IBRA bioregions. This encompasses the area from around Sale on the south-east coast of Victoria to around Raymond Terrace, just north of Newcastle on the New South Wales east coast (DAWE, 2020a).

The ecological community occurs on alluvial landforms related to coastal river floodplains and associated sites where transient water accumulates, including floodplains, riverbanks, riparian zones, lake foreshores, creek lines (including the floors of tributary gullies), floodplain pockets, depressions, alluvial flats, fans, terraces, and localised colluvial fans. Floodplains may be occasionally or more often saturated, water-logged or inundated. The ecological community is typically found below 50 metres above sea-level (mASL), although it can occur up to 250 mASL (e.g. on floodplain pockets and plateaus above nick points).

Based on the field surveys and characteristics of the PCTs within the subject land, two PCTs (3328 and 4039) were assessed against the River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria TEC key diagnostic characteristics and condition thresholds (Section 4.3.2.3 of the BDAR). Given the previous agricultural practices PCT 3328 lacked the diagnostic canopy species. Therefore, the PCT does not meet the key diagnostic for the TEC and is not considered to be River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria.

Plant Community Type 4039 met both the key diagnostic characteristics and condition thresholds. The PCT occurs in a patch size of greater than 2 hectares in area with 50–80% of its total perennial understory vegetation cover comprised of native species, with over 20 identified within the patch. With 5 large trees identified within the vegetation integrity plot, there is likely to be over 20 large trees per hectare. Recent fauna surveys conducted within or near this patch have identified several arboreal mammal species, including Squirrel Glider and Yellow-bellied Glider. It is likely that at least four or more species of arboreal mammals would utilise this patch. Plant Community Type 4039 likely meets the threshold to be considered under the condition class A2 (large or contiguous patch in good condition with arboreal mammals).

4.1.4 Other Threatened Ecological Communities

Further assessment was undertaken for Warkworth Sands Woodland of the Hunter Valley and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland to determine whether vegetation within the subject land meets the EPBC Act diagnostic characteristics for these listed ecological communities.

As part of the exhibited EIS of the HTP project, mapping of Warkworth Sands Woodland took a conservative approach and included all woodland vegetation on aeolian sand substrate as forming part of the community. The mapping of Warkworth Sands Woodland and associated PCT 3636 within the HTP subject land was consistent with NSW State Vegetation Type Map (SVTM) release C2.0M2.1 mapping (DCCEEW, 2024g) of PCT 3636. In relation to the extent of Warkworth Sands Woodland TEC within the HTP subject land, NSW CPHR have provided additional notes on the known distribution and area of occupancy of this vegetation community (Bell 2016). This paper states the current known area of occupancy has been estimated to be ~390 hectares, significantly less than the area of occupancy assessed within the exhibited BDARs SAII assessment.

Based on this additional information, the HTP project does not impact on the current known area of occupancy of Warkworth Sands Woodland mapped by Bell (2016). Section 4.3.2.4 of the BDAR sets out a comparative assessment of vegetation integrity plots sampled for the HTP project on aeolian sands has been conducted, referencing the key diagnostic characteristics (Table 4.86 of the BDAR), and additional diagnostic considerations (Table 4.87 of the BDAR), to evaluate whether the vegetation within the designated area constitutes the Warkworth Sands Woodland of the Hunter Valley Threatened Ecological Community (TEC) as listed under the EPBC Act

The vegetation assessed within the subject land does not meet the key diagnostic or floristic criteria for the EPBC-listed *Warkworth Sands Woodland of the Hunter Valley* (TSSC, 2016a). While some plots occur on sandy substrates and meet isolated structural characteristics, all sampled plots show a stronger floristic affinity to Central Hunter Valley eucalypt forest and woodland (DoE, 2015a), rather than Warkworth Sands Woodland. Specifically:

- Floristic composition across all plots is dominated by species characteristic of *Central Hunter Valley eucalypt forest* (50–74% characteristic species), compared to a much lower representation of Warkworth Sands Woodland species (23–50%).
- Diagnostic canopy species for the TEC (notably *Angophora floribunda*) are absent or not dominant; instead, canopies are consistently dominated by *Eucalyptus crebra* (Narrow-leaved Ironbark).
- Key diagnostic shrub and ground-layer species (e.g. *Imperata cylindrica* and *Pteridium esculentum*) are consistently absent across plots.
- The vegetation does not occur within the mapped Warkworth Land System aeolian sands (Story et al. 1963), nor within the four known main occurrences or the updated mapped area of occupancy for the TEC (Bell 2016).

Overall determination: All assessed patches are appropriately assigned to PCT 3431 (Central Hunter Valley eucalypt forest and woodland) and do not trigger EPBC Act protection for Warkworth Sands Woodland.

Vegetation mapped as PCT 3314 within the subject land does not meet the key diagnostic characteristics of the EPBC-listed *White Box–Yellow Box–Blakely's Red Gum Grassy Woodland and Derived Native Grassland* TEC (DCCEEW, 2023a). Based on an assessment against the key diagnostic characteristics PCT 3314 was found to meet some of the characteristic for the TEC however:

- The vegetation lacks the required canopy species, with no evidence of dominance or prior dominance by *Eucalyptus albens* (White Box), *E. melliodora* (Yellow Box), or *E. blakelyi* (Blakely's Red Gum).
- The only consistently recorded canopy species is *Eucalyptus moluccana*, often with *Allocasuarina luehmannii* and *Brachychiton populneus*, which does not satisfy TEC canopy requirements.
- Although some areas exhibit a native ground layer, the absence of diagnostic overstorey species precludes inclusion within the EPBC-listed TEC.

Assessment against alternative TECs indicates that parts of PCT 3314 instead align with the Central Hunter Valley eucalypt forest and woodland ecological community.

Overall determination: Vegetation mapped as PCT 3314 does not constitute the EPBC-listed White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC. Further information is provided in section 4.3.2.5 of the BDAR.

4.2 Threatened flora

Database searches identified 68 threatened flora species listed under the EPBC Act known or likely to occur within the subject land or surrounding locality (10 kilometre buffer area). Of these, 8 species were recorded within the subject land. Based on the likelihood of occurrence assessment (Attachment A) a further 18 species were determined to have a moderate to high likelihood of occurrence within the subject land (Table 4.2) and have been further assessed via Significant Impact Assessments in Attachment B.

Table 4.2 Threatened flora likelihood of occurrence within the projects area.

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Acacia bynoeana	Bynoe's Wattle	V	Moderate. Habitat associated with PCT 3315, 3433, 3436, 3582, 3583, 3617 and 4039.
Angophora inopina	Charmhaven Apple	V	Moderate. Habitat associated with PCT 3244, 3250, 3433, 3436, 3581, 3582, 3583, 4042 and 4044 within the subject land.
Asperula asthenes	Trailing Woodruff	V	Moderate. Habitat associated with PCT 3086, 3241, 3242, 3244, 3250, 3436, 3446 and 4044.
Brachyscome brownii	–	CE	Recorded. Habitat occurs in the subject land in the form of PCT 3239 and 3241.
Cryptostylis hunteriana	Leafless Tongue Orchid	V	Moderate. Habitat is associated with PCT 3250, 3581, 3585 and 3582.
Cynanchum elegans	White-flowered Wax Plant	E	Moderate. Within the subject land the species is associated with PCTs 3029, 3086, 3087, 3151, 3152, 3237, 3239, 3244, 3250, 3489, 3617 and 3621.
Eucalyptus glaucina	Slaty Red Gum	V	High. Recorded during the survey but outside the subject land. Species associated with PCTs 3152, 3239, 3241, 3314, 3315, 3431, 3433, 3438, 3446 and 3605.
Genoplesium branwhiteorum	Charmhaven Midge Orchid	CE	Moderate Associated habitat occurs in PCT 3581, 3433, 3582 and 3583.
Genoplesium insigne	Variable Midge Orchid	CE	Recorded. This species was recorded along the existing easement corridor near Cooranbong. In the subject the species is associated with PCTs 3433, 3581, 3582, 3583 and 4042.
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	V	Recorded. This species was recorded along the existing easement corridor near Cooranbong. In the subject the species is associated with PCTs 3244, 3433, 3436, 3444, 3446, 3581, 3582, 3583 and 4044.
Melaleuca biconvexa	Biconvex Paperbark	V	Moderate. The eastern portion of the subject land near Cooranbong and Martinsville is located within the northern extent of the Central Coast meta population. The species is associated with the following PCTs within the subject land PCTs 3029, 3150. 3241, 3242, 3244, 3250, 3582, 4042 and 4044.

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Olearia cordata	–	V	Moderate. Species associated with PCTs 3151, 3152, 3238, 3239, 3605 and 3617.
Ozothamnus tesselatus	–	V	Moderate. The species is known to occur near Bayswater Power Station which is within the western extent of the subject land. Species associated with PCTs 3315 and 3431.
Prasophyllum petilum	Tarengo Leek Orchid	E	Moderate. Whilst the subject land is outside the current known distribution for this species, it is known from the Muswellbrook area to the west. Potential habitat occurs in the subject land in the form of PCTs 3314, 3315, 3431, 3438 & 3444.
Prasophyllum sp. Wybong	Leek Orchid	CE	Moderate. Whilst the subject land is outside the current known distribution for this species, it is known from the Muswellbrook area to the west. Species is associated with 3314, 3315, 3431, 3438 and 3444.
Prostanthera cineolifera	Singleton Mint Bush	V	Recorded. The species was recorded within PCTs 3237, 3239, 3489 and 3605 of Yengo IBRA subregion and PCTs 3444 and 3605 of Hunter IBRA subregion.
Pterostylis gibbosa	Illawarra Greenhood	E	Recorded. The species was recorded within the Singelton Military Area within PCT 3431.
Rhizanthella slateri	Eastern Australian Underground Orchid	E	Moderate. Within the subject land the species is associated with PCTs 3242, 3150, 3617 and 3621.
Rhodamnia rubescens	Scrub Turpentine	CE	Recorded. This species has been recorded from Watagan, Corrabare and Pokolbin State Forests. In the subject the species is associated with PCTs 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3436, 3446, 3617, 4042 and 4044.
Rhodomyrtus psidioides	Native Guava	CE	Recorded. This species was recorded from Watagan State Forest. Species is associated with PCTs 3029, 3086, 3087, 3150, 3151, 3152, 3242, 3250, 3436, 3621, 4042, 4044 and 4072.
Rutidosis heterogama	Heath Wrinklewort	V	Moderate. Species is associated with PCTs 3244, 3250, 3433, 3581, 3582, 3583, 3605 and 4039.
Syzygium paniculatum	Magenta Lilly Pilly	V	Moderate. Not recorded during targeted surveys. Species is associated with PCTs 3029, 3087, 3150, 3241, 3242, 3244, 3250, 3433, 4042 and 4044.
Tetratheca juncea	Black-eyed Susan	V	Recorded. This species was recorded along the existing easement corridor near Cooranbong. In the subject the species is associated with PCTs 3241, 3242, 3244, 3250, 3433, 3436, 3581, 3582, 3853 and 3617.
Thelymitra adorata	Wyong Sun Orchid	CE	Moderate. This species is included based on the presence of assumed habitat only. Species is associated with PCTs 3244, 3433, 3436, 3582 and 4042.

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Velleia perfoliata	–	V	Moderate. Species is associated with PCTs 3152, 3239, 3605 and 3617 in the subject land.
Zieria involucrata	–	V	Moderate: Species is associated with PCTs 3151, 3152, 3238, 3239, 3605 and 3617 in the subject land.

(1) CE= critically endangered, E = Endangered, V = Vulnerable.

4.3 Threatened fauna

The database search identified 69 threatened fauna species listed under the EPBC Act with known or likelihood of occurrence within the subject land or surrounding locality (10 kilometre buffer area). Of these, 20 species were recorded within the subject land. Based on the likelihood of occurrence assessment (Attachment A) a further 9 species were determined to have a moderate to high likelihood of occurrence within the subject land (Table 4.3).

Table 4.3 Threatened fauna likelihood of occurrence within the subject land

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Threatened frogs			
Heleioporus australiacus australiacus	Giant Burrowing Frog	E	Recorded. Species associated with PCT 3029, 3150, 3230, 3239, 3242, 3263, 3617 and 3621.
Litoria littlejohni	Littlejohn's Tree Frog	E	Recorded. Species habitats associated with PCT 3029, 3150, 3230, 3617 and 3621.
Mixophyes balbus	Stuttering Frog	V	Recorded. Species habitats associated with PCTs 3029, 3150, 3230, 3239, 3242, 3244, 3263, 3581, 3617 and 3621.
Mixophyes iteratus	Giant Barred Frog	V	Recorded. Species habitats associated with PCTs 3029, 3150, 3230, 3242, 3263, 3617 and 3621.
Threatened birds			
Anthochaera phrygia	Regent Honeyeater	CE	High. Suitable habitat is present in the subject land, and the subject land includes mapping of Regent Honeyeater important areas habitat (BAM 2020). Species associated with PCT 3230, 3238, 3239, 3241, 3244, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3621, 4039, 4042, 4044, 4072 and 4089.
Botaurus poiciloptilus	Australasian Bittern	E	Moderate. Species associated with PCT 4015, 4039, 4042, 4044, 4072 and 4089.
Callocephalon fimbriatum	Gang-gang Cockatoo	E	Recorded. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4072 and 4089

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	Recorded. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 and 4089.
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	Recorded. Species associated with PCT 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 and 4089.
Gallinago hardwickii	Latham's Snipe	V	Recorded in PCT 4015.
Grantiella picta	Painted Honeyeater	V	Moderate. Species associated with PCT 3151, 3152, 3230, 3242, 3244, 3489, 3599, 3605, 3617 and 4015.
Hirundapus caudacutus	White-throated Needletail	V, M[2]	Recorded. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 and 4089.
Lathamus discolor	Swift Parrot	CE	High. Species associated with PCT 3029, 3086, 3087, 31503151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3438, 3439, 3444, 3446, 3599, 3605, 3617, 4015, 4042, 4044, 4039, 4072 and 4089.
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E	Recorded. Suitable habitat is found within the subject land. Species associated with PCT 3151, 3152, 3230, 3242, 3244, 3489, 3599, 3605, 3617 and 4015.
Pycnoptilus floccosus	Pilotbird	V	Moderate. Suitable habitat is found within the subject land, with records of this species from the broader locality. Species associated with PCT 3152, 3238, 3239, 3250, 3599, 3605, 3617 and 3621.
Rostratula australis	Australian Painted Snipe	E	Moderate. Species associated with PCT 4015, 4039, 4042, 4044, 4072 and 4089.
Stagonopleura guttata	Diamond Firetail	V	Moderate. Species associated with PCT 3239, 3244, 3250, 3314, 3315, 3431, 3433, 3446, 3489, 3605, 3617, 3621, 4042 and 4089.
Threatened mammals			
Chalinolobus dwyeri	Large-eared Pied Bat	E	Recorded. Species associated with PCT 3086, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621 and 4042.
Dasyurus maculatus	Spotted-tail Quoll	E	Recorded. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4042, 4044, 4072 and 4089.

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Notamacropus parma	Parma Wallaby	V	Recorded within the Corrabare State Forest. Associated PCTs include 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3239, 3242, 3244, 3250, 3263, 3433, 3489, 3581, 3582, 3605, 3617, 3621 and 4042.
Nyctophilus corbeni	Corben's Long-eared Bat	V	Moderate. Suitable habitat may be present within the subject land, with limited records from the broader locality. This species is associated with PCTs 3315, 3438 and 4039
Petauroides volans	Southern Greater Glider	E	Recorded. Species recorded in PCT 3237, 3239, 3242, 3263, 3599 and 3605. Other associated PCTs include PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3315, 3328, 3431, 3433, 3438, 3444, 3446, 3489, 3581, 3599, 3605, 3617, 3621, 4039 and 4072.
Petaurus australis australis	Yellow-bellied Glider	V	Recorded. Species associated with PCT 3086, 3087, 3150, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3433, 3436, 3438, 3444, 3446, 3581, 3582, 3599, 3605, 3617, 3621, 4042 and 4044.
Petrogale penicillata	Brush-tailed Rock Wallaby	V	Recorded. Species habitat associated with PCT 3029, 3087, 3150, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3250, 3263, 3315, 3438, 3444, 3446, 3581, 3605 and 4039.
Phascolarctos cinereus	Koala	E	Recorded. Species habitat associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044 and 4072.
Potorous tridactylus tridactylus	Long-nosed Potoroo	V	Recorded. Species habitat associated with PCT 3150, 3230, 3242, 3244, 3250, 3263, 3433, 3436, 3581, 3582, 3583, 3617, 3621, 4042 and 4044.
Pseudomys novaehollandiae	New Holland Mouse	V	Moderate. Suitable habitat may be present within the subject land, with a number of records from the broader locality. The species is associated with PCT 3244, 3250, 3315, 3433, 3436, 3446, 3581, 3582 and 3583.
Pteropus poliocephalus	Grey-headed Flying-fox	V	Recorded. Species recorded in PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4039, 4042, 4044 and 4089.
Threatened reptiles			
Delma vescolineata	Hunter Valley Delma	E	Recorded. Species associated with PCT 3241, 3244, 3314, 3315, 3431, 3438, 3444, 3605, 4015, 4039, 4072 and 4089.

(1) CE= critically endangered, E = Endangered, V = Vulnerable, M = Migratory.

(2) The project was not determined to be a controlled action for listed migratory species; therefore, the species has only been considered under its threatened species status.

5 Commonwealth land (plants and animals)

The project will transect the Singleton Military Area, which is considered Commonwealth land under the EPBC. The assessment of Commonwealth land must consider the 'environment' on Commonwealth land. The EPBC Act defines environment to include: (a) ecosystems and their constituent parts, including people and communities; and (b) natural and physical resources; and (c) the qualities and characteristics of locations, places and areas; and (d) heritage values of places; and (e) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b), or (c).

In accordance with the *Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth Land, and actions by Commonwealth agencies (Significant Impact Guidelines 1.2*) the component of the environment considered in relation to biodiversity includes the plants and animals on Commonwealth land (Singleton Military Area). This includes an assessment of the common species, threatened species and ecological communities listed under the BC Act and the EPBC Act, and migratory species listed under the EPBC Act known or likely to occur within the subject land on the Singleton Military Area. Indirect and cumulative impacts associated with the project in relation to Commonwealth land have been considered in the assessing the entire project under the BDAR and in section 4 of this report (including the significant impact assessment in Attachment B).

5.1 Plants

The *Significant Impact Guidelines 1.2* (DoE, 2013b) provides guidance to identify the environmental context for an action. In relation to plants the guidelines considers this to be vegetation types and vegetation species. Based on the database searches and ecological surveys, native vegetation within the subject land on the Singleton Military Area has been assigned to 4 vegetation formations and 5 vegetation classes being:

- Dry Sclerophyll Forests (shrub/grass sub-formation)
  - Hunter-Macleay Dry Sclerophyll Forests
- Forested Wetlands
  - Coastal Floodplain Wetlands
  - Eastern Riverine Forests
- Grassy Woodlands
  - Coastal Valley Grassy Woodlands
- Wet Sclerophyll Forests (shrubby sub-formation)
  - North Coast Wet Sclerophyll Forests.

An overview of the PCTs within the subject land on the Singleton Military Area, including the associated listed threatened ecological communities under the EPBC Act and BC Act, is presented in Table 5.1.

Table 5.1 Plant community types identified within the subject land on the Singleton Military Area

PCT	Condition States	Associated TECs within subject land on the Singleton Military Area (SMA)	
		BC Act	EPBC Act
PCT 3241-Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	-	-
PCT 3314 – Central Hunter Slopes Grey Box Forest	Thinned	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	Central Hunter Valley eucalypt forest and woodland
PCT 3315 – Central Hunter Ironbark-Spotted Gum Forest	Derived	–	–
	Thinned	Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	Central Hunter Valley eucalypt forest and woodland
PCT 3431 – Central Hunter Ironbark Grassy Woodland	Disturbed Grassland	–	–
	Plantation	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	Central Hunter Valley eucalypt forest and woodland
	Thinned		
PCT 3438 – Hunter Escarpment Footslopes Ironbark Forest	Mod-good	–	Central Hunter Valley eucalypt forest and woodland
PCT 3444 – Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	–
PCT 3446 – Lower North Foothills Ironbark-Box-Gum Grassy Forest	Mod-good	Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	Central Hunter Valley eucalypt forest and woodland
PCT 4015 – Central Hunter Swamp Oak Riparian Forest	Derived	–	–
	Thinned	–	–
PCT 4039 – Hunter Range Creekflat Apple-Red Gum Forest	Mod-good	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria
PCT 4072 – Hunter River Oak Mesic Forest	Mod-good	–	–

Database searches identified 25 threatened flora species listed under the EPBC Act and/or BC Act known or likely to occur within the subject land or surrounding locality (10 kilometre buffer area). Of these two threatened plant species were recorded within the subject land on the Singleton Military Area and 1 endangered population listed under the BC Act. Based on ecological surveys, a further 8 species were assumed present due to their association with PCTs within the Singleton Military Area (Table 5.2).

Table 5.2 Threatened plant species and associated PCTs recorded or assumed to be present in the subject land on Singleton Military Area

Scientific name	Common name	BC Act status[1]	EPBC Act status[1]	Associated PCTs within subject land on the SMA
Acacia bynoeana	Bynoe's Wattle	E	V	Assumed habitat. Species associated with PCT 3315 and 4039.
Cymbidium canaliculatum – endangered population	*Cymbidium canaliculatum* population in the Hunter Catchment	Endangered Population	–	Recorded. Species associated with PCTs 3314, 3315, 3431, 3438 and 3439.
Diuris tricolor	Pine Donkey Orchid	V	-	Assumed habitat. Species associated with PCTs 3314, 3315 and 3431.
Eucalyptus glaucina	Slaty Red Gum	V	V	Assumed habitat. Species associated with 3241, 3314, 3315 and 3431.
Ozomthamnus tesselatus	-	V	V	Assumed habitat. Species associated with 3315 and 3431
Pomaderris queenslandica	Scant Pomaderris	E	-	Assumed habitat. Species associated with 3431
Prasophyllum petilum	Tarengo Leek Orchid	E	E	Assumed habitat. Species associated with PCTs 3315 and 3431.
Prasophyllum sp. *Wybong*	–	–	CE	Assumed habitat. Species associated with PCTs 3314, 3315, 3431, 3438 and 3444.
Prostanthera cineolifera	Singleton Mint Bush	V	V	Recorded. Species associated with PCTs 3315, 3438, and 3444.
Pterostylis chaetophora	-	V	-	Assumed habitat. Species associated with PCTs 3314, 3315, 3431, 3438, 3444 and 3446
Pterostylis gibbosa	Illawarra Greenhood	E	E	Recorded within area of PCT 3431. Species also associated with PCT 3438.
Rhodamnia rubescens	Scrub Turpentine	CE	CE	Habitat associated with PCTs 3446.

(1) CE= critically endangered, E = Endangered, V = Vulnerable.

5.2 Animals

Eighteen threatened fauna species were recorded within the subject land on the Singleton Military Area during the ecological surveys, including 9 mammal species, 8 bird species and 1 reptile species. An additional 22 species were predicted as likely to occur within the subject land based on BioNet records within a 5 kilometres radius, and observations from fieldwork (i.e. presences of habitat features, habitat condition and connectivity). Threatened species known to occur or assumed/predicted to be present based on associated PCTs within the Singleton Military Area are shown in Table 5.3.

The Singleton Military Area has been mapped as important habitat area for the critically endangered Regent Honeyeater and Swift Parrot. Neither species were recorded during the ecological surveys.

Table 5.3 Threatened fauna species recorded or considered likely to occur within the subject land on the Singleton Military Area

Scientific name	Common name	EPBC Act	BC Act / FM Act	Associated PCTs within the subject land on the Singleton Military Area
Birds				
Anthochaera phrygia	Regent Honeyeater	CE	CE	Suitable habitat present. Species associated with PCT 3314, 3315, 3431, 3438, 3439, 3444, 4039, 4072
Apus pacificus	Fork-tailed Swift	M	–	Associated PCTs not listed for this species however records from ALA and BioNet are present within the locality, and the species exhibits a diverse range of habitat preferences
Botaurus poiciloptilus	Australasian Bittern	E	E	Assumed habitat. Species associated with PCT 4039, 4072, 4015
Callocephalon fimbriatum	Gang-gang Cockatoo	E	E	Assumed habitat. Species associated with PCT 3087, 3438, 3439, 3444, 3446, 4039, 4072, 3314, 3315, 3431, 4015
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	Assumed habitat. Species associated with PCT 3087, 3444, 3446, 4039, 4072, 3314, 3315, 3431, 4015
Chthonicola sagittata	Speckled Warbler	–	V	Recorded. Species associated with PCT 3314, 3315, 3431, 3438, 3439, 3444, 3446, 4015, 4039, 4072
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	Recorded. Species associated with PCT 3087, 3438, 3439, 3444, 3446, 4039, 4072, 3314, 3315, 3431, and 4015
Daphoenositta chrysoptera	Varied Sittella	–	V	Recorded. Species associated with PCT 3314, 3315, 3431, 3438, 3439, 3444, 3446, 4015, 4039, 4072
Erythrotriorchis radiatus	Red Goshawk	E	E	Assumed habitat. Species associated with PCT 3315, 4039, 3446
Grantiella picta	Painted Honeyeater	V	V	Assumed habitat. Species associated with PCT 4015
Glossopsitta pusilla	Little Lorikeet	–	V	Recorded. Species associated with PCT 3087, 3314, 3315, 3438, 3439, 3444, 3446, 4015, 4039, 4072
Hirundapus caudacutus	White-throated Needletail	V, M	V	Recorded. Species associated with PCT 3087, 3314, 3315, 3431, 3438, 3439, 3444, 3446, 4039, 4072

Scientific name	Common name	EPBC Act	BC Act / FM Act	Associated PCTs within the subject land on the Singleton Military Area
Lathamus discolor	Swift Parrot	CE	E	Assumed habitat. Species associated with PCT 3087, 3314, 3315, 3431, 3438, 3439, 3444, 4015
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E	E	Assumed habitat. Species associated with PCT 4015
Ninox strenua	Powerful Owl	–	V	Recorded. Species associated with PCT 3087, 3314, 3315, 3431, 3438, 3439, 3444, 4015, 4039, 4072
Petroica boodang	Scarlet Robin	–	V	Recorded. Species associated with PCT 3314, 3315, 3431, 3444, 3446, 4072
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern)	–	V	Recorded. Species associated with PCT 3315, 3431, 3438, 3444, 3446, 4015, 4039, 4072
Rostratula australis	Australian Painted Snipe	E	E	Species associated with PCT 4015, 4039, 4072
Stagonopleura guttata	Diamond Firetail	V	V	Species associated with PCT 3446, 3314, 3315, 3431
Tyto novaehollandiae	Masked Owl	–	V	Species associated with PCT 3314, 3315, 3431, 3438, 3439, 3444
Fish				
Mogurnda adspersa	Southern Purple Spotted Gudgeon	–	E	Monkey Place Creek is mapped as habitat for the Southern Purple Spotted Gudgeon
Mammals				
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	Recorded Species associated with PCT 3314, 3315, 3431, 3438, 3439, 3444
Dasyurus maculatus	Spotted-tail Quoll	E	V	Species associated with PCT 3087, 3438, 3439, 3444, 3446, 4072, 3314, 3315, 3431, 4015
Micronomus norfolcensis	Eastern Coastal Free-tailed Bat	–	V	Species associated with PCT 3314, 3315, 3431, 3444, 3446, 4015, 4039
Miniopterus australis	Little Bent-winged Bat	–	V	Recorded Species associated with PCT 3087, 3314, 3315, 3431, 3438, 3439, 3444, 4039
Miniopterus orianae oceanensis	Large Bent-winged Bat	–	V	Recorded Species associated with PCT 3087, 3314, 3315, 3431, 3438, 3439, 3444, 3446, 4015, 4039

Scientific name	Common name	EPBC Act	BC Act / FM Act	Associated PCTs within the subject land on the Singleton Military Area
Myotis macropus	Southern Myotis	–	V	Recorded. Species associated with PCT 3087, 3150, 3314, 3315, 3431, 3438, 3439, 3444, 4015, 4039, 4072
Nyctophilus corbeni	Corben's Long-eared Bat	V	V	Species associated with PCT 3315, 3438, 4039
Petauroides volans	Southern Greater Glider	E	E	Species associated with PCT 3314, 3315, 4039, 4072
Petaurus australis australis	Yellow-bellied Glider	V	V	Recorded. Species associated with PCT 3438, 3444, 3446, 3087
Petaurus norfolcensis	Squirrel Glider	–	V	Recorded. Species associated with PCT 3314, 3315, 3431, 3444, 3446, 4015, 4039
Petrogale penicillata	Brush-tailed Rock Wallaby	V	E	Species associated with PCT 3087, 3314, 3315, 3444, 3446, 4015, 4039
Phascolarctos cinereus	Koala	E	E	Species associated with PCT 3314, 3315, 3431, 3438, 3439, 3446
Planigale maculata	Common Planigale	–	V	Recorded. Species associated with PCT 3314, 3315, 3431, 3438, 3439
Pseudomys novaehollandiae	New Holland Mouse	V	V	Species associated with PCT 3446 and 3315
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Recorded. Species recorded in PCT 3315 and 3438
Scoteanax rueppellii	Greater Broad-nosed Bat	–	V	Recorded. Species associated with PCT 3315, 3431, 3446
Vespadelus troughtoni	Eastern Cave Bat	–	V	Species associated with PCT 3314, 3315, 3431, 3438, 3439, 3444, 4015, 4039
Reptiles				
Delma vescolineata	Hunter Valley Delma	E	E	Recorded. Species associated with PCT 3314, 3315, 3431, 3438, and 3439

*E = Endangered, V = Vulnerable, CE = Critically Endangered, M= migratory

6 Impacts

The project will impact on biodiversity within the subject land during the construction and ongoing maintenance once the HTP is operational. Direct impacts on listed threatened species and ecological communities associated with the project, include:

- vegetation clearing and loss of habitat
- habitat fragmentation and barrier effects
- injury and mortality.

The above impacts are discussed in Section 6.1.

Indirect impacts occur when project-related activities affect vegetation or habitats in a manner other than a direct loss or clearing. By potentially modifying or disrupting ecological processes these impacts can adversely affect the ecological values within the subject land. The potential indirect impacts that may result from project are discussed in Section 6.1.

6.1 Direct impacts

To assess direct impacts associated with the construction of each stage, a disturbance area, as defined in Table 6.1, has been used. It should be noted that the final project design has not been completed and as a result the disturbance area is based on a reference design. This has enabled the assessment to consider the worst-case scenario of the likely quantum and type of impacts of the project. These will be confirmed following the completion of the final design.

Table 6.1 Disturbance area definitions for biodiversity construction impact assessment purposes

Term	Definition
Disturbance area	Refers to the area that would be directly impacted by construction and operation of the project including all project infrastructure elements (including the proposed project disturbance area, substation site works and other ancillary works i.e. the permanent works footprint) as well as locations for currently proposed construction elements such as construction compounds, access tracks and site access points, laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps. The area is identified based on realistic project component locations and areas however it is indicative at this stage. The area would be confirmed during finalisation of design and construction methodology and would be developed as part of the consideration of avoidance and impact minimisation. Also termed the construction impact area.
Disturbance area A	Refers to an area at and around the transmission line towers, areas for brake and winch sites and for new/upgraded access tracks in which vegetation would be removed during construction. The area also includes the proposed construction compounds and accommodation camps. It would include vegetation (including tree) removal and sub-surface impacts through construction activities such as grading, excavation, and full tree removal. Except in areas where only temporary disturbance is required (i.e. temporary access tracks and brake and winch sites), this area would also be subject to ongoing maintenance during operation (i.e. vegetation removal to ground level) for operational and safety requirements (including bushfire).

Term	Definition
Disturbance area B	Refers to an area between the proposed transmission line towers in which it is assumed vegetation removal would only be required to meet the vegetation clearance heights. Where trees within this area would or have the potential to exceed vegetation clearance heights with growth heights greater than 2 metres, these trees would be removed. Retention of root bases, and or tree stumps of trees identified for removal, would occur where practicable. Vegetation clearance heights take into account operational and safety requirements, including bushfire risk management. This zone is a subset of the disturbance area.
Disturbance area HZ	Refers to an area adjacent to disturbance area B which is known as a hazard tree zone (Hazard High Risk Trees). The hazard tree zone is inspected for trees within the risk category height range 20–30 metres. Then those that meet the height category are considered for structural stability. A structurally sound tree with no obvious risk of falling is left standing. Trees with obvious defects that pose a risk of falling are removed. The number of trees that are likely to be at risk of falling are likely to be minimal. A disturbance area HZ has been mapped and a nominal 10% of this area is taken to likely be impacted. Selective tree removal is posed for disturbance area HZ. This zone is a subset to the disturbance area.

6.1.1 Vegetation clearing

To minimise the impacts associated with the project, a number of specific clearing controls have been identified for each disturbance area. A summary table of the disturbance types, potential impacts, proposed clearing method and specifications is provided below in Table 6.2. Further details on the clearing controls are provided in Section 1.1.6.2 of the BDAR.

Table 6.2 Summary of disturbance type and clearing methods

Disturbance type	Component	Transmission line easement section	Impact type	Clearing method	Control measures/specifications	Post construction restoration
Disturbance area A (including centreline)	Tower sites, substation sites, access tracks, stringing sites, construction support sites, laydown area and central 20 m strip of the transmission line easement.	10 m either side of centreline (total 20 m).	Full clearing to ground, including root ball removal.	No restrictions, tracked heavy machinery permitted.	— Standard mitigation controls. — In sensitive biodiversity areas associated with mapped breeding habitats for threatened amphibians – implementing water quality controls and structures to maintain existing water quality levels and prevent impact to downstream amphibian breeding habitats. — In sensitive biodiversity areas associated with mapped Locations of threatened plants (*Rhodamnia rubescens*) – implement myrtle rust controls.	— Disturbance area A (centreline) to be rehabilitated to maintain erosion and sedimentation controls. — No changes to existing water quality levels in areas of sensitive biodiversity areas associated with mapped breeding habitats for threatened amphibians. — Areas not associated with permanent access tracks or permanent infrastructure to be remediated as part of restoration phase of the project with existing native understorey species with growth heights below 2 m. Species mix to be dictated by pre-disturbance vegetation types identified in the EIS. — Mulched material will be evenly spread on bare disturbed areas to assist with the protection of the soil. Spread of mulched material to a depth of >50 mm will be avoided where practicable. — Herbicides will be applied as required. — Temporary off transmission line easement construction zones: laydown, stringing sites, workshops, site offices and accommodation will be remediated as part of restoration phase of the project.
Disturbance area B	Operational easement 25 m strips outside the central 20 m corridor.	Outer 10–35 m either side of 20 m centreline.	All vegetation that impinges clearances to the overhead conductors will be removed. Partial clearing only that minimise impacts to the understorey vegetation, defined by growth height not exceeding 2m at maturity.	Non-tracked machinery/plant within disturbance area B. Tracked and wheeled machinery will be permitted through disturbance area A central 20 m of the transmission line easement (fully cleared). This is to remove fell timber within the disturbance area B.	— Standard mitigation controls. — Maintaining a proportion of understorey vegetation in situ across the total area for disturbance area B in the transmission line easement. — Retention of threatened species of plant associated with mapped locations of threatened plants with growth height forms of < 2 m in height. — In sensitive biodiversity areas associated with mapped breeding habitats for threatened amphibians– implementing water quality controls and structures to prevent impact to downstream amphibian breeding habitats. — In sensitive biodiversity areas associated with mapped locations of threatened plants (*Rhodamnia rubescens*) – implement myrtle rust controls. — Where possible, retain felled habitat trees in situ. — Mulched material will be evenly spread on bare disturbed areas to assist with the protection of the soil. Spread of mulched material to a depth of >50 mm will be avoided where practicable.	— Maintaining a proportion of understorey vegetation < 2 m in height in situ across the area. Some vegetation may require removal to access tall growing trees that could exceed the VCR in the future.

Disturbance type	Component	Transmission line easement section	Impact type	Clearing method	Control measures/specifications	Post construction restoration
Disturbance area B – mapped sensitive biodiversity areas	Locations of threatened plants for avoidance Streams 5 m buffer zone from top of bank.	Outer 10–35 m either side of 20 m centreline	As above and minimise impacts on the surrounds and avoid degrading the water quality.	Hand Clearing – Vegetation to be cut down by chain saws and removed from the transmission line easement. Tracked and wheeled vehicles will be permitted through disturbance area A central 20 m of the transmission line easement. This is to remove fell timber within the disturbance area B.	— In sensitive biodiversity areas associated with mapped breeding habitats for threatened amphibians – implementing water quality controls and structures to prevent impact to downstream amphibian breeding habitats. — In sensitive biodiversity areas associated with mapped locations of threatened plants (*Rhodamnia rubescens*) –implement myrtle rust controls. — Where possible, retain felled habitat trees in situ.	Maintaining a proportion of understorey vegetation < 2 m in height in situ across the area.
Disturbance area HZ	Hazard trees 10 m either side of operational transmission line easement in areas of canopy heights > 20 m in height.	Limited areas identified through LiDAR analysis within 10 m either side of 70 m wide easement.	Partial clearing of structurally unsound canopy trees only, minimise impacts to the understorey vegetation, defined by growth height forms of < 2 m in height.	Non-tracked machinery/plant/ hand clearing.	— Implement clearing mitigation controls. — Maintaining a proportion of existing understorey vegetation in situ across the area. — Retention of threatened species of plant with growth forms of < 2 m in height. — Where possible, retain felled habitat trees in situ.	Maintaining a proportion of existing understorey vegetation < 2 m in height in situ across the area.
No Clearing Zone	Gullies and other areas where project design and construction does not require vegetation to be removed.	Entire width of easement in areas that meet the Vegetation Clearing Requirements (> 10 m from conductor).	No impact	No clearing required as construction methods able to avoid this area.	N/A	Not required as vegetation retained.

The project requires clearing of approximately 945.24 hectares of native vegetation which may result in temporary and permanent residual impacts (Table 6.3). Table 6.4 provides a summary of the TECs to be cleared.

For disturbed grassland and derived vegetation conditions the impacts are limited to disturbance area A where there would be complete vegetation removal and potential sub-surface impacts through construction activities such as grading, excavation, and full tree removal. The impacts from disturbance area B and disturbance area HZ are not applicable to vegetation conditions as these areas would not contain vegetation over 2 metres in height.

Table 6.3 Summary of direct impacts to PCTs identified within the subject land

PCT ID number and name	Disturbance area A impact (ha)	Disturbance area B impact (ha)	Disturbance area HZ impact (ha)	Total impact (ha)
3029 - Lower North Wet Gully Palm Rainforest	1.17	2.17	0.00	3.34
3086 - Lower North Hinterland Riparian Dry Rainforest	6.33	1.12	0.00	7.45
3087 - Lower North Ranges Riparian Turpentine Forest	1.33	1.49	0.00	2.82
3150 - Hunter Coast Ranges Turpentine Wet Forest	32.23	15.45	0.19	47.87
3151 - Northwest Sydney Sandstone Grey Myrtle Dry Rainforest	0.87	0.98	0.00	1.85
3152 - Hunter Range Turpentine-Grey Myrtle Gully Forest	0.25	0.67	0.00	0.92
3230 - Central Coast Escarpment Moist Forest	73.22	15.02	0.05	88.29
3237 - Hunter Range Blue Gum Gully Forest	2.89	3.03	0.00	5.92
3238 - Hunter Range Colluvial Apple-Gum Forest	0.01	0.04	0.00	0.05
3239 - Hunter Range Sheltered Grey Gum Forest	85.59	23.59	0.07	109.25
3241 - Lower North White Mahogany-Spotted Gum Moist Forest	18.90	1.01	0.21	20.12
3242 - Lower North Ranges Turpentine Moist Forest	20.87	18.16	0.15	39.18
3244 - Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	2.73	0.31	0.00	3.04
3250 - Northern Foothills Blackbutt Grassy Forest	5.92	0.00	0.00	5.92
3263 - Watagan Range Turpentine-Mahogany Grassy Forest	50.40	8.79	0.19	59.38
3314 - Central Hunter Slopes Grey Box Forest	110.05	17.55	0.00	127.60
3315 - Central Hunter Ironbark-Spotted Gum Forest	22.96	4.06	0.00	27.02
3328 - Lower Hunter Red Gum-Paperbark Riverflat Forest	0.91	0.17	0.00	1.08
3431 - Central Hunter Ironbark Grassy Woodland	129.47	44.94	0.00	174.41
3433 - Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	2.00	0.00	0.00	2.00
3436 - Hunter Coast Sandy Creekflat Low Paperbark Scrub	0.43	0.00	0.00	0.43
3438 - Hunter Escarpment Footslopes Ironbark Forest	4.70	4.04	0.02	8.76
3444 - Lower Hunter Spotted Gum-Ironbark Forest	26.01	18.67	0.00	44.68

PCT ID number and name	Disturbance area A impact (ha)	Disturbance area B impact (ha)	Disturbance area HZ impact (ha)	Total impact (ha)
3446 - Lower North Foothills Ironbark-Box-Gum Grassy Forest	0.45	0.68	0.00	1.13
3489 - Hunter Escarpment Grey Box Forest	4.04	0.70	0.00	4.74
3581 - Hunter Coast Foothills Apple Forest	0.67	0.00	0.00	0.67
3582 - Hunter Coast Lowland Apple-Bloodwood Forest	11.09	0.00	0.00	11.09
3583 - Hunter Coast Lowland Scribbly Gum Forest	8.43	0.00	0.00	8.43
3599 - Blue Mountains Peppermint Shrub Forest	8.54	0.01	0.00	8.55
3605 - Hunter Range Ironbark Forest	48.79	13.46	0.14	62.39
3617 - Sydney Hinterland Peppermint-Apple Forest	31.16	4.88	0.13	36.17
3621 - Sydney Hinterland Turpentine-Apple Gully Forest	2.36	2.30	0.00	4.66
4015 - Central Hunter Swamp Oak Riparian Forest	8.10	2.49	0.00	10.59
4039 - Hunter Range Creekflat Apple-Red Gum Forest	0.85	0.31	0.00	1.16
4042 - Lower North Riverflat Eucalypt-Paperbark Forest	0.94	0.00	0.00	0.94
4044 - Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	0.39	0.00	0.00	0.39
4072 - Hunter River Oak Mesic Forest	0.37	0.00	0.00	0.37
4089 - Namoi-Upper Hunter River Red Gum Forest	9.46	3.12	0.00	12.58
Totals	**734.88**	**209.21**	**1.15**	**945.24**

Table 6.4 Summary of project impacts on EPBC Act listed TECs

TEC name	EPBC Act status[1]	Associated PCT and vegetation zones within the subject land	Disturbance area A	Disturbance area B	Disturbance area HZ	Impact within subject land (ha)
Central Hunter Valley eucalypt forest and woodland	CE	3314_Thinned (50.02 ha) 3315_Thinned (9.56 ha) 3431_Thinned (71.14ha) 3431_Poor (8.40 ha) 3431_Plantation (15.18 ha) 3438_Mod-good (8.76 ha) 3446 Mod-good (1.13 ha)	94.71	69.46	0.02	164.19
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	E	4044_Mod-good (0.12 ha)	0.12	0.00	0.00	0.12

TEC name	EPBC Act status[1]	Associated PCT and vegetation zones within the subject land	Disturbance area A	Disturbance area B	Disturbance area HZ	Impact within subject land (ha)
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	CE	3328_Mod-good (1.08 ha) 4039_Mod-good (1.16 ha)	1.76	0.48	0.00	2.24
Total			**96.59**	**69.94**	**0.02**	**166.55**

(1) CE = Critically Endangered under the EPBC Act

6.1.2 Habitat loss

The extent of impacts has been refined based on design principles of avoid and minimise impacts. Nonetheless, the project would directly impact habitat for EPBC Act listed threatened species that have either been recorded or assessed as likely to occur in the subject land, as well as a diverse assemblage of common flora and fauna species. This would impact and reduce the overall in-situ biodiversity (flora and fauna species abundance) within the subject land.

The removal of habitat will displace native fauna into adjacent retained habitats and create a level of intraspecific and interspecific competition for habitat resources for a period, until home ranges are re-established, and a biodiversity equilibrium is once again attained.

Important microhabitat features that will be removed during land clearing, include:

- ground cover containing hollow logs, coarse woody debris, dense vegetation, and leaf litter suitable for sheltering by reptiles, amphibians and small mammals
- hollow bearing trees and stags providing sheltering and breeding habitat for a range of arboreal fauna such as gliders, possums, forest owls, hollow nesting parrots, owlet nightjars, microbats, and native bees
- flowering eucalypts and other native trees providing suitable foraging habitat for fauna such as flying foxes and native birds.

The extent of impacts associated with the project on listed threatened fauna species within the subject land is presented in Table 6.5. The project has considered the impacts on both confirmed habitat (habitat confirmed by surveys) and assumed habitat (non-surveyed potential habitat) for the species across all disturbance areas.

6.1.3 Habitat fragmentation

The project has the potential to further fragment habitat within the subject land through the creation or use of powerline easements and related infrastructure, thus affecting the connectivity between habitats in the wider landscape. Habitat connectivity is essential for the mitigation of habitat loss and fragmentation resulting from changes to a landscape, with connected habitats providing a means for species dispersal, improved genetic diversity, and movement between populations that might otherwise become isolated by these changes (Doerr *et al*. 2010). Maintenance of access routes and infrastructure associated with powerline easements is required regularly, creating a significant abrupt difference of habitat condition types. This ultimately leads to dispersal and movement inhibition for many species (Strevens *et al*. 2008).

6.1.4 *Injury and mortality*

As with any land clearing activities involving removal of native vegetation, there is always an inherent risk of native fauna mortality, especially those fauna species actively sheltering or breeding in microhabitats (i.e. hollows) during vegetation clearing.

It is possible native fauna could be injured or killed during vegetation clearing, earthworks and vehicle and machinery interactions during construction activities. Increased traffic along access roads for the project during the construction phase may increase the current level of vehicle and fauna interactions and roadkill. Vehicle collision is a direct impact that reduces local population numbers and is a common occurrence in Australia (Coffin 2007; Rowden *et al.* 2008). Overall, vehicle strike would not appear to be a significant concern for the project. Areas in the Hunter Valley are near existing infrastructure and highly disturbed areas. During operation in the State forests, vehicle speeds would be very low due to the topography and nature of the roads, combined with speed limits.

There is an increased risk of collision with the transmission line. The general fauna group most likely to have potential for powerline strike are those groups of birds which are likely to fly at heights where powerlines are located and are not familiar with local habitat attribute. Such birds can include, birds of prey, quail, and other birds, many of which move in response to changing distributions of resources usually associated with water. A fauna risk assessment is provided in Appendix I of the BDAR identifies 2 EPBC listed threatened species, Gang-gang Cockatoo and South-eastern Glossy Black-Cockatoo, as a high risk of collision with powerline infrastructure. These species are wide-ranging in the vicinity of the project's greenfield locations.

Electrical and magnetic fields (EMF) impacts from new infrastructure include impacts to birds moving through the alignment. It is considered unlikely, however, that birds would be at high risk of electrocution, as electrocution would require contact with different phases or conductor potentials, and the horizontal separation between individual conductors, or bundled conductors, exceeds the wingspans (WS) of all birds, including the largest migratory birds, such as Brolgas (WS~2.4 m), Pelicans (WS~2.4–2.6 m), Black Swans (WS~2.0 m) and Australian Shelduck (WS~1.2 m) (Pizzey and Knight. 2012).

Table 6.5 Extent of project impacts on listed threatened species within the Wyong, Yengo, and Hunter IBRA subregions

Scientific name	Common name	EPBC Act[1]	Total impacts habitat (ha) or individuals (count), including confirmed and assumed habitat
Threatened flora			
Acacia bynoeana	Bynoe's Wattle	V	5.79
Angophora inopina	Charmhaven Apple	V	3.70
Asperula asthenes	Trailing Woodruff	V	2.75
Brachyscome brownii	-	CE	12.85
Cryptostylis hunteriana	Leafless Tongue Orchid	V	7.13
Cynanchum elegans	White-flowered Wax Plant	E	2.67
Eucalyptus glaucina	Slaty Red Gum	V	34 (count)
Genoplesium branwhiteorum	Charmhaven Midge Orchid	CE	6.12
Genoplesium insigne	Variable Midge Orchid	CE	10.67
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	V	11.87

Scientific name	Common name	EPBC Act[1]	Total impacts habitat (ha) or individuals (count), including confirmed and assumed habitat
Melaleuca biconvexa	Biconvex Paperbark	V	6.05
Olearia cordata	-	V	2.24
Ozothamnus tesselatus	-	V	0.65
Prasophyllum petilum	Tarengo Leek Orchid	E	11.82
Prasophyllum sp. Wybong	Leek Orchid	CE	11.82
Prostanthera cineolifera	Singleton Mint Bush	V	65.88
Pterostylis gibbosa	Illawarra Greenhood	E	13.62
Rhizanthella slateri	Eastern Australian Underground Orchid	E	81.37
Rhodamnia rubescens	Scrub Turpentine	CE	1,528 (count)
Rhodomyrtus psidioides	Native Guava	CE	17.87
Rutidosis heterogama	Heath Wrinklewort	V	0.66
Syzygium paniculatum	Magenta Lilly Pilly	V	61 (count)
Tetratheca juncea	Black-eyed Susan	V	14.68
Thelymitra adorata	Wyong Sun Orchid	CE	0.79
Velleia perfoliata	-	V	2.24
Zieria involucrata	-	V	2.24
Threatened frogs			
Heleioporus australiacus australiacus	Giant Burrowing Frog	E	73.62
Litoria littlejohni	Littlejohn's Tree Frog	E	70.34
Mixophyes balbus	Stuttering Frog	V	191.99
Mixophyes iteratus	Giant Barred Frog	V	10.76
Threatened birds			
Anthochaera phrygia	Regent Honeyeater	CE	96.91
Botaurus poiciloptilus	Australasian Bittern	E	26.03
Callocephalon fimbriatum	Gang-gang Cockatoo	E	41.71
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	18.52
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	877.19
Gallinago hardwickii	Latham's Snipe	V, M	10.59
Grantiella picta	Painted Honeyeater	V	255.72

Scientific name	Common name	EPBC Act[1]	Total impacts habitat (ha) or individuals (count), including confirmed and assumed habitat
Hirundapus caudacutus	White-throated Needletail	V, M	900.56
Lathamus discolor	Swift Parrot	CE	45.32
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E	255.72
Pycnoptilus floccosus	Pilotbird	V	227.91
Rostratula australis	Australian Painted Snipe	E	26.03
Stagonopleura guttata	Diamond Firetail	V	571.85
Threatened mammals			
Chalinolobus dwyeri	Large-eared Pied Bat	E	574.24
Dasyurus maculatus	Spotted-tail Quoll	E	871.78
Notamacropus parma	Parma Wallaby	V	390.74
Nyctophilus corbeni	Corben's Long-eared Bat	V	36.94
Petauroides volans	Southern Greater Glider	E	560.39
Petaurus australis australis	Yellow-bellied Glider	V	521.47
Petrogale penicillata	Brush-tailed Rock Wallaby	V	163.96
Phascolarctos cinereus	Koala	E	625.71
Potorous tridactylus tridactylus	Long-nosed Potoroo	V	168.33
Pseudomys novaehollandiae	New Holland Mouse	V	59.73
Pteropus poliocephalus	Grey-headed Flying-fox	V	775.27
Threataned reptiles			
Delma vescolineata	Hunter Valley Delma	E	353.53

(1) V = Vulnerable, E = Endangered, CE = Critically Endangered under the EPBC Act

6.2 Indirect impacts

Indirect impacts occur when project related activities affect vegetation or habitats in a manner other than a direct loss or clearing. Indirect impacts have been considered in terms of the nature, extent and duration of impacts on native vegetation, threatened species and habitats likely to be affected and are presented.

Indirect impacts associated with the project include:

- inadvertent impacts on adjacent habitat or vegetation including:
  - impact to habitat surrounding known locations of Brush-tailed Rock Wallaby populations
  - impact to habitat surrounding known aquatic or gully locations of threatened frog species
  - impact to habitat near known locations of Hunter Valley Delma
  - impact to caves that are known or potential breeding habitat for threatened microbat species
- reduced viability of adjacent habitat due to edge effects
- reduced viability of adjacent habitat due to noise, dust or light spill
- transport of weeds, pests and pathogens from the site to adjacent vegetation
- increased risk of starvation, exposure and loss of shade or shelter
- loss of breeding habitats
- trampling of threatened flora species
- increased risk of fire
- increased risk of collision with lines and EMF impacts with new infrastructure.

Table 8.20 of the BDAR documents the indirect impacts likely to occur on native vegetation, threatened entities and their habitat. Figure 14.13 in the BDAR illustrates the final impacts likely to occur on the subject land including consideration of indirect impacts.

7 Mitigation measures

The project applies an avoid–minimise–mitigate framework for all MNES, with the primary emphasis on avoidance wherever feasible. Avoidance has been achieved through the use of micro-siting of towers, access tracks and construction support infrastructure, the incorporation of disturbance area categories and no-clearing zones, and the strategic placement of infrastructure to reduce impacts on riparian environments, key habitat areas and known threatened species features. Existing tracks and previously disturbed areas have been prioritised during detailed design, and targeted pre-clearing surveys will validate species presence to identify additional opportunities to minimise impacts.

Vegetation clearing within MNES habitat areas will follow strict protocols to reduce ecological disturbance. Clearing will occur in two phases to allow fauna to disperse, with manual dismantling of trees required in sensitive habitat to avoid damage to shrub and ground layers. No-go zones, retained habitat features and sensitive biodiversity areas will be clearly demarcated prior to works. Where hollow-bearing trees are affected, nest boxes or supplementary hollows will be installed in advance of clearing wherever practicable. Vehicular access into MNES habitat will be restricted where it risks ground disturbance or habitat degradation.

A suite of environmental sub-plans under the Biodiversity Management Plan (BMP) will guide MNES-specific management. These include the Amphibian Management Plan, Microbat Sub-Plan, Terrestrial Mammal Sub-Plan and Biosecurity Management Plan. Collectively, these documents prescribe species-specific controls such as seasonal timing limitations around breeding habitats, noise and vibration restrictions near microbat caves, chytrid fungus prevention measures, predator and weed management, and supplementary breeding or habitat enhancement measures where required.

Connectivity impacts on MNES fauna will be minimised through implementation of a Connectivity Strategy, which may include glider poles, retained tall stags, rope bridges and other structures informed by local habitat characteristics. Vehicle strike risk will be reduced through driver awareness training, fauna signage and speed restrictions. Within the transmission easement, midstory and ground layers will be retained where feasible to maintain low-level connectivity for fauna.

Riparian and aquatic environments that support MNES species will be protected by retaining understorey vegetation where possible and applying hand-clearing and machinery exclusion zones at waterway crossings. Erosion and sediment control measures consistent with the Primary ESCP will safeguard aquatic habitat, and disturbed riparian areas will be progressively stabilised and rehabilitated under the Riparian Vegetation Management Plan.

For aerial MNES species, bird diverters will be installed in targeted spans to minimise collision risk, and lighting associated with construction or operation will comply with the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023b). Noise and vibration controls will be applied in proximity to known owl or microbat breeding areas, with activities timed outside sensitive breeding periods where possible.

Monitoring and adaptive management form a key part of MNES mitigation. A Biodiversity Impact Monitoring Program (BIMP) will track fauna activity, breeding site use, noise and vibration levels, amphibian habitat condition, weed and pest presence, and collision or strike events. Pre-clearing surveys will confirm species presence in areas of assumed habitat, triggering either additional avoidance measures or a revised BAM-C calculation. An adaptive management framework will allow adjustments to mitigation measures where monitoring indicates that performance outcomes are not being met.

Operational activities will be managed under the Network Operator's accredited environmental management system to ensure continued protection of MNES values. Maintenance activities will avoid unnecessary disturbance and comply with vegetation management requirements within the easement. Across all phases, an unexpected finds protocol will apply, requiring immediate cessation of work and ecological assessment if previously unidentified MNES species, TECs or habitat features are encountered.

Further information regarding avoidance, minimisation (including micro -siting) and mitigation measures is provided in section 7.3, 7.5 and 8.4 of the BDAR.

8 Threatened biodiversity assessment

Residual impacts are impacts of the project that may remain after the mitigation measures have been considered. The residual significant impact was determined by applying the relevant significant impact criteria set out in the *Significant Impact Guidelines (1.1 and 1.2)* relevant to listed threatened species and ecological communities and Commonwealth Land.

The following factors have been considered in assessing the residual impacts on the environment and listed threatened species and ecological communities:

- nature of the impacts such as direct, indirect, cumulative and facilitated
- magnitude of the impact, taking into account the severity and scale of the impact when compared with baseline condition timing, duration and frequency of the impact (temporary or permanent)
- likelihood that any given impact would occur
- whether any impacts are unknown, unpredictable or irreversible
- benchmarks and requirements set by statutory requirements, policies, and guidelines
- mitigation measures to minimise the impacts.

Details on the residual impacts to MNES are outlined in Chapters 8 and 10 of the BDAR.

Under the EPBC Act where a project is likely to have a significant residual impact on a listed threatened species and/or community, the impacts must be compensated. Based on the assessment of significance the project would result in significant residual impact to two threatened ecological communities, and 35 threatened species.

The HTP would reduce the habitat for threatened species within the subject land on the Singleton Military Area. Therefore, the project would result in a significant residual impact on a component (plants and animals) of the environment on Commonwealth Land. Compensation for the loss of vegetation and habitat for plants and animals on Commonwealth land will be offset through species and ecosystem credits under the NSW Biodiversity Offsets Scheme (BOS).

The Australian Government has endorsed the NSW BOS, allowing offset MNES to be compensated under this scheme. Section 11 of the BDAR sets out the biodiversity credit report; a summary of the required credits is provided in Table 8.1 and Table 8.2. The BDAR (and all calculations) had been prepared by an accreditor assessor in accordance with the BAM 2020. Appendix A of the BDAR provides an assessment of the compliance with the minimum information requirements outlined in BAM Appendix K. The methodology used is consistent with the requirements to identify the number and class of biodiversity credits need to be offset in accordance with the endorsed NSW BOS.

Not all species requiring species credits under the NSW BOS were assessed as having a significant residual impact under the EPBC Act. However, for those species that do require offsets under the NSW BOS, the proponent will secure the necessary species credits in accordance with NSW requirements. This will mean the impacts have been mitigated and offset. In addition, ecosystem credits will also account for those species that are only listed under the EPBC Act, as the ecosystem credits aim to offset the PCTs/habitat for the species.

A summary of ecosystem credits required to offset the residual impacts associated with the project on threatened species and ecological communities is presented in Table 8.1 and species credit requirements for EPBC listed threatened species are summarised in Table 8.2.

Table 8.1 Summary of the total ecosystem credits required for EPBC threatened

Threatened species and ecological communities	Impact area (ha/count)	Significant residual impact	Ecosystem credits required
Threatened ecological community			
Central Hunter Valley Eucalypt Forest and Woodland	164.19	Yes	5,087
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	0.12	No	6
River-Flat Eucalypt Forest on coastal floodplains of southern New South Wales and eastern Victoria	2.24	Yes	67
Threatened species			
Botaurus poiciloptilus (Australasian Bittern)	26.03	No	528
Brachyscome brownii	12.85	Yes	3,256
Climacteris picumnus victoriae (Brown Treecreeper (eastern subspecies))	877.19	Yes	19,320
Dasyurus maculatus (Spotted-tail Quoll)	871.78	Yes	19,298
Gallinago hardwickii (Latham's Snipe)	10.59	No	298
Grantiella picta (Painted Honeyeater)	255.72	Yes	6,660
Hirundapus Caudacutus (White-throated Needletail)	900.56	No	19,660
Melanodryas cucullata cucullata (South-eastern Hooded Robin)	255.72	Yes	6,660
Nyctophilus corbeni (Corben's Long-eared Bat)	36.94	No	812
Petaurus australis (Yellow-Bellied Glider)	521.47	Yes	13,342
Pseudomys novaehollandiae (New Holland Mouse)	59.73	Yes	1,187
Pteropus poliocephalus (Grey-headed Flying fox)	775.27	Yes	17,976
Pycnoptilus floccosus (Pilotbird)	227.91	Yes	5,757
Rostratula australis (Australian Painted Snipe)	26.03	No	528
Stagonopleura guttata (Diamond Firetail)	571.85	Yes	11,257

Table 8.2 Summary of the total species credits required

Scientific name	Common name	Impact area (ha/count)	Significant residual impact	Species credits required
Acacia bynoeana	Bynoe's Wattle	5.79	Yes	174
Angophora inopina	Charmhaven Apple	3.70	No	142
Anthochaera phrygia	Regent Honeyeater	96.91	Yes	5,172
Asperula asthenes	Trailing Woodruff	2.75	No	100
Callocephalon fimbriatum	Gang-gang Cockatoo	41.71	Yes	1,515
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	18.52	Yes	669
Chalinolobus dwyeri	Large-eared Pied Bat	574.24	Yes	28,631
Cryptostylis hunteriana	Leafless Tongue Orchid	7.13	No	117
Cynanchum elegans	White-flowered Wax Plant	2.67	No	100
Delma vescolineata	Hunter Valley Delma	353.53	Yes	6,571
Eucalyptus glaucina	Slaty Red Gum	34 (count)	Yes	68
Genoplesium branwhiteorum	Charmhaven Midge Orchid	6.12	No	205
Genoplesium insigne	Variable Midge Orchid	10.67	No	389
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	11.87	No	280
Heleioporus australiacus australiacus	Giant Burrowing Frog	73.62	Yes	2,123
Lathamus discolor	Swift Parrot	45.32	Yes	2,394
Litoria littlejohni	Littlejohn's Tree Frog	70.34	Yes	2,702
Melaleuca biconvexa	Biconvex Paperbark	6.05	Yes	203
Mixophyes balbus	Stuttering Frog	191.99	Yes	11,133
Mixophyes iteratus	Giant Barred Frog	10.76	No	319
Notamacropus parma	Parma Wallaby	390.74	Yes	13,386
Olearia cordata	–	2.24	No	83
Ozothamnus tesselatus	–	0.65	No	16
Petauroides volans	Southern Greater Glider	560.39	Yes	21,081
Petrogale penicillata	Brush-tailed Rock-wallaby	163.96	Yes	8,454
Phascolarctos cinereus	Koala	625.71	Yes	23,314
Potorous tridactylus	Long-nosed Potoroo	168.33	Yes	5,923
Prasophyllum petilum	Tarengo Leek Orchid	11.82	Yes	375
Prasophyllum sp. Wybong	–	11.82	Yes	561

Scientific name	Common name	Impact area (ha/count)	Significant residual impact	Species credits required
Prostanthera cineolifera	Singleton Mint Bush	65.88	Yes	2,452
Pterostylis gibbosa	Illawarra Greenhood	13.62	Yes	463
Rhizanthella slateri	Eastern Australian Underground Orchid	81.37	Yes	3,988
Rhodamnia rubescens	Scrub Turpentine	1,528 (count)	Yes	4,584
Rhodomyrtus psidioides	Native Guava	17.87	Yes	1,080
Rutidosis heterogama	Heath Wrinklewort	0.66	No	15
Syzygium paniculatum	Magenta Lilly Pilly	61 (count)	No	122
Tetratheca juncea	Black Eyed Susan	14.68	Yes	417
Thelymitra adorata	Wyong Sun Orchid	0.79	No	21
Velleia perfoliata	–	2.24	No	75
Zieria involucrata	–	2.24	No	75
Total species credits				**149,492**

9 References

Bell. (2015). Ecology Report for the Continuation of Rix's Creek Mine, Singleton LGA. Prepared for Rix's Creek Pty Limited by Eastcoast Flora Survey, October 2015.

Bell. (2016) Additional notes on distribution and fragmentation of Warkworth Sands Woodland, from the Hunter Valley of New South Wales. Eastcoast Flora Survey, 26 April 2016).

Bureau of Meteorology. (2024). *Atlas of Groundwater Dependent Ecosystems*.

Coffin, A. (2007). From roadkill to road ecology: a review of the ecological effects of roads. *Journal of transport Geography*, 15(5), 396-406.

Cumberland Ecology. (2014a). Warkworth Coal Mine Continuation Project – Biodiversity Assessment Report. Prepared by Cumberland Ecology on behalf of Warkworth Mining Limited, 2014.

Cumberland Ecology. (2014b). Bengalla Mine Continuation – Biodiversity Assessment Report prepared by Cumberland Ecology 2014.

DAWE (Department of Agriculture, Water and the Environment). (2020a). *Conservation Advice for the River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria*. Canberra: Department of Agriculture, Water and the Environment.

DAWE (Department of Agriculture, Water and the Environment). (2021a). *Directory of Important Wetlands of Australia*.

DAWE (Department of Agriculture, Water and the Environment). (2021b). *Conservation Advice for the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland*. Canberra: Department of Agriculture, Water and the Environment.

DCCEEW (Department of Climate Change, Energy, the Environment and Water). (2023a). *Conservation Advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Canberra: Department of Climate Change, Energy, the Environment and Water.

DCCEEW (Department of Climate Change, Energy, the Environment and Water). (2023b). *National Light Pollution Guidelines for Wildlife*. Department of Climate Change, Energy, the Environment and Water, Canberra, May. CC BY 4.0.

DCCEEW (Department of Climate Change, Energy, the Environment and Water). (2024a). *Species Profile and Threats Database* (SPRAT).

DCCEEW (Department of Climate Change, Energy, the Environment and Water). (2024b). BioNet Threatened Biodiversity Data Collection (TBDC).

DCCEEW (Department of Climate Change, Energy, the Environment and Water). (2024c). BioNet Atlas.

DCCEEW (Department of Climate Change, Energy, the Environment and Water). (2024c). BioNet Vegetation Classification Database.

DCCEEW (Department of Climate Change, Energy, the Environment and Water). (2024e). BAM Important Area Maps for threatened species.

DCCEEW (Department of Climate Change, Energy, the Environment and Water). (2024f). Register of Declared Areas of Outstanding Biodiversity Value – Critical habitat declarations in NSW.

DCCEEW (Department of Climate Change, Energy, the Environment and Water) (2024g). *NSW State Vegetation Type Map C2.0M2.1* (November 2024).

DEC (NSW Department of Environment and Conservation) (2004) *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)*.

DEE (Department of the Environment and Energy). (2018). *NSW Interim Biogeographic Regionalisation of Australia* (IBRA region and subregion – Version 7.0).

DEWHA (NSW Department of the Environment Water Heritage and the Arts) (2010). *Survey Guidelines for Australia's Threatened Birds*.

DoE (Department of the Environment). (2013a). *Significant Impact Guideline 1.1 – Matters of National Environmental.* Canberra, ACT.

DoE (Department of the Environment). (2013b). *Significant impact guidelines 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies*. Canberra, ACT.

DoE (Department of the Environment). (2015a). Conservation Advice – Central Hunter Valley eucalypt forest and woodland ecological community.

Doerr, E., Doerr, V., & Davies, M. (2010). *Does structural connectivity facilitate dispersal of native species in Australia's fragmented terrestrial landscapes? CEE protocol 08–007* (SR 44). Collaboration Environ Evid, 8.

DPE (NSW Department of Planning and Environment) (2022a). *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide*.

DPE (NSW Department of Planning and Environment) (2022b). *Threatened Reptiles Biodiversity Assessment Method Survey Guide.*

DPHI (Department of Planning, Housing and Infrastructure) (2016). *Guidance for Accredited Assessors on the assessment of MNES.*

DPIE (Department of Planning, Industry and Environment). (2020a). *Biodiversity Assessment Method 2020*. Parramatta: Environment, Energy and Science.

DPIE (NSW Department of Planning, Industry and Environment) (2020b). NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method.

DPIE (Department of Planning, Industry and Environment). (2021a). *BioNet (NSW) Mitchell Landscapes* – Version 3.1.

DPIE (NSW Department of Planning and Environment) (2021b). *'Species credit' Threatened Bats and their Habitats. NSW Survey Guide for the Biodiversity Assessment Method.*

DSEWPC (Commonwealth Department of Sustainability, Environment, Water, Population and Communities) (2011). *Survey Guidelines for Australia's Threatened Mammals*.

Hunter Eco. (2021). Mt Pleasant Optimisation Project – Appendix E – Biodiversity Development Assessment Report. Prepared by Hunter Eco on behalf of MACHEnergy, January 2021.

Pizzey, G. and F. Knight (2012). The Field Guide to the Birds of Australia. Sydney, HarperCollins.

Rowden, P., Steinhardt, D., & Sheehan, M. (2008). Road crashes involving animals in Australia. *Accident Analysis & Prevention*, 40(6), 1865-1871.

Royal Botanic Gardens and Domain Trust, Sydney. (2024). Retrieved from PlantNET (NSW): https://plantnet.rbgsyd.nsw.gov.au.

Strevens, Puotinen and Whelan. (2008) Powerline easements: ecological impacts and contribution to habitat fragmentation from linear features. *Pacific Conservation Biology* 14, 159–168.

TSSC (Threatened Species Scientific Committee). (2016a). *Approved Conservation Advice (including listing advice) for the Warkworth Sands Woodland of the Hunter Valley ecological community*. Canberra: Department of the Environment.

Umwelt. (2013) Bulga Coal Mine Optimisation – Ecological Impact Assessment. Prepared by Umwelt 2013 on behalf of Bulga Coal Management Pty Ltd.

Umwelt. (2019) Mangoola Coal Continued Operations Project – Biodiversity Assessment Report. Prepared by Umwelt on behalf of Mangoola Open Cut Glencore, June 2019.

Umwelt. (2022) Hunter Valley Operations Continuation Project, Biodiversity Development Assessment Report (4948_R01_HVO_BDAR_V7_Final). Prepared by Umwelt (Australia) Pty Limited, December 2022 on behalf of Hunter Valley Operation Pty Ltd.

Attachment A

Likelihood of occurrence

The following table considers the likelihood of occurrence for threatened species in relation to the controlling provision for listed threatened species and ecological communities and whether further assessment is required. Threatened species considered under the Commonwealth Land controlling provision are provided in Attachment B Table B.4 and Table B.5.

Table A.1 Threatened flora likelihood of occurrence

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Acacia bynoeana	Bynoe's Wattle	V	Occurs in heath or dry sclerophyll forest on sandy soils with a preference for open, sometimes slightly disturbed sites e.g., trail margins, edges of roadside spoil mounds and in recently burnt patches. This species is associated with Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple.	BioNet, PMST, ALA	Moderate Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. This included assumed habitat for areas that contain historic BioNet records of the where presence in the soil seed bank is considered likely. Habitat associated with PCT 3315, 3433, 3436, 3582, 3583, 3617 and 4039.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**
Acacia gordonii	-	E	This species has a disjunct distribution in the Sydney Basin bioregion and is primarily found in the lower Blue Mountains	BioNet, ALA	Low. The project alignment outside of known range and distribution. Suitable microhabitats deemed not to be present.	Species is not present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Acacia pubescens	Downy Wattle	V	This species is restricted to the Sydney region of NSW. Although the distribution includes a large area, the extant sites are mostly small and fragmented. This species is associated with open woodland and forest.	BioNet, ALA	Low. Species was not recorded despite targeted ecological surveys.	Species is not present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required
Allocasuarina glareicola	-	E	The species grows in Castlereagh woodland on lateritic soil. It is generally found in open woodland with *Eucalyptus parramattensis, Eucalyptus fibrosa, Angophora bakeri, Eucalyptus sclerophylla and Melaleuca decora. Common associated understorey species include Melaleuca nodosa, Hakea dactyloides, Hakea sericea, Dillwynia tenuifolia, Micromyrtus minutiflora, Acacia elongata, Acacia brownei, Themeda australis and Xanthorrhoea minor.*	PMST	Low. *Allocasuarina glareicola* is restricted to the Sydney region of New South Wales and known to occur within an area of approximately 27 km² around Castlereagh and Londonderry. An outlier population is also present on Commonwealth land at the Holsworthy Military Area, southwest of Sydney.	Species is not present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Androcalva procumbens	-	V	The species occurs in sandy soils, often in disturbed habitats such as road verges, quarry boundaries, gravel stockpiles, and power line easements	PMST	Low. This species is endemic to NSW and is known from the Dubbo–Medooran– Gilgandra region, the Cobar region, and the upper Hunter Valley	Th subject land occurs outside of the known habitat for this species. The species is known from the areas of western Sydney, Kosciuszko National Park, the Bega Valley, Bungonia Gorge east of Goulburn on the Central Tablelands, the Shoalhaven River and Lake Illawarra on the Central Coast, the North Coast and the Northern Tablelands
Androcalva rosea Syn. Commersonia rosea	-	E	This species is known to the Hunter Valley, from Lee's Pinch in Goulburn River National Park to Payne's Crossing near Wollombi. Large population within Wollemi National Park. The species occurs on sandy soils with scrub or heath with some tree species including *Eucalyptus crebra* (Narrow-leaved Ironbark), *Callitris endlicheri* (Black Cypress Pine) and/or *E. caleyi* subsp. c*aleyi*.	BioNet, PMST	Low. Despite detailed targeted surveys, including during a post-fire survey window, the species has not been recorded within the subject land.	Species is not present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is <u>not</u> required

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Angophora inopina	Charmhaven Apple	V	This species occurs most frequently in four main vegetation communities: (i) *Eucalyptus haemastoma–Corymbia gummifera–Angophora inopina* woodland/forest; (ii) *Hakea teretifolia*-Banksia oblongifolia wet heath; (iii) *Eucalyptus resinifera-Melaleuca sieberi-Angophora inopina sedge woodland; (iv) Eucalyptus capitellata-Corymbia gummifera-Angophora inopina* woodland/forest.	BioNet, PMST, ALA	Moderate. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Habitat associated with PCTs 3244, 3250, 3315, 3433, 3436, 3581, 3582, 3583, 4042 and 4044.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**
Asperula asthenes	Trailing Woodruff	V	Found in scattered locations within NSW from Bulahdelah to Kempsey. This species occurs in damp sites, often along riverbanks, and distribution overlaps with the 'White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland' EPBC Act-listed threatened ecological community.	PMST, BioNet, ALA	Moderate. A population of *Asperula asthenes* occurs outside the subject land in the Mandalong, Durren Durren and Wyee areas. Habitat associated with PCT 3086, 3241, 3242, 3244, 3250, 3446 and 4044.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Asterolasia elegans	-	E	Found in sheltered forests on mid- to lower slopes and valleys on Hawksbury sandstone. E.g. in or adjacent to gullies which support sheltered forest. The canopy at known sites includes Turpentine (*Syncarpia glomulifera subsp. glomulifera*), Smooth-barked Apple (*Angophora costata*), Sydney Peppermint (*Eucalyptus piperita*), Forest Oak (*Allocasuarina torulosa*) and Christmas Bush (*Ceratopetalum gummiferum).*	PMST	Low. Species was not recorded despite targeted ecological surveys.	Species is not present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required
Astrotricha crassifolia	Thick-leaf Star-hair	V	This species occurs within the Hawkesbury-Nepean, Hunter-Central Rivers, Sydney Metro and Lachlan and Murrumbidgee Regions. Found on dry ridgetops to 300 m altitude and is associated with very rich heath, or dry sclerophyll woodland.	BioNet	Low. The project alignment outside of known range and distribution. Suitable microhabitats deemed not to be present.	Species is unlikely to occur within the subject land, therefore unlikely to be impacted by the project. EPBC Act significant impact assessment is not required
Banksia penicillata	-	E	Banksia penicillata is endemic to New South Wales (NSW) and is found on sandstone-derived soils along ridges, among rocks or near cliffs, and occasionally on lower slopes and in plateau valleys, in the northern Blue Mountains, including Wollemi, Blue Mountains and Gardens of Stone National Parks, Mugii Murum-ban State Conservation Area and Gardens of Stone State Conservation Area.	PMST	Low. Based on the SPRAT profile, the project occurs outside of the known and predicted habitat for the species.	Species is not present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required
Brachyscome brownii	-	CE	This species is endemic to NSW, with four possibly extant populations located between Windsor and Cessnock. Associations with riparian zones, and sandy zones in dry sclerophyll forest, within approximately 100 m of watercourses.	BioNet, PMST	Recorded. Habitat occurs in the subject land in the form of PCTs 3239 and 3241.	**EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Caladenia tessellata	Thick-lipped Spider-orchid	V	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	PMST	Low. The subject land occurs outside of the known distribution of this species. *Caladenia tessellata* is known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW.	The project occurs outside of known range and distribution of the species. EPBC Act significant impact assessment is not required
Cryptostylis hunteriana	Leafless Tongue Orchid	V	This species does not appear to have well-defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. However, larger populations occur in woodland dominated by Scribbly Gum (*Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (Corymbia gummifera) and Black Sheoak (*Allocasuarina littoralis*). Open areas in the understorey of this community are preferred. On the Central Coast of NSW, populations have been recorded in woodland dominated by Scribbly Gum (*Eucalyptus haemastoma*), Brown Stringybark (*Eucalyptus capitellata)*, Red Bloodwood (*Corymbia gummifera*). The Leafless Tongue Orchid is often found in association with the Large Tongue Orchid (*C. subulata*) and the Tartan Tongue Orchid (*C. erecta*).	BioNet, PMST, ALA	Moderate. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Habitat associated with PCTs 3250, 3581, 3582 and 3583.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Cynanchum elegans	White-flowered Wax Plant	E	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation as well as littoral rainforest; Coastal Tea-tree *Leptospermum laevigatum*–Coastal Banksia coastal scrub; Forest Red Gum aligned open forest and woodland; Spotted Gum aligned open forest and woodland; and Bracelet Honeymyrtle scrub to open scrub.	BioNet, PMST, ALA	Moderate. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Habitat associated with PCTs 3029, 3086, 3087, 3151, 3152, 3237, 3239, 3244, 3250, 3489, 3617 and 3621.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**
Darwinia biflora		V	The species is found across the Hornsby plateau area of north-western Sydney along the edges of weathered shale-capped ridges and Hawkesbury Sandstone.	BioNet	Low. project alignment outside of known range and distribution. Suitable microhabitats deemed not to be present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Dichanthium setosum	Bluegrass	V	Associated with heavy basaltic black soils and red-brown loams with clay subsoil. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	PMST, ALA	Low. Species was not recorded during targeted surveys.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Diuris praecox	Rough Doubletail	V	Found on hills and slopes of near-coastal districts in open forests which have a grassy to fairly dense understorey.	BioNet, PMST, ALA	Low. The project alignment is outside of known range and distribution. Suitable microhabitats deemed not to be present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Eucalyptus camfieldii	Camfield's Stringybark	V	This species occurs on poor coastal country, in shallow sandy soils overlying Hawkesbury sandstone including within coastal heath on exposed sandy ridges. Found in small, scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas. Associated species frequently include stunted species of *E. oblonga, E. capitellata and E. haemastoma.*	BioNet, PMST	Low. Despite targeted surveys, species was not recorded.	Species is not present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Eucalyptus sp. cattai	–	CE	Only known from north-western Sydney between Castle Hill and Cattai. The species grows in scrub, heath and low woodland, on sandstone-derived soils.	BioNet	Low. project alignment outside of known range and distribution. Suitable microhabitats deemed not to be present.	The known distribution range for the species occurs outside of the subject land, therefore it is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Eucalyptus glaucina	Slaty Red Gum	V	Occurs in grassy woodland and dry eucalypt forest on deep, moderately fertile and well-watered soils.	BioNet, PMST, ALA	High. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Habitat occurs in the subject land in association with PCTs 3152, 3239, 3241, 3314, 3315, 3431, 3433, 3438, 3446 and 3605.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**
Eucalyptus parramattensis subsp. decadens	Earp's Gum	V	Generally, occupies deep, low-nutrient sands, often those subject to periodic inundation or where water tables are relatively high. It occurs in dry sclerophyll woodland with dry heath understorey. It also occurs as an emergent in dry or wet heathland. Often where this species occurs, it is a community dominant.	PMST, BioNet	Low. Despite targeted surveys, the species has not been recorded within the subject land.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Eucalyptus pumila	Pokolbin Mallee	V	The single known population occupies north-west-facing slopes derived from sandstone within dry sclerophyll woodland, with a canopy comprising *Eucalyptus fibrosa, Callitris endlicheri and, to a lesser extent, Corymbia maculata.*	BioNet, PMST, ALA	Low. Despite targeted surveys, the species has not been recorded within the subject land.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Euphrasia arguta	-	CE	Little is known about the ecology if this species, although it has been recorded in the open understorey of eucalypt forest with a mixed grass and shrub understorey, in sites that had been disturbed by logging or historic clearing. It has been estimated as favouring grassy areas near rivers at elevations up to 700 m above sea level, with an annual rainfall of 600 mm.	PMST	Low. The species is now known from six sites up to 25 km apart in the area of Nundle State Forest, south east of Tamworth, NSW. All sites are in the Nandewar Bioregion (subregion 4) of northern New South Wales, in the south-east section of Namoi NRM region	Species is unlikely to be present in subject land. EPBC Act significant impact assessment is not required.
Gaudium deanei Syn. Leptospermum deanei	-	V	This species occurs with Hornsby, Warringah, Ku-ring-gai and Ryde LGAs. The species prefers woodland on sandy alluvial soil or sand and sandstone and tend to occur on lower slopes. Usually occurs near to creeks or in riparian scrub.	BioNet	Low. Project alignment outside of known range and distribution. Suitable microhabitats deemed not to be present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Genoplesium baueri	Yellow Gnat-orchid	E	Grows in dry sclerophyll forest and moss gardens over sandstone.	PMST	Low. The subject land is outside any known records of this species. The species generally occurs within coastal areas from Ulladulla on the south coast to Port Stephens on the mid-north coast.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Genoplesium branwhiteorum Syn. Corunastylis sp. Charmhaven	-	CE	This species occurs within Morisset to Warnervale and east to Chain Valley Bay. The species occurs in low woodland or heathland with shrubby understorey and ground layer. Species within habitat include *Allocasuarina littoralis* (Black She-oak), *Leptospermum juniperinum* (Prickly Tea-tree), *Melaleuca nodosa* (Prickly-leaved Paperbark), *Callistemon linearis* (Narrow-leaved Bottlebrush) and *Schoenus brevifolius* (Zig-zag Bog-rush).	BioNet	Moderate. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Associated habitat occurs in PCTs 3581, 3433, 3582 and 3583.	Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. **EPBC Act significant impact assessment is required (refer Attachment B).**
Genoplesium insigne	Variable Midge Orchid	CE	This species appears to be associated with Scribbly Gum – Red Bloodwood –*Angophora inopina* (not always present) heathy woodland on lowlands of the Central Coast and variations containing *Angophora costata*. Several known sites exhibit a removed/managed shrub layer and canopy. Grows in patches of *Themeda triandra* (Kangaroo Grass), which can be ephemeral. Other associated species include, but are not limited to, *Mirbelia speciosa, Ptilothrix deusta, Leptospermum trinervium* and *L. juniperinum* in wet (seasonal) heath settings, *Banksia spinulosa* and *Xanthorrhoea latifolia*, and *X. media*. Other seasonal and cryptic species commonly associated with known populations include: *Cryptostylis subulate, C. erecta, Thelymitra ixiodes, T. pauciflora, Microtis spp., Burchadia umbellate, Tricoryne elatior,* and *Thysanotus juncifolius.*	BioNet, ALA	Recorded Recorded during targeted surveys. Associated habitat occurs in PCTs 3433, 3581, 3582, 3583 and 4042.	**EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	V	Found over a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Hunter occurrences are usually 30–70 mASL, often occurring in open, slightly disturbed sites such as along tracks. This species grows in sandy or light clay soils in a range of vegetation types, from heath and shrubby woodland to open forest. In Sydney it has been recorded from Shale Sandstone Transition Forest and in the Hunter in Kurri Sand Swamp Woodland. Associated species in the Kurri Sand Swamp Woodland include *Eucalyptus parramattensis subsp. Decadens, Angophora bakeri and E. fibrosa with Acacia elongate, Dillwynia parvifolia, Melaleuca thymifolia, Grevillea montana, Eragrostis brownie and Aristida vagans.* Despite the range of associated communities several understorey species which are common to several of the known sites include *Allocasuarina littoralis, Daviesia ulicifolia, Kunzea ambigua, Banksia spinulosa, Leptospermum trinervium, Melaleuca nodosa, linifolia, Themeda australis, Entolasia stricta and Eragrostis brownie*.	BioNet, PMST, ALA	Recorded. This species was recorded along the existing easement corridor near Cooranbong. Associated habitat occurs in PCTs 3244, 3433, 3436, 3444, 3446, 3581, 3582, 3583 and 4044.	**EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Haloragis exalata subsp. *exalata*	Wingless Raspwort	V	The species occurs across a range of vegetation types, all of which appear to have a history of recurrent disturbance. It appears to be a post-disturbance coloniser, based on observations of large numbers of plants on disturbed roadsides, cleared power-line easements, and recently burnt or flooded areas.	PMST	Low. The species is known from the areas of western Sydney, Kosciuszko National Park, the Bega Valley, Bungonia Gorge east of Goulburn on the Central Tablelands, the Shoalhaven River and Lake Illawarra on the Central Coast, the North Coast and the Northern Tablelands.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Hibbertia acaulothrix	-	E	*Hibbertia acaulothrix* is found on rocky outcrops and has been recorded growing in Eucalyptus sieberi woodland or in association with Allocasuarina littoralis (black she-oak), Corymbia gummifera (red bloodwood), and Leptospermum trinervium (flaky-barked tea-tree).	PMST	Low. The species is known from several widely separated localities in NSW, from Wadbilliga National Park in the Southern Tablelands, through the Nattai Wollondilly area in the Southern Central Tablelands, to the Mt Bake.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Homoranthus darwinioides	Fairy Bells	V	Grows in in various woodland habitats with shrubby understoreys, usually in gravely sandy soils. Landforms the species has been recorded growing on include flat sunny ridge tops with scrubby woodland, sloping ridges, gentle south-facing slopes, and a slight depression on a roadside with loamy sand. Associated species include *Callitris endlicheri, Eucalyptus crebra, E. fibrosa, C. trachyphloia, E. beyeri subsp. illaquens, E. dwyeri, E. rossii, Leptospermum divaricatum, Melaleuca uncinata, Calytrix tetragona, Allocasuarina spp. and Micromyrtus spp.*	PMST	Low. The subject land is outside the known distribution of this species. *Homoranthus darwinioides* is known to occur in central tablelands and western slopes of NSW, occurring from Putty to the Dubbo district. It is found west of Muswellbrook between Merriwa and Bylong, and north of Muswellbrook to Goonoo SCA.	Species is unlikely to occur within the subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Kunzea rupestris	-	V	Grows in shallow depressions on large flat sandstone rock outcrops. Characteristically found in short to tall shrubland or heathland.	PMST	Low. *Kunzea rupestris* has a highly restricted distribution, with most locations in the Maroota – Sackville – Glenorie area and one outlier in Ku-ring-gai Chase National Park	The subject land is outside the known distribution of this species and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Lasiopetalum joyceae	-	V	Grows in heath on sandstone, on lateritic shaley ridgetops.	PMST	Low. *Lasiopetalum joyceae* has a restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River. It is currently known from 34 sites between Berrilee and Duffys Forest.	The subject land is outside the known distribution of this species and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Leionema lamprophyllum subsp. fractum	-	CE	Found in sparse heathland or very open low woodland in skeletal sandy soils on exposed northerly to north-westerly facing rocky terrain. This species is associated with *Corymbia maculate, Eucalyptus sparsifolia, Pultenaea spinosa, Leptospermum trinervium, Acacia parvipinnula, Dillwynia sieberi, Persoonia linearis, Leucopogon muticus, Astrotricha sp. Quorrobolong, Correa reflexa var. reflexa, Patersonia sericea, Entolasia stricta, Cleistochloa rigida, Pomax umbellate, Lepidosperma gunnii and Lomandra confertifolia subsp. Rubiginosa.*	BioNet, PMST	Low. Despite targeted surveys, the species was not recorded within the subject land.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Lepidium aschersonii	Spiny Peppercress	V	This species is known to occur in in periodically wet sites such as gilgai depressions and the margins of freshwater and saline marshes and shallow lakes, usually on heavy clay soil. In New South Wales the species grows in a range of woodland types including Brigalow *Acacia harpophylla*, Belah *Casuarina cristata*, Buloke *Allocasuarina luehmanii* and Grey Box *Eucalyptus microcarpa*, Bull Mallee *E. behriana* and Green Mallee *E. viridis.*	PMST	Low. The subject land is outside the known distribution of this species. In NSW the species occurs in Brigalow Belt South, Darling Riverine Plains, Cobar Peneplain, and Riverina	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Melaleuca biconvexa	Biconvex Paperbark	V	Occurs in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. The species may also occur in coastal districts and adjacent tablelands. Found within the Hawkesbury-Nepean, Northern Rivers, Hunter-Central Rivers and Southern Rivers Regions.		Moderate. The eastern portion of the subject land near Cooranbong and Martinsville is located within the northern extent of the Central Coast meta population. Associated habitat occurs in PCTs 3029, 3150, 3241, 3242, 3244, 3250, 3582, 4042 and 4044.	Given the proximity of the subject land to the northern population, a precautionary approach has been undertaken. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Melaleuca deanei	Deane's Melaleuca	V	Endemic to Sydney Basin Bioregion in New South Wales. The species occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone. Co-occurring woodland species include *Banksia ericifolia* (Heath-leaved Banksia), *B. serrata* (Old-man Banksia), *Petrophile pulchella* (Conesticks), *Leptospermum trinervium* (Flaky-barked Tea-tree), and *Hakea teretifolia* (Needlebush).	PMST	Low. *Melaleuca deanei* occurs in two distinct areas, in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas respectively. There are also more isolated occurrences at Springwood (in the Blue Mountains), Wollemi National Park, Yalwal (west of Nowra) and Central Coast (Hawkesbury River) areas. Despite targeted surveys the species was not recorded in the subject land.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Micromyrtus blakelyi	-	V	The species is restricted to areas near the Hawkesbury River. Typically occurs within heathlands in shallow sandy soil in cracks and depressions of sandstone rock platforms. A Habitat constraint exists of skeletal soil in rocky areas, and Hawkesbury sandstone rock platforms and outcrops or within 50 m.	PMST	Low. This species is restricted to areas near the Hawkesbury River, north of Sydney. Distribution extends from north of Maroota in the north, to Cowan in the south. All known populations occur within the Baulkham Hills and Hornsby local government areas.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Neoastelia spectabilis	-	V	Grows in rock crevices near waterfalls and in seepage lines on rocky slopes in Antarctic Beech rainforest, between 900–1150 m altitude. The species grows on stony and shallow soils but will tolerate deeper soils.	PMST	Low. This species is confined to the New England National Park.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Olearia cordata	-	V	Populations are typically small and scattered. Grows in dry open sclerophyll forest and open shrubland, on Hawkesbury sandstone ridges. The species grows in shallow or skeletal soils that are neutral to slightly acidic.	PMST	Moderate. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Associated habitat occurs in PCTs 3151, 3152, 3238, 3239, 3605 and 3617.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Ozothamnus tesselatus		V	The species occurs within the Hunter-Central Rivers Region. Grows in eucalypt woodland.	BioNet, PMST	Moderate. The species is known to occur near Bayswater Power Station which is within the western extent of the subject land. The existing records are outside the subject land footprint and no specimens of this species have been recorded from preliminary field surveys to date. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Associated habitat occurs in PCTs 3315 and 3431.	While the existing known records for the species occur outside for the subject land, given the proximity to the subject land a precautionary approach has been undertaken. **EPBC Act significant impact assessment is required (refer Attachment B).**
Persicaria elatior	Tall Knotweed	V	This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	PMST	Low. There are no current records of this species within the subject land.	The species was not recorded within the subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Persoonia hirsuta	Hairy Geebung	E	The Hairy Geebung is found in clayey and sandy soils in dry sclerophyll open forest, woodland and heath, primarily on the Mittagong Formation and on the upper Hawkesbury Sandstone. It is usually present as isolated individuals or very small populations.	PMST	Moderate Associated with PCTs 3238, 3605 and 3617. Not recorded during targeted surveys.	The species was not recorded within the subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Persoonia pauciflora	North Rothbury Persoonia	CE	Occurs in dry open forest or woodland on silty sandstone soils with a moderate to sparse shrub layer and grassy groundcover. Associated dominate canopy species include *Corymbia maculata, Eucalyptus fibrosa* and *E. crebra.*	BioNet, PMST	Low. This species has a highly restricted distribution at North Rothbury in the Cessnock local government area which occurs well outside the current subject land.	Subject land occurs outside of the species known distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Picris evae	Hawkweed	V	*Picris evae* mainly inhabits open Eucalypt forest including a canopy of *Eucalyptus melliodora, E. crebra, E. populnea, E. albens, Angophora subvelutina, Allocasuarina torulosa*, and/or *Casuarina cunninghamiana* with a *Dichanthium* grassy understory.	PMSR	Low. Habitat not present. Species is known in NSW north from the Inverell area, in the north-western slopes and plains regions.	Subject land occurs outside of the species known distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Pimelea curviflora var. curviflora	-	V	Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Also recorded in Illawarra Lowland Grassy Woodland habitat at Albion Park on the Illawarra coastal plain.	PMST	Low. *Pimelea curviflora var. curviflora* is generally confined to the coastal area of the Sydney and Illawarra regions.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Pomaderris brunnea	Brown Pomaderris	V	The species is endemic to south-eastern Australia, where majority of the sub-populations occur in south-west Sydney. Brown Pomaderris grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	PMST	Low. *Pomaderris brunnea* is found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It also occurs near Walcha on the New England tablelands and in far eastern Gippsland in Victoria.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Pomaderris reperta	Denman Pomaderris	CE	Denman Pomaderris occupies woodland on sandy loam of sandstone or conglomerate, in association with *Eucalyptus crebra, E. blakelyi, Notelaea macrocarpa* and *Allocasuarina littoralis*.	BioNet	Low. *Pomaderris reperta* is only known from a small number of sites along a single ridgeline near Denman in the upper Hunter Valley. Furthermore, the species was not recorded during targeted surveys.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Prasophyllum petilum	Tarengo Leek Orchid	E	Found within open natural temperate grassland at known sites, as well as in grassy woodland in association with *Poa labillardieri, Eucalyptus aggregate and Leptospermum spp*. near Queanbeyan and within the grassy ground layer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford. This species is only retained at little-grazed travelling stock reserves and in cemeteries at some locales. The population near Muswellbrook is considered small.	BioNet	Moderate. The subject land is outside the known distribution of this species. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Habitat associated PCTs 3314, 3315, 3431, 3438 and 3444.	While the subject land is outside the current known distribution for this species, it is known from the Muswellbrook area to the west, and habitat occurs within the subject land. Therefore, a precautionary approach has been undertaken. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Prasophyllum sp. Wybong	Leek Orchid	CE	This species is known to occur in open eucalypt woodland and grassland.	BioNet	Moderate. Prasophyllum sp. Wybong is known from near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. The subject land is outside the known distribution of this species. Not recorded during targeted surveys. Assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. Habitat associated with PCT 3314, 3315, 3431, 3438 and 3444.	While the subject land is outside the current known distribution for this species, it is known from the Muswellbrook area to the west and habitat occurs within the subject land. Therefore, a precautionary approach has been undertaken. **EPBC Act significant impact assessment is required (refer Attachment B).**
Prostanthera askania	Tranquility Mintbush	E	Occurs adjacent to, but not immediately in, drainage lines on flat to moderately steep slopes formed on Narrabeen sandstone and alluvial soils derived from it. Found in moist sclerophyll forest and warm temperate rainforest communities, and the ecotone between them. These communities are generally tall forests with a mesic understorey; *Eucalyptus saligna* and *Syncarpia glomulifera* are usually present, though canopy species present can be highly variable.	BioNet	Low. *Prostanthera askania* has a very restricted geographic range (of less than 12 km) in the upper reaches of creeks that flow into Tuggerah Lake or Brisbane Water within the Central Coast local government areas.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Prostanthera cineolifera	Singleton Mint Bush	V	Grows in open woodlands on exposed sandstone ridges in association with shallow or skeletal sands.	BioNet, PMST	Recorded. This species has been recorded from Pokolbin State Forest and in the Singleton Training Area during targeted field surveys. Habitat associated with PCTs 3239, 3315, 3438, 3444, 3446, 3489 and 3605.	Species is known to occur within the subject and may be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Prostanthera cryptandroides subsp.	Wollemi Mint Bush	V	This species occurs in dry sclerophyll forested slopes and gullies, in rocky areas, especially at the base of scree slopes and sandstone boulders, and in shallow sandy loam, as an understorey species to Eucalyptus spp. and Acacia spp.	PMST	Low. *Prostanthera cryptandroides* subsp. is very restricted in its distribution and is know from Glen Davis to Capertee and extends to Goulburn River Nation Park.	Subject land occurs outside of the species distribution range and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Prostanthera junonis	Somersby Mint Bush	E	The species is restricted to the Somersby Plateau, on both the Somersby and Sydney Town soil landscapes on gently undulating country over weathered Hawkesbury sandstone within open forest/low woodland/open scrub. It occurs in both disturbed and undisturbed sites.	BioNet, PMST	Low. Not recorded in the locality and rare in the region (generally restricted to the Somersby Plateau).	The species was not recorded in the subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Pterostylis gibbosa	Illawarra Greenhood	E	All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage. In the Hunter region, the species grows in open woodland dominated by *Eucalyptus crebra* and *Callitris endlicheri*.	BioNet, PMST	Recorded. The species was recorded within the Singelton Military Area within PCT 3431. In the Hunter the species is only known from the Broke, Kurri Kurri and Maitland area.	Species is known to occur within the subject and may be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Rhizanthella slateri	Eastern Australian Underground Orchid	E	Habitat requirements are poorly understood, and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest.	BioNet, PMST, ALA	Moderate. Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. Habitat associated with PCTs 3029, 3086, 3087, 3150, 3230, 3237, 3241, 3242, 3244, 3250, 3263, 3581, 3582, 3583, 3599, 3617 and 3621.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Rhodamnia rubescens	Scrub Turpentine	CE	Scrub Turpentine occupies littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	BioNet, PMST	Recorded. This species has been recorded from within the State forests (Olney, Watagan, Corrabare and Pokolbin), Corrabare North Flora Reserve and some private lands during targeted field surveys. Habitat associated with PCTs 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3436, 3446, 3617, 4042 and 4044.	Species is known to occur within the subject and may be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Rhodomyrtus psidioides	Native Guava	CE	This species occurs in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	BioNet, PMST	Recorded. This species was recorded from Watagan State Forest during targeted field surveys. Habitat associated with PCTs: 3029, 3086, 3087, 3150, 3151, 3152, 3242, 3250, 3436, 3621, 4042, 4044 and 4072.	Species is known to occur within the subject land and may be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Rutidosis heterogama	Heath Wrinklewort	V	Grows in heath on sandy soils and moist areas in open forest, with records along disturbed roadsides.	BioNet, PMST, ALA	Moderate Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. Species associated with PCTs 3244, 3250, 3315, 3433, 3444, 3446, 3581, 3582, 3583, 3605 and 4039.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**
Syzygium paniculatum	Magenta Lilly Pilly	V	On the central coast *Syzygium paniculatum* occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities.	BioNet, PMST, ALA	Moderate. Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. Species associated with PCTs 3029, 3087, 3150, 3241, 3242, 3244, 3250, 3433, 4042 and 4044.	The species is assumed present in areas lacking survey where there was associated PCTs and/or potentially suitable habitat. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Tetratheca juncea	Black-eyed Susan	V	Found in low open forest/woodland with a mixed shrub understorey and grassy groundcover, as well as in heathland and moist forest. Often found on well-drained sites.	BioNet, PMST, ALA	Recorded. This species was recorded near Cooranbong during targeted field surveys. Habitat associated with PCTs: 3241, 3242, 3244, 3250, 3433, 3436, 3581, 3582, 3853 and 3617.	Species is known to occur within the subject land and may be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Thelymitra adorata	Wyong Sun Orchid	CE	Occurs from 10–40 mASL in grassy woodland or occasionally derived grassland in well-drained clay loam or shale derived soils. Common vegetation type is a Spotted Gum - Ironbark Forest with a diverse grassy understorey and occasional scattered shrubs. Often found at disturbed sites, including on the edges of roads that contain a mixture of native and introduced species in the understorey. Alluvial Redgum Footslopes Forest adjoins Dooralong Spotted Gum - Ironbark Forest at one known population and may constitute habitat for the species. Alluvial Floodplain Shrub Swamp Forest also adjoins Dooralong Spotted Gum – Ironbark Forest at another extant population.	BioNet, PMST, ALA	Moderate. The closest record being from southern portion of Lake Macquarie City Council area. Habitat associated with PCTs: 3244, 3433, 3436, 3582, 3583 and 4042.	The species known distribution is located north of the subject land. This species is included based on the presence of assumed habitat only. **EPBC Act significant impact assessment is required (refer Attachment B).**
Thesium australe	Austral Toadflax	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*).	PMST	Low The species is rare but widespread in distribution. Species was not recorded during targeted.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is <u>not</u> required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Thismia clavarioides	-	E	This species is known to occur in *Ceratopetalum apetalum* (coachwood) rainforest in humus-rich, colluvial soil and leaf litter on sandstone on a south facing slope, near a streams, and under thick leaf litter in loose soil on a brush turkey mound in tall wet sclerophyll forest along a drainage line on an upper south-east facing mountain slope with deep loam above basalt geology.		Low. *Thismia clavarioides* is known from two records in New South Wales (NSW). One, at Fairy Bower Falls in Morton National Park southeast of Bundanoon and Barrington Tops National Park in the North Coast region of NSW.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Velleia perfoliata	-	V	Found in shallow depressions on Hawkesbury sandstone shelves, on rocky hill sides, under cliffs or on rocky/sandy soils along tracks and trails. Occurs on fairly shallow soils of sandy loam texture. Often found growing on moss and lichen mats formed on rock.	BioNet	Moderate *Velleia perfoliata* is only known from the Hawkesbury district and upper Hunter Valley (near Munghorn Gap Nature Reserve). Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. Habitat associated with PCTs 3152, 3239, 3605 and 3617.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Wollemia nobilis	Wollemi Pine	CE	Occurs in warm temperate rainforest and rain forest margins in remote sandstone canyons.	PMST	Low. Restricted to remote canyons in the Wollemi National Park, north-west of Sydney.	The species known distribution is located north of the subject, therefore unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Zieria involucrata	-	V	Occurs primarily on Hawkesbury sandstone. Also occurs on Narrabeen Group sandstone and on Quaternary alluvium. Found primarily in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest, although some populations extend upslope into drier vegetation. Also known from at least two atypical ridgetop locations. The canopy typically includes *Syncarpia glomulifera subsp. glomulifera* (Turpentine), *Angophora costata* (Smooth-barked Apple), *Eucalyptus agglomerata* (Blue-leaved Stringybark) and *Allocasuarina torulosa* (Forest Oak).	PMST	Moderate. Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. Habitat associated with PCTs 3151, 3152, 3238, 3239, 3605 and 3617.	Not recorded during targeted surveys, however assumed present in areas lacking survey in areas of potential habitat throughout associated PCTs. **EPBC Act significant impact assessment is required (refer Attachment B).**

(1) CE= Critically endangered, E = Endangered and V = Vulnerable, under the Commonwealth EPBC Act.

(2) Source: PMST = The Department of the Environment and Energy's EPBC Protected Matters Search Tool, BioNet = BioNet Atlas of NSW Wildlife.

The following table consider the likelihood of occurrence for threatened species in relations to the controlling provision for listed threatened species and ecological community. Threatened species considered under the Commonwealth Land controlling provision are provided in Attachment B Table B.4.

Table A.2 Threatened fauna within the locality of the project, likelihood of occurrence

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Amphibians						
Heleioporus australiacus australiacus	Giant Burrowing Frog	E	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Spending more than 95% of its time in non-breeding habitat below the soil surface in areas up to 300 m from breeding sites. Breeding habitat of this species generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water.	BioNet, PMST, ALA	Recorded. Species recorded in PCT 3263 near the Olney Substation. Other associated PCTs include 3150, 3151 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3436, 3438, 3439, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4039, 4044, & 4072	Species is known to occur within the subject land. **EPBC Act significant impact assessment is required (refer Attachment B).**
Litoria aurea	Green and Golden Bell Frog	V	This species inhabits marshes, dams and stream-sides, particularly those containing bullrushes or spikerushes that are unshaded, free of predatory fish such as Plague Minnow, have a grassy area nearby and diurnal sheltering sites available. Can occur in highly disturbed areas.	PMST, BioNet	Low. Despite targeted surveys, the species was not recorded within the subject land.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Litoria booroolongensis	Booroolong Frog	E	Found along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. This species occurs on or near cobble banks and other rock structures within stream margins where they shelter under rocks or amongst vegetation near the ground on the stream edge.	PMST	Low. Species not recorded despite targeted surveys.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Litoria littlejohni	Littlejohn's Tree Frog	E	Littlejohn's Tree Frog breeds in the upper reaches of permanent streams and in perched swamps, calling from low overhanging vegetation. Non-breeding habitat includes heath-based forests and woodlands.	BioNet, PMST, ALA	Recorded. Species recorded in PCT 3150 and 3263 surrounding the Olney substation. Other associated PCTs include 3230, 3237, 3238, 3239, 3250, 3433, 3581, 3605, 3617, 3621 and 4039.	Species is known to occur within the subject land. The project has been designed to avoid breeding habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**
Mixophyes balbus	Stuttering Frog	V	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Adults live in deep leaf litter and thick understorey vegetation on the forest floor out of breeding season. Breeding occurs in small flowing streams with rock shelves or shallow riffles connected to deep permanent pools.	BioNet, PMST, ALA	Recorded. Species recorded in PCT 3029, 3150, 3230, 3239, 3242, 3244, 3263, 3581, 3617 and 3621. Other associated PCTs include 3086, 3087, 3151, 3152, 3237, 3238, 3241, 3250, 3433, 3582, 3583, 3599, 3605, 4042, 4044 and 4072.	Species is known to occur within the subject land. **EPBC Act significant impact assessment is required (refer Attachment B).**
Mixophyes iteratus	Giant Barred Frog	V	Occurring along freshwater streams with permanent or semi-permanent water, generally at lower elevation within moist riparian habitats such as rainforest or wet sclerophyll forest. However, Giant Barred Frogs will also sometimes occur in other riparian habitats, such as those in drier forest or degraded riparian remnants, and even occasionally around dams.	BioNet, PMST, ALA	Recorded. Species recorded in PCT 3029. Other associated PCTs include 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3581, 3582, 3583, 3605, 3617, 3621, 4042, 4044 and 4072.	Species is known to occur within the subject land. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Uperoleia mahonyi	Mahony's Toadlet	E	Mahony's Toadlet inhabits ephemeral and semi-permanent swamps and swales on coastal fringes. Habitat is exclusively associated with leached white sand including heath or wallum habitat including acid paperbark swamps.	PMST	Low. No suitable habitat is found within the subject land.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Birds						
Anthochaera phrygia	Regent Honeyeater	CE	Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	ALA, BioNet, PMST	High. Species associated with PCT 3230, 3238, 3239, 3241, 3244, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3621, 4039, 4042, 4044, 4072 and 4089.	Important habitat for species is mapped within the subject land (BAM 2020). **EPBC Act significant impact assessment is required (refer Attachment B).**
Aphelocephala leucopsis	Southern Whiteface	V	Occupying a wide range of dry open woodland and shrubland on ranges, foothills, lowlands and plains. Dominated by an acacia or eucalypt canopy of low tree density, the understorey is usually grassy or shrubby, with hollows and crevices of live or dead trees required for roosting and nesting.	ALA, PMST	Low. This species is not recorded within the subject land, and no suitable dry habitat present.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Ardenna grisea	Sooty Shearwater	V	The species mostly lives over deep ocean waters but is sometimes found in onshore areas particularly in rough weather. It nests on islands and headlands in large colonies.	PMST	Low. This species is not recorded within the subject land, and no suitable dry habitat present.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Arenaria interpres	Ruddy Turnstone	V	During the austral summer non-breeding season, the ruddy turnstone is widespread within Australia. The species is found in most coastal regions, preferring rocky shores or beaches where there are large deposits of rotting seaweed. The species breeds on the coasts of Europe, Asia, and North America	PMST	Low. This species is not recorded within the subject land, and no suitable dry habitat present.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Botaurus poiciloptilus	Australasian Bittern	E	This species favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spikerushes.	ALA, PMST	Moderate. Species associated with PCT 4015, 4039, 4042, 4044, 4072 and 4089.	Habitat for the species is known to occur in the subject land. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Calidris acuminata	Sharp-tailed Sandpiper	V, M	This migratory species may stop at coastal salt marshes, lagoons and mudflats during migration.	ALA, PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Calidris canutus	Red Knot	V, M	Recorded in small numbers within the Hunter River estuary during non-breeding season, this species is a rare visitor to terrestrial saline wetlands, freshwater swamps and inland wetlands. Found more commonly on intertidal mudflats, estuaries, lagoons, sandflats and sandy beaches along sheltered coasts.	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Calidris ferruginea	Curlew Sandpiper	CE, M	Spends non-breeding season in Australia where it occurs around most of the Australian coastline (including Tasmania). It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland	ALA, BioNet, PMST	Low. Species rarely occurs away from the coast and preferred habitat not present. Species not associated with any impacted PCTs.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Calidris tenuirostris	Great Knot	CE, M	With scattered occurrence along the NSW coastline, this species is found within sheltered coastal habitats including bays, estuaries and lagoons, all with large intertidal mudflats or sandflats. Recorded on sandy beaches and spits with nearby mudflats, and sometimes on coastal rocky platforms.	ALA, PMST	Low. Species rarely occurs away from the coast and preferred habitat not present. Species not recorded despite targeted surveys.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Callocephalon fimbriatum	Gang-gang Cockatoo	E	Occurs from southern Victoria through south- and central-eastern New South Wales and ACT. In New South Wales, it occurs from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes – it is rare at the extremities of its range. Occurs in wetter tall mountain forests and woodlands in autumn/winter, and in spring/summer moves to lower altitudes in drier more open eucalypt forests and woodlands particularly box-gum and box-ironbark assemblages. Often found in urban areas. Favours old growth forest and woodland attributes for nesting and roosting.	ALA, BioNet, PMST	Recorded. Species recorded in PCT 3230, 3239, 3242, 3263 and 3605. Other associated PCTs include 3029, 3086, 3087, 3150, 3151, 3152, 3237, 3238, 3241, 3244, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3617, 3621, 4015, 4039, 4042, 4072 and 4089.	The Gang-gang Cockatoo has been recorded within the subject land. The project has the potential to impact both foraging and breeding habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	Occurs from central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia.	ALA, BioNet, PMST	Recorded. Species recorded in PCT 3086, 3150, 3230, 3239, 3241, 3263, 3431, 3599, 3605 and 3617. Other associated PCTs include 3029, 3087, 3151, 3152, 3237, 3238, 3242, 3244, 3250, 3314, 3315, 3328, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3621, 4015, 4039, 4042, 4044, 4072 and 4089.	The species has been recorded within the subject land. The project has the potential to impact both foraging and breeding habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**
Charadrius leschenaultia	Greater Sand Plover	V, M	Rarely appears on the east coast of Australia, this species has been recorded between the northern rivers and Illawarra. Sheltered coastal sandy, shelly or muddy beaches with large sandbanks or mudflats are utilised.	ALA, PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Charadrius mongolus	Lesser Sand Plover	E,M	A coastal migratory species, found on sheltered beaches with large mudflats or sandflats, less frequently on reefs and rocky platforms.	ALA, BioNet, PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	This species is endemic to the south-eastern Australia, occupying dry open eucalypt forests and relatively undisturbed grassy woodlands.	PMST	Recorded. Species recorded in PCT 3444. Other associated PCTs include 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 and 4089.	The species has been recorded within the subject land. The project has the potential to impact both foraging and breeding habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**
Diomedea antipodensis	Antipodean Albatross	V, M	Endemic to New Zealand with six breeding sites on the sub-Antarctic Antipodes Islands, Auckland Islands and Campbell Island. Australia is within the foraging range of the species. his species regularly occurs in small numbers off the NSW south coast from Green Cape to Newcastle during winter where they feed on cuttlefish	PMST	Low. Habitat is not present within the subject land	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Diomedea antipodensis gibsoni	Gibson's Albatross	V, M	Endemic to the Auckland Islands of New Zealand. The non-breeding range is poorly known however the species probably disperses across the southern Pacific. The species is regularly encountered on trans-Tasman shipping routes and at seas off Sydney and regularly occurs off the NSW coast usually between Green Cape and Newcastle.	PMST	Low. Habitat is not present within the subject land	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Diomedea epomophora	Southern Royal Albatross	V, M	Endemic to New Zealand with four breeding sites in the sub-Antarctic Auckland Islands, and Campbell Island. Australia is within the foraging range of the Southern Royal Albatross. Tracking studies indicate that during the breeding season the birds mostly forage in New Zealand waters, but dispersal is circumpolar during non-breeding periods, including southern	PMST	Low. Habitat is not present within the subject land	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Diomedea exulans	Wandering Albatross	V, M	The Wandering Albatross is known to visit Australian waters extending from Fremantle, Western Australia, across the southern water to the Whitsunday Islands in Queensland between June and September. It has been recorded along the length of the NSW coast. The species feed in pelagic, offshore and inshore waters, often at night, taking fish and cephalopods such as squid, crustaceans and carrion, and will often follow ships feeding on the refuse they trail. The Wandering Albatross breed on a number of islands just north of the Antarctic Circle: South Georgia Island (belonging to the UK), Prince Edward and Marion Islands (South Africa), Crozet and Kerguelen Islands (French Southern Territories) and Macquarie Island (Australia)	PMST	Low. Habitat is not present within the subject land	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Diomedea sanfordi	Northern Royal Albatross	E,M	The Northern Royal Albatross breeds in New Zealand waters. Most the population spends the non-breeding period off both coasts of southern South America, especially off Chile and Argentina. It is a rare visitor to NSW waters, predominantly visiting southern waters in the winter and early spring period.	PMST	Low. Habitat is not present within the subject land	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Erythrotriorchis radiatus	Red Goshawk	E	The species inhabits open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, *Melaleuca* swamp forest and riparian *Eucalyptus* forest of coastal rivers.	PMST	Low. No records within the subject land.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required
Falco hypoleucos	Grey Falcon	V	Distributed primarily throughout the Murray-Darling Basin, with the occasional vagrant found east of the Great Dividing Range within open woodland. This species is generally restricted to arid and semi-arid regional grassland, shrubland and wooded watercourses.	ALA, PMST	Low. No records within the subject land.	Subject land occurs outside of the species known distribution. The species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Gallinago hardwickii	Latham's Snipe	V, M	A non-breeding migrant to south-east Australia, they are found in freshwater wetland on or near the coast, often with dense vegetation cover including grasses, sedges or rushes. Occasionally occurring in saltmarshes and along creek edges.	ALA, PMST	Recorded. Species recorded in PCT 4015 in Bulga Mine.	The species has been recorded within the subject land. The project has the potential to impact foraging habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Grantiella picta	Painted Honeyeater	V	Found in low densities this nomadic species breeds west of the Great Dividing Range. Preferred habitat includes Boree/ Weeping Myall, Brigalow, and Box-Gum Woodlands and Box-Ironbark Forests.	ALA, BioNet, PMST	Moderate. Species associated with PCT 3151, 3152, 3230, 3242, 3244, 3489, 3599, 3605, 3617 and 4015.	The project is likely to impact foraging habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**
Hirundapus caudacutus	White-throated Needletail	V, M	A migratory species, it is recorded along most of coastal eastern Australia west to the Great Dividing Range. Occurring as an aerial species over a broad range of habitats, roosting within dense canopy foliage or tree hollows.	ALA, BioNet, PMST	Recorded. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 and 4089.	The project is likely to impact foraging habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Lathamus discolor	Swift Parrot	CE	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen, and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and nomadic, moving about in response to changing food availability. The subject land did not occur within important mapped areas.	ALA, BioNet, PMST	High Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4039, 4042, 4044, 4072 and 4089.	Important habitat for species is mapped within the subject land (BAM 2020). **EPBC Act significant impact assessment is required (refer Attachment B).**
Limosa lapponica baueri	Bar-tailed Godwit	E	The Bar-tailed Godwit is a migratory wader. Birds arrive in New South Wales between August and October and then leave between February and April, with a small number of individuals overwintering. The species is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platform	PMST	Low. Preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Macronectes giganteus	Southern Giant Petrel	E, M	The Southern Giant Petrel has a circumpolar pelagic range from Antarctica to approximately 20° S and is a common visitor off the coast of NSW. Over summer, the species nests in small colonies amongst open vegetation on Antarctic and subantarctic islands, including Macquarie and Heard Islands and in Australian Antarctic territory.	PMST	Low. Preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Macronectes halli	Northern Giant-Petrel	V, M	The Northern Giant-Petrel has a circumpolar pelagic distribution, usually between 40-64ºS in open oceans. Their range extends into subtropical waters (to 28ºS) in winter and early spring, and they are a common visitor in NSW waters, predominantly along the south-east coast during winter and autumn. Breeding in Australian territory is limited to Macquarie Island and occurs during spring and summer	PMST	Low. Preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E	This species occurs in dry eucalypt and acacia woodlands and shrublands, found in south-eastern Australia.	ALA, PMST	Recorded. Species associated with PCT 3151, 3152, 3230, 3242, 3244, 3489, 3599, 3605, 3617 and 4015.	The project is likely to impact both breeding and foraging habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Neophema chrysostoma	Blue-winged Parrot	V	Blue-winged parrots inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zone.	PMST	Low. Preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Numenius madagascariensis	Eastern Curlew	CE, M	Spends non-breeding season in Australia where it occurs primarily along the coast and rarely inland. In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. Generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.	ALA, BioNet, PMST	Low. Preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Pachyptila turtur subantarctica	Fairy Prion	V	The Fairy Prion is found throughout oceans and coastal areas in the Southern Hemisphere. Their colonies can be found, amongst other places, on the Chatham Islands, Snares Islands and Antipodes Islands of New Zealand, the Bass Strait Islands of Australia. The species is mainly offshore but may move inshore during stormy weather. Its diet is comprised mostly of crustaceans (especially krill) but occasionally includes some fish and squid.	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Pycnoptilus floccosus	Pilotbird	V	Lowland Pilotbirds occur in forests from the Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong near Melbourne. Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth. Its natural habitat is temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris.	ALA, BioNet, PMST	Moderate. Suitable habitat is found within the subject land, with records of this species from the broader locality. Species associated with PCT 3152, 3238, 3239, 3250, 3599, 3605, 3617 and 3621.	Species habitat is known to occur within the subject land. **EPBC Act significant impact assessment is required (refer Attachment B).**
Rostratula australis	Australian Painted Snipe	E	Important locations within NSW, with recent records, include the Clarence and lower Hunter Valleys. This species occupies swamp and dam fringes as well as nearby marshy areas with accompanying grass, low scrub or open timber cover.	ALA, BioNet, PMST	Moderate. Species associated with PCT 4015, 4039, 4042, 4044, 4072, and 4089.	Species habitat is known to occur within the subject land. **EPBC Act significant impact assessment is required (refer Attachment B).**
Stagonopleura guttata	Diamond Firetail	V	Occurs on the south-east mainland of Australia, with the distribution stretching across NSW expanding 300km inland from the sea. This species occupies eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees.	ALA, BioNet, PMST	Moderate. Species associated with PCT 3239, 3244, 3250, 3314, 3315, 3431, 3433, 3446, 3489, 3605, 3617, 3621, 4042 and 4089.	Species habitat is known to occur within the subject land. **EPBC Act significant impact assessment is required (refer Attachment B).**
Sternula nereis nereis	Australian Fairy Tern	V	Fairy Terns utilise a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands, beaches and spits.	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Thalassarche bulleri	Buller's Albatross	V, M	Endemic to New Zealand with 10 breeding sites on the Chatham Islands, Solander Islands, Snares Islands, and Three Kings Islands (ACAP 2012f). Buller's Albatross are regular visitors to Australian waters. They are frequently seen off the coast from Coffs Harbour, south to Tasmania and west to Eyre Peninsula	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Thalassarche bulleri platei	Northern Buller's Albatross	V, M	It occurs in subtropical and subantarctic waters of the South Pacific Ocean. Habitat preferences are poorly known. In Australia, the species occurs over inshore, offshore and pelagic waters and off the coast of south-east Tasmania. The Northern Buller's Albatross prefers waters of the East Australia Current where sea surface-temperatures are greater than 16.5°C . The birds fly in low or medium airspace using updraft off sea swell for lift. The species takes food from the surface with shallow dives to depth of 1 m observed.	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Thalassarche cauta	Shy Albatross	E, M	Occurs widely in the southern oceans. Islands off Australia and New Zealand provide breeding habitat. In Australian waters, the Shy Albatross occurs along the east coast from Stradbroke Island in Queensland along the entire south coast of the continent to Carnarvon in Western Australia. Although uncommon north of Sydney, the species is commonly recorded off southeast NSW, particularly between July and November, and has been recorded in Ben Boyd National Park	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Thalassarche eremita	Chatham Albatross		Endemic to New Zealand with 10 breeding sites on the Chatham Islands, Solander Islands, Snares Islands, and Three Kings Islands. The principal foraging range for this species is in coastal waters off eastern and southern New Zealand, and Tasmania	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Thalassarche impavida	Campbell Albatross	V,M	This species breeds on the northern and western coastline of Campbell Island and the islet Jeanette Marie, part of the Campbell Islands group, one of New Zealand's five subantarctic island groups. The Campbell Albatross is a non-breeding visitor to Australian waters. Non-breeding birds are most commonly seen foraging over the oceanic continental slopes off Tasmania, Victoria and New South Wales.		Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Thalassarche melanophris	Black-browed Albatross	V, M	The species has a circumpolar range over the southern oceans and are seen off the southern Australian coast mainly during winter. This species migrates to waters off the continental shelf from approximately May to November and is regularly recorded off the NSW coast during this period. The species has also been recorded in Botany Bay National Park	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Thalassarche salvini	Salvin's Albatross	V,M	The species is a large seabird, that breeds mostly on small, bare rocky islands mainly on the Bounty Islands of New Zealand. At sea they range from South Africa across to Australia and as far east as the coast of South America.	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Thalassarche steadi	White-capped Albatross	V, M	The species breeds on islands off Tasmania and New Zealand but disperses widely across the southern Oceans between 15 and 60°S, where it is a frequently encountered pelagic seabird. Australia is within the foraging range of the White-capped Albatross, feeding across the surface of the water on fish, cephalopods, tunicates and crustaceans.	PMST	Low. Species rarely occurs away from the coast and preferred habitat not present.	Species is unlikely to be present in subject land and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Tringa nebularia	Common Greenshank	E,M	The common greenshank is widespread in coastal regions across Australia. In NSW, the species is widespread west of the Great Dividing Range. This species occurs at the edge of wetlands, mudflats in channels or within shallows around the edge of waterbodies.	PMST	Low. Limited suitable habitat is found and the species not recorded despite targeted surveys.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Fish						
Epinephelus daemelii	Black Cod Fish	V	The species is known to occur from southern Queensland through NSW to northern Victoria. The NSW coastline forms the species' main range, both in Australia and internationally. Black cod are known to occur to some degree in all six NSW Marine Parks – Lord Howe, Cape Byron, Solitary Island, Port Stephens, Jervis Bay and Batemans Bay. Black cods generally inhabit near-shore rocky and offshore coral reefs at depths down to 50 m. In coastal waters adult Black cod are found in rock caves, rock gutters and on rock reefs	PMST	Low. Preferred habitat not present in the subject land.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Invertebrates						
Meridolum maryae	Maroubra Woodland Snail	E	This species is endemic to NSW, confined to coastal habitat within the Royal National Park to Palm Beach in Sydney. The species occurs within coastal vegetation, found amongst leaf litter, commonly in heathland on foredunes. The species can occur in sandstone and clay heathstone on headlands.	PMST	Low. Project alignment is outside of species known range and distribution.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Pommerhelix duralensis	Dural Land Snail	E	This species is endemic to NSW, occurring within shale-sandstone habitats. The species is known to St Albans in the north, southwest to East Kurrajong and south along the Blue Mountains. The species is found in a range of forests and woodlands within leaf litter or exposed areas, but sheltering beneath rocks, leaves and woody debris.	PMST	Low. Project alignment is outside of species known range and distribution.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Mammals						
Chalinolobus dwyeri	Large-eared Pied Bat	E	Found in well-timbered areas containing gullies. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Occurs mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes.	ALA, BioNet, PMST	Recorded. Species recorded in PCT 3150, 3230, 3239, 3242, 3244, 3263, 3328, 3231, 3444 and 3599. Species associated with PCT 3086, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621 and 4042.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Dasyurus maculatus	Spotted-tail Quoll	E	Occupies a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest to the coast.	ALA, BioNet, PMST	Recorded. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015, 4042, 4044, 4072 and 4089.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Notamacropus parma	Parma Wallaby	V	This species prefers moist eucalypt forest, with a dense shrubby understorey adjacent to grassy areas, rainforest margins and sometimes drier eucalypt forest.	ALA, BioNet, PMST	Recorded. Species recorded in PCT 3230, 3242 and 3263. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3242, 3244, 3250, 3263, 3433, 3489, 3581, 3582, 3605, 3617, 3621 and 4042.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Nyctophilus corbeni	Corben's Long-eared Bat	V	Found in a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities. A preference is shown for box/ironbark/cypress-pine vegetation along the western slopes and plains of NSW.	BioNet, PMST	Moderate Suitable habitat may be present within the subject land, with limited records from the broader locality. This species is associated with PCTs 3315, 3438 and 4039.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Petauroides volans	Southern Greater Glider	E	The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The distribution may be patchy even in suitable habitat. The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.	ALA, BioNet, PMST	Recorded. Species recorded in PCT 3237, 3239, 3242, 3263, 3599 and 3605. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3328, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3599, 3605, 3617, 3621, 4039, 4042, 4044 and 4072.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Petaurus australis australis	Yellow-bellied Glider	V	Found in tall mature eucalypt forest in areas with high rainfall, with mixed coastal forests to dry escarpment forests utilised in the north, and moist coastal gullies and creek flats to tall montane forests in the south.	ALA, BioNet, PMST	Recorded. Species associated with PCT 3086, 3087, 3150, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3433, 3436, 3438, 3444, 3446, 3581, 3582, 3599, 3605, 3617, 3621, 4042 and 4044.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Petrogale penicillata	Brush-tailed Rock Wallaby	V	The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Found in rocky areas in a wide variety of habitats including rainforest gullies, wet and dry sclerophyll forest, open woodland, and rocky outcrops in semi-arid country. Commonly sites have a northerly aspect with numerous ledges, caves, and crevices.	ALA, BioNet, PMST	Recorded. Species recorded in PCT 3239, 3244, 3263 and 3605. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4015 and 4039.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Phascolarctos cinereus	Koala	E	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	ALA, BioNet, PMST	Recorded. Species recorded in PCT 3239, 3263 and 3605. Species associated with PCT 3029, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4042, 4044 and 4089.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Potorous tridactylus tridactylus	Long-nosed Potoroo	V	Occurs in coastal heaths and dry and wet sclerophyll forests featuring a dense understorey with occasional open areas. Habitat may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas on a sandy loam soil. is also a common feature.	ALA, BioNet, PMST	Recorded. Species recorded in PCT 3617 in Olney State Forest. Species associated with PCT 3150, 3230, 3242, 3244, 3250, 3433, 3436, 3581, 3582, 3583, 3617, 4042 and 4044.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Pseudomys novaehollandiae	New Holland Mouse	V	Occupies open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes.	ALA, BioNet, PMST	Moderate. Suitable habitat may be present within the subject land, with a number of records from the broader locality. The species is associated with PCT 3244, 3250, 3315, 3433, 3436, 3446, 3581, 3582 and 3583.	Records have been identified within the locality and habitat occurs in the subject land. **EPBC Act significant impact assessment is required (refer Attachment B).**
Pteropus poliocephalus	Grey-headed Flying-fox	V	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Bats commute daily to foraging areas, usually within 15 km of the day roost although some individuals may travel up to 70 km.	ALA, BioNet, PMST	Recorded. Species associated with PCT 3029, 3086, 3087, 3150, 3151, 3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4039, 4042, 4044 and 4089.	Camp occurs within 50km of the subject land. The project may impact foraging habitat for the species. **EPBC Act significant impact assessment is required (refer Attachment B).**

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Reptiles						
Aprasia parapulchella	Pink-tailed Legless Lizard	V	The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. Inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by Kangaroo grass. Sites are typically well-drained, with rocky outcrops or scattered, partially buried rocks.	ALA, BioNet, PMST	Low. Species not recorded despite targeted surveys.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.
Delma vescolineata	Hunter Valley Delma	E	The species is known almost entirely from a 25 km wide corridor in the Hunter Valley, between Maitland and Muswellbrook. Habitat suitable for the species occurs in secondary native grasslands remaining after the removal or dieback of previous woody canopy vegetation.	PMST	Recorded. Species associated with PCT 3241, 3244, 3314, 3315, 3431, 3438, 3444, 3605, 4015, 4039, 4072 and 4089.	Species occurs within the subject land and is likely to be impacted by the project. **EPBC Act significant impact assessment is required (refer Attachment B).**
Delma impar	Striped Legless Lizard	V	Occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Found in natural temperate grassland, secondary grassland and open box-gum woodland. Habitat is typically dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda australis*, spear-grasses *Austrostipa spp*. and *poa tussocks Poa spp*., and occasionally wallaby grasses *Austrodanthonia spp*., though can occur in modified grasslands with a significant content of exotic grasses.	ALA, BioNet, PMST	Low. Species was not recorded in subject land.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

Scientific name	Common name	EPBC Act[1]	Habitat	Source[2]	Likelihood of occurrence	Further assessment required
Hoplocephalus bungaroides	Broad-headed Snake	V	This species shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring and moves to shelters in crevices or hollows in large trees within 500 m of escarpments in summer.	PMST	Low. Species was not recorded in subject land.	Species is unlikely to be present in project development footprint and is unlikely to be impacted by the project. EPBC Act significant impact assessment is not required.

(1) CE= critically endangered, E = Endangered, V = Vulnerable, M = Migratory under the EPBC Act.

(2) Source: PMST = The Department of the Environment and Energy's EPBC Protected Matters Search Tool, BioNet = BioNet Atlas of NSW Wildlife.

Attachment B

Significant impact assessment

B1. Significant impact assessment

The Significant Impact Guidelines 1.1 (DoE, 2013a) provide definitions for specific terms used throughout the significant impact assessment criteria contained in the Significant Impact Guidelines 1.1 as follows:

- population of a species
- important population
- habitat critical to the survival of a species or ecological community
- important habitat for migratory species
- ecologically significant proportion (migratory species)
- population of a migratory species
- invasive species.

These definitions are key considerations when conducting a significant impact assessment for threatened and migratory species listed under the EPBC Act. The definition for each is presented below.

Population of a species

A 'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations, or
- a population, or collection of local populations, that occurs within a particular bioregion.

Important population

An 'important population' is defined by the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

Habitat critical to the survival of a species or ecological community

'*Habitat critical to the survival of a species or ecological community*' is defined by the Significant Impact Guidelines as areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to:

- habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or
- habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.

Critical habitat can be further explained as an identified area of viable habitat that contains habitat attributes that are essential for the conservation of a threatened species. These areas are typically under a regime of special protection and management to ensure the critical habitat remains a stronghold for the species to ensure its long-term survival and viability in the wild. Critical habitat may also include an area of land not currently occupied by the species but can act as a sanctuary by possessing the necessary whole of life cycle habitat attributes to facilitate the recovery of a declining population of the species.

Invasive species

An *'invasive species'* is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources, or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation.

Bushfires

In the summer of 2019–2020, Australia experienced extreme bushfires across many areas of the country. The number of fires, their severity and extent, and the damage caused to the environment were unprecedented. The fires covered almost 10 million hectares. A Wildlife and Threatened Species Bushfire Recovery Expert Panel was convened in January 2020 to assist in prioritising recovery actions for native species and ecological communities affected by the 2019–2020 extreme fire event. The expert panel identified priority native plants, animals and ecological communities considered to be at risk due to additional degradation and loss of habitat associated with the bushfires. The following documents and datasets have been considered in conjunction with the relevant statutory documents in assessing the significant residual impacts for the threatened species or ecological community:

- *National prioritisation of Australian plants affected by the 2019-2020 bushfire season* – Report to the Commonwealth Department of Agriculture, Water and Environment (Gallagher RV. 2020).
- Priority TECs for recovery activity for each fire affected NRM Region (DAWE, 2020a)
- National and state ecological communities (terrestrial) that were substantially fire affected in the 2019-2020 bushfires (as at September 2020) (DAWE, 2020b)
- Analysis of species listed under the Environment Protection and Biodiversity Conservation Act 1999 which occur in areas affected by bushfires between 1 August 2019 and 13 January 2020 in southern and eastern Australia (DEE, 2020a)
- Preliminary Area for Environmental Analysis – 2019/2020 Fires (DAWE, 2020c)

B2. Listed threatened species and ecological communities

B2.1 Threatened ecological communities

Three Threatened Ecological communities (TECs) listed under the EPBC Act were recorded the subject land, including:

- Central Hunter Valley eucalypt forest and woodland – Critically Endangered
- Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland – Endangered
- River-flat Eucalypt Forest on coastal floodplains of southern New South Wales and eastern Victoria – Critically Endangered

An assessment of significant residual impacts has been undertaken for all three TECs in accordance with the significant impact guidelines 1.1.

B2.1.1 Central Hunter Valley eucalypt forest and woodland

The Central Hunter Valley eucalypt forest and woodland is listed as a Critically Endangered ecological community under the EPBC Act. The ecological community occurs in the Hunter Valley region (primarily in the Central Hunter) which is mostly in the northeast of the Sydney Basin IBRA Bioregion (DoE, 2015a). Within the Sydney Basin Bioregion the ecological community occurs mainly in the Hunter Valley IBRA subregion and occurs in subregions adjacent to the Hunter Valley IBRA subregion; for example, in the Goulburn Valley in the Kerrabee IBRA subregion and in the Hunter Thrust Zone in the Upper Hunter IBRA subregion (DoE, 2015a).

The Central Hunter Valley eucalypt forest and woodland ecological community generally occurs on soils derived from the Permian sedimentary bedrock found on the valley floors and on lower hillslopes and low ridges (DoE, 2015a).

The canopy of the ecological community is dominated by one or more of the following four eucalypt species: Narrow-Leaved Ironbark (*Eucalyptus crebra*), Spotted Gum (*Corymbia maculata* (syn. *E. maculata*)), Slaty Gum (*E. dawsonii*) and Grey Box (*E. moluccana*) (DoE, 2015a). Under certain circumstances a fifth species, Buloke (*Allocasuarina luehmannii*), may be part of the mix of dominants, in sites previously dominated by one or more of the above four eucalypt species (DoE, 2015a). Derived native grasslands and shrublands are not included in the nationally protected ecological community.

Relevant commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant commonwealth statutory document considered for this ecological community is the approved Conservation Advice on Central Hunter Valley eucalypt forest and woodland (DoE, 2015a). In effect under the EPBC Act from 07 May 2015.

Specific impacts

The following plant community types (PCTs) recorded within the subject land were considered to potentially align with (were equivalent to) the EPBC Act Central Hunter Valley eucalypt forest and woodland listing:

- PCT 3314 – Central Hunter Slopes Grey Box Forest
- PCT 3315 – Central Hunter Ironbark-Spotted Gum Forest
- PCT 3431 – Central Hunter Ironbark Grassy Woodland
- PCT 3438 – Hunter Escarpment Footslopes Ironbark Forest
- PCT 3446 – Lower North Foothills Ironbark-Box-Gum Grassy Forest.

Based on these assessments, the project is estimated to impact upon approximately 164.19 hectares of remnant vegetation potentially corresponding with the EPBC listed community. Additional areas of derived native and exotic mixed grasslands potentially corresponding with the TEC also have the potential to be impacted by the project.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- *reduce the extent of an ecological community*

The approved conservation advice for the Central Hunter Valley eucalypt forest and woodland notes that the extent of occurrence within the Sydney Basin IBRA Bioregion is estimated to be 740,000 hectares with area of occupancy estimated at 370,000 hectares.

The project would result in loss of approximately 164.19 hectares of remnant vegetation and additional plantation areas potentially corresponding with the EPBC listed community. Based on the 'Central Hunter Valley eucalypt forest and woodland: a nationally protected ecological community' (DEE, 2016a) the project is likely to reduce the northwestern extent of the Central Hunter Valley eucalypt forest and woodland.

- *fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines*

The project would require the removal and/or disturbance of approximately 164.19 hectares of the Central Hunter Valley eucalypt forest and woodland ecological community. Given the large extent of clearing of this community the project is likely to significantly increase fragmentation of TEC within the area.

- *adversely affect habitat critical to the survival of an ecological community*

The approved conservation advice for the Central Hunter Valley eucalypt forest and woodland ecological community (DoE, 2015a) outlines that: 'Areas that meet the minimum (Moderate quality condition class) condition thresholds, or are within the buffer zone, are considered critical to the survival of the Central Hunter Valley eucalypt forest and woodland ecological community. Additional areas such as adjoining native vegetation and areas that meet the description of the ecological community but not the condition thresholds are also important to the survival of the ecological community and should be taken into consideration as part of the surrounding environment and landscape context.'

The vegetation within the subject land was assessed as meeting condition thresholds of Class A High quality condition. Therefore, the loss of 164.19 hectares associated with the project will adversely affect habitat critical to the survival of the community.

- *modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns*

The project would require the removal of up to 164.19 hectares of Central Hunter Valley eucalypt forest and woodland ecological community. Construction of the access roads and towers may require some excavation works; however, these are not expected to alter groundwater levels or substantially change surface water drainage patterns to an extent that would impact the community's survival. Furthermore, mitigation measures will be implemented during the construction phase and ongoing maintenance to minimise disturbance and reduce surface water impacts (e.g. controls for sedimentation and hydrological impacts).

- *cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.*

The project does not include regular burning or flora and fauna harvesting or other activities that would substantially change the species composition of the community.

Indirect impacts caused by shifting of edge effects and weed dispersal may result in a reduction in the quality or integrity on the edge of the remaining areas of the ecological community. Mitigation measures such as weed and pathogen control, controls for sedimentation and hydrological impacts will be put in place to limit indirect impacts of the project on the surrounding vegetation. Therefore, it is considered unlikely the project will result in the decline or loss of a functionally important species, substantially change the species composition of the retained vegetation, or substantially impact fauna occurring within this habitat.

- *cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to assisting invasive species, that are harmful to the listed ecological community, to become established causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.*

Most of the project occurs within previously disturbed agricultural land, therefore the Central Hunter Valley eucalypt forest and woodland within the subject land is currently subject to weed and pest invasion.

There is potential for the mobilisation of fertilisers, herbicides or other chemicals or pollutants to impact on the remaining area of the ecological community. The project includes mitigation measures to minimise sedimentation and hydrological impacts (water-sensitive urban design) and to minimise potential indirect impacts resulting from altered soil or drainage patterns. It is considered that with the implementation of the mitigation measures, the project is unlikely to substantially reduce the quality or integrity of the community's occurrence or significantly increase the spread of invasive species.

- *interfere with the recovery of an ecological community*

To date, no recovery plan has been developed by the DCCEEW for Central Hunter Valley eucalypt forest and woodland. The approved conservation advice (DoE, 2015a) notes that one of the highest priorities in the recovery of the TEC is to avoid further clearance and fragmentation of the ecological community and of surrounding native vegetation. The project will involve clearing of this TEC and therefore the project is likely to interfere with the recovery of this TEC.

Conclusion

The project will remove approximately 164.19 hectares of Central Hunter Valley eucalypt forest and woodland, which is likely to result in a reduction of the extent of the TEC, impact habitat critical to the survival and interfere with the recovery of the community. For these reasons, the project is likely to have a significant residual impact on this community.

B2.1.2 Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland

The Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland is listed as an Endangered ecological community under the EPBC Act. The community is characterised by a layered canopy, dominated by melaleucas and/or *Eucalyptus robusta*, with an understory and ground layer of species tolerant of regular inundation and are adapted to sandy soils. In an intact forest, the canopy can be layered, with a sub-canopy of melaleuca grading into a taller mixed melaleuca and/or eucalypt canopy. Canopy density, light availability, water regime, salinity level and soil fertility influence the development and composition of the understorey flora (DAWE, 2021a).

Relevant commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this TEC is as follows:

- Approved Conservation Advice (including listing advice): Approved Conservation Advice (including listing advice) for the Coastal Swamp Sclerophyll Forest of NSW and South East Queensland ecological community. Canberra (DAWE, 2021a). Available from: https://environment.gov.au/biodiversity/threatened/communities/pubs/171-conservation-advice.pdf. In effect under the EPBC Act from 08-December-2021.
- Policy Statement: Coastal Swamp Sclerophyll Forest of NSW and South East Queensland ecological community: a nationally protected ecological community (DAWE, 2021b) [Admin Guideline].

This Approved Conservation Advice (including listing advice) and the Policy Statement have been applied to PCT 4044 to determine whether this vegetation within the subject land is part of the Coastal Swamp Sclerophyll Forest of NSW and South East Queensland ecological community TEC listed under the EPBC Act.

Specific impacts

PCT 4044 was recorded within the subject land and is considered to align with Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland.

Based on these assessments, the project is estimated to impact upon approximately 0.12 hectares of remnant vegetation corresponding with the EPBC listed community.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- *reduce the extent of an ecological community*

The approved conservation advice for the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland notes that the estimated area of occupancy is 115,000 hectares. The project will result in the clearance of 0.12 hectares of this community, which equates to 0.0001% of the area of occupancy for this community. The project is therefore unlikely to result in a reduction in the extent of the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland community.

- *fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines*

The project would require the removal and/or disturbance of approximately 0.12 hectares of the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland community. Given the small extent of clearing of this community the project is unlikely to significantly increase fragmentation of TEC within the area.

- *adversely affect habitat critical to the survival of an ecological community*

The approved conservation advice for the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community (DAWE, 2021a) outlines that: 'The habitat or areas most critical to the survival of the ecological community are those patches that are in the best condition. These represent those parts of the ecological community closest to the benchmark state of the ecological community; they are the patches that that retain the highest diversity and most intact structure and ecological function and have the highest chance of persisting in the long-term. However, this does not mean that areas that otherwise meet the minimum condition thresholds are unimportant for the survival of the ecological community. Many of these patches occur in locations or landscape positions that are particularly important for biodiversity or function and/or may contain suites of species or habitat features that are

important in a regional or local context. Hence these areas can still be critical to the survival of the ecological community'.

The vegetation within the subject land was assessed as meeting condition thresholds of high quality condition. Therefore, the loss of 0.12 hectares associated with the project will adversely affect habitat critical to the survival of the community.

- *modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns*

The project would require the removal of up to 0.12 hectares of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community. Construction of the access roads and towers may require some excavation works; however, these are not expected to alter groundwater levels or substantially change surface water drainage patterns to an extent that would impact the community's survival. Furthermore, mitigation measures will be implemented during the construction phase and ongoing maintenance to minimise disturbance and reduce surface water impacts (e.g. controls for sedimentation and hydrological impacts), therefore, it is considered unlikely that the project would result in the modification or destruction of abiotic factors necessary for the survival of this ecological community.

- *cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.*

The project does not include regular burning or flora and fauna harvesting or other activities that would substantially change the species composition of the community.

Indirect impacts caused by shifting of edge effects and weed dispersal may result in a reduction in the quality or integrity on the edge of the remaining areas of the ecological community. Mitigation measures such as weed and pathogen control, controls for sedimentation and hydrological impacts will be put in place to limit indirect impacts of the project on the surrounding vegetation. Given the small scale of clearing and implementation of appropriate mitigation, it is considered unlikely the project will result in the decline or loss of a functionally important species, substantially change the species composition of the retained vegetation, or substantially impact fauna occurring within this habitat.

- *cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to assisting invasive species, that are harmful to the listed ecological community, to become established causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.*

Most of the project occurs within previously disturbed agricultural land, therefore the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community within the subject land is currently subject to weed and pest invasion.

There is potential for the mobilisation of fertilisers, herbicides or other chemicals or pollutants to impact on the remaining area of the ecological community. The project includes mitigation measures to minimise sedimentation and hydrological impacts (water-sensitive urban design) and to minimise potential indirect impacts resulting from altered soil or drainage patterns. It is considered that with the implementation of the mitigation measures, the project is unlikely to substantially reduce the quality or integrity of the community's occurrence or significantly increase the spread of invasive species, particularly given the small scale of clearing.

— *interfere with the recovery of an ecological community*

To date, no recovery plan has been developed by the DCCEEW for Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community. The approved conservation advice (DAWE, 2021a) notes that one of the highest priorities in the recovery of the TEC is to the protection of patches of the ecological community that have a low incidence of weeds, contain mature habitat trees (e.g. those with hollows) and a more diverse understorey, and/or patches that are part of larger native vegetation remnants and/or patches that are known to support arboreal mammals, are a high priority for protection and management. Very small, isolated patches that are subject to high disturbance and with a less diverse native understorey, contribute less to the conservation of the ecological community and may not meet the condition thresholds for national protection. Given the small-scale clearing of this TEC (0.12 hectares), it is considered unlikely that the project interfere with the recovery of this TEC.

Conclusion

The project will remove approximately 0.12 hectares of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland ecological community, which is considered unlikely to result in a significant residual impact on this community.

B2.1.3 River-Flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales and Eastern Victoria

The River-flat Eucalypt Forest on Coastal Floodplains of southern New South Wales and eastern Victoria Ecological Community is listed as a Critically Endangered ecological community under the EPBC Act. The ecological community occurs on deep alluvial soils, sometimes shallower on the edges of floodplains, within coastal river floodplains and associated sites below 50 metres above sea level (mASL) with accumulated transient water, although it can occur on floodplain pockets up to 250 mASL.

River-flat Eucalypt Forest on Coastal Floodplains communities are tall open forest to woodland, with taller (up to 40 metres) denser forest found in confined floodplains, with lower, less dense structure as floodplains widen. The canopy is dominated by *Angophora* and *Eucalyptus* species, primarily Rough-barked Apple (*Angophora floribunda*), Broad-leaved Apple (*A. subvelutina*), Forest Red Gum (*Eucalyptus tereticornis*) and Cabbage Gum (*E. amplifolia*), with a sub-canopy of *Allocasuarina*, *Melaleuca* or *Leptospermum*, and a sparse shrub layer. Climbers and vines, including Common Silkpod (*Parsonsia straminea*) and Native Sarsaparilla (*Smilax australis*), often occur between the mid-storey and canopy. Grasses, forbs, ferns, sedges and scramblers make up the diverse groundcover, with high coverage of litter and woody debris present in intact patches. Not all characteristic species are present at each site, with some species present only underground as seed or dormant structures (DAWE, 2020d).

Relevant commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant commonwealth statutory document considered for this ecological community is the approved Conservation Advice for the River-flat Eucalypt Forest on Coastal Floodplains of southern New South Wales and eastern Victoria Ecological Community (DAWE, 2020d)

Specific impacts

Much of this EPBC TEC corresponds with the River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions NSW-listed community, with some areas of the Hunter and Central Coast corresponding to the NSW-listed Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions or the Subtropical Coastal Floodplain Forest in NSW North Coast Bioregion communities.

The following vegetation types recorded within the subject land were considered consistent with the EPBC Act River-flat Eucalypt Forest on Coastal Floodplains listing:

- PCT 3328 – Lower Hunter Red Gum-Paperbark Riverflat Forest
- PCT 4039 – Hunter Range Creekflat Apple-Red Gum Forest.

Based on these assessments, the project is estimated to impact on 2.24 hectares of River-flat Eucalypt Forest on Coastal Floodplains.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- *reduce the extent of an ecological community*

Within the subject land the TEC occurs in the NSW Yengo and Hunter IBRA subregions. The current extent of the community within NSW is estimated at 10,600 hectares and 20,600 hectares nationally with a median patch size of 0.8 hectares. The approved conservation advice for the TEC states that the community is highly fragmented with 90% of the patches smaller than 10 hectares.

The project will result in clearing of 0.02% of the extent of the community in NSW and 0.01%, nationally. Given the small area to be impacted it is considered unlikely the project would significantly reduce the extent of the River-flat Eucalypt Forest on Coastal Floodplains.

- *fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines*

This ecological community is highly fragmented, with 90% of remnant patches less than 10 hectares in size. The project will require the removal and/or disturbance of 2.24 hectares River-flat Eucalypt Forest on Coastal Floodplains. Within the subject land, River-flat Eucalypt Forest on Coastal Floodplains generally occurs within a fragmented landscape. The project will bisect patches of the TEC and therefore increase existing fragmentation within the subject land and region.

- *adversely affect habitat critical to the survival of an ecological community*

Spatially linked patches are of high importance for functional River-flat Eucalypt Forest on Coastal Floodplains, and patches that are in the best condition are considered habitat critical to the survival of this TEC, with surrounding vegetation and landscape influencing a patch's importance. The approved conservation advice also notes that patches that meet the minimum condition thresholds are also considered important for biodiversity and function of the community and can still represent habitat critical to the community.

Based on the assessment against the TEC condition thresholds the River-flat Eucalypt Forest on Coastal Floodplains was identified as a large or contiguous patch in good condition with arboreal mammals and therefore considered habitat critical to the survival of the community. The loss of vegetation is likely to affect habitat critical to the survival of the River-flat Eucalypt Forest on Coastal Floodplains ecological community.

- *modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns*

The project would result in the removal of up to 2.24 hectares of River-flat Eucalypt Forest on Coastal Floodplains. Construction of the access roads and towers may require some excavation works; however, these are not expected to alter groundwater levels or substantially change surface water drainage patterns to the extent that would impact the community's survival. Furthermore, mitigation measures will be implemented during the construction phase and ongoing maintenance to minimise disturbance and reduce surface water impacts (e.g. controls for sedimentation and hydrological impacts).

- *cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.*

The project does not include regular burning or flora and fauna harvesting or other activities that would substantially change the species composition of the community. Mitigation measures such as weed and pathogen control, controls for sedimentation and hydrological impacts will be put in place to limit indirect impacts of the proposed development surrounding vegetation. The project is considered unlikely to substantially alter the species composition of the retained vegetation, or to substantially impact fauna occurring within this habitat. Therefore, the project is considered unlikely to substantially change the species composition of an occurrence of this community.

- *cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to assisting invasive species, that are harmful to the listed ecological community, to become established causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community*

River-flat Eucalypt Forest on Coastal Floodplains within the subject land is currently subject to weed and pest invasion. Additionally, most of the project occurs within previously disturbed land. Therefore, it is considered unlikely that the project would substantially reduce the quality or integrity of the community or significantly increase the spread of invasive species. In addition, mitigation measures (weed and sedimentation controls) will be implemented during construction and ongoing maintenance to minimise the likelihood of spread of weeds or pathogens into the subject land and minimise sedimentation and hydrological impacts.

- *interfere with the recovery of an ecological community*

To date, no recovery plan has been developed by the DCCEEW for River-flat Eucalypt Forest on Coastal Floodplains. However, approved Conservation Advice for the TEC outlines the priority conservation actions required for this community. These include:

- protect the ecological community to prevent further losses including conserve remaining patches, manage actions to minimise detrimental impacts, apply buffer zones, and prevent the introduction and spread of exotic species
- restore and manage the ecological community by active abatement of threats, appropriate management, restoration and other conservation initiatives including manage weeds, pests and pathogens, manage trampling, browsing and grazing, manage fire, undertake restoration
- communicate, engage and support people to increase understanding of the value and function of the ecological community and encourage their efforts in its protection and recovery including raise awareness, gather and provide information, and coordinate efforts
- research and monitoring to improve our understanding of the ecological community and the best methods to aid its management and recovery including mapping, options for management, and monitoring.

The project would involve clearing of this TEC and therefore it is likely the project would interfere with the recovery of this TEC.

Conclusion

Within the subject land, this community occurs in the Hunter, Wyong and Yengo IBRA subregions, with 10,600 hectares of the TEC remaining in NSW. The project will clear 2.24 hectares of habitat (equivalent to 0.02% of the extent of the community in NSW and 0.01% nationally) and is likely to marginally fragment the patches within the locality. Whilst the impacts are considered small, the project will adversely impact habitat critical to the survival of the community. Therefore, the project is likely to have a significant residual impact on the River-flat Eucalypt Forest on Coastal Floodplains ecological community.

B3. Threatened flora subject to assessment

Twenty-six threatened flora species were identified as having a high to moderate likelihood of occurrence within the subject land. Significance assessments for these species have been completed in accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (DoE, 2013a).

B3.1 Critically endangered flora

B3.1.1 Brachyscome brownii

Brachyscome brownii is listed as critically endangered under the EPBC Act, with no current listing under the NSW BC Act. *Brachyscome brownii* is a daisy which grows up to 30 centimetres tall. Its leaves are mostly hairless to the naked eye, with distinct serrated edges or 'teeth'. The species has a single purple flowerhead which grows from the tip of the stem. This species has been recorded in association with sandy soils in dry sclerophyll forests, within 100 metres of watercourses.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant Commonwealth guidelines and policy statement available for this species is the approved conservation advice: *Conservation Advice for* Brachyscome brownii (DCCEEW, 2024a).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Brachyscome brownii was known from four possibly extant populations between Windsor and Cessnock, which were 14–34 kilometres of each other. It is unknown how many individual plants occurred in any of the four extant populations before the 2019–2020 bushfires. The approved conservation advice for the species notes surveys in 2021 revisited 3 of the 4 populations, excluding the Pokolbin population since it hadn't been affected by the 2019–2020 bushfires. Individuals were only identified at 1 of the 3 surveyed populations, with 94 mature plants identified at the Mellong Creek population.

Within the subject land, a population of *Brachyscome brownii* was identified within Pokolbin State forest (SF) (Yengo and Hunter IBRA subregions). This area was subjected to a low intensity 'cool burn' by NSW Forestry in the Spring of 2023, with the species detected during targeted survey in February 2025. This species was often detected in areas of PCT 3241, with a few individuals detected in PCT 3239. Individuals were frequently recorded along roadsides, with some detected over 50 metres from these trails.

In total the project is estimated to impact on 12.85 hectares of confirmed habitat for this species in the form of PCTs 3239 and 3241 in recorded areas. Within NSW, the remaining extent of PCT 3239 is 46,086 hectares and the remaining extent of PCT 3241 is 55,109 hectares. The removal of 12.85 hectares therefore represents less than 0.01% of the remaining extent of these PCTs. Habitat for this species is also well represented within the locality with approximately 7806.58 hectares of the associated PCTs occurring within a 10 kilometre buffer of the subject land. Given the number of records from targeted surveys for the project, the extent of habitat in NSW and within the immediate

vicinity of the subject land (i.e. 10 kilometre buffer), and the small area of habitat to be impacted, it is unlikely that the project will lead to a decrease in the size of a population of this species.

- *reduce the area of occupancy of the species*

The extent of occurrence is estimated at 14 square kilometres, with the area of occupancy of the known distribution estimated to be 12 square kilometres. Given the geographic distribution of the species is highly restricted, it is likely the project would reduce the area of occupancy for the species.

- *fragment an existing population into two or more populations*

The project is estimated to impact on 12.85 hectares of confirmed habitat for this species in the form of recorded PCTs 3239 and 3241. The project will involve micro-siting towers with transmission lines spanning large tracts of habitat. Given the low number of records, the restricted distribution of the species, the area of habitat to be impacted, and the nature of the project it is unlikely that this project impact would result in fragmentation of a population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Brachyscome brownii* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community (DoE, 2013a)

Until further information is available, all habitat for this species in all known extant and historical populations should be considered as habitat critical to the survival of *B. brownii*. In addition, areas identified as suitable for translocations should also be considered as habitat critical to the survival. Areas of suitable habitat where the species is likely to occur, or may occur, should be considered assumed habitat for the species. Given the close proximity of the project to one of the few known extant populations of the species, it is possible that the habitat to be impacted may be important for facilitating dispersal and contributing to species recovery. Therefore, the project may impact habitat critical to the survival of the species.

Within NSW, the remaining extent of PCT 3239 is 46,086 hectares and the remaining extent of PCT 3241 is 55,109 hectares. The removal of 12.85 hectares of confirmed habitat therefore represents less than 0.01% of the remaining extent of these PCTs and 0.16% of the habitat within the locality (10 kilometre buffer of the subject land). The loss of 12.85 hectares of confirmed habitat is unlikely to significantly impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The species has been recorded within the subject land. The project is estimated to impact on 12.85 hectares of confirmed habitat for this species in the form of associated PCTs 3239 and 3241. Given the area of assumed habitat to be removed, and the number of records during targeted surveys to date, it is unlikely that the project would directly impact on the seed dispersal or disrupt the ecological processes and functions important for the life cycle of the species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project would result in the complete loss of 12.85 hectares of confirmed habitat for the species. Given the area of assumed habitat to be impacted, and the number of records, it is unlikely the project will modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Adhering to mitigation measures which will be put in place for the project, such as pest management, weed and pathogen controls, is expected to prevent potentially harmful invasive weeds and vertebrate pests such as rabbits, cats and foxes establishing in *Brachyscome brownii* habitat. It is therefore unlikely that the project would result in the establishment or spread of invasive species, provided mitigation measures for the project are adhered to.

- *introduce disease that may cause the species to decline*

There is no known disease that infects *Brachyscome brownii*, however other *Brachyscome* species, such as *B. uliginosa,* are susceptible to *Phytophthora cinnamomi* and declines have been observed in infested populations. Mitigation measures will be implemented including vegetation clearing protocols, installation of vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species identifies major threats including fire regimes that cause declines in biodiversity, climate change and potential disease. Other potential threats include habitat disturbance and modification where the species occurs in State Forests and on private property. As the project involves removal of individuals and habitat for the species, the project is likely to interfere with the recovery of the species.

Conclusion

The species has been recorded within areas of PCT 3239 and 3241, with its occurrence linked with areas subject to recent low intensity fires. Based on the assessment above it is likely the project would have a significant residual impact on *Brachyscome brownii* due to the complete loss of 12.85 hectares of confirmed habitat for the species.

B3.1.2 Genoplesium branwhiteorum (Variable Midge Orchid)

Genoplesium branwhiteorum is listed as critically endangered under both the NSW BC Act and EPBC Act.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant Commonwealth guidelines and policy statement available for this species is the approved conservation advice: *Conservation Advice for* Corunastylis sp. Charmhaven (DoE, 2014a).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The approved conservation advice s for the species notes that in 2012 there were less than 20 individual mature plants occurring within the species' primary population. The species is also known from two small subpopulations 2–3 square kilometres to the west of this population. The species' total population has been estimated to consist of 40–60 mature plants. The species was not record during targeted seasonal surveys and no population has been identified within the subject land. The project would result in the loss of 6.12 hectares of assumed habitat for the species. It is unlikely the project would lead to a long term decrease in the size of the population.

— *reduce the area of occupancy of the species*

According to the approved conservation advice, the extent of occurrence is estimated to be 4 square kilometres with an estimated area of occupancy of 2 square kilometres. Due to new records being identified since the writing of the approved Conservation Advice (DoE, 2014a), the latest published areas are now 76.2 square kilometres extent of occurrence and 40 square kilometres area of occupancy (Renner et al., 2022).

Approximately 28.26 hectares of potential habitat for the species burn during the 2019–2020 bushfires. Despite the lack of detailed studies on the fire response of individual *Genoplesium* species, there is a body of evidence which suggests that fire and mechanical vegetation slashing during their dormancy periods can stimulate mature individuals of the genus to flower. However, the stimulated flowering is likely to be influenced by, or dependent upon, post-fire rainfall. In the absence of fire, or other disturbances, these species may remain dormant, or at least undetectable (Towle, 2023). The 2019–2020 bushfires ranged in intensity from high to low, with the majority of the habitat subjected to a moderate to low (13.99 hectares) intensity burn.

The project would result in the loss of 6.12 hectares of assumed habitat, which when combined with the impact of the 2019–2020 bushfires would represent a loss of 0.5% of the species' area of occupancy. The project has the potential to slightly reduce the area of occupancy and current extent of the species. However, the impacts will not result in the species being lost from any 2 x 2 kilometre grid cells currently forming part of the area of occupancy. Any changes in the area of occupancy are considered likely to be negligible.

— *fragment an existing population into two or more populations*

Given the pollination and seed dispersal mechanisms (via wind) of this species, stringing work to mitigate fragmentation of habitat under the project and micro-siting of the towers it is unlikely the project would result in fragmentation of a population into two or more populations.

— *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

— for activities such as foraging, breeding, roosting, or dispersal
— for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
— to maintain genetic diversity and long-term evolutionary development, or
— for the reintroduction of populations or recovery of the species or ecological community (DoE, 2013a)

The species was not recorded despite targeted seasonal surveys and no populations have been identified in the subject land, and therefore habitat within the subject land is unlikely to represent habitat critical to the survival of the species. It is unlikely the loss of 6.12 hectares of habitat would adversely impact habitat critical to the survival of the species.

— *disrupt the breeding cycle of a population*

The approved conservation advice for the species states that the species' seeds are wind dispersed. Given the nature of the project, it is unlikely it would create a barrier to seed dispersal. The project is unlikely to result in direct disruptions to the ecological processes and functions important for the life cycle of this species.

— *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project is likely to impact 6.12 hectares of habitat for the species across the project. Given the nature of the project, (micro-siting to avoid and minimise impacts on threatened species, and transmission lines spanning large tracts of habitat) it is unlikely to modify, destroy, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Adhering to mitigation measures that will be put in place for the project such as pest management, weed and pathogen controls, would prevent potentially harmful invasive weeds establishing in *Genoplesium branwhiteorum* habitat. As such, the project is not likely to result in invasive species becoming established in the threatened species' habitat.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to these species. Biosecurity measures will be implemented to reduce the likelihood of introducing diseases or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority recovery and threat abatement actions that can be implemented to support the recovery of *Genoplesium branwhiteorum*. The loss of 6.12 hectares is unlikely to substantially interfere with the recovery of the species.

Conclusion

The species has been assumed within 6.12 hectares of habitat within the subject land. Based on the assessment above it is considered unlikely the project would result in a significant residual impact on *Genoplesium branwhiteorum*.

B3.1.3 Genoplesium insigne (Variable Midge Orchid)

Genoplesium insigne is listed as critically endangered under both the NSW BC Act and EPBC Act.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

There are no relevant Commonwealth guidelines and policy statement available for this species. In the absence of this, the NSW Scientific Committee Final Determination (NSW Scientific Committee, 2015) and other recent published sources were applied to access the impact to *Genoplesium insigne*.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

There have been 15 individuals identified within the subject land, which makes up 3.47% of the known population of 432 flowering stems (Towle, 2022). All of these individuals were recorded within the existing transmission easements, which are subject to range of management, including slashing. Given the nature of the project (i.e. towers will be micro-sited and transmission lines will span across large tracts of habitat) it is unlikely the loss of 4.25 hectares of confirmed and 6.42 hectares of assumed habitat for the species would lead to a long-term decrease in the size of a population.

- *reduce the area of occupancy of the species*

In the 2015 Final Determination, the extent of occurrence was calculated to be 40 square kilometres and area of occurrence was estimated to be between 12–20 square kilometres. Since there were additional sub-populations identified since the 2015 Final Determination, Towle (2023) recalculated the extent of occurrence to be 210 square kilometres and are of occupancy to be 576 square kilometres.

The project would result in the loss of 4.25 hectares of confirmed and 6.42 hectares of assumed habitat, representing a loss of 0.02% of the species' area of occupancy. It is unlikely the project would significantly reduce the area of occupancy for the species

- *fragment an existing population into two or more populations*

Given the pollination and seed dispersal mechanisms (via wind) of this species, stringing work to mitigate fragmentation of habitat under the project and micro-siting of the towers it is unlikely the project would result in fragmentation of a population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community (DoE, 2013a).

The species was recorded during the targeted seasonal surveys within existing transmission easements. Habitat for the species is well represented within the locality with 7,325 hectares within the immediate vicinity of the subject land (10 kilometre buffer zone of the subject land). Therefore, it is unlikely the loss of 10.67 hectares of habitat would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

Published literature on the species and *Genoplesium* genus (Towle, 2023) states that the species' seeds by wind dispersed. Given the nature of the project, it is unlikely it would create a barrier to seed dispersal. The project is unlikely to result in direct disruptions to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project is likely to impact 10.67 hectares of habitat for the species across the project. Given the nature of the project, (micro-siting to avoid and minimise impacts on threatened species, and transmission lines spanning large tracts of habitat) it is unlikely to modify, destroy, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Adhering to mitigation measures that will be put in place for the project such as pest management, weed and pathogen controls, would prevent potentially harmful invasive weeds establishing in *Genoplesium insigne* habitat. As such, the project is not likely to result in invasive species becoming established in the threatened species' habitat.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to these species. Biosecurity measures will be implemented to reduce the likelihood of introducing diseases or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan or approved conservation advice has been prepared for this species at this stage. No local and regional priority recovery and threat abatement actions have been implemented to support the recovery of *Genoplesium insigne*. The loss of 10.67 hectares is unlikely to substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above it is considered unlikely the project would result in a significant residual impact on *Genoplesium insigne*.

B3.1.4 Rhodamnia rubescens (Scrub Turpentine)

Rhodamnia rubescens is listed as critically endangered under the EPBC Act. *Rhodamnia rubescens*, also known as Scrub Turpentine or Brown Malletwood, is a shrub or small tree up to 25 metres high. The species is known to occur from coastal districts of NSW north from Batemans Bay to Bundaberg in Queensland. The distribution of *R. rubescens* occasionally extends inland onto the escarpment up to 600 metres above sea level in areas with rainfall of 1000–1600 millimetres. The approved conservation advice for this species (TSSC, 2020a) notes that the assessment for the species was undertaken prior to the 2019–2020 bushfires, and the impact of the bushfires on the species and its habitat are not fully known. Approximately 54.94 hectares of habitat for the species experienced a moderate to intense burn during the 2019–2020, with 264.25 hectares unburnt.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory documents used for this assessment is the approved conservation advice: The *Approved Conservation Advice for* Rhodamnia rubescens *Scrub Turpentine* (Threatened Species Scientific Committee, 2020). Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/15763-conservation-advice-11122020.pdf. In effect under the EPBC Act from 11 December 2020.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Within the subject land, *Rhodamnia rubescens* was recorded extensively between Olney State Forest and Corrabare North Flora Reserve, with individuals also recorded in parts of Pokolbin. Over 2,511 individuals were recorded during targeted threatened flora surveys of which 1,430 confirmed individuals have been identified within the subject land. In addition, based on assumed habitat, a further 98 individuals may be impacted (total of 1,528 individuals). The loss of 1,528 individuals for this species is likely to lead to a decrease in the size of an important population.

- *reduce the area of occupancy of the species*

The species is known to occur from coastal districts from Batemans Bay, NSW to Bundaberg, Queensland. The approved conservation advice for the species notes that the extent of occurrence was estimated to be 147,340 square kilometres, with an area of occupancy estimated at 3,360 square kilometres. It is estimated that 54.49 hectares of habitat experience a moderate to extreme intensity during the 2019–2020 bushfires, representing 0.005% of the area of occupancy for the species.

The total impact on the species is expected to be loss of 1,430 confirmed individuals, and 98 assumed individuals and equivalent habitat, therefore the project is likely to reduce the area of occupancy for *Rhodamnia rubescens*.

- *fragment an existing population into two or more populations*

Given the pollination and seed dispersal mechanisms of this species and stringing work designed to mitigate fragmentation of habitat, it is unlikely that the project would fragment an important population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Rhodamnia rubescens* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as breeding
- or dispersal for the long-term maintenance of the species (including the maintenance of species essential to the survival of the species, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development,
- for the reintroduction of populations or recovery of the species or ecological community.

Given the location of the recorded populations, and the projected reduction of the population, it is possible that this habitat may be important for facilitating population dispersal and contributing to genetic diversity and species recovery. Therefore, the project is likely to adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The project is likely to result in direct impact to individuals occurring within the impact footprint which may have some impact on genetic diversity of local populations. Therefore, as a precautionary approach, any disturbance is likely to result in direct disruptions to the ecological processes and functions important for the life cycle of the species, including the breeding cycle of the population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will result in the predicted loss of up to 1,528 individuals (of which 1,430 are confirmed individuals) and equivalent habitat for this species. Although mitigation measures will be implemented to minimise the impacts, including micro-siting towers to avoid known occurrences, it is likely the project will modify, destroy, remove, or decrease the availability or quality of habitat to the extent that the species is likely to decline. It is noted that approximately 54.49 hectares of habitat experienced a moderate to extreme severity burn during the 2019–2020 bushfires, however 264.25 hectares remain intact.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Adhering to mitigation measures which will be put in place for the project, such as pest management, weed and pathogen controls, is expected to prevent potentially harmful invasive weeds in *Rhodamnia rubescens* habitat. As such, the project is not expected to result in the introduction of invasive species that are harmful to the species ability to establish.

- *introduce disease that may cause the species to decline*

Rhodamnia rubescens is a known host of *Austropuccinia psidii* (Zauza *et al.* 2010) and is characterised as 'Highly to Extremely Susceptible' to infection (Pegg *et al*. 2014). *Austropuccinia psidii* is already established within the landscape, but while the majority of the plants recorded within the subject land were affected to some extent, several individuals were identified as beginning to, were, or had gone to flower. Mitigation measures such as weed and pathogen control will be implemented by the project to minimise the likelihood of spread of disease that could have a cumulative effect that could potentially result in species decline. Therefore, it is unlikely the project would result in the introduction of a disease that could cause the species to decline.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority recovery and threat abatement actions that can be done to support the recovery of *Rhodamnia rubescens*. As the project involves the removal of 1,528 individuals, including 1,430 confirmed individuals, and equivalent habitat for this species, the project is likely to interfere with the recovery of the species.

Conclusion

Due to the known decline in size and distribution of existing populations of this species (Threatened Species Scientific Committee, 2020), as well the size and extent of the recorded populations within the subject land, the project is likely to have a significant residual impact on *Rhodamnia rubescens*.

B3.1.5 Rhodomyrtus psidioides (Native Guava)

Rhodomyrtus psidioides is listed as critically endangered under the EPBC Act. The species occurs from Broken Bay, approximately 90 kilometres north of Sydney, New South Wales, to Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to 120 kilometres inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW. It's a pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. This species is characterised as being extremely susceptible to infection by *Austropuccinia psidii*, which can affect all parts of the plant (Threatened Species Scientific Committee, 2020b).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory document used in this assessment is the *Approved Conservation Advice for* Rhodomyrtus psidioides *Native Guava* (Threatened Species Scientific Committee, 2020b).

Rhodomyrtus psidioides is known and recorded throughout the subject area within Watagan State Forest and Corrabare State Forest. However, the project's current design takes known distribution into account to mitigate clearing of known individuals. Assumed habitat for *Rhodomyrtus psidioides* within the project is located across 12 PCTs.

Associated PCTs for *Rhodomyrtus psidioides* within the subject land have not been assessed via field surveys, however, using a precautionary approach, all areas of the associated PCTs are considered assumed habitat for *Rhodomyrtus psidioides*. Therefore, the project would require the removal and/or disturbance of 1.80 hectares of confirmed habitat and 16.07 hectares of assumed habitat (total of 17.87 hectares) for *Rhodomyrtus psidioides* within subject land.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Eight individuals of *Rhodomyrtus psidioides* were recorded within the subject land in the Watagan State Forest. The project will result in the loss 17.87 hectares of habitat for this species. Habitat for the species was impacted by the 2019–2020 bushfires with 18.19 hectares of the species habitat burnt. Given the project is at the western limit of the species range, habitat for *Rhodomyrtus psidioides* within the subject land is likely to be necessary for dispersal and maintaining genetic diversity across the region, and it is therefore assumed to form part of an important population. Therefore, it is likely that the project will lead to a decrease in the size of an important population.

- *reduce the area of occupancy of the species*

Rhodomyrtus psidioides is known to occur from coastal districts from Gosford, NSW to Maryborough, Queensland. The approved conservation advice for the species notes that the extent of occurrence was estimated to be 134,428 square kilometres, with an area of occupancy estimated at 884 square kilometres. Given the project is at the western limit of the species range it is likely the loss of 17.87 hectares of habitat (of which 16.07 hectares is assumed habitat) will reduce the area of occupancy for *Rhodomyrtus psidioides*.

- *fragment an existing population into two or more populations*

Given the nature of the project (stringing across tracts of habitat), it is unlikely the project would result in fragmentation of an important population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Rhodomyrtus psidioides* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Given the project is at the western limit of the species known distribution, the location of the recorded populations, and the projected reduction of the population, it is possible that this habitat may be important for facilitating population dispersal and contributing to genetic diversity and species recovery. Therefore, the project is likely to impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The project is likely to result in a direct impact on individuals occurring within the subject land which may have some impact on genetic diversity of local populations. Therefore, as a precautionary approach, it is considered that any disturbance is likely to result in direct disruptions to the ecological processes and functions important for the life cycle of the species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will result in the loss of 17.87 hectares of habitat for the species. Given the disjunct nature of known patches and records of the species it is likely that the loss of 17.87 hectares of habitat will modify, destroy, remove, or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Adhering to mitigation measures which will be put in place for the project, such as weed control, will prevent potentially harmful invasive weeds establishing in *Rhodomyrtus psidioides* habitat. As such, the project is unlikely to result in the establishment of invasive species that are harmful to the species habitat.

- *introduce disease that may cause the species to decline*

Rhodomyrtus psidioides is a known host of *Austropuccinia psidii* (Zauza *et al.* 2010) and is characterised as 'Extremely Susceptible' to *Austropuccinia psidii* infection (Pegg et al. 2014). *Austropuccinia psidii* is already established within the landscape. Mitigation measures such as weed, and pathogen control will be implemented by the project to minimise the likelihood of spread of disease that could have a cumulative effect that could potentially result in species decline. Therefore, it is unlikely the project would result in the introduction of a disease that could cause the species to decline.

- *interfere substantially with the recovery of the species*

No Recovery Plan has been prepared for this species at this stage. The approved conservation advice provides sufficient direction to implement priority actions and mitigate against key threats. As the project involves removal of individuals and habitat for the species, the project is likely to interfere with the recovery of the species.

Conclusion

Based on the assessment above it is likely the project would have a significant residual impact on *Rhodomyrtus psidioides* due to the loss of 17.87 hectares of habitat for the species.

B3.1.6 Thelymitra adorata (Wyong Sun Orchid)

Thelymitra adorata is listed as critically endangered under both the NSW BC Act and EPBC Act.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant Commonwealth guidelines and policy statement available for this species is the approved conservation advice: *Conservation Advice for* Thelymitra adorata (Department of the Environment, 2014)

Significant impact criteria

An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

There is no available information regarding the species' population. Given the nature of the project (i.e. towers will be micro-sited and transmission lines will span across large tracts of habitat) it is unlikely the loss of 0.79 hectares of assumed habitat for the species would lead to a long-term decrease in the size of a population.

- *reduce the area of occupancy of the species*

According to the approved Conservation Advice (Department of the Environment, 2014), the extent of occurrence and area of occupancy are both estimated to be less than 10 square kilometres. The project would result in the loss of 0.79 hectares of assumed habitat representing a loss of 0.079% of the species' area of occupancy.

The project would result in the species being lost from any 2 x 2 kilometre grid cells currently forming part of the area of occupancy, therefore it is unlikely the project would reduce the area of occupancy for the species.

- *fragment an existing population into two or more populations*

Given the pollination and seed dispersal mechanisms (via wind) of this species, stringing work to mitigate fragmentation of habitat under the project and micro-siting of the towers it is unlikely the project would result in fragmentation of a population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community (Department of the Environment 2013).

The species was not recorded despite targeted seasonal surveys, and no know population has been identified within the subject land. Therefore, habitat within the subject land is unlikely to represent habitat critical to the survival of the species. The project would not adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

Considering that the species' seeds are wind dispersed, and given the nature of the project, it is unlikely it would create a barrier to seed dispersal. The project is unlikely to result in direct disruptions to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project is likely to impact 0.79 hectares of assumed habitat for the species across the project. Given the nature of the project, (micro-siting to avoid and minimise impacts on threatened species, and transmission lines spanning large tracts of habitat) it is unlikely to modify, destroy, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Adhering to mitigation measures that will be put in place for the project such as pest management, weed and pathogen controls, would prevent potentially harmful invasive weeds establishing in *Thelymitra adorata* habitat. As such, the project is not likely to result in invasive species becoming established in the threatened species' habitat.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to these species. Biosecurity measures will be implemented to reduce the likelihood of introducing diseases or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of priority research and management action to support the recovery of *Thelymitra adorata* including assessing the distribution, ecological requirements of the species, restricting access to known location and managing weed, and fire. The project is unlikely to substantially interfere with the recovery of the species.

Conclusion

The species has been assumed within 0.79 hectares of habitat within the subject land. Based on the assessment above it is considered unlikely the project would result in a significant residual impact on *Thelymitra adorata*.

B3.2 Endangered flora

B3.2.1 Cynanchum elegans (White-flowered Wax Plant)

Cynanchum elegans is listed as endangered under the EPBC Act. The species occurs primarily at the transition zone (ecotone) between dry subtropical rainforest and sclerophyll forest/woodland communities in eastern NSW, from Brunswick Heads on the north coast to the Illawarra region. It inhabits rainforest gullies, scrub and scree slopes. Seeds are wind dispersed. Seed production is variable and unreliable, and it is unlikely that a soil seed bank exists for this species. The fire response of this species is unknown.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: The *Approved Conservation Advice for* Cynanchum elegans *White-flowered Wax Plant* (Department of the Environment, Water, Heritage and the Arts, 2008) was reviewed as part of this assessment.
- Adopted/Made threat abatement plans:
  - *Threat abatement plan for competition and land degradation by rabbits* (Department of the Environment and Energy, 2016).
  - *Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs* (Department of the Environment and Energy, 2017).
  - *Threat abatement plan for competition and land degradation by unmanaged goats* (Department of the Environment, Water, Heritage and the Arts, 2008).

Significant impact criteria

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

There is no available information regarding the species' population. Given the nature of the project (i.e. towers will be micro-sited and transmission lines will span across large tracts of habitat) it is unlikely the loss of 2.67 hectares of assumed habitat for the species would lead to a long-term decrease in the size of a population.

- *reduce the area of occupancy of the species*

The extent of occurrence is estimated to be 81,000 square kilometres with an estimated area of occupancy of 500 square kilometres. Approximately 4.49 hectares of potential habitat for the species was burnt in the 2019–2020 bushfires. While the species' response to fire is largely unknown, *Cynanchum elegans* has been seen to regrown after low intensity fire (NSW Scientific Committee, 2009). The 2019–2020 bushfires ranged in intensity from high to low, with the majority of the habitat subjected to a moderate to low intensity burn. The project would result in the loss of 2.67 hectares of assumed habitat, which when combined with the impact of the 2019–2020 bushfires would represent a loss of 0.001% of the species' area of occupancy.

The project is unlikely to reduce the area of occupancy of the species such that the species would be lost from any 2 x 2 kilometre grid cells currently forming part of the area of occupancy.

- *fragment an existing population into two or more populations*

Given the pollination and seed dispersal mechanisms (via wind) of this species, stringing work to mitigate fragmentation of habitat under the project and micro-siting of the towers it is unlikely the project would result in fragmentation of a population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Cynanchum elegans* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or

- for the reintroduction of populations or recovery of the species or ecological community (Department of the Environment Heritage Water and the Arts 2009).

The species was not recorded despite targeted seasonal surveys. Habitat for the species is well represented within the locality with 6800.79 hectares within the immediate vicinity of the subject land (10 kilometre buffer zone of the subject land). Therefore, it is unlikely the loss of 2.67 hectares of habitat would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The approved conservation advice for the species states that the species' seeds are wind dispersed. Given the nature of the project, it is unlikely it would create a barrier to seed dispersal. The project is unlikely to result in direct disruptions to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project is likely to impact 2.67 hectares of habitat for the species across the project. Given the nature of the project, (micro-siting to avoid and minimise impacts on threatened species, and transmission lines spanning large tracts of habitat) it is unlikely to modify, destroy, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Adhering to mitigation measures that will be put in place for the project such as pest management, weed and pathogen controls, would prevent potentially harmful invasive weeds establishing in *Cynanchum elegans* habitat. As such, the project is not likely to result in invasive species becoming established in the threatened species' habitat.

- *introduce disease that may cause the species to decline*

Pre-dispersal seed predation by unidentified moth larvae (Lepidoptera) has been observed at a number of sites and may affect the fecundity of some sub-populations (NPWS, 2002). Defoliation of plants by *Dichromia quinqualis* moth-larvae has also been observed at a number of sites (NPWS, 2002). Mitigation measures such as weed and pathogen control will be implemented by the project to minimise the likelihood of spread of disease or pathogens that could have a cumulative effect that could potentially be harmful to this species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority recovery and threat abatement actions that can be implemented to support the recovery of *Cynanchum elegans*. The loss of 2.67 hectares is unlikely to substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above it is considered unlikely the project would result in a significant residual impact on *Cynanchum elegans*.

B3.2.2 Tarengo Leek Orchid *(Prasophyllum petilum and Prasophyllum sp. Wybong (C.Phelps ORG 5269))*

Prasophyllum petilum is listed as endangered under the EPBC Act. *Prasophyllum* sp. Wybong is listed as critically endangered under the EPBC Act.

There is considerable taxonomic uncertainty surrounding these two species. Some authorities consider *Prasophyllum petilum* to be restricted to the southern tablelands and western slopes of New South Wales and the Australian Capital Territory. The NSW Herbarium treats *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) as a synonym of *Prasophyllum petilum* (i.e. the same species).

Between 14 May 2015 and 7 July 2017, the SPRAT profile for *Prasophyllum* sp. Wybong (C.Phelps ORG 5269) treated the species as a synonym of *Prasophyllum petilum*. Although that treatment has been accepted by the NSW Herbarium, it has not been accepted by the national authority, the Australian Plant Census. The taxonomic recognition of *Prasophyllum petilum* and *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) as the same species will be released in the next Orchidaceae taxonomic update via the Australian Plant Census, which provides a list of currently accepted names. As it stands, the two species are treated as one for NSW regulatory purposes, with the distinction maintained under Commonwealth legislation. Any plants impacted by the project will be classed as one species, but this assessment applies to both *Prasophyllum petilum* and *Prasophyllum* sp. Wybong as listed under the EPBC Act.

Prasophyllum petilum occurs in grasslands and grassy woodlands on fertile soils at flat or gently sloping sites of the western slopes and southern tablelands of NSW among native and (to a lesser extent) exotic grasses. This preferred habitat, indicating its extent of occurrence, has been reduced by large scale degradation and fragmentation in these regions (Department of Environment, Climate Change and Water 2010).

Currently, natural populations are limited to 1 population on the northern border of the ACT and to 4 known locations in NSW: Tarengo Travelling Stock Route in Boorowa, Captains Flat Cemetery in Queanbeyan, Ilford Cemetery and Steves Travelling Stock Route in Delegate. However, both the Delegate and Captains Flat populations are potentially misidentified as *Prasophyllum petilum* (Department of Agriculture Water and the Environment, 2021).

Prasophyllum sp. Wybong (C. Phelps ORG 5269) is a terrestrial orchid that grows to approximately 30 centimetres high. It has a single, tubular, fleshy, dull-green leaf and a single flower spike with numerous fragrant flowers (Department of the Environment, Water, Heritage and the Arts, 2009). *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) is known from seven populations in open eucalypt woodland and grassland in New South Wales. This species occurs within the Sydney Basin, New England Tablelands, Brigalow Belt South and NSW South Western Slopes IBRA Bioregions and the Border Rivers–Gwydir, Namoi, Hunter–Central Rivers and Central West Natural Resource Management Regions. This species is endemic to NSW, it is known from near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. Most populations are small, although the Wybong population contains by far the largest number of individuals.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements used to assess the species is as follows:

- Approved conservation advice: Conservation *Advice for* Prasophyllum petilum *(Tarengo Leek Orchid)* (Department of Agriculture Water and the Environment 2021), *Approved Conservation Advice for* Prasophyllum *sp. Wybong (C. Phelps ORG 5269) (a leek-orchid)* (Department of the Environment, Water, Heritage and the Arts, 2009).
- Listing advice: There is no relevant listing advice for *Prasophyllum petilum; Commonwealth Listing Advice on* Prasophyllum *sp. Wybong* (C. Phelps ORG 5269) (a leek-orchid). (Threatened Species Scientific Committee (TSSC), 2009).

- Adopted/Made Threat Abatement Plans: *Threat Abatement Plan for competition and land degradation by rabbits* (2016) (Department of Environment and Energy 2016).
- Policy and statement guidelines: *Draft survey guidelines for Australia's threatened orchids* (Department of the Environment, 2013).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Given the taxonomic uncertainty surrounding *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) the true population size is unknown. The estimated population size based on surveys in 2006 was 460 mature individuals (Department of the Environment, Water, Heritage and the Arts, 2009). These numbers likely to apply to the Mangoola site at Wybong.

The known population sizes for *Prasophyllum petilum* are shown in Table B.1.

The project will result in the loss 11.82 hectares of assumed habitat for *Prasophyllum petilum* and *Prasophyllum* sp. Wybong. Given the impacts assessed from the project are in relation to assumed habitat and none of the known populations will be impacted by the project, it is considered unlikely that the project will lead to a long-term decrease in the size of a population.

Table B.1 Known population sizes for *Prasophyllum petilum* (Source: Department of the Environment, Climate Change & Water, 2010)

Site	Numbers	Year
Hall Cemetery	26	2009
Captains Flat Cemetery	Only leaves (i.e. numbers not known accurately)	2009
Ilford Cemetery	6	2009
Tarengo TSR	Approx. 45,000	2009
Steves TSR	19	2009

- *reduce the area of occupancy of the species*

Prasophyllum sp. Wybong (C. Phelps ORG 5269) is eligible for listing as Critically endangered under the EPBC Act as it has a very restricted geographic distribution with an estimated area of occupancy of 1.5 square kilometres (Department of the Environment, Water, Heritage and the Arts, 2009). For *Prasophyllum petilum*, the area of occupancy is about 4.5 hectares. At Ilford, Captains Flat, and Hall Cemetery the plants occur in a very limited area.

Approximately 11.88 hectares of *Prasophyllum* sp. Wybong habitat was burnt by 2019–2020 bushfires with an estimated 296.48 hectares unburnt with the subject land. The approved conservation advice for the *Prasophyllum* sp. Wybong notes that it is not dependent on fire nor is it a factor in the species populations size.

The project has the potential to slightly reduce the area of occupancy and current extent of the species. However, noting the species is only known from a restricted area outside of the subject land, it is unlikely the project would result in the species being lost from any 2 x 2 kilometre grid cell currently forming part of the area of occupancy. Any changes in area of occupancy are considered likely to be negligible.

- *fragment an existing population into two or more populations*

The project would not present a significant barrier to this species. It is considered unlikely that the project would fragment an existing population into two or more populations given that a known population is not being impacted and the current fragmented state of assumed habitat.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Prasophyllum petilum* or *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) or included in the Register of Critical Habitat.

For *Prasophyllum petilum*, due to the species' eligibility for listing (highly restricted range, severe fragmentation, and small population size), all habitat is considered critical to the survival of the species. This habitat includes the area of occupancy of known populations, all areas of the species' historical occurrence and all areas of assumed habitat (habitat areas with attributes necessary for the species' persistence) throughout its geographic and ecological range (Department of Agriculture Water and the Environment, 2021). Given this broad definition it is likely the project would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The generalist Thynnine Wasp has been identified as an important pollinator for the *Prasophyllum petilum*. It is likely that *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) would also be pollinated by the Thynnine Wasp. Given the nature of the project and clearing protocols (i.e. micro-siting towers to minimise impact to threatened species) it is unlikely to introduce any significant barriers to dispersal of seeds or pollinators given that the power lines will span habitats.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Any plants impacted by the project will be classed as one species, but both species are recognised by the Australian Plant Census and separate EPBC Act listings. The assumed loss of habitat to both species is 11.82 hectares.

It is important to recognise that this estimated impact is to assumed habitat based on broad PCT associations inflating the impact significantly. The impacts of tower locations and access tracks will be minimal. The habitats will mostly be spanned by wires and the micro-siting process undertaken before construction begins would further minimise impacts to the greatest extent possible. While these species are known west of the subject land they were not recorded within the subject land. Given the proposed mitigation measures and lack of records the project is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

The project is unlikely to result in an invasive species harmful to these species becoming established in the habitat. Due to previous land use (i.e. agriculture), invasive species are well established in the landscape. The project will implement mitigation measures including weed control to minimise the impacts. Consequently, there is no real chance or possibility that the project will result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to these species. Biosecurity measures will be implemented to reduce the likelihood of introducing diseases or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for *Prasophyllum petilum* or *Prasophyllum* sp. Wybong (C. Phelps ORG 5269).

Conclusion

Based on the potential impacts to assumed habitat, the project is may adversely impact habitat critical to the survival of species. Therefore, it is likely the project would have a significant residual impact on *Prasophyllum petilum* and *Prasophyllum* sp. Wybong (C. Phelps ORG 5269).

B3.2.3 *Pterostylis gibbosa* (Illawarra Greenhood)

Pterostylis gibbosa is listed as endangered under both the NSW BC Act and the EPBC Act. The species is known from a small number of populations in the Hunter region, the Illawarra region and the Shoalhaven region. It is apparently extinct in western Sydney which is the area where it was first collected (1803). All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage (Threatened Species Scientific Committee, 2016b).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved conservation advice: Threatened Species Scientific Committee (2016). *Conservation Advice* Pterostylis gibbosa *Illawarra greenhood*. Canberra: Department of the Environment and Energy. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/4562-conservation-advice-16122016.pdf. In effect under the EPBC Act from 16 Dec 2016.
- Adopted or made recovery plan: National Parks and Wildlife Service (2002). Pterostylis gibbosa *(R.Br.) Illawarra Greenhood Orchid Recovery Plan*. NSW National Parks and Wildlife Service, Hurstville. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/pterostylis-gibbosa-rbr-illawarra-greenhood-orchid-recovery-plan. In effect under the EPBC Act from 19 Feb 2004 as Pterostylis gibbosa.
- Adopted or made Threat Abatement Plan/s: Department of the Environment and Energy (2016). *Threat abatement plan for competition and land degradation by rabbits.* Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits-2016. In effect under the EPBC Act from 07 Jan 2017.
- *Draft survey guidelines for Australia's threatened orchids* (Department of the Environment, 2013).

Significant impact criteria

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Pterostylis gibbosa is known from a small number of populations in the Hunter region (Milbrodale), the Illawarra region (Albion Park and Yallah) and the Shoalhaven region (near Nowra) of New South Wales. The approved conservation advice for the species notes that the population in the Hunter Valley was estimated at 400 plants

The species was recorded within the Singleton Military Area in PCT 3431. The project will result in the loss of 4.98 hectares of confirmed habitat and 8.64 hectares of assumed habitat (total of 13.62 hectares of habitat). Given the nature of the project (i.e. towers will be micro-sited to avoid and minimise impacts) and scale of the impacts (13.62 hectares), it is unlikely the project would lead to a long-term decrease in the size of a population.

- *reduce the area of occupancy of the species*

The species is only known from the Hunter region (Milbrodale), the Illawarra region (Albion Park and Yallah) and the Shoalhaven region (near Nowra) in New South Wales. The project is located at the northern extent of the species distribution. The species was identified by DCCEEW as a fire priority species after the 2019–2020 bushfires. It is estimated that 0.01 hectares of the subject land experienced a low intensity burn during the 2019–2020 bushfires (Department of the Environment and Energy, 2020). When combined with the project's impacts this would represent 13.62 hectares of habitat (including 8.64 hectares of assumed habitat) for the species. It is unlikely the loss of 13.62 hectares would reduce the area of occupancy for the species.

- *fragment an existing population into two or more populations*

The project is estimated to impact on 4.98 hectares of confirmed habitat for this species, with a further 8.64 hectares of assumed habitat. Given the nature of the project (micro-siting transmission line infrastructure and transmission lines spanning over the habitat) it is unlikely project would fragment a population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Pterostylis gibbosa* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Pterostylis gibbosa was recorded within the subject land. Given the species is only known from three location in NSW it is likely habitat within the subject land would represent habitat critical to the survival of the species. However, the loss of 13.62 hectares is would adversely affect habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The approved conservation advice for the species notes *Pterostylis gibbosa* is likely to be pollinated by male fungus gnats of the genus *Mycomya* species. The seeds appear to be wind dispersed and can remain dormant for up to two seasons. The seeds require the presence of a specific strain of the mycorrhizal fungus *Ceratobasidium cornigerum* for successful germination, which is associated with leaf litter. While the project will disturb and/or remove habitat for the gnat and mycorrhizal fungus, including leaf litter, these species are considered common and widespread. Therefore, it is unlikely the project would disrupt the breeding cycle of a population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The species has a highly restricted distribution and is known to occur within the subject land. However, the loss of 13.62 hectares is unlikely to compromise the habitat significantly given the extent of available habitat within the immediate vicinity of the subject land (approximately 15,619.92 hectares of habitat for the species occurs within a 10 kilometre buffer of the subject land). Therefore, it is unlikely the project would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Invasive species currently exist within the landscape. It is unlikely that the project would result in the establishment or spread of invasive species, provided mitigation measures such as such as clearing protocols and where relevant, installation vehicle wash stations are implemented.

- *introduce disease that may cause the species to decline*

There are no diseases known to infect *Pterostylis gibbosa*. Furthermore, mitigation measures will be implemented such as clearing protocols, installation of vehicle wash stations and sediment and control measures to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

The recovery plan for the species notes that the objective of the plan is to protect known populations of *Pterostylis gibbosa* from decline and to develop a management regime, based on current knowledge, designed to promote the plants' conservation and evolutionary potential in situ. The project is unlikely to interfere with the objective of the recovery plan or any action to meet the objective. Therefore, it is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

Pterostylis gibbosa was recorded within the subject land, and the project would result in the loss of 13.62 hectares of habitat critical to the survival of the species (this including 8.64 hectares of assumed habitat) and reduce the area of occupancy for the species. Therefore, it is likely that the project would result in a significant residual impact on *Pterostylis gibbosa*.

B3.2.4 Rhizanthella slateri (Eastern Australian Underground Orchid)

Rhizanthella slateri is listed as endangered under the EPBC Act. The species is described as a 'terrestrial saprophytic' (grows on and derives its nourishment from dead or decaying organic matter) herb and is restricted to NSW. It is currently known only from 10 locations, including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wiseman's Ferry area, Agnes Banks Nature Reserve and near Nowra. The population in the Great Lakes area occurs at the known northern limit of the species' range and is disjunct from other known populations of the species.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant available Commonwealth guidelines and policy statements used in the assessment of this species is as follows:

- Approved Conservation advice: Department of the Environment (2014). *Approved Conservation Advice for* Rhizanthella slateri *(eastern underground orchid)*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/11768-conservation-advice.pdf. In effect under the EPBC Act from 11 April 2014.
- Listing advice: Threatened Species Scientific Committee (2007). *Commonwealth Listing Advice on* Rhizanthella slateri. Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/352963-listing-advice.pdf. In effect under the EPBC Act from 19 December 2007.
- *Draft survey guidelines for Australia's threatened orchids* (Department of the Environment, 2013).

Significant impact criteria

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Since the species' discovery, approximately 90 individuals have been recorded, with the largest known population consisting of approximately 60 individuals. *Rhizanthella slateri* is a cryptic a species and there is limited information regarding the population or preferred habitat. The project is likely to impact 81.37 hectares of assumed habitat for the species and as a result of excavation works for the construction of the access roads and towers. Without further information on the species population and habitat requirements it is considered likely the loss of habitat could lead to a long-term decrease in the size of a population if present within the subject area.

— *reduce the area of occupancy of the species*

Based on currently available information, *Rhizanthella slateri* has a relatively large extent of occurrence, from the NSW south coast to the mid north coast. However, the species is likely to have a very restricted area of occupancy, as it is known from fewer than 10 small, isolated populations within its extent of occurrence. Approximately 54.56 hectares of habitat for the species was impacted by the 2019–2020 bushfires within the subject land. Given the extent of the habitat impacted during the 2019–2020 bushfires, the loss of 81.37 hectares associated with the project may reduce the area of occupancy for this species.

— *fragment an existing population into two or more populations*

Construction of the access roads and towers may require some excavation works which may impact on the species. Therefore, without further information on the species, there is a real chance or possibility that the works combined with the clearing could fragment an existing population into two or more.

— *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Rhizanthella slateri* or included in the Register of Critical Habitat. Little is known about the species habitat requirements and/or preferences. A conservative approach has been applied, and any assumed habitat is considered to represent habitat critical to the survival of the species. The project would result in the loss of 81.37 hectares of habitat for the species.

— *disrupt the breeding cycle of a population*

Given the lack of information on the species and the potential for excavation works, the project may disrupt the breeding cycle of a population.

— *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Rhizanthella slateri is a cryptic a species and there is limited information regarding the population or preferred habitat. The project is likely to impact 81.37 hectares of assumed habitat for the species and would involve excavation works for the construction of the access roads and towers. Without further information on the species population and habitat requirements there is a real chance or probability that the project would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

— *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Adhering to mitigation measures which will be put in place for the project, such as weed controls, would prevent potentially harmful invasive weeds establishing in *Rhizanthella slateri* habitat.

— *introduce disease that may cause the species to decline*

There are no known diseases identified for this species. Biosecurity measures will be implemented to minimise the likelihood of spread of disease or pathogens that could be potentially harmful to this species.

— *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for *Rhizanthella slateri*. The approved conservation advice for the species identifies recovery actions for the conservation of the species including identifying populations of high conservation priority and ensuring there is no disturbance in areas where the Eastern Underground Orchid occurs. There are no populations of high conservation priority. The species has not been recorded in the subject land, and there are no known records of the species. There is a chance that excavation works may disturb individuals, however if detected, mitigation measures will be implemented to minimise impacts on any populations, therefore it is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

Based on the assessment completed above, and without further information on the species population and habitat requirements, it is likely the project would have a significant residual impact on *Rhizanthella slateri*, due to the loss of habitat and potential fragmentation.

B3.3 Vulnerable flora

B3.3.1 Acacia bynoeana (Bynoe's Wattle)

Acacia bynoeana is listed as Vulnerable under the EPBC Act. *Acacia bynoeana* (Bynoe's wattle) family Mimosaceae, also known as the tiny wattle, has a prostrate habit (Cowan, 2001), with stems lying on the ground but rising at the tip. Bynoe's wattle grows to 0.3 m high, with ribbed branchlets (Cowan, 2001). The inflorescences are simple, with globular heads (3.5–4 mm in diameter) borne on short hairy stems, bearing 16–20 light golden flowers (Cowan, 2001). Pods are tapered to both ends and seeds are longitudinal, oblong, 4–4.5 mm long, dull, mottled-brown (Cowan, 2001). The single flower heads can appear between September and March, and seedpods mature between September and January (NSW OEH, 2012). The hairy branchlets distinguish Bynoe's wattle from the similar and more common three-veined wattle (*Acacia trinervata*) (NSW OEH, 2012).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant Commonwealth statutory documents used to assess this species is *The approved Conservation Advice for Acacia bynoeana* Bynoe's Wattle *(Department of Environment 2015)* was reviewed as part of this assessment.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The project occurs near the limit of the species distribution, therefore, is considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The approved conservation advice for *Acacia bynoeana* is known to occur from about 30 locations, with the size of the population very small at each location (30–40 individuals). Most of these known locations are from reserves including Marramarra National Park, Castlereagh Nature Reserve, Blue Mountains National Park and Ku-ring-gai Chase National Park. The species was not recorded during the targeted surveys. Given the lack of records within the subject land for the species to date, and the amount of habitat to be removed, the project is unlikely to lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

The project occurs near the limit of the species range, therefore the loss of 5.79 hectares of assumed habitat may reduce the area of occupancy for the species.

- *fragment an existing important population into two or more populations*

The project is likely to impact on up to 5.79 hectares of assumed habitat for this species, which is also mapped either side of the subject land. The project will implement measures including micro-sitting the towers to minimise, and transmission lines will span larges area so habitat for the species. Given the small area to be impacted it is unlikely the project would result in fragmentation of an important population.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Acacia bynoeana* or included in the Register of Critical Habitat (Department of Climate Change Energy the Environment and Water 2023). 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community (Department of the Environment Heritage Water and the Arts 2009).

There is a general paucity of information for this species regarding population size and demographics. Habitat within the subject land may be important for facilitating population dispersal and contributing to genetic diversity and species recovery. However, given the wider habitat in the surrounding locality, it is unlikely the loss of 5.79 hectares would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

Acacia bynoeana flowers from September to March, and seedpods mature between September and January (Department of Planning and Environment 2013). The project will implement measures including micro-sitting the towers to minimise and is unlikely to result in fragmentation of the species. Therefore, given the small area to be impacted it is unlikely the project would directly disrupt the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Approximately 3.93 hectares were impacted to varying degrees of severity by the 2019–2020 bushfires The project will impact 5.79 hectares of assumed habitat for the species. Given the disjunct nature of known patches and the location of the project near the limit of the species range it is considered likely that the project may modify, destroy, remove or decrease the availability or quality of habitat to the extent that the species is likely to decline at a local level and result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to *Acacia bynoeana*. Mitigation measures will be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No Recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priorities including research, invasive weed management, conservation covenant, improving connectivity and monitoring to support the recovery of *Acacia bynoeana*. The project is also unlikely to result in fragmentation of the species. Therefore, it is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above there is a real chance or possibility that the loss of 5.79 hectares of assumed habitat for *Acacia bynoeana* would reduce the area of occupancy for the species and therefore result in a significant residual impact on the species.

B3.3.2 Angophora inopina (Charmhaven Apple)

Angophora inopina is listed as vulnerable under the EPBC Act. *Angophora inopina* is found in open dry sclerophyll woodland of *Eucalyptus haemastoma* and *Corymbia gummifera* with a dense shrub understorey. The woodland occurs on deep white sandy soils over sandstone, often with some gravelly laterite. This species has a patchy distribution across the Hunter-Central Rivers region of NSW, ranging from Lake Macquarie to north of the Hunter River (Department of the Environment Water Heritage and the Arts 2008c).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved conservation advice: *Approved Conservation Advice for* Angophora inopina (Department of the Environment Water Heritage and the Arts 2008c).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The southern portion of the subject land occurs within the western extent of the species known range. Taking a precautionary approach, considering the largest population of this species occurs in the Lake Macquarie area to the southeast of the subject land, any individuals occurring in the subject land have been considered to form part of an important population for the purpose of this assessment.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Angophora inopina has not been recorded during surveys of the subject land to date. The project is likely to impact on 3.70 hectares of habitat for this species in the form of associated PCTs 3250 and 3582 (Mod-good condition). The remaining extent of PCTs 3250 and 3582 within NSW is 105,006 hectares. The removal of 3.70 hectares for this project (in modified condition) therefore represents less than 0.004% of the remaining extent of this PCT. The subject land generally falls within the western limit of the species known range. Considering this, and the extent of habitat to be removed for the project, it is unlikely the project will lead to a decrease in the size of an important population, if present.

- *reduce the area of occupancy of an important population*

The species has not been recorded within the subject land to date, with most of the population being recorded across an area of 1,250 hectares of mapped, occupied habitat to the east of the subject land (Department of the Environment Water Heritage and the Arts 2008c). Approximately, 1.59 hectares of habitat for this species was impacted by the 2019–2020 bushfires within the subject land, with 27.54 hectares left unburnt.

The removal of 3.70 hectares of assumed habitat (PCTs 3250 and 3582) from the project represents less than 0.004% of the remaining extent of these PCTs, and the species is also known to occur in a number of other PCTs. Considering this, it is unlikely that the project would significantly reduce the area of occupancy of an important population, if present.

- *fragment an existing important population into two or more populations*

This species has not been recorded within the study area to date. However, the project is likely to impact on up to 3.70 hectares of habitat for the species. Similar habitat for the species is extensive in the wider locality and region, and the known populations of this species generally occur to the east of the subject land. Considering this, and the small area of habitat to be impacted, the project is considered unlikely to result in fragmentation of an important population.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Angophora inopina* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The subject land falls within the known or predicted distribution of the species so would likely not be significant in terms of geographic isolation, genetic diversity or dispersal. The species has not been recorded during survey of the subject land to date and considering the small area of habitat to be impacted, it is unlikely that a population occurs within the subject land that would be of sufficient size to maintain genetic diversity or facilitate recovery efforts such as propagation. The habitat to be impacted is not restricted to the subject land and the species is known to occur in other habitats, available more broadly in the region. Consequently, it is unlikely that the project would impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

This species has not been recorded in surveys of the subject land to date. The subject land generally occurs to the west of known populations of the species. Given the small area of assumed habitat to be removed and the lack of records within the subject land to date, the project is generally unlikely to result in direct disruptions to the populations or to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Assumed habitat impacts total 3.70 hectares and given the lack of targeted survey in these habitats; it is difficult to discern if a population occurs within this habitat. However, the species has not been recorded in targeted surveys to date, with most records falling far to the east of the subject land and assessed impact to this species is assumed habitat only. Similar habitat for the species occurs broadly across the locality and region. Given the small area of assumed habitat to be impacted, and the lack of records to date, it is unlikely the project will modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. It is noted that approximately 1.59 hectares were impacted to varying degrees of severity by the 2019–2020 bushfires, however 27.54 hectares were left unburnt.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Adhering to mitigation measures which will be put in place for the project such as pest management, weed and pathogen controls, would prevent potentially harmful invasive weeds establishing in *Angophora inopina* habitat. It is unlikely that the project would result in the establishment or spread of invasive species, provided mitigation measures for the project are adhered to.

- *introduce disease that may cause the species to decline*

Mitigation measures will be recommended, such as weed and pest management plans, vegetation clearing protocols, installation of vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority recovery and threat abatement actions can be implemented to support the recovery of *Angophora inopina*. The project is unlikely to interfere with any of the actions outlined.

Conclusion

This species has not been recorded within the subject land during surveys to date. The project is estimated to impact on 3.70 hectares of assumed habitat for this species in the form of associated PCTs 3250 and 3582. The extent to be impacted is small (representing ~0.004% of the remaining extent of PCTs 3250 and 3582) in terms of similar habitat available to the species locally and the subject land generally occurs outside of the known range of the species. The project is unlikely to impact on habitat critical for survival of or interfere with the recovery of the species. Consequently, the project is considered unlikely have a significant residual impact on *Angophora inopina.*

B3.3.3 *Asperula asthenes* (Trailing Woodruff)

Asperula asthenes is listed as vulnerable under the EPBC Act. The species is found in scattered locations within NSW from Bulahdelah to Kempsey, with several records from the Port Stephens/Wallis Lakes are and is known to occur within the Hunter–Central Rivers and Northern Rivers (NSW) Natural Resource Management Regions.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory document considered in this assessment is the *Approved Conservation Advice for* Asperula asthenes *Trailing Woodruff* (Department of the Environment, Water, Heritage and the Arts, 2008d).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

No important populations are currently listed for *Asperula asthenes.* The project occurs near the limit of the species range. Given this, and taking a precautionary approach, any potentially occurring population within the subject land could be considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Given the records for this species occur within small populations or as individuals that occur near the subject land and the extent of the habitat for *Asperula asthens* within the subject land, it is likely to be necessary for maintaining genetic diversity or dispersal across the region and is assumed to form part of an important population. The project may have a direct impact on a recorded locally occurring population and will impact up to 2.75 hectares of assumed habitat for this species. Therefore, it is unlikely that the project will lead to a decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

Asperula asthens has been recorded from scattered locations within NSW including the Bulahdelah/Kempsey, Port Stephens and Wallis Lakes region and the project is near the limit of the species distribution. Within the subject land approximately 17.92 hectares of habitat for the species was impacted by the 2019–2020 bushfires, with over 45 hectares unburnt. The loss of 2.75 hectares would represent 6% of the remaining unburnt habitat in the subject land.

Given the small area to be impacted and additional habitat for the species within the Biodiversity study area, the project impact will not result in the species being lost from any 2 x 2 kilometre grid cell currently forming part of the area of occupancy. Any changes in area of occupancy are considered likely to be negligible.

- *fragment an existing important population into two or more populations*

Populations of *Asperula asthens* occur in scattered locations across NSW. The project will result in the loss of 2.75 hectares of habitat across the extent of the project. Towers will be micro-sited to minimise impact on threatened species habitat. Therefore, it is unlikely the project would result in fragmentation of an important population.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Asperula asthens* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as breeding, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

There is a general paucity of information for this species regarding population size and demographics. The subject land may provide habitat that is important for facilitating population dispersal and contributing to genetic diversity and species recovery. However, the loss of 2.75 hectares of habitat across the subject land is unlikely to adversely to impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

Asperula asthens flowers in spring (PlantNET, 2024). Little information is available about the species' life cycle and ecology. Given the small area to be impacted, the project is unlikely to result in direct disruptions to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will result in the loss of 2.75 hectares and given the disjunct known populations and the location of the project near the limit of the species distribution, there is a real chance or possibility that the project may decrease the availability of habitat for the species. However, the project will implement mitigation measure to further avoid the impacts. Therefore, the project is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is unlikely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

Mitigation measures will be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No Recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority research, recovery and threat abatement actions can be done to support the recovery of *Asperula asthens*. As the project involves removal of a small area of assumed habitat for the species, the project is unlikely to substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above it is considered unlikely the project would result in a significant residual impact on *Asperula asthens*.

B3.3.4 Cryptostylis hunteriana (Leafless Tongue Orchid)

Cryptostylis hunteriana is listed as vulnerable under the EPBC Act. The species has been reported to occur in a wide variety of habitats including heathlands, heathy woodlands, sedgelands, *Xanthorrheoa* spp. plains, dry sclerophyll forests (shrub/grass sub-formation and shrubby sub-formation), forested wetlands, freshwater wetlands, grasslands, grassy woodlands, rainforests and wet sclerophyll forests (grassy sub-formation) Soils are generally considered to be moist and sandy, however, this species is also known to grow in dry or peaty soils (Department of the Environment, 2025).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory document considered in this assessment is the approved conservation advice: Department of the Environment, Water, Heritage, and the Arts (2008). *Approved Conservation Advice for* Cryptostylis hunteriana *(Leafless Tongue-orchid)*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/19533-conservation-advice.pdf. In effect under the EPBC Act from 03-Jul-2008.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

No important populations are currently listed for *Cryptostylis hunteriana.* The project occurs within the species range. Given this, and taking a precautionary approach, any potentially occurring population within the subject land could be considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Cryptostylis hunteriana has not been recorded within the subject land, with populations known to occur nearby, including in Awaba State Forest near Freeman's Waterhole (Department of the Environment, 2025). The project will remove approximately 7.13 hectares of assumed habitat for the species. The area to be impacted by the project is small in terms of similar habitat available to the species within the immediate locality (approximately 7375.42 hectares within a 10 kilometre buffer of the subject land) and the species was not recorded in the subject land despite seasonal surveys. Therefore, it is unlikely that these impacts would lead to a significant or long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

Cryptostylis hunteriana has been recorded from scattered locations within NSW between Batesmans Bay and Nowra, with additional records in Nelson Bay, Wyee, Catherine Hill Bay, Dolphin Point and Bulahdelah. Within the subject land approximately 0.12 hectares of habitat for the species was impacted by the 2019–2020 bushfires.

Given the small area to be impacted and additional habitat for the species within the immediate locality (7,375.42 hectares within a 10 kilometre buffer of the subject land), the project impact will not result in the species being lost from any 2 x 2 kilometre grid cell currently forming part of the area of occupancy. Therefore, the project would not reduce the area of occupancy for the species.

- *fragment an existing important population into two or more populations*

Populations of *Cryptostylis hunteriana* occur in scattered locations across NSW. The project will result in the loss of 7.13 hectares of habitat across the extent of the project. Towers will be micro-sited to minimise impact on threatened species habitat. Therefore, it is unlikely the project would result in fragmentation of an important population.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Cryptostylis hunteriana* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as breeding, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The subject land falls within the known or predicted distribution of the species so would likely not be significant in terms of geographic isolation, genetic diversity or dispersal. The species has not been recorded during survey of the subject land to date and considering the small area of habitat to be impacted, it is unlikely that a population occurs within the subject land that would be of sufficient size to maintain genetic diversity or facilitate recovery efforts such as propagation. The habitat to be impacted is not restricted to the subject land and the species is known to occur in other habitats, available more broadly in the region. Consequently, it is unlikely that the project would impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

This species has not been recorded in surveys of the subject land to date. The subject land generally occurs to the west of known populations of the species. Given the small area of assumed habitat to be removed and the lack of records within the subject land to date, the project is generally unlikely to result in direct disruptions to the populations or to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Assumed habitat impacts total 7.13 hectares and given the lack of targeted survey in these habitats; it is difficult to discern if a population occurs within this habitat. However, the species has not been recorded in targeted surveys to date, with most records falling far to the east of the subject land and assessed impact to this species is assumed habitat only. Similar habitat for the species occurs broadly across the locality and region. Given the small area of assumed habitat to be impacted, and the lack of records to date, it is unlikely the project will modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

Mitigation measures will be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority recovery and threat abatement actions can be implemented to support the recovery of *Cryptostylis hunteriana*. The project is unlikely to interfere with any of the actions outlined.

Conclusion

Based on the assessment above it is considered unlikely the project would result in a significant residual impact on *Cryptostylis hunteriana*.

B3.3.5 Eucalyptus glaucina (Slaty Red Gum)

Eucalyptus glaucina is listed as vulnerable under the EPBC Act. *Eucalyptus glaucina* is a small to medium sized woodland tree which was originally known from the Rappville district, south of Casino, and in a number of localities in the Taree, Stroud, Dungog and Paterson districts, NSW. This species is only conserved in a flora reserve in Bremer State Forest, south of Casino. One of the records from Taree is of a single tree that was washed away in a flood, and the species has not been recorded at the site since. This species occurs within the Hunter Central Rivers and the Northern Rivers (NSW) Natural Resource Management Regions.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory document used in the assessment of this species is the *Approved Conservation Advice for* Eucalyptus glaucina *Slaty Red Gum*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: https://www.environment.gov.au/biodiversity/threatened/species/pubs/5670-conservation-advice.pdf. In effect under the EPBC Act from 03 July 2008.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

Given the records occur near the western limit of the species range and the extent of the recorded presence and assumed habitat for *Eucalyptus glaucina* within the subject land, it is likely to be necessary for maintaining genetic diversity or dispersal across the region and is assumed to form part of an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Although *Eucalyptus glaucina* has not been recorded within the subject land, this species has been recorded previously south of the Singleton Military Area. The project will disturb habitat for the species, and it is assumed that 34 individuals could be lost.

Given the lack of information available on the specific population count for this species, a precautionary approach has been applied; therefore, the assumed loss of 34 individuals is likely to lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

Given that the species has a restricted distribution and this population is located on the western extent of its range, there is a real chance or possibility the assumed loss of 34 individuals would reduce the area of occupancy of an important population.

- *fragment an existing important population into two or more populations*

The project is likely to result in fragmentation impacts associated with the construction of access roads and the towers. Mitigation measures will be implemented to minimise these impacts. The loss of 34 assumed individual has the potential to fragment an important population. However, given the pollination and seed dispersal mechanisms of this species (by beetles, flies and flying foxes), this linear based project is unlikely to result in impeding cross-pollination of remaining individuals. As such it is considered unlikely that the project will result in the fragmentation of an existing important population in two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Eucalyptus glaucina* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

There is a general paucity of information for this species regarding population size and demographics. Given the location of the recorded populations at or near the limit of the species range, and the number of individuals recorded, it is possible that this habitat may be important for facilitating population dispersal and contributing to genetic diversity and species recovery. Therefore, the project may adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

Eucalyptus glaucina flowers between August and December by beetles, flies and flying foxes. While habitat will be removed, the project is unlikely to significantly impact the pollinators. Therefore, it is unlikely the project would disrupt the life cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will impact 34 assumed individuals. Given the limited extent of the species distribution, it is likely that the project would decrease the availability of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be implemented to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

There are no diseases known to impact *Eucalyptus glaucina*. Furthermore, mitigation measures will be recommended, such as vegetation clearing protocols, installation vehicle wash stations and sediment and control measures to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No Recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority recovery and threat abatement actions can be done to support the recovery of *Eucalyptus glaucina*. As the project involves the removal of assumed habitat and estimated 34 individuals, the project is likely to interfere with the recovery of the species.

Conclusion

Little information is currently known about the size and distribution of existing populations of this species (Department of Climate Change Energy the Environment and Water 2023), however, considering the size and extent of recorded populations within the project area and the location of individuals near the western extent of the species known range, the project is likely to impact on an important population of *Eucalyptus glaucina*.

Although *Eucalyptus glaucina* has not been recorded within the subject land to date, it was recorded in the immediate locality of the subject land. The project is estimated to impact 34 individuals of this species, as a precautionary approach this estimated impact is considered to have a significant residual impact on an important population.

B3.3.6 Grevillea parviflora subsp. parviflora (Small-flower Grevillea)

Grevillea parviflora subsp. parviflora is listed as vulnerable under the EPBC Act. This Small-flower Grevillea is endemic to NSW and occurs sporadically throughout the Sydney Basin. There are at least 21 known populations, of which, three are thought to be extinct and several need to be confirmed (NSW NPWS 2002g). In more urbanised areas closer to Sydney, the isolation of populations is likely to be increasing and perhaps reflected in the smaller population sizes in these areas (NSW NPWS 2002h).

The approved conservation advice for the species notes that sizeable populations occur in the Hunter Valley in the Cessnock – Kurri Kurri area (particularly Werakata NP), with a northern limit of Heddon Greta in the Lower Hunter Valley (Putty to Wyong on the Central Coast, the western shores of Lake Macquarie on the Central Coast at Dooralong, Cooranbong and Awaba (Makinson 2008 pers. comm.; NSW NPWS 2002g), near Liverpool, where small populations occur at Kemps Creek and Voyager Point (NSW NPWS 2002h) west of Prospect to Woronora Plateau (this population is now extinct) (James et al. 1999).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory documents used in the assessment of this species is approved conservation advice: Department of the Environment, Water, Heritage and the Arts (2008). Approved Conservation Advice for Grevillea parviflora subsp. parviflora (Small-flower Grevillea). Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/64910-conservation-advice.pdf. In effect under the EPBC Act from 26-March-2008.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The project occurs near with the known distribution range of the species Hunter Valley subpopulations. Therefore, the species is considered be considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

As noted above the project is located in an area that is known to support a sizeable population of the species. The project is likely to remove 6.74 hectares of recorded habitat, with a further 5.13 hectares of assumed habitat for the species. Given the extent of habitat and populations of the species it is unlikely the project would reduce the resources for this species that would lead to a long-term decrease in the size of the population.

- *reduce the area of occupancy of an important population*

The extent of occurrence of the *Grevillea parviflora subsp. parviflora is* estimated at 6,590 square kilometres. With an estimated area of occupancy 55 square kilometres. The habitat within the subject land was impacted by the 2019/2020 bushfires, with 3.24 hectares of habitat burnt within the subject land, which represents 0.059 % of the estimated area of occupancy for the species. The project will result in the loss of 11.87 hectares which when considering the impact of the bushfires represents 0.27% of the area of occupancy of the population. The impacts will not result in the species being lost from any 2 x 2 kilometre grid cell currently forming part of the area of occupancy. Therefore the project would not reduce the area of occupancy for the species.

- *fragment an existing important population into two or more populations*

The project would not present a significant barrier to this species, given the nature of the project (i.e. towers will be micro-sited and transmission lines will span across large tracts of habitat). Therefore, it is unlikely that the project would fragment an existing population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Grevillea parviflora subsp. parviflora* or included in the Register of Critical Habitat (Department of Climate Change Energy the Environment and Water 2023). The species occurs in a range of vegetation types from heath and shrubby woodland to open forest (NSW NPWS, 2002; NSW NPWS, 2007). Populations are also found in disturbed sites along roads and tracks and within open areas of habitat. If habitat critical to the survival of the species occurs within the subject land it is unlikely the loss of 11.87 hectares within the subject land would result in adverse impact, given the extent of habitat and known populations of the species.

- *disrupt the breeding cycle of an important population*

There is little information on relating to the reproductive biology of the species. However, given the nature of the project (i.e. towers will be micro-sited and transmission lines will span across large tracts of habitat) it is unlikely the project would provide as barrier to dispersal. Furthermore, if information become available fire management protocols will consider the species requirements where possible. Provided the mitigation measures are implemented it is unlikely the project would disrupt the species ability to pollinate.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project is likely to impact 11.87 hectares of habitat for the species across the project. The impacts of tower locations and access tracks will be minimal. The habitats will mostly be spanned by transmission lines and the micro-siting process undertaken before construction begins would further minimise impacts to the greatest extent possible. Given the nature of the project, it is unlikely to modify, destroy isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to this species. Mitigation measures will be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for this species. The approved conservation advice for the species sets out actions for the conservation of the species including:

- managing threats to areas of vegetation that contain populations/occurrences/remnants of species
- ensure road widening and maintenance activities (or other infrastructure or development activities) in areas where the species occurs do not adversely impact on known populations
- monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary
- manage sites to prevent introduction of invasive weeds, which could become a threat to species, using appropriate methods.

The project will occur within a known population of the species. The project will result in the loss of 11.87 hectares of habitat for this species. Mitigation measure will be implemented to further reduce the impacts; therefore, it is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above, the project is unlikely to have a significant residual impact on *Grevillea parviflora subsp. parviflora*.

B3.3.7 Melaleuca biconvexa (Biconvex Paperbark)

Melaleuca biconvexa is listed as vulnerable under the EPBC Act. The approved conservation advice for the species notes that *Melaleuca biconvexa* occurs in coastal districts and adjacent tablelands in NSW, from Jervis Bay to Port Macquarie The species occurs within the Hawkesbury-Nepean, Northern Rivers, Hunter-Central Rivers and Southern Rivers NSW Natural Resource Management (NRM) regions (TSSC 2008).

The approved conservation advice states that the species occurs in damp places, often near streams and rivers or low-lying areas on alluvial soils of low slopes or sheltered aspects. It occurs in coastal districts and adjacent tablelands. *Melaleuca biconvexa* may occur in dense stands forming a narrow strip adjacent to watercourses, in association with other Melaleuca species or as an understorey species in wet forest types.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory documents used in the assessment of this species is approved conservation advice: Department of the Environment, Water, Heritage and the Arts (2008). *Approved Conservation Advice for* Melaleuca biconvexa *(Biconvex Paperbark)*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/5583-conservation-advice.pdf. In effect under the EPBC Act from 26 March 2008.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

Melaleuca biconvexa is described as occurring as 'disjunct populations' across the species' range. Based on SPRAT the known predicted species mapping for the species shows the distribution of the species occurring closer to the coast. The main concentration of records occurs around the Gosford/Wyong area The southern portion of the project occurs near with the limit of the western distribution of the species. Therefore, the species is considered to be an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The key population of the species occurs around Gosford and Wyong which is outside of the subject land. The project is likely to remove 6.05 hectares of assumed habitat for the species. Given the area to be impacted and location of the project near the limit of the species range, it is considered the habitat may be necessary for maintaining genetic diversity or dispersal across the region. Therefore, the project may lead to the long-term decline in the size of an important population.

- *reduce the area of occupancy of an important population*

Approximately 15.33 hectares of habitat for the species was impacted by the 2019–2020 bushfires, with 61.75 hectares remaining intact. Given the species occurs near the western limit of the species range, there is a real chance or possibility that the clearing of 6.05 hectares of assumed habitat may reduce the area of occupancy for the species.

- *fragment an existing important population into two or more populations*

The project would not present a significant barrier to this species, given the nature of the project (i.e. towers will be micro-sited and transmission lines will span across large tracts of habitat). Therefore, it is unlikely that the project would fragment an existing population into two or more populations

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Melaleuca biconvexa* or included in the Register of Critical Habitat. Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The subject land contains assumed habitat and is located near the limit of the species range. Therefore, without further information the habitat could be considered necessary for the dispersal, long term maintenance or habitat for the species reintroduction. The loss of 6.05 hectares of assumed habitat within the subject land is likely to adversely affect habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The project is unlikely to provide a barrier to seed dispersal for the species, however, approve conservation advice for the species notes that multiple stems may arise from single rootstock. The project will require excavation works during the construction of the project which may disrupt the breeding cycle of a population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The key population of the species occurs around Gosford/Wyong are which is outside of the subject land. The project is likely to remove 6.05 hectares of assumed habitat for the species. Given the area to be impacted and location of the project near the limit of the species range, it is considered the habitat may be necessary for maintaining genetic diversity or dispersal across the region. Therefore, the project may modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to this species. Mitigation measures will be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. The project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for this species. The approved conservation advice for the species sets out research priorities including monitoring; protection of known populations, management of threat; local and regional priorities. The project is unlikely to interfere with these recovery actions.

Conclusion

Given the area to be impacted and location of the project near the limit of the species range, the project may lead to the long-term decline in the size of an important population and reduce the area of occupancy for the species. Therefore, based on the assessment completed above, it is likely the project would result in a significant residual impact on *Melaleuca biconvexa*.

B3.3.8 Olearia cordata

Olearia cordata is listed as vulnerable under the EPBC Act. *Olearia cordata* occurs in woodland on exposed Hawkesbury Sandstone ridges. It grows in shallow or skeletal soils that are neutral to slightly acidic. It is recorded at altitudes from 150–500 metres above sea level on steep to gentle slopes.

The species is generally restricted to the southwestern Hunter and eastern Colo Plateau, with southern outliers recorded in the far northwest of the Hornsby Plateau, near Wisemans Ferry and South Maroota, and one record near Sackville, adjoining the Hawkesbury-Nepean River (Department of the Environment Water Heritage and the Arts, 2008e).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant Commonwealth statutory document considered in the assessment of the species is the *Approved Conservation Advice for* Olearia cordata (Department of the Environment Water Heritage and the Arts, 2008e).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

No important populations are currently listed for *Olearia cordata* (Department of the Environment Water Heritage and the Arts, 2008e). The project occurs at the eastern and northern limit of the species range. Given this and taking a precautionary approach, any potentially occurring population within the subject land could be considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Olearia cordata has not been recorded within the subject land and the majority of extant records for the species occur to the south of the subject land in areas managed by the National Parks and Conservation Service (Department of the Environment Water Heritage and the Arts, 2008e). The project will remove approximately 2.24 hectares of assumed habitat for the species. The area to be impacted by the project is small in terms of similar habitat available to the species within the immediate locality (approximately 28,189.59 hectares within a 10 kilometre buffer of the subject land) and the

species was not recorded in the subject land despite seasonal surveys. Therefore, it is unlikely that these impacts would lead to a significant or long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

Olearia cordata has not been recorded within the subject land, however species presence has been assumed within the Yengo IBRA subregion where survey not undertaken. In total the project is estimated to impact on 2.24 hectares of assumed habitat for this species representing a small proportion of similar habitat available within the locality (approximately 28,189.59 hectares within 10 kilometre buffer of the subject land). Given the lack of records for the species and extensive habitat in the immediate vicinity, it is considered unlikely to reduce the area of occupancy for an important population.

- *fragment an existing important population into two or more populations*

The project is likely to impact on up to 2.24 hectares of assumed habitat for this species, part of which occurs within larger patches of woodland. The project will micro-site towers to avoid and minimise impacts to threatened species, with transmission lines spanning across the habitat. Therefore, it is unlikely the project would fragment an existing population into two or more.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Olearia cordata* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

This species has not been recorded in surveys of the subject land to date. Given the extent of habitat within the immediate vicinity of the subject land (approximately 28,189.59 hectares within a 10 kilometre buffer of the subject land), it is unlikely that the area to be impacted would be important habitat for facilitating population dispersal and contributing to genetic diversity and species recovery. Therefore, the project is unlikely to impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

This species has not been recorded in surveys of the subject land to date. The subject land generally occurs to the east of known populations of the species. Given the small area of habitat to be removed and the lack of records within the subject land, the project is unlikely to result in direct disruptions to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project is likely to result in the loss of 2.24 hectares of assumed habitat for the species. *Olearia cordata* has a highly restricted distribution, and is known to occur in Pokolbin State Forest, adjacent to the subject land, although the species has not recorded during surveys to date, therefore assessed impact to this species is assumed habitat only. Approximately 69.18 hectares of habitat was impacted by the 2019–2020 bushfires, with 134.24 hectares remaining intact. The project would result in the loss of 1.67% of the remaining unburnt area. Given the small area of assumed habitat to be impacted, and the lack of records to date, it is unlikely the project will modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Adhering to mitigation measures which will be put in place for the project such as pest management, weed and pathogen controls, would prevent potentially harmful invasive weeds and vertebrate pests such as rabbits, cats and foxes establishing in *Olearia cordata* habitat. It is unlikely that the project would result in the establishment or spread of invasive species, provided mitigation measures such as vegetation clearing protocols, installation vehicle wash stations and sediment and control measures are implemented.

- *introduce disease that may cause the species to decline*

There are no diseases known to impact *Olearia cordata*. Furthermore, mitigation measures will be implemented, such as vegetation clearing protocols, installation vehicle wash stations and sediment and control measures to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority recovery and threat abatement actions can be done to support the recovery of *Olearia cordata*. The project is unlikely to interfere with any of the actions outlined.

Conclusion

Olearia cordata has not been recorded within the subject land to date. The project is estimated to impact on 2.24 hectares of assumed habitat for this species. The extent to be impacted is small in terms of similar habitat available to the species locally (28,189.59 hectares) and is unlikely to impact on habitat critical for survival or interfere with the recovery of the species. Consequently, the project is considered unlikely to have a significant residual impact on *Olearia cordata.*

B3.3.9 Ozothamnus tesselatus

Ozothamnus tesselatus is listed as vulnerable under the EPBC Act. The species is restricted to a few locations north of Rylstone, NSW, and is conserved within the Goulburn River National Park and Munghorn Gap Nature Reserve. This species has been collected at eight sites in a restricted area over a range of 300 square kilometres.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory document relevant to the assessment of this species is the *Approved Conservation Advice for* Ozothamnus tesselatus (Department of the Environment Water Heritage and the Arts, 2008f).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

There is little information regarding the population of the species. Noting the project occurs withing the known and predicted distribution of the species and without further population information a conservative approach has been undertaken, therefore the species is considered to be part of an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The project is located within the known and predicted range of the species; however, the species was not recorded despite targeted seasonal surveys. The project would result in the loss of 0.65 hectares of assumed habitat. Approximately 25,477.76 occur within the immediate vicinity (within a 10 kilometre buffer of the subject land). Given the lack of records, small area to be impacted and extent of habitat within the immediate surrounds it is unlikely the project would lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

Habitat within the subject land was impacted by the 2019–2020 bushfires, with approximately 1.59 hectares burnt and 170.37 unburnt. The project is likely to impact on up to 0.65 hectares of habitat for this species. Taking account of the areas burnt and impacts of the project, the area of occupancy would be reduced by 1.3%. Parts of the project are at the limit of the species range, however given the extensive habitat in the immediate vicinity (within a 10 kilometre buffer of the subject land), and small area to be impacted it is unlikely the project would significantly reduce the area of occupancy for an important population.

- *fragment an existing important population into two or more populations*

The project is likely to impact on up 0.65 hectares of assumed habitat for this species, which is also mapped either side of the subject land. Given the lack of records, small area to be impacted, and nature of the project it is considered unlikely the project would result in fragmentation of an important population.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Ozothamnus tesselatus* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as breeding, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community (Department of the Environment Heritage Water and the Arts 2009).

There is a general paucity of information for this species regarding population size and demographics. Known habitat for the species is restricted; therefore, it is likely that any population occurring within this habitat may be important for facilitating population dispersal and contributing to genetic diversity and species recovery. However, given the extensive habitat in the immediate vicinity (25,477.76 within a 10 kilometre buffer of the subject land), it is unlikely the project would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

Given the small impact extent and nature of impact, it unlikely the project would cause disruptions to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Given the given the extensive habitat in the immediate vicinity (25,477.76 within a 10 kilometre buffer of the subject land), and small area to be impacted it is unlikely the loss of habitat associated with the project would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to *Ozothamnus tesselatus.* Mitigation measures will be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. The project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority research, recovery and threat abatement actions can be done to support the recovery of *Ozothamnus tesselatus.* The removal of 0.65 hectares of habitat for the species is likely to interfere with the recovery of the species.

Conclusion

Based on the assessment above, it is unlikely the project would have a significant residual impact on *Ozothamnus tesselatus*.

B3.3.10 Prostanthera cineolifera (Singleton Mint-bush)

Prostanthera cineolifera is listed as vulnerable under the EPBC Act. *Prostanthera cineolifera* occurs in sclerophyll forests and open woodlands on exposed sandstone ridges and is often found in association with shallow or skeletal sands.

Prostanthera cineolifera occurs within the Hawkesbury–Nepean, Hunter–Central Rivers and Northern Rivers (NSW) Natural Resource Management Regions. Its distribution is uncertain, but it is considered to be restricted to only a few localities near Walcha, Scone and St Albans, NSW.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: *Approved Conservation Advice for* Prostanthera cineolifera (Department of the Environment, Water, Heritage and the Arts, 2008g).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

Prostanthera cineolifera is restricted to only a few localities near Scone, Cessnock and St Albans. However, it is now believed that the Scone and St Albans populations are likely undescribed taxon. Within the subject land, *Prostanthera cineolifera* was recorded extensively within Pokolbin State Forest and neighbouring private properties (Yengo IBRA subregion). Given the restricted range of the species, it is considered that the species within the subject land would represent an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Prostanthera cineolifera was recorded within the subject land. In total the project is estimated to impact on 47.34 hectares of confirmed habitat and 18.54 hectares of assumed habitat (65.88 hectares of habitat total) for this species.

Given the extent of habitat for *Prostanthera cineolifera* within the impact area, potentially occurring populations may be necessary for maintaining genetic diversity or dispersal across the region. Therefore, the project is considered likely to lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

Approximately 78.74 hectares of habitat for the species was impacted during the 2019–2020 bushfires. The project is likely to impact on up to 65.88 hectares of habitat for this species. Given the species' restricted distribution and known location, and loss of habitat due to the bushfires, it is likely the project would reduce the area of occupancy of an important population.

- *fragment an existing important population into two or more populations*

The project is likely to result in fragmentation impacts associated with the construction of access roads and the towers. Mitigation measures will be implemented to minimise these impacts, however the loss of 65.88 hectares of habitat on the western side of an important population may result in an existing important population being fragmented into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Prostanthera cineolifera* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

There is a general paucity of information for this species in regard to population size and demographics. Given the species was recorded within the subject land, and the restricted range of the species, it is likely that habitat within the subject land would represent habitat critical to the survival of the species. The loss of 65.88 hectares is likely to adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

Prostanthera cineolifera flowers predominately between September to October (PlantNET, 2023) and is likely to pollinate from beetles and flies. While habitat will be removed, the project is unlikely to significantly impact the pollinators, therefore is unlikely to result in direct disruptions to the ecological processes and functions important for the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will impact 65.88 hectares of habitat for the species. Given the limited extent of the species distribution, it is likely that the project would decrease the availability of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be implemented to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

Dieback associated with *Phytophthora cinnamon* is identified as a possible threat to this species within the Conservation Advice. Mitigation measures will be implemented, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority research, recovery and threat abatement actions that can be done to support the recovery of *Prostanthera cineolifera*. As the project involves removal of habitat for the species, the project is likely to interfere with the recovery of the species according to the approved conservation advice.

Conclusion

This species has been recorded within the subject land, with the project likely to impact on up to 65.88 hectares of habitat for this species. Considering the extent of species distribution and scale of the impacts the project is likely have a significant residual impact on *Prostanthera cineolifera*.

B3.3.11 Rutidosis heterogama (Heath Wrinklewort)

Rutidosis heterogama is listed as vulnerable under the EPBC Act. The species is confined to the North Coast and Northern Tablelands regions of NSW. It is known from the Hunter Valley to Maclean, Wooli to Evans Head, and Torrington (Harden, 1992). It occurs within the Border Rivers–Gwydir, Hunter–Central Rivers and Northern Rivers Natural Resource Management Regions.

Rutidosis heterogama mostly inhabits heath, and is often found along disturbed roadsides (Harden, 1992). It occurs on moist sites in open forest and in sedgeland/heathland within shrubby open forest and woodland, at 860–1040 m above sea level, on granitic substrates in podsolic and lithosolic soils. The seeds are dispersed by wind and the species appears to require soil disturbance for successful recruitment.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved conservation advice: Department of the Environment, Water, Heritage and the Arts (2008). Approved Conservation Advice for Rutidosis heterogama (Heath Wrinklewort). Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/13132-conservation-advice.pdf. In effect under the EPBC Act from 03-July-2008.
- Adopted or made threat abatement plan: Department of the Environment and Energy (2016). Threat abatement plan for competition and land degradation by rabbits. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits-2016. In effect under the EPBC Act from 07-January-2017.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The project occurs withing the known and predicted distribution of the species. Without further population information a conservative approach has been undertaken, therefore the species is an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Given the extent of assumed habitat for *Rutidosis heterogama* (0.66 hectares) within the impact area, potentially occurring populations are unlikely to be of sufficiently large size to be necessary for maintaining genetic diversity or dispersal across the region. Given the lack of records for the species to date, the project is unlikely to lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

Rutidosis heterogama occurs on the North Coast and Northern Tablelands regions of NSW. It is known from the Hunter Valley to Maclean, Wooli to Evans Head, and Torrington. It occurs within the Border Rivers–Gwydir, Hunter-Central Rivers and Northern Rivers (NSW) Natural Resource Management Regions. The project would result in the loss of 0.66 hectares. Given the extensive habitat in the immediate vicinity of the project area (approximately 41,210.23 hectares within a 10 kilometre radius of the subject land), and small area to be impacted, the project would not result in the species being lost from any 2 x 2 kilometre grid cell currently forming part of the area of occupancy. Therefore, it is unlikely the loss of 0.66 hectares would reduce the area of occupancy for the species.

- *fragment an existing important population into two or more populations*

The project would not present a significant barrier to this species, given the nature of the project (i.e. towers will be micro-sited and transmission lines will span across large tracts of habitat). Therefore, it is unlikely that the project would fragment an existing population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Rutidosis heterogama* or included in the Register of Critical Habitat (Department of Climate Change Energy the Environment and Water 2023). Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community (Department of the Environment 2013).

The subject land may provide habitat for an important population of the species, however the loss of 0.66 hectares of assumed habitat is unlikely to adversely affect habitat critical to the survival of the species. In addition, approximately 41,210.23 hectares of habitat for this species occurs the immediate vicinity (within a 10km radius of the subject land).

- *disrupt the breeding cycle of an important population*

Rutidosis heterogama seeds are dispersed by wind and the species appears to require soil disturbance for successful recruitment, therefore given the natures of the project, it is unlikely it would disrupt the breeding cycle of the species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will result in the loss of 0.66 hectares of assumed habitat for the species. Given the area of available habitat within the immediate vicinity (41,210.23 hectares of habitat within a 10km radius of the subject land), it is unlikely the loss of this habitat would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to this species. Mitigation measures will be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for this species. The approved conservation advice for the species set out research priorities including monitoring; protection of known populations, management of threat; local and regional priorities. The project is unlikely to interfere with these recovery actions.

Conclusion

Based on the assessment completed above, the project is unlikely to have a significant residual impact on *Rutidosis heterogama*.

B3.3.12 Syzygium paniculatum (Magenta Lilly Pilly)

Syzygium paniculatum is listed as vulnerable under the EPBC Act. *Syzygium paniculatum* is a rainforest tree with a total population of at least 1500 plants spread across a 400 kilometre stretch of coastal NSW. Its bright pink edible fruit is dispersed by flying foxes and rainforest birds. The Magenta Lilly Pilly is superficially similar to *Syzygium australe* (Brush Cherry), *S. oleosum* (Blue Lilly Pilly) and *Syzygium smithii* syn. *Acmena smithii* (Lilly Pilly), which also occur within the natural range of the Magenta Lilly Pilly.

The Magenta Lilly Pilly is endemic to New South Wales and is distributed along a 400 kilometre coastal stretch between Conjola National Park in the south and Taree in the north. The Magenta Lilly Pilly occurs in restricted habitats that have been extensively cleared or modified, including lowland and littoral rainforest.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved conservation advice: *Conservation Advice for* Syzygium paniculatum *(magenta lilly pilly)* (Department of Climate Change, Energy, the Environment and Water, 2023)
- Adopted/Made Recovery Plan: *National Recovery Plan Magenta Lilly Pilly* Syzygium paniculatum (Office of Environment and Heritage 2012).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The project lies at the western (inland) extent of the known range of *Syzygium paniculatum* within a largely coastal distribution of records which covers a distance of 66 kilometres. In addition to this, the approved conservation advice for the species states that 'All naturally occurring populations, and the full range of genetic diversity they contain, are considered to be important.' As such, it is considered that any species occurring within the subject land would form part of an important population for the purpose of this assessment.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The population size of *Syzygium paniculatum* is estimated at a minimum of 1,500 plants. Whilst the species has not been recorded during surveys of the subject land to date, the presence of the species is associated with PCTs 3150, 3242 and 3250 within the subject land, and therefore it is assumed to be present. It is assumed that, the project would result in a loss of 61 individuals, representing loss of 4% of the total population. The loss of 4% of the population is unlikely to lead to the long-term decrease in the size of the population.

- *reduce the area of occupancy of an important population*

The area of occupancy for the species is estimated at approximately 200 square kilometres or 20,000 hectares according to the approved conservation advice. The removal of assumed habitat would constitute a potential reduction in area of occupancy for the species of 0.4% and as such would not be considered a significant reduction in area of occupancy.

- *fragment an existing important population into two or more populations*

This species has not been recorded within the subject land to date; however, the project is likely to impact on up 61 assumed *Syzygium paniculatum* individuals. Considering the existing disjunction of the current population into multiple populations and sub-populations it is unlikely that the project would result in fragmentation of an important population into two or more populations. In addition, mitigation measures will be implemented to avoid and minimise impacts on threatened species including micro-siting of towers to avoid threatened species.

- *adversely affect habitat critical to the survival of a species*

According to the approved conservation advice for the species, habitat critical to the survival of the species includes 'all habitat in which *Syzygium paniculatum* populations occur' This species has not been recorded in surveys of the subject land to date. The subject land generally occurs to the west of known populations of the species, therefore it is unlikely the subject land would represent habitat critical to the survival of the species. The project would not adversely affect habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

This species has not been recorded in surveys of the subject land to date. The subject land generally occurs to the west of known populations of the species. The approved conservation advice for the species notes that it is able to produce seed both sexually (through pollination) and asexually (without pollination). There are a range of known pollinators for the species including flying foxes, possums, honeyeaters, bees, beetle, moths and butterflies. It is unlikely the project would significantly reduce the pollinators such that the species would not be able to reproduce sexually. It is unlikely the project would disrupt the life cycle of this species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The species has not been recorded in targeted surveys to date, with most records falling far to the east of the subject land and assessed impact to this species is assumed individuals only. Similar habitat for the species occurs broadly across the locality and region with over 47,000 hectares in the immediate vicinity of the subject land (within a 10 kilometre radius of the subject land). Given the lack of records to date, it is unlikely the project will modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

Mitigation measures will be implemented, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

Then National Recovery Plan for *Syzygium paniculatum* lists the following major threats to the species:

- habitat clearing and fragmentation
- low genetic diversity
- inappropriate grazing regimes
- weed infestations
- inappropriate fire regimes
- climate change
- introduced vertebrate pests
- recreational activities
- pathogens
- changes to local water regimes through water extraction.

The removal of 61 *assumed Syzygium paniculatum* individuals is unlikely to substantially interfere with the recovery of the species.

Conclusion

This species has not been recorded within the subject land during surveys to date. The project would result in the clearing of assumed habitat for this species in the form of associated PCTs 3150, 3242 and 3250, resulting in a potential loss of up to 61 individuals. A loss of 61 plants would consist of around 4% of the total population. Given the extensive habitat in the immediate vicinity, lack of records and small assumed impact, it is unlikely the project would result in a significant residual impact on *Syzygium paniculatum.*

B3.3.13 Tetratheca juncea (Black-eyed Susan)

Tetratheca juncea is listed as Vulnerable under the EPBC Act. The species occurs on nutrient poor soils, and can be found on ridges, in woodland and open forest with a shrub understorey and groundcover of grasses. This species has also been recorded in moist forest and heath. Associated species include *Angophora costata* (Smooth Barked Apple), *Corymbia gummifera* (Red Bloodwood), *Eucalyptus haemastoma* (Scribbly Gum) and *Eucalyptus capitellata* (Brown Stringybark) (Department of the Environment, Water, Heritage and the Arts, 2008).

Tetratheca juncea occurs within coastal districts of the Hunter-Central Rivers region, from Lake Macquarie north to Bulahdelah, with an east-west range of approximately 50 kilometres (Department of the Environment, Water, Heritage and the Arts, 2008).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant available Commonwealth guidelines and policy statements used in this assessment is as follows:

- Approved Conservation Advice: Approved Conservation Advice for *Tetratheca juncea* (Department of the Environment, Water, Heritage and the Arts, 2008).
- Listing Advice: Commonwealth Listing Advice on *Tetratheca juncea* (Threatened Species Scientific Committee, 2005).
- Adopted/made threat abatement plan: Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Department of the Environment and Energy, 2017) and Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi (Department of Environment and Energy, 2018).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The approved conservation advice for the species notes that there are four subpopulations known to have of greater than 1000 plant clumps each: 1. Green Point Recreation Reserve; 2. Awaba Interchange; 3. Jewells/Red Head; and 4. Glenrock State Recreation Area. These populations are considered to be necessary for maintaining genetic diversity. The conservation advice also identifies populations that are near the limit of the species range including from Bulahdelah on the NSW north coast to Wyong on the NSW central coast and inland to Maitland and Kurri Kurri. Isolated populations are present in the Cessnock, Newcastle, Port Stephens and Great Lakes local government areas. The project is located near the Cessnock government areas. Considering the species was recorded in the subject land near Cooranbong, it is potentially part of the Awaba Interchange subpopulation. Therefore, the species is potentially an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The species approved conservation advice states that there are approximately 239 subpopulations known to occur with 83% of these subpopulations consisting of fewer than 50 individuals. The project is likely to impact on up to 3.35 hectares of recorded habitat, and a further 11.33 hectares of assumed habitat for this species. Given the low population of the species, it is considered likely the project would lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

The approved conservation advice notes that *Tetratheca juncea* has a small extent of occurrence (estimated to be between 1594 and 1861 square kilometres) and is severely fragmented (i.e. most individuals are found in small and relatively isolated subpopulations). A small area (1.91 ha) of the species habitat was impacted by the 2019/2020 bushfires, with 38.84 hectares unburnt within the subject land.

The species is known to consist of approximately 239 subpopulations with 83% of these subpopulations consisting of fewer than 50 individuals. Most subpopulations occur in the Wyong and Lake Macquarie local government areas, with isolated populations present in the Cessnock, Newcastle, Port Stephens and Great Lakes local government areas. The project is likely to impact on up to 14.68 hectares of habitat for this species, given the subject land is near the limit of the species range, it is likely the loss of this would reduce the area of occupancy for the species.

- *fragment an existing important population into two or more populations*

The project is likely to impact on up to 14.68 hectares of recorded and assumed habitat for this species part of which occurs within larger patches of woodland. As such there is the potential for marginal fragmentation of habitat on a local scale.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Tetratheca juncea* or included in the Register of Critical Habitat (Department of Climate Change Energy the Environment and Water 2023a). 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community (Department of the Environment Heritage Water and the Arts 2009).

The approved conservation advice for the species notes that there are four subpopulations known to have of greater than 1000 plant clumps each: 1. Green Point Recreation Reserve; 2. Awaba Interchange; 3. Jewells/Red Head; and 4. Glenrock State Recreation Area. The subject land occurs outside of these populations and given the dispersal mechanism of the species the habitat is unlikely to represent critical habitat for the species. Therefore, the project is unlikely to impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

Tetratheca juncea flowers predominately between July and December (NSW PlantNet, 2023). The project is generally unlikely to result in direct disruptions to the ecological processes and functions important for the life cycle of this species, including the breeding cycle.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project is likely to impact on up to 14.68 hectares of habitat for this species. *Tetratheca juncea* is severely fragmented, consisting of approximately 240 subpopulations with over 80% containing 50 or fewer plant clumps. The project will implement mitigation measures including micro-sitting the towers, weed and sedimentation controls, therefore the loss of 14.68 hectares is unlikely to modify, destroy, remove or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be recommended to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

Dieback associated with *Phytophthora cinnamon* is identified as a main threat to this species within the Conservation Advice (Department of the Environment, Water, Heritage and the Arts, 2008). Mitigation measures will be recommended, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority research, recovery and threat abatement actions that can be done to support the recovery of *Tetratheca juncea*. As the project involves removal of assumed habitat for the species, the project is likely to interfere with the recovery of the species according to the approved conservation advice.

Conclusion

Based on the assessment above the loss 14.68 hectares of recorded and assumed habitat is considered likely to cause significant residual impact on *Tetratheca juncea*.

B3.3.14 Velleia perfoliata

Velleia perfoliata is listed as vulnerable under the EPBC Act. The species is only known from the Hawkesbury district and upper Hunter Valley, near Munghorn Gap Nature Reserve.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory document relevant to the assessment of this species is the *Approved Conservation Advice for* Velleia perfoliata (Department of the Environment Water Heritage and the Arts, 2008h).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

There is little information regarding the population of the species, however nine populations are known to exist. The project occurs outside the known and predicted distribution of the species. Given this and taking a precautionary approach, any potentially occurring population within the subject land could be considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The project is located outside the known and predicted range of the species. Given the lack of records, it is unlikely the loss of 2.24 hectares would lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

The project occurs outside of the known distributed populations. Given the species was not recorded despite targeted seasonal surveys, it is unlikely the loss of 2.24 hectares of assumed habitat would reduce the area of occupancy for an important population.

- *fragment an existing important population into two or more populations*

The project is likely to impact on up to 2.24 hectares of habitat for this species, which is also mapped either side of the subject land. The subject land is outside the distribution of the known populations for the species; therefore, it is unlikely the project would fragment an important population into two or more populations. In addition, the project will implement mitigation measures such as micro-sitting of towers to avoid and minimise impacts on threatened species.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Velleia perfoliata* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as breeding, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

There is a general paucity of information for this species regarding population size and demographics. The species was not recorded within the subject land, and the project is considered to be outside of the known distribution of the current populations. Therefore, it is unlikely the loss of 2.24 hectares of assumed habitat would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The subject land falls outside if the distribution of known populations for the species. Therefore, it is unlikely the project would disrupt the breeding cycle of an important population. Furthermore, mitigation measures will be implemented to further reduce potential impacts on the assumed habitat including micro-siting of towers to avoid threatened species, and implementing biosecurity and pest species controls.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Approximately 38.94 hectares of habitat was impacted to varying degrees of severity by the 2019–2020 bushfires. The project occurs outside the distribution of the species' known population, therefore it is unlikely the loss of 2.24 hectares of assumed habitat associated with the project would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, such as delineation of 'no go' zones and project clearing boundaries to ensure works are contained, vegetation clearing protocols, and wash down protocols. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to *Velleia perfoliata.* Mitigation measures will be used, such as weed and pest controls such as vehicle wash stations, vegetation clearing protocols, and sediment and erosion control. These will help to minimise the likelihood of introduction or spread of pathogens into the site. The project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

No Recovery plan has been prepared for this species at this stage. The approved conservation advice for the species outlines a number of local and regional priority research, recovery and threat abatement actions can be done to support the recovery of *Velleia perfoliata*, including monitoring of known populations, managing threats to the species, minimising adverse impacts, implementing weed removal and developing suitable fire management strategy for the species. The loss of 2.24 hectares associated with the project is unlikely to substantially interfere with the recovery of the species.

Conclusion

Given the project occurs outside of the known population distribution for the species, the small scale of impacts and mitigation measures to further reduce impacts on threatened species habitat, it is unlikely the project would have a significant residual impact on *Velleia perfoliata.*

B3.3.15 Zieria involucrata

Zieria involucrata is listed as vulnerable under the EPBC Act. The species is restricted to a disjunct distribution north and west of Sydney. The species distribution is primarily in the Central Coast botanical subdivision of NSW, except for the Blue Mountains populations which are within the Central Tablelands subdivision.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant available Commonwealth statutory document relevant to the assessment of this species is the *Adopted/Made Recovery Plan:* Zieria involucrata *Recovery Plan* (Department of the Environment and Conservation, 2006).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

There is limited information regarding the population of the species, however there are 26 recognised extant or historical populations, varying between a single individual to more than 500 plants. Part of the project occurs at the limit of the species range. Given this and taking a precautionary approach, any potentially occurring population within the subject land could be considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Part of the project occurs at the limit of the species range. Given the restricted species distribution, it is likely the subject land could be necessary for maintaining genetic diversity or dispersal across the region, if a population exists. The project would result in the loss of 2.24 hectares of habitat for the species. Mitigation measures will be implemented to avoid and minimise impacts on threatened species including micro-siting of towers to avoid threatened species. Therefore, given the lack of records, small area to be impacted and mitigation measures, it is unlikely the project would lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

Habitat for the species was impacted by the 2019–2020 bushfires, with 68.93 hectares of habitat burnt within the subject land. The project is likely to impact on up to 2.24 hectares of assumed habitat for this species. Part of the project occurs at the limit of the species' range; however, the species was not recorded despite targeted seasonal surveys. Mitigation measures will be implemented to avoid and minimise impacts on threatened species including micro-siting of towers to avoid threatened species. Therefore, it is unlikely that the loss of 2.24 hectares would reduce the area of occupancy for an important population.

- *fragment an existing important population into two or more populations*

The project is likely to impact on up to 2.24 hectares of habitat for this species, which is also mapped either side of the subject land. The species was not recorded despite targeted seasonal surveys, and no populations have been identified within the subject land. Given the area of habitat to be impacted and lack of records, the project is considered unlikely to result in fragmentation of an important population.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified for *Zieria involucrata* or included in the Register of Critical Habitat. 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as breeding, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

There is a limited amount of recent information for this species regarding population size and demographics. The species was not recorded within the subject land despite targeted seasonal surveys. Therefore, it is unlikely the subject land would be important for facilitating population dispersal and contributing to genetic diversity and species recovery. Habitat within the subject land is not considered to represent habitat critical to the survival of the species, therefore the loss of 2.24 hectares is unlikely to adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The species was not recorded within the subject land despite targeted seasonal surveys. Given the small extent, nature of impact and implementation of mitigation measures (micro-siting of towers to avoid threatened species and transmission lines spanning large tracts of habitat), it is unlikely the project would disrupt the life cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Approximately 68.93 hectares of habitat was impacted to varying degrees of severity by the 2019–2020 bushfires, with 100.72 hectares remaining intact. Part of the project occurs at the limit of the species range; however, the species was not recorded despite targeted seasonal surveys. Mitigation measures will be implemented to avoid and minimise impacts on threatened species including micro-siting towers to avoid threatened species. Therefore, it is unlikely that the loss of 2.24 hectares would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Mitigation measures will be used to limit the spread of weeds, pathogens and disease. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species not currently present in surrounding areas.

- *introduce disease that may cause the species to decline*

There are no known diseases that are specific to *Zieria involucrata.* Mitigation measures will be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These will help to minimise the likelihood of introduction or spread of pathogens into the site. The project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

A recovery plan for *Zieria involucrata* has been prepared for this species. The plan includes 6 recovery objectives that will each contribute to achieving the overall goal of maintaining or improving the current conservation status of *Z. involucrata*. These objectives are:

- conserve *Z. involucrata* using land-use and conservation planning mechanisms
- implement a survey and monitoring program that will provide information on the extent, viability and habitat of *Z. involucrata*
- identify and minimise the operation of threats at sites where *Z. involucrata* occurs
- provide public authorities and the community with information that assists in conserving the species
- raise awareness of the species and involve the community in the recovery program; and
- promote research that will assist future management decisions.

The removal of large area of 2.24 hectares of assumed habitat for the species is unlikely to substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above, it is unlikely the project would have a significant residual impact on *Zieria involucrata*, if a population is present.

B4. Threatened fauna species subject to assessment

28 listed threatened fauna species were identified to have a moderate or higher likelihood of occurrence. Significance assessments for these species have been completed in accordance with the Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (Department of the Environment Water Heritage and the Arts 2013).

B4.1 Critically endangered and Endangered fauna

B4.1.1 Littlejohn's Treefrog *(Litoria littlejohni)*

Littlejohn's Treefrog is listed as endangered under the EPBC Act and NSW BC Act.

The Littlejohn's Tree Frog is a medium sized tree frog, that breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath-based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground. Eggs are laid in loose gelatinous masses attached to small, submerged twigs. Eggs and tadpoles are mostly found in still or slow flowing pools that receive extended exposure to sunlight but will also use temporary isolated pools.

Littlejohn's Tree Frog has a distribution that includes the plateaus and eastern slopes of the Great Dividing Range from Watagan State Forest (90 kilometres north of Sydney) south to the end of the Woronora Plateau. Most of the records are from within the Sydney Basin Bioregion. Records are isolated and tend to be at high altitude (elevations from 100–1160 metres).

Littlejohn's Tree Frog tadpoles and metamorphs were identified near the Olney substation (Wyong IBRA subregion) during targeted surveys.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species that have bene considered in this assessment is as follows:

- Approved conservation Advice: Conservation advice for *Litoria littlejohni* (Littlejohn's tree frog) (Department of Agriculture, Water and the Environment, 2022).
- Adopted/made threat abatement plans:
  - Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (Department of the Environment and Energy, 2016b).
  - Department of Climate Change, Energy, the Environment and Water (2024*). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available* from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Relevant Survey Guidelines: *Survey Guidelines for Australia's Threatened Frogs*. EPBC Act survey guidelines 6.3 (Department of Australia, 2016u).

Significant impact criteria

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The total number of mature individuals is not known with certainty, however Mahony et al. (2020) has recorded population declines. Thirty-eight records of the species were identified during the targeted surveys, with most records within Olney State Forest and Jilliby Conservation area. The project will avoid impacts to streams with towers placed outside of the riparian zones limiting impact to the construction of access roads that will cross creek lines.

The project may result in the complete removal of 59.91 hectares of confirmed habitat Littlejohn's Tree Frog habitat and a further 10.43 hectares of assumed habitat. Habitat for this species is well represented within the locality with approximately 20,424.53 hectares of the associated PCTs occurring within a 10 km buffer of the subject land. Therefore, given the avoidance and minimisation of impacts to the species habitat and extent of habitat within the locality, it is unlikely the project would lead to a long-term decrease in the size of a local population.

- *reduce the area of occupancy of the species*

The approved conservation advice for the species estimates the area of occupancy at 272–296 square kilometres, with an estimated extent of occurrence of 10,122–12,084 square kilometres (Department of Agriculture, Water and the Environment, 2022). The project is located at the northern extent of the species distribution, and approximately 40.96 hectares of habitat for the species was burnt within the subject land during the 2019–2020 bushfires. Given the species is at the northern limit of its range, it is likely the project would reduce the area of occupancy for this species.

- *fragment an existing population into two or more populations*

The towers will be micro-sited to ensure minimal impact on the species habitat, and riparian habitats will be largely avoided. Although the species may use the terrestrial habitats for dispersal, given the nature of the projects (i.e. powerlines will be above the habitat) it is unlikely the project would result in a barrier to movement or fragment an existing population into two or more important populations.

- *adversely affect habitat critical to the survival of a species*

There is no specifically mapped habitat critical to the survival of the Littlejohn's Tree Frog as non-breeding habitat preferences are poorly understood. However, the approved Conservation Advice for *Litoria littlejohni* (Littlejohn's tree frog) (Department of Agriculture, Water and the Environment, 2022) indicates that the species is only reliably found at just a few locations. Key aspects of the breeding habitat are considered to be habitat critical to the survival of the species. This includes ponds that have an area of 1–3000 square metres and less than 1.5 metres deep, with a low salinity and high levels of leaf litter. The project will avoid impacts to streams with towers placed away outside of the riparian zones limiting impact to the construction of access roads that will cross creek lines. Therefore, it is unlikely the project would adversely affect habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

Typical breeding habitat of Littlejohn's Tree Frog includes ponds of an area between 1–3000 square metres and less than 1.5 metres deep. With a low salinity (0.25 parts per thousand), and slight acidity (between 4.5–7 pH) these ponds contain high levels of leaf litter, while lacking fish (invasive or native) and with little algae (Klop-Toker et al. 2021). Reduction to suitable breeding habitat or impacting of rain fed water bodies where tadpoles may be present has the potential to disrupt the breeding cycle of a population. The project will avoid impacts to streams with towers placed outside of the riparian zones limiting impact to the construction of access roads that will cross creek lines. Mitigation measure will be implemented to reduce impacts associated with access roads such as increase in run-off and sedimentation. Therefore, the project is unlikely to disrupt the breeding cycle of a population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will avoid impacts to streams with towers placed outside of the riparian zones limiting impact to the construction of access roads that will cross creek lines. Habitat for this species is also well represented within the locality with approximately 20,424.53 hectares of the associated PCTs occurring within a 10 kilometre buffer of the subject land. Given the extent of habitat within the locality it is unlikely the project would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Due to previous land use (e.g. agriculture), invasive species are already known to occur within the landscape. Adhering to mitigation measures which will be put in place for the project such as weed controls, would prevent further harmful invasive weeds establishing in the species habitat.

- *introduce disease that may cause the species to decline*

There is the risk of the introduction or spread of chytrid fungus during project implementation, however this is unlikely to be a significant risk. Mitigation actions including the implementation of best practice hygiene protocols, included in the construction environmental management plan, will reduce the introduction or spread of pathogens. Consequently, it is considered highly unlikely that the project will introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

There is no made or adopted recovery plan for Littlejohn's tree Frog. The species approved conservation advice outlines primary conservation outcomes for Littlejohn's Tree Frog, including:

- minimise habitat disturbance
- bushfire response
- reduce the spread of chytrid fungus.

The project will potentially disturb 70.34 hectares (59.91 hectares of confirmed habitat and 10.43 of assumed habitat) of Littlejohn's Tree Frog habitat and therefore has the potential to interfere with the recovery of the species. Towers will largely avoid waterbodies and be micro-sited to minimise impacts on species habitats. In addition, mitigation measures will be implemented to further reduce impacts on the species habitats. With the implementation of such measures, it is likely that the impacts will be reduced to the extent that the project would not interfere with the recovery of the species.

Conclusion

Although the project will avoid breeding habitat and habitat critical to the survival of the species, it is likely that the complete loss of 70.34 hectares of habitat will reduce the available resources for the species and therefore potentially lead to a long-term decrease in the size of a local population and reduce the area of occupancy for the species. Therefore, the project is likely to result in a significant residual impact on Littlejohn's Tree Frog.

B4.1.2 Giant Burrowing Frog *(Heleioporus australiacus australiacus)*

The Giant Burrowing Frog listed as endangered under the EPBC Act. The species occurs in NSW and Victoria along the coast and adjacent ranges. It occurs in two disjunct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria.

The Giant Burrowing Frog occurs in areas of native vegetation (Penman et al. 2004) and can be found in heath, woodland and open dry sclerophyll forest on a variety of soils, except clay based soils (Department of the Environment, 2014b). The species has not been recorded from cleared land**.** The Giant Burrowing Frog spends more than 95% of the time in non-breeding habitats, which are areas up to 300 metres from breeding sites.

While in these areas, individuals burrow below the soil surface or in the leaf litter. Individual frogs occupy a series of burrow sites, some of which are used repeatedly.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Department of the Environment (2014b). *Approved Conservation Advice for* Heleioporus Australiacus *(giant burrowing frog)*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/1973-conservation-advice.pdf. In effect under the EPBC Act from 11 April 2014.
- Adopted/Made Threat Abatement plans include:
  - Department of Climate Change, Energy, the Environment and Water (2024*). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available* from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
  - Department of the Environment and Energy (2016). *Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (2016)*. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/infection-amphibians-chytrid-fungus-resulting-chytridiomycosis-2016. In effect under the EPBC Act from 07 September 2016.
- Policy Statements and Guidelines: *Survey Guidelines for Australia's Threatened Frogs.* (Department of the Environment, Water, Heritage and the Arts, 2010).

Significant impact criteria

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The Giant Burrowing Frog was recorded within the subject land in the Wyong IBRA subregion. Habitat for the species was impacted by the 2019–2020 bushfires with the initial estimate of 46% of the Giant Burrowing Frog distribution range impacted by the bushfires. Within the subject land 12.35 hectares was impacted by the bushfires.

The project would result in the complete loss of 25.31 hectares of confirmed habitat and 48.31 hectares of assumed habitat (73.62 hectares total) for the Giant Burrowing Frog. Approximately 10,686.90 hectares of assumed habitat is mapped within a 10 kilometre buffer of the subject land. Mitigation measures will be implemented to minimise the impacts on threatened species including avoiding riparian zone and micro-siting the towers to minimise impact on threatened species. Given the nature of the project, scale of impact and extent of habitat within the locality it is unlikely the project would reduce resources to an extent that would lead to long-term decrease in the size of a population.

- *reduce the area of occupancy of the species*

The approved conservation advice for the Giant Burrowing Frog notes that it occurs in two disjunct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. The disjunct may be due to the species absence from the area between the populations (a gap of 100 kilometres) or may be a result of limited survey effort in the region. The species' extent of occurrence is estimated at 80,000 square kilometres.

The project has the potential to reduce the area of occupancy and current extent of the species. However, the impacts will not result in the species being lost from any 2 x 2 kilometre grid cell currently forming part of the area of occupancy. Any changes in area of occupancy are considered likely to be negligible.

- *fragment an existing population into two or more populations*

The Giant Burrowing Frog spends more than 95% of the time in non-breeding habitats, which are areas up to 300 metres from breeding sites such as soaks or pools within first or second order streams. The frogs are known to move 200–300 metres a night. The towers will be micro-sited to ensure minimal impact on the species habitat, and riparian habitats will be largely avoided. Although the species may use the terrestrial habitats for dispersal, given the nature of the projects (i.e. powerlines will be above the habitat) it is unlikely the project would result in a barrier to movement, or in the fragmentation of an existing population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act is on the Register of Critical Habitat. Habitat critical for the survival is defined as areas required:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The project will remove 73.62 hectares of habitat for the Giant Burrowing Frog. These areas may be used by the species for activities such as foraging and dispersal and would therefore represent habitat critical to the survival of the species. Therefore, the loss of this habitat may adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The species' breeding habitat consists of soaks or pools within first or second order stream. The project will largely avoid impacts to stream and riparian habitat. Given the nature of the project, it is unlikely to represent a barrier to the species movement.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Impacts to Giant Burrowing Frog are based on the loss of 25.31 hectares of confirmed habitat and the potential loss of 48.31 hectares of assumed habitat. The impacts of tower locations will be minimal in riparian areas. These habitats will mostly be spanned by wires and the micro-siting process undertaken before construction begins would further minimise impacts to the greatest extent possible.

In addition, approximately 10,686.90 hectares of assumed habitat is mapped within a 10 kilometre buffer of the subject land. Therefore, it is unlikely the project would modify, decrease the availability or quality of habitat to the extent that the species is likely to decline at a local scale.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

The project is unlikely to result in an invasive species harmful to the Giant Burrowing Frog becoming established in the habitat. Introduced predators are well established. The potential for weed invasion is considered possible with a project of this nature, and appropriate controls will be implemented during construction and operation to reduce this threat. Invasive species will be managed under the construction environmental management plan using best practice methods. Consequently, there is no real chance or possibility that the project will result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat.

- *introduce disease that may cause the species to decline*

Infection of the frog with chytrid fungus (*Batrachochytrium dendrobatidis*) resulting in chytridiomycosis is an issue for this species. However, the project would be unlikely to increase the potential for significant disease vectors to affect the species. It is the intention to use current best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. There is no real chance or possibility that the project will introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

There is no made or adopted recovery plan for this species. The approved conservation advice sets out the action required for conservation and recovery of the species, including:

- prepare and implement site specific management plans to protect key giant burrowing frog populations from identified threats
- retain native vegetation and minimise ground disturbance where the species occurs, especially within 300 metres of known breeding sites
- develop a protocol for monitoring populations throughout the species range. Once a monitoring protocol is developed, incorporate it into site management plans
- coordinate implementation, including management and analysis data, reviewing the progress of recovery and effectiveness of management actions, and adapting actions if necessary.

The project will involve the loss of 73.62 hectares of habitat for the Giant Burrowing Frog. However, these impacts may be further minimised during the detail design and siting of the project. In addition, biosecurity protocols will be implemented to reduce further impacts of invasive species and pathogens becoming established in the Giant Burrowing Frog habitat. Therefore, it is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

Based on the above assessment, the loss of 73.62 hectares of habitat for the Giant Burrowing Frog associated with the project is likely to result in significant residual impact due to impacts on habitat critical to the survival of the species.

B4.1.3 Regent Honeyeater *(Anthochaera phrygia)*

The Regent Honeyeater is a nomadic and partially migratory woodland bird, which has a patchy distribution between south-east Queensland and central Victoria. Some predictable seasonal movements have been observed, and breeding varies between regions and corresponds with flowering of key eucalypt and mistletoe species.

The species is predominantly found along inland slopes of the Great Dividing Range in areas containing moist, fertile soils. It prefers box-ironbark eucalypt woodland and dry sclerophyll forest but also inhabits riparian vegetation including She-oak (*Casuarina* spp.). Lowland coastal forest may also act as a refuge habitat during periods of drought, and they may also be found in remnant patches of farmland and urban areas (Department of Environment, 2015).

The Regent Honeyeater primarily feeds on nectar which it obtains from eucalyptus flowers and mistletoes but also feeds on invertebrates and their exudates (lerp, honeydew), and occasionally fruit. This species roosts communally in small groups or large flocks, in trees with dense foliage, and foraging trees are rarely used for roosting (Department of Environment, 2015).

Breeding appears to correspond with the flowering of key eucalypt and mistletoe species and varies between regions, usually occurring from August to January. Cup shapes nests are constructed usually in the canopy of mature trees with rough bark, and a clutch consists of two to three eggs (Department of Environment, 2015).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice*: Conservation Advice for* Anthochaera Phrygia*, Regent Honeyeater* (Department of Environment, 2015)
- Adopted/Made Recovery Plan: *National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*)* (Department of the Environment, 2016)
- Adopted/made Threat Abatement Plans:
  - Threat abatement plan for competition and land degradation by rabbits (Department of Environment and Energy, 2016)
  - Department of Climate Change, Energy, the Environment and Water (2024*). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available* from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Relevant Survey Guidelines*: Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts, 2010b).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

Approximately 101.85 hectares of Regent Honeyeater habitat was impacted within the subject land during the 2019–2020 bushfires. The subject land includes area of important mapped habitat and Key Biodiversity Areas for the species; the area was identified as a KBA because it regularly supports significant numbers of the Regent Honeyeater.

The project is likely to impact 96.91 hectares of habitat for the Regent Honeyeater. As a population of the species is known to occur in the area and the project is likely to substantially reduce the amount of foraging and breeding habitat available to this species within the location, it is possible that the project would contribute to a long-term decline in the size of a population of this species.

- *reduce the area of occupancy of the species*

The Regent Honeyeater has a patchy distribution which extends from south-east Queensland, through NSW and the ACT, to central Victoria. Based on the approved conservation advice for the species the extent of occurrence is estimated at 600,000 square kilometres and the area of occupancy at 300,000 square kilometres. Habitat for this species is also well represented within the locality with approximately 78,017.03 hectares of the associated PCTs occurring within a 10 kilometre buffer of the subject land.

Given the reduction of available foraging and breeding resources associated with the project, this it is likely the removal of 96.91 hectares of confirmed habitat would reduce the area of occupancy for these species.

- *fragment an existing population into two or more populations*

The subject land is already largely fragmented, and habitat remaining occurs as disjunct remnant patches and as scattered paddock trees within the locality. Regent Honeyeater is a highly mobile species and is known to disperse widely (Higgins, Peter, & Steele, 2001) and consequently is unlikely that the project would present a significant barrier to this species. Therefore, it is considered unlikely that the project would fragment an existing population into two or more

populations given the ecology of the species, the existing fragmented state of potential foraging habitat, and that the clearing would occur at the edge of important breeding habitat.

- *adversely affect habitat critical to the survival of a species*

The recovery plan defines habitat critical to the survival as any breeding or foraging habitat in areas where the species is likely to occur and any newly discovered breeding or foraging locations. Key areas of critical habitat listed for the species includes the Bundarra-Barraba, Pilliga Woodlands, Mudgee-Wollar and the Capertee Valley and Hunter Valley areas in New South Wales, and the Chiltern and Lurg-Benalla regions of north-east Victoria, inclusive of a number of subsidiary areas within these regions.

The subject land footprint occurs within a mapped area of important breeding habitat for the Regent Honeyeater within the Hunter Valley area and is anticipated to clear up to 96.91 hectares of this confirmed mapped habitat. The project would also clear a large amount of potential foraging habitat for the species. Consequently, the project is likely to adversely impact habitat critical to the survival of the Regent Honeyeater.

- *disrupt the breeding cycle of a population*

The project is likely to impact on 96.91 hectares of mapped breeding habitat for the Regent Honeyeater. Removal of this habitat would reduce the breeding opportunities available to individuals occurring in this area, which is known to be utilised by populations of the species. Consequently, the project is likely to disrupt the breeding cycle of a population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project is likely to impact on 96.91 hectares of mapped important habitat for the Regent Honeyeater. Removal of these foraging and breeding resources for the Regent Honeyeater are likely to reduce breeding opportunities and result in a significant reduction in the overall habitat available to the species within the locality, likely reducing the overall area of occupancy of the species. Given the overall extent of habitat impacted by the project, it is likely that the project would modify, destroy, remove or isolate habitat for this species to the extent that is likely to cause the species to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Given the previous agricultural land use, many of the invasive species are already present in the landscape. Adhering to mitigation measures which will be put in place for the project such as pest management, weed and pathogen controls, would prevent potentially harmful invasive weeds and vertebrate pests such as rabbits, cats and foxes establishing in Regent Honeyeater habitat. Therefore, it is unlikely the project would result in further invasive species becoming established within the species habitat.

- *introduce disease that may cause the species to decline*

The key disease likely to impact these species is *Psittacine Circovirus* Disease (PCD). The disease is believed to have evolved with wild psittacines and is widespread in wild psittacines, including many common Australian species. Noting PCD is already within the landscape, and given the nature and scale of the project it is unlikely it would introduce a disease that may cause the species to decline

- *interfere substantially with the recovery of the species*

No recovery plan is currently in force for the Regent Honeyeater. Previous Recovery Plan actions (Department of the Environment, 2016) include:

- improve the extent and quality of regent honeyeater habitat
- bolster the wild population with captive-bred birds until the wild population becomes self-sustaining
- increase understanding of the size, structure, trajectory, and viability of the wild population
- maintain and increase community awareness, understanding and involvement in the recovery program.

Based on the potential impacts of the project on this species, as discussed above, it is likely that the project would be in conflict with the objectives and the first strategy of the recovery plan by reducing the extent of Regent Honeyeater habitat and impacting on the breeding opportunities and habitat condition for the species.

Conclusion

The project is likely to impact on 96.91 hectares of mapped breeding habitat, outlined in the National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*) (Department of the Environment, 2016) as habitat critical to the survival of the species as well as a large amount of potential foraging habitat that occurs within the subject land. The removal of this habitat is likely to impact on both foraging and breeding resources for the species and impact on known areas of occurrence, likely reducing the overall area of occupancy of the species. Considering the above information, the project is considered likely to have a significant residual impact on the Regent Honeyeater.

B4.1.4 Gang-gang Cockatoo *(Callocephalon fimbriatum)*

The Gang-gang Cockatoo is listed as endangered under the NSW BC Act and EPBC Act. The Gang-gang Cockatoo is distributed from southern Victoria through south and central eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the southeast coast to the Hunter region, and inland to the Central Tablelands and southwest slopes. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee.

In spring and summer, this species is generally found in tall mountain forests and woodlands, mainly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas, and is often found in urban areas. The species favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 7 centimetres in diameter or larger in eucalypts and 3 metres or more above the ground.

Gang-gang Cockatoos have been recorded between Olney and Pokolbin State Forests (Wyong and Yengo IBRA subregions).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant Commonwealth statutory document available for this specie and used in this assessment is the following:

- Approved Conservation Advice: *Approved Conservation Advice for* Callocephalon fimbriatum *(Gang-gang Cockatoo)*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/768-conservation-advice-02032022.pdf. In effect under the EPBC Act from 02 March 2022.
- Adopted/Made Threat Abatement Plans: *Threat abatement plan for predation by feral cats 2024*. (Department of Climate Change, Energy, the Environment and Water 2024).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The approved conservation advice for Gang-gang Cockatoo notes that the species population had declined by 69% between 1999–2019. It is estimated that the 2019–2020 bushfires impacted between 28% to 36% of the species distribution, resulting in a 10% reduction in the overall population size. Estimates of the impacts of the 2019–2020 bushfires on populations of native animal species (Legge, et al., 2021) identified that the population three years post fire generation would still be 25% lower than the pre-fire population size.

The project will result in the loss of 9.83 hectares of confirmed habitat and 31.88 hectares of assumed habitat (total of 41.71 hectares) for the species. In addition, the Gang-Gang Cockatoo was identified as one of the species at risk of collision with the transmission lines. Animals can be electrocuted on powerlines; however, electrocution would require contact with different phases or conductor potentials, and the horizontal separation between individual conductors, or bundled conductors, exceeds the wingspan of the Gang-gang Cockatoo (<80cm). Therefore, Electrocution is therefore considered unlikely. However, collision with powerlines while flying still poses a threat to Gang-gang Cockatoo. Mitigation measures will be implemented to reduce the risk of collision including installing bird diverters. However given the known population declines, it is possible that the loss of habitat associated with the project would lead to a long-term decrease in the size of a population.

— *reduce the area of occupancy of the species*

The species is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. However, the range has contracted with records north of Sydney occurring rarely. The project would result in the loss of 9.83 hectares of confirmed habitat and 31.88 hectares of assumed habitat for the Gang-Gang Cockatoo. Given the project is located at the northern extent of the species distribution, it is likely to significantly reduce the area of occupancy for this species.

— *fragment an existing population into two or more populations*

The maximum cleared area for a single tower footprint or laydown area would not exceed 0.5 hectares, and the easement width of the transmission line would be a maximum of approximately 200 metres wide which allows for micro-siting of the transmission line easement and transmission towers to avoid significant environmental constraints. Given the ability of this species to disperse over and around these cleared areas, it is considered unlikely that the project would fragment an existing population into two or more populations.

— *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been included in the register of Critical Habitat. The approved conservation advice for the species identifies habitat critical for the survival of the Gang-Gang Cockatoo as all foraging habitat during both the breeding and non-breeding season. The species relies on stands of suitable hollow bearing trees with known or potential hollow chambers that are generally around 20 centimetres in floor diameter, 50 centimetres deep and around 7.5 metres above the ground (Department of Agriculture, Water and the Environment, 2022). Therefore, as defined by the approved conservation advice, habitat critical to the survival of the species is present and is likely to be impacted or modified by the project.

— *disrupt the breeding cycle of a population*

Gang-gang Cockatoos nest in the hollows of tree trunks and limbs, or within the dead sprout of large, living eucalypts often near water. The approved conservation advice notes that the species prefers hollows that generally have an entrance height of 21.3 centimetres (minimum entrance height 12 centimetres) and an average entrance width of 13.1 centimetres (range 9–24 centimetres; Davey & Mulvaney 2020). The hollow chambers are generally around 20 centimetres in floor diameter, around 50.5 centimetres deep (range 22–90 centimetres) and occur around 7.5 metres (range 5–9.4 metres) above the ground. Breeding aggregations are reliant on stands of suitable hollow bearing trees.

The project will result in the loss of 41.71 hectares that may include suitable breeding hollows for the species. However, the towers will be micro-sited to avoid sensitive habitat features and largely avoid the riparian habitats. Therefore, it is unlikely the project would significantly disrupt the breeding cycle of the species.

In addition, to minimise the impacts on suitable nesting trees a supplementary hollow and nest strategy will be developed and implemented for the creation of nest boxes or other hollow creation method to provide alternative roosting and/or nesting habitat for threatened fauna displaced during clearing. Nest box/hollows are to be installed prior to commencement of clearing works where practicable in each construction area. Where supplementary hollows are proposed to be established on land adjacent to the easement, these will be subject to landowner agreement and captured in any property management plan.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project would result in the loss of 9.83 hectares of confirmed habitat and 31.88 hectares of assumed habitat (41.71 hectares total) for this species. This habitat has been previously modified and is similar habitat occurs in the surrounding locality (approximately 142,174.73 hectares within a 10 kilometre buffer of the subject land). In addition, impacts of tower locations and access tracks will be minimal. The habitats will mostly be spanned by wires and the micro-siting process undertaken before construction begins which would further minimise impacts to the greatest extent possible.

Noting the condition of the habitat, mobility of the species, scale and nature of the project it is unlikely that the project would modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the Gang-gang Cockatoo would likely decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Many assumed habitat patches in the subject land are dominated by exotic ground species. Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the project would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. There is potential for the project to introduce additional weeds and pathogens within the subject land and surrounding locality. Mitigation measures outlined in section 8.4 of the BDAR will be implemented for the project to address potential invasive species introduction. As such the project is considered unlikely to result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered habitat.

- *introduce disease that may cause the species to decline*

The key disease likely to impact these species is *Psittacine Circovirus* Disease (PCD). The disease is believed to have evolved with wild psittacines and is widespread in wild psittacines, including many common Australian species. Noting PCD is already within the landscape and given the nature and scale of the project it is unlikely it would introduce a disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

There are currently no adopted or made recovery plans for the Gang-gang Cockatoo. The approved conservation advice (Department of Agriculture Water and the Environment, 2022b) outlines the primary conservation objective for the species as 'To prevent further declines and support increases in the population size of the Gang-gang Cockatoo' with a number of priority actions for conservation and management, survey and monitoring and research also outlined. The project is likely to impact one of the recovery objectives outlined, namely: protect and enhance the quality of assumed habitat (both breeding and foraging) of the Gang-gang Cockatoo.

Conclusion

Based on the assessment above the loss of 41.71 hectares of habitat associated with the project is likely to result in a significant residual impact on the Gang-gang Cockatoo.

B4.1.5 Swift Parrot *(Lathamus discolor)*

Swift Parrots breed in Tasmania. In Autumn, the majority of the population migrates to mainland Australia. Overwintering occurs predominantly in Victoria and central and eastern NSW, but also south-eastern Queensland as far north as Duaringa. Until recently it was believed that in New South Wales, Swift Parrots forage mostly in the western slopes region along the inland slopes of the Great Dividing Range but are patchily distributed along the north and south coasts including the Sydney region. However, new evidence indicates that the forests on the coastal plains from southern to northern NSW also provide extremely important foraging habitat. Swift Parrots are listed as critically endangered.

On mainland Australia Swift Parrots are semi-nomadic, foraging on flowering eucalypts and in eucalypt associations, particularly box-ironbark forests and woodlands. The species prefers sites with flowering *Acacia pycnantha*, or sites with highly fertile soils where large trees have high nectar production, such as sites along drainage lines and isolated rural or urban remnants. Swift Parrot use foraging sites inconsistently across years (Garnett and Crowley 2000, Swift Parrot Recovery Team 2001).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Threatened Species Scientific Committee (2016). *Conservation Advice* Lathamus discolor *Swift Parrot.* Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/744-conservation-advice-05052016.pdf. In effect under the EPBC Act from 05 May 2016.
- Adopted/Made Recovery Plan: Department of Climate Change, Energy, the Environment and Water (2024). *National Recovery Plan for the Swift Parrot (*Lathamus discolor*).* Department of Climate Change, Energy, the Environment and Water, Canberra. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/recovery-plans/swift-parrot-2024. In effect under the EPBC Act from 30 April 2024.
- Adopted/Made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Policy Statements and Guidelines: *Survey Guidelines for Australia's Threatened Birds*. (Department of the Environment, Water, Heritage and the Arts, 2010b).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The subject land includes area of important mapped habitat and Key Biodiversity Areas for the species; the area was identified as a KBA because it regularly supports significant numbers of the Swift Parrot. The most recent population estimate for the Swift Parrot is 2000 birds, which is considered low. Approximately 10% to 30% of habitat for the Swift Parrot within the species distribution range was impacted by the 2019–2020 bushfires. The impact of the bushfires within the subject land was estimated at 134.36 hectares. The project is likely to impact 45.32 hectares of important foraging habitat for the Swift Parrot. Swift Parrot may be at risk of collision from powerlines, and electrocution may pose a risk, however, electrocution would require contact with different phases or conductor potentials, and the horizontal separation between individual conductors, or bundled conductors, exceeds the wingspan of the Swift Parrot (~36 cm). Therefore, Electrocution is therefore considered unlikely.

However, collision with powerlines while flying still poses a threat to Swift Parrot due to the speed of their flight. Mitigation measures will be implemented to reduce the risk of collision including installing bird diverters, however, it is possible that the project would significantly contribute to a long-term decline in the size of a population of these species.

- *reduce the area of occupancy of the species*

The non-breeding range of this species includes much of the east coast of mainland Australia, primarily forested areas of Vicotria and NSW but ranging up to southeast QLD. The full extent of occurrence for this species was estimated at 5,700,000 hectares. The area of occupancy for the species is estimated at 1,850–35,500 square kilometres. The project would result in the loss of 45.32 hectares of habitat for the species, which represents between approximately between 0.001% – 0.02% of the species geographic range.

Given the mobility of these bird species, it is unlikely the removal of 45.32 hectares of habitat would reduce the area of occupancy for these species. Habitat for this species is also well represented within the locality with approximately 13,5002.60 hectares of the associated PCTs occurring within a 10 km buffer of the subject land.

- *fragment an existing population into two or more populations*

Habitat removal is unlikely to result in fragmentation of habitat for the Swift Parrot. This species is highly mobile and regularly flies long distances over open areas to move between suitable foraging habitats. The action will not affect the movement of the Swift Parrot between habitat patches or fragment the population in two or more.

- *adversely affect habitat critical to the survival of a species*

According to the *National Recovery Plan for the Swift Parrot (Lathamus discolor)*, habitat critical to the survival of the Swift Parrot includes 'those areas of priority habitat for which the Swift Parrot has a level of site fidelity or possess phenological characteristics likely to be of importance to the Swift Parrot or are otherwise identified by the recovery team'. Swift Parrot has important habitat maps, as identified in NSW BioNet which identify land that is considered important to support critical life stages of the species (i.e. key areas that migratory species forage/over-winter in, or sites where multiple records have been located over multiple years).

Important foraging habitat is mapped within the greater region; the project would result in the loss of 45.32 hectares of confirmed habitat with the subject land. Consequently, the project is likely to adversely impact habitat critical to the survival of the Swift Parrot.

- *disrupt the breeding cycle of a population*

Swift Parrots breed in Tasmania during spring and summer, migrating to south-eastern Australia during autumn and winter. While Swift Parrots are dependent on flowering resources across a wide range of habitats (woodlands and forests) within their NSW wintering grounds, the removal of a small amount of potential foraging habitat is unlikely to disrupt their movements to Tasmanian breeding grounds. As such the project is unlikely to affect their breeding cycle.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

As a large-scale migrant, the Swift Parrot has the ability to cover vast areas of its winter range, seeking suitable flowering eucalypt habitat. The species is an occasional visitor to the region and may utilise trees in the subject land for foraging intermittently. The action is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Given the previous land use (i.e. agriculture) within the subject land, many invasive species are already present in the landscape. Adhering to mitigation measures such as pest management, weed and pathogen controls, would prevent further invasive species establishing in Swift Parrot habitat.

- *introduce disease that may cause the species to decline*

The key disease likely to impact these species is *Psittacine Circovirus* Disease (PCD). The disease is believed to have evolved with wild psittacines and is widespread in wild psittacines, including many common Australian species. Noting PCD is already within the landscape, and given the nature and scale of the project it is unlikely it would introduce a disease that may cause the species to decline

- *interfere substantially with the recovery of the species*

A National Recovery Plan for the Swift Parrot *Lathamus discolor* was prepared in 2024. Recovery strategies outlined in this plan include:

- maintain known Swift Parrot breeding and foraging habitat at the local, regional and landscape scales
- reduce impacts from Sugar Gliders at Swift Parrot breeding sites
- monitor and manage other sources of mortality
- develop and apply techniques to measure changes in population trajectory in order to measure the success of recovery actions
- improve understanding of foraging and breeding habitat use at a landscape scale in order to better target protection and restoration measures
- engage community and stakeholders in Swift Parrot conservation
- coordinate, review and report on recovery progress.

Based on the potential ecological impacts of the project on the Swift Parrot it is unlikely the project would be in conflict with the Recovery Actions outlined above. Therefore, it is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

The project is likely to impact on with 45.32 hectares of mapped important habitat for the Swift Parrot. Based on the assessment above it is considered likely that the project will result in a significant residual impact on the Swift Parrot.

B4.1.6 South-eastern Hooded Robin *(Melanodryas cucullata cucullata)*

The South-eastern Hooded Robin is listed as endangered under the EPBC Act.

Hooded Robins are shy and largely sedentary birds and are mostly seen in pairs or small groups. They prefer dry eucalypt and acacia woodlands and shrublands with an open understory, some grassy areas and a complex ground layer. They tend to avoid woodlands with tall trees or dense tree cover but sometimes occur in tall, dense heaths with scattered open areas

The species generally forms monogamous pairs and occupies territories during the breeding season (between July and November) and non-breeding season. The birds usually return to the same breeding site where they nest in small, neat cups of bark and grasses bound with webs, that are generally situated in a tree fork or crevice, from less than 1 metre to 5 metres above the ground. The south-eastern species (*Melanodryas cucullata cucullata*) occurs in south-eastern Australia from Brisbane, Queensland to Adelaide in South Australia and through much of inland NSW.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Department of Climate Change, Energy, the Environment and Water (2023). *Conservation Advice for* Melanodryas cucullata cucullata *(hooded robin (south-eastern))*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/67093-conservation-advice-31032023.pdf. In effect under the EPBC Act from 31 March 2023.

- Adopted/Made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024.* Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The Hooded Robin was recorded during the targeted surveys near Bulga. Habitat for the species was identified in association with PCT 3151, 3152, 3230, 3242, 3244, 3489, 3599, 3605, 3617 and 4015 in the Yengo and Hunter IBRA subregions. The approved conservation advice for the species notes that the population has declined by more than 50% over the last ten years.

Approximately 83.7 hectares of habitat for the species was impacted within the subject land during the 2019–2020 bushfires. While the species is known to occur in Broke and Jerry plains which are located outside of the subject land, the project may provide foraging and breeding resources necessary to maintain the population. Therefore, there is a real chance or possibility that the loss 255.72 of hectares of assumed habitat for the Hooded Robin within the subject land would lead to long-term decrease in the size of the Hooded Robin population.

- *reduce the area of occupancy of the species*

The species ranges from far southeast Queensland to Yorke Peninsula in South Australia. The extent of occurrence is estimated at 1,200,000 square kilometres and the area of occupancy for the species is 30,000 square kilometres. The project will result in the loss of 255.72 hectares of assumed habitat for the species, which represents 0.008% of the area of occupancy for the species. Given the mobility of the species, and the extent of similar habitats in the locality, it is unlikely the project would reduce the area of occupancy for these the Hooded Robin. In addition, approximately 60,963.9 hectares of assumed habitat for the species occurs within a 10 kilometre buffer of the subject land.

- *fragment an existing population into two or more populations*

The species is a small bird that is known to avoid tall vegetation and forages in from the ground. Given the behaviour of the species and nature of the project (i.e. towers will be micro-sited to ensure minimal impact on the species habitat, and powerlines will largely span the habitat) it is unlikely the project would result in a barrier to movement or fragment an existing population into two or more important populations.

- *adversely affect habitat critical to the survival of a species*

The approved conservation advice for the species define habitat critical to the survival as areas of dry eucalypt and acacia woodlands and shrublands remnants with an open understory, some grassy areas and a complex ground layer, often in or near clearings or open areas; structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses; standing dead or live trees and tree stumps are also essential for nesting, roosting and foraging; and moderately deep to deep soils, rocks and fallen timber which provides essential foraging habitat. The project will remove 255.72 hectares of habitat for the species that is likely to represent habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

A population of the species is known to occur in Broke and Jerry Plains which are located outside of the subject land. There are no records of the Hooded Robin occurring within the subject land, and while there are Eucalyptus trees that may provide nesting opportunities for the Hooded Robin no nesting was observed during the surveys. In addition, the project will not form a barrier to the species movement. Based on the above it is unlikely the project would disrupt the breeding cycle of the species.

- *modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project would result in the loss of 255.72 hectares of assumed habitat for this species. This habitat has been previously modified, and similar habitat occurs in the surrounding locality (approximately 60,963.9 hectares within a 10 kilometre buffer of the subject land). In addition, impacts of tower locations and access tracks will be minimal. The habitats will mostly be spanned by wires and the micro-siting process undertaken before construction begins would further minimise impacts to the greatest extent possible. Therefore, it is unlikely the project would modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the Hooded Robin would likely decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming species established in the established in the endangered species habitat.*

Many assumed habitat patches in the subject land are dominated by exotic ground species. Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the project would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. There is potential for the project to introduce additional weeds and pathogens within the subject land and surrounding locality. Mitigation measures outlined in Section 8.4 of the BDAR would be implemented for the project to address potential invasive species introduction. As such the project is considered unlikely to result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.

- *introduce a disease that may cause the species to decline*

The key disease likely to impact these species is *Psittacine Circovirus* Disease (PCD). The disease is believed to have evolved with wild psittacines and is widespread in wild psittacines, including many common Australian species. Noting PCD is already within the landscape and given the nature and scale of the project it is unlikely it would introduce a disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

There is no recovery plan for the Hooded Robin, the approved conservation advice for the species sets out several conservation and management priorities to stabilise or increase the population across the species range. This includes ceasing land clearing within areas of habitat critical to the survival of the species. Therefore, the project may sustainably interfere with the recovery of the species.

Conclusion

Based on the assessment above the project is likely to remove habitat critical to the survival of the species, therefore it is considered the project would have a significant residual impact on the Hooded Robin.

B4.1.7 Australasian Bittern *(Botaurus poiciloptilus)*

Australasian Bittern is listed as endangered under the EPBC Act. The Australasian Bittern is a large, stocky, thick-necked, heron-like bird that occurs in mainly in freshwater wetlands and, rarely, in estuaries or tidal wetlands. The species favours wetlands with tall dense vegetation, particularly those dominated by sedges, rushes and reeds, where it forages in still, shallow water up to 0.3 metres deep.

The Australasian Bittern occurs from southeast Queensland to southeast South Australia as far as the Adelaide Region, southern Eyre Peninsula. In New South Wales, the species is known to occurs along the coast and is also frequently recorded in the floodplain wetlands of the Murray, Murrumbidgee, Lachlan, Macquarie and Gwydir Rivers.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Threatened Species Scientific Committee (2019). *Conservation Advice* Botaurus poiciloptilus *Australasian Bittern*. Canberra, ACT: Department of the Environment and Energy. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/1001-conservation-advice-18012019.pdf. In effect under the EPBC Act from 18 January 2019.
- Listening Advice: Threatened Species Scientific Committee (TSSC) (2011). *Commonwealth Listing Advice on* Botaurus poiciloptilus *(Australasian Bittern).* Department of Sustainability, Environment, Water, Population and Communities. Canberra, ACT: Department of Sustainability, Environment, Water, Population and Communities. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/1001-listing-advice.pdf. In effect under the EPBC Act from 03 March 2011.
- Adopted/Made Recovery Plan: Department of Climate Change, Energy, the Environment and Water (2022). *National Recovery Plan for the Australasian Bittern (*Botaurus poiciloptilus*)*. Department of Climate Change, Energy, the Environment and Water, Canberra. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/recovery/australasian-bittern. In effect under the EPBC Act from 24 February 2023.
- Adopted/Made Threat Abatement Plans:
  - Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
  - Department of the Environment, Water, Heritage and the Arts (2008). *Threat abatement plan for predation by the European red fox*. DEWHA, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox. In effect under the EPBC Act from 01 October 2008.

Significant impact criteria

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The *Action Plan for Australian Birds 2010* (Garnett *et al*. 2011) suggested there were less than 1000 mature Australasian Bitterns within the Australian population, and that the population was likely declining. The species was not recorded within the subject land despite targeted ecological surveys.

The project will result in the clearing of approximately 26.03 hectares of assumed habitat for the species in the form of associated PCTs 4015, 4039, 4042, 4044, 4072 and 4089 in the Wyong, Yengo and Hunter IBRA subregions. Given the mobility of the species and larger areas of known habitat in the surrounding region it is unlikely the project would reduce the resources within the species range such that it would lead to a long-term decrease in the population.

- *reduce the area of occupancy of the species*

The area of occupancy for Australasian Bittern is estimated to be approximately 1150 square kilometres. This equates to an area of 115,000 hectares. The project will result in the loss of 26.03 suitable hectares which represents 0.022% of the area of occupancy for the species. In addition, approximately 5993.37 hectares of associated PCTs habitat for the species was identified within a 10 kilometre buffer of the subject land. Therefore, it is unlikely the project would reduce an area of occupancy for the species.

- *fragment an existing population into two or more populations*

The Australasian Bittern population can be divided into two subpopulations, the southeastern and southwestern subpopulations. This species is highly mobile and capable of long distance flights to move between suitable wetland habitats. Therefore, it is considered unlikely that the project would introduce a barrier to movement, which would result in the southeastern subpopulation being fragmented into two or more populations.

- *adversely affect habitat critical to the survival of a species*

The approved conservation advice states that as a guide, habitat critical to the survival of the Australasian Bittern can be considered to include any natural wetland habitat where the species is known or likely to occur (breeding or foraging habitat) within the indicative distribution map.

The subject land does not contain any natural wetland habitat, therefore does not represent habitat critical to the survival of the species. The project will not adversely impact habitat critical to the survival for the species.

- *disrupt the breeding cycle of a population*

The species nests in densely vegetated freshwater wetlands, building its nests within dense cover over shallow water placed about 30 centimetres above the water level. The species was not recorded during the ecological surveys, and no evidence of nesting was observed. The project will remove 26.03 hectares of assumed habitat for the species. However, mitigation measures will be implemented to minimise the impacts on species habitat including micro-siting the towers and largely avoiding waterway and major wetlands. Therefore, it is unlikely the project would it disrupt the breeding cycle of the Australasian Bittern.

- *modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Due to their considerable ability to move very long distances, Australasian Bittern individuals that may be present within the habitat in the impact area would be part of the broader population that is known to occur in local areas of habitat across the Hunter. In light of the demonstrated absence of Australasian Bitterns from the subject land, it is considered unlikely that impacts from in the project would be highly significant to the habitat preferences of Australasian Bitterns in the region. The project is therefore unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming species established in the established in the endangered species habitat.*

Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the project would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. As such the project is considered unlikely to result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.

- *introduce a disease that may cause the species to decline*

There are no known diseases impacting this species that would be introduced by the project.

- *interfere substantially with the recovery of the species*

The objective of the *National Recovery Plan* is to demonstrate, by 2032, an increasing trend (compared to 2020 baseline counts) in the number of mature individuals being recorded in annual surveys at key locations, and to ensure that habitat critical to the survival of the Australasian Bittern is protected and managed to meet the ecological requirements of the species. The strategies to achieve objectives include:

- implement management actions that mitigate or reduce threats to Australasian Bittern and their habitat
- enhance the quality, extent and protection of assumed habitat for the Australasian Bittern
- undertake research and monitoring to improve knowledge of the biology, ecology and population trends of Australasian Bittern
- increase stakeholder participation in Australasian Bittern conservation and management
- coordinate, review and report on recovery progress.

Approximately 26.03 hectares of habitat for Australasian Bittern would be impacted by the project and this is likely to contribute to the known threats to the species and as such interfere with the recovery of the species. However, in the context of the habitat to be removed the impact is likely to be minimal as the habitat has been demonstrated through considerable survey effort to be suboptimal for the species. Therefore, it is unlikely the project would result in an adverse impact on the Australian Bittern.

Conclusion

Based on the assessment above the project is unlikely to result in a significant residual impact on the Australasian Bittern. However, the 26.03 hectares of assumed habitat (PCTs) to be removed will require 528 ecosystem credits in accordance with the NSW Biodiversity Offsets Scheme (see Table 11.1 of the BDAR). This will provide habitat resources for the species.

B4.1.8 Australian Painted Snipe *(Rostratula australis)*

Australian Painted Snipe is listed as endangered under the EPBC Act. The species is a stocky wading bird that occurs in both ephemeral and permanent shallow freshwater wetlands, such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains. The habitats generally have a good cover of grasses, rushes and reeds, low scrub, *Muehlenbeckia* spp. (lignum), open timber or samphire.

The Australian Painted Snipe has been recorded in all states and territories, however important areas for this species in the past have included the Murray-Darling Basin (particularly the Riverina of Victoria and New South Wales), Queensland Channel Country, Fitzroy Basin of Central Queensland, southeastern South Australia and adjacent parts of Victoria. Records published over the past twenty years provide evidence for Australian painted snipe occurring more widely and frequently in the remote arid and tropical regions of Australia.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Department of Sustainability, Environment, Water, Population and Communities (2013). *Approved Conservation Advice for* Rostratula australis *(Australian painted snipe)*. Canberra: Department of Sustainability, Environment, Water, Population and Communities. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/77037-conservation-advice.pdf. In effect under the EPBC Act from 15 May 2013.

- Listening Advice: Threatened Species Scientific Committee (TSSC) (2013). *Commonwealth Listing Advice on* Rostratula australis *(Australian Painted Snipe)*. Department of Sustainability, Environment, Water, Population and Communities. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/77037-listing-advice.pdf. In effect under the EPBC Act from 15 May 2013.
- Adopted/Made Recovery Plan: Department of Climate Change, Energy, the Environment and Water (2022). *National Recovery Plan for the Australian Painted Snipe (*Rostratula australis*)*. Department of Climate Change, Energy, the Environment and Water, Canberra. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/recovery/australian-painted-snipe-2022.
- Adopted/Made Threat Abatement Plans: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Policy Statement and Guidelines: *Survey Guidelines for Australia's Threatened Birds.* (Department of the Environment, Water, Heritage and the Arts, 2010).

Significant impact criteria

An action is likely to have a significant impact on an endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The national recovery plan for the Australian Painted Snipe notes that the estimated population in 2020 was between 240–410 mature individuals. The species was not recorded within the subject land despite targeted ecological surveys.

The project will result in the clearing of approximately 26.03 hectares of assumed habitat for the species in the form of associated PCTs 4015, 4039, 4042, 4044, 4072 and 4089. Given the mobility of the species and larger areas of known habitat in the surrounding locality (7254.67 hectares within a 10 kilometre buffer of the subject land) it is unlikely the project would reduce the resources within the species range such that it would lead to a long-term decrease in the population.

- *reduce the area of occupancy of the species*

The estimated extent of the species occurrence is 4,500,000 square kilometres with and estimated area of occupancy of 1000 square kilometres. This equates to an area of 100,000 hectares. The project will result in the loss of 26.03 hectares of assumed habitat which represents 0.03% of the area of occupancy for the species. Given the distribution of the species, and proposed avoidance measures such as micro-siting the towers outside of wetland habitats, it is unlikely the project would reduce an area of occupancy for the species.

- *fragment an existing population into two or more populations*

The Australian Painted Snipe is highly mobile and capable of long distance flight to move between suitable wetland habitats. Therefore, it is considered unlikely that the project would introduce a barrier to movement, which would result in a population being fragmented into two or more populations.

- *adversely affect habitat critical to the survival of a species*

The recovery plan states that, as a guide habitat critical to the survival of the Australian Painted Snipe can be considered.

- any natural wetland habitat where the species is known or likely to occur (especially with suitable breeding habitat) within the indicative distribution of the species
- any location outside the above area that may be periodically occupied by Australian Painted Snipe when wetland conditions are favourable.

Mitigation measures will be implemented to minimise the impacts on species habitat including micro-siting the towers and largely avoiding waterway and major wetlands. Therefore, it is unlikely the project would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The national recovery plan for the Australian Painted Snipe notes that breeding habitat requirements may be quite specific: shallow wetlands with areas of bare wet mud and mixed heights of low vegetation. Nest records are all, or nearly all, from or near small islands in freshwater wetlands, with a combination of very shallow water, exposed mud, dense low cover and sometimes some tall dense cover. The project will remove 26.03 hectares of assumed habitat for the species. However, mitigation measures will be implemented to minimise the impacts on species habitat including micro-siting the towers and largely avoiding waterway and major wetlands. Therefore, it is unlikely the project would it disrupt the breeding cycle of the Australian Painted Snipe.

- *modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Although the species was not recorded during the surveys project would result in the loss of 26.03 hectares of assumed habitat for the species. Given the mobility of the species and extent of the species distribution, it is unlikely the loss of 26.03 hectares of assumed habitat would modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming species established in the established in the endangered species habitat*

Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the project would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. As such the project is considered unlikely to result in invasive species that are harmful to Australian Painted Snipe habitat.

- *introduce a disease that may cause the species to decline*

There are no known diseases impacting this species that would be introduced by the project. Clearing protocols, installation vehicle wash stations and sediment and control measures will help to minimise the likelihood of introduction or spread of pathogens into the site. Consequently, the project is unlikely to introduce disease or pathogens that may contribute to the decline of the species.

- *interfere substantially with the recovery of the species*

The national recovery plan for the species lists a number of strategies for the recovery of the Australian painted Snipe including:

- manage and protect known Australian Painted Snipe habitat at the landscape scale
- develop and apply techniques to measure changes in population trajectory in order to measure the success of recovery actions
- reduce, or eliminate threats at breeding and non-breeding habitats
- undertake research to improve knowledge of the habitat requirements, biology and behaviour of Australian Painted Snipe
- engage community stakeholders to improve awareness of the conservation of Australian Painted Snipe
- coordinate, review and report on recovery progress.

Approximately 26.03 hectares of habitat for Australian Painted Snipe would be impacted by the project and this is likely to contribute to the known threats to the species and as such interfere with the recovery of the species. However, in the context of the habitat to be removed the impact is likely to be minimal as the habitat has been demonstrated through considerable survey effort to be suboptimal for the species. Therefore, it is unlikely the project would substantially interfere with the recovery of the Australian Painted Snipe.

Conclusion

Based on the assessment above the project is unlikely to result in a significant residual impact on the Australian Painted Snipe. However, the 26.03 hectares of assumed habitat to be removed will require 528 ecosystem credits in accordance with the NSW Biodiversity Offsets Scheme (Table 11.1 of the BDAR). This will provide habitat resources for the species.

B4.1.9 Southern Greater Glider *(Petauroides volans)*

The Southern Greater Glider (southern and central) is listed as endangered under the EPBC Act. The species has a broad distribution in Eastern Australia from around Proserpine in Queensland, south through NSW and the ACT, to Wombat State Forest in central Victoria. An arboreal nocturnal marsupial, that is predominantly solitary, this species is largely restricted to eucalypt forests and woodlands within its range. This species is most abundant in tall, montane, moist eucalypt forests on fertile soils, that feature relatively old trees with abundant hollows.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Department of Climate Change, Energy, the Environment and Water (2022). *Conservation Advice for* Petauroides volans *(greater glider (southern and central))*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/254-conservation-advice-05072022.pdf. In effect under the EPBC Act from 05 July 2022.
- Adopted /Made Threat Abatement Plans: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.

Significant impact criteria

An action is likely to have a significant impact on critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The approved conservation advice for the species notes that approximately 40% of the distribution of the Southern Greater Glider was impacted during the 2019–2020 bushfires. High severity fires have the potential to damage tree hollows or result in the loss of hollow-bearing trees entirely and may also trigger the collapse of hollow bearing trees (Green, 2024). Approximately 53.24 hectares of habitat for the species within the subject land experienced a moderate to extreme severity burn during the 2019–2020 bushfires.

The project will result in the complete removal of 533.42 hectares of confirmed habitat and 26.97 hectares of assumed habitat (total of 560.39 hectares) for the Southern Greater Glider (southern and central). Thirty-two observations of southern greater glider were recorded across the Pokolbin, Watagan and Corrabare State Forests. Given the loss of habitat already impacted by the bushfires there is a real chance or possibility that the project would lead to a long-term decrease in the size of a population.

- *reduce the area of occupancy of the species*

The extent of occurrence of the Southern Greater Glider is estimated at 1,586,870 square kilometres and the area of occupancy estimated at 16,164 square kilometres. Habitat for this species is well represented within the locality with approximately 42,513.84 hectares of the associated PCTs occurring within a 10 km buffer of the subject land.

The project is likely to remove 533.42 hectares of confirmed habitat for the species representing 0.03% of the area of occupancy for the species. Given the species distribution and large area of occupancy it is unlikely the project would result in a significant reduction in the area of occupancy of the species.

- *fragment an existing population into two or more populations*

The project has the potential to limit connectivity due to clearance requirements under the transmission lines. Where the construction area will impact habitat connectivity the areas are to be investigated and where appropriate glider poles will be installed. The exact location and design of under-transmission line glider poles and/or rope bridges will be nominated as part of a connectivity strategy. Where poles are proposed to be installed on land adjacent to the easement, they will be subject to landowner agreement and captured in the property management plan. These measures have been used in previous linear project and are considered effective in maintaining connectivity for the species. Providing these measures are implemented it is unlikely the project would fragment an existing population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

The approved conservation advice for the species states that the habitat critical to their survival is:

- large contiguous areas of eucalypt forest, which contain mature hollow-bearing trees and a diverse range of the species' preferred food species in a particular region
- smaller or fragmented habitat patches connected to larger patches of habitat, that can facilitate dispersal of the species and/or that enable recolonization
- cool microclimate forest/woodland areas (e.g. protected gullies, sheltered high elevation areas, coastal lowland areas, southern slopes)
- areas identified as refuges under future climate changes scenarios
- short-term or long-term post-fire refuges (i.e. unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonize burnt areas.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

Based on this broad definition, 533.42 hectares of confirmed habitat within the subject land could be defined as critical to the survival of the Southern Greater Glider (southern and central), therefore the project could adversely affect habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

From March to June, female individuals of this species give birth to a single young. It takes until the second year for them to reach sexual maturity. The estimated lifespan for this species is around 15 years, while the generation length is estimated to be between 6 to 8 years. The species utilises tree hollows in both dead and live tree for denning. The loss of these trees combined with the potential fragmentation may disrupt the breeding cycle of the species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The loss of 533.42 hectares of confirmed habitat including the potential loss of tree hollows, associated with the project, is considered likely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Many assumed habitat patches in the subject land are dominated by exotic ground species. Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the project would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. There is potential for the project to introduce additional weeds and pathogens within the subject land and surrounding locality. Mitigation measures outlined in Section 8 of the BDAR would be implemented for the project to address potential invasive species introduction. As such the project is considered unlikely to result in invasive species becoming established in the habitat.

- *introduce disease that may cause the species to decline*

There are no known disease issues affecting this species in relation to the project. The project would be unlikely to increase the potential for significant disease vectors to affect the species. It is the intention to use current best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. Consequently, there is no real chance or possibility that the project will introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

There is currently no recovery plan for the Southern Greater Glider. The species' approved conservation advice outlines the following conservation and management priorities:

- habitat loss, disturbance and modification (including fire)
- climate change
- invasive species (including threats from predation, grazing, trampling).

As the project will affect 533.42 hectares of confirmed habitat, it is possible that it will interfere with the recovery of the species.

Conclusion

Based on the assessment above the, it likely that the removal of a total of 560.39 hectares (533.42 hectares of confirmed and 26.97 hectares of assumed) of Southern Greater Glider habitat associated with the project would result in a significant residual impact on the species.

B4.1.10 Koala (Phascolarctos cinereus)

The Koala (combined populations of Qld, NSW and the ACT) is listed as endangered under the EPBC Act.

The range of the Koala differs slightly between the biological species range and listed species range. The biological species range extends from northeastern Queensland to the southeast corner of South Australia. Several sub-populations of the biological species occur outside this range in southeastern South Australia (i.e., Kangaroo Island) and some parts of Victoria, due to translocations. The listed species range extends from northeastern Queensland to the Victorian border. Distribution of the Koala is influenced by altitude (generally limited to <800 metres above sea level) and tied to temperature. Distribution is also influenced by leaf moisture at the western and northern ends of the range. Koala population density is typically greater towards the coast than inland in these areas.

In NSW, Koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests and some smaller populations on the plains west of the Great Dividing Range. Koalas naturally inhabit a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by Eucalyptus species. They are a leaf-eating specialist that feed primarily during dawn, dusk or night.

Koalas feed primarily on the foliage of Eucalyptus species; though may sometimes consume *Corymbia* spp., *Angophora* spp. and *Lophostemon* spp. and occasionally *Leptospermum* spp. and *Melaleuca* spp. Individual Koalas typically get their nutrition from just one or a few species present at a site. Koalas typically give birth between October and May and can potentially produce one offspring each year. Young remains in the pouch for 6–8 months and remain with their mothers until they become independent at approximately 12 months of age.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: *Conservation Advice for* Phascolarctos cinereus *(combined populations in Queensland, New South Wales and the Australian Capital Territory)*. (Department of Agriculture Water and the Environment, 2022).
- Adopted/Made Recovery Plan: *National Recovery Plan for the Koala* Phascolarctos cinereus *(combined populations of Queensland, New South Wales and the Australian Capital Territory)*. (Department of Agriculture, 2022).
- Adopted/Made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024*). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available* from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Policy Statements and Guidelines: *Identifying habitat for the endangered Koala* (Department of Climate Change, Energy, the Environment and Water, 2022); *Referral guidance for the endangered Koala* (Department of Climate Change, Energy, the Environment and Water, 2023).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The Koala's distribution includes Queensland, New South Wales, the Australian Capital Territory, Victoria, and South Australia. The Koala's distribution is not continuous across this range, and it occurs in several subpopulations that are separated by cleared land or unsuitable habitat. In NSW, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains and southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Estimated populations in the NSW southwestern slopes was 2,310 individuals in 2012. The loss of 625.71 hectares of confirmed Koala habitat is likely to lead to a long-term decrease in the size of the species' population.

- *reduce the area of occupancy of the species*

The listed population of the Koala has a wide but patchy distribution that spans the coastal and inland areas of Queensland north to the Herberton area, extending westwards into hotter and dryer semi-arid climates of central Queensland, New South Wales, and the Australian Capital Territory.

The area of occupancy for Koala is estimated at 19,400 square kilometres, based on the mapping of point records from 2000 from state governments, museums, and CSIRO. Approximately 10% to 30% of the Koala's modelled likely and known distribution was impacted by the 2019–2020 bushfires. Within the subject land 38.61 hectares was impacted by the bushfires.

The project would result in the loss of 625.71 hectares of Koala habitat, which represents 0.03% of the estimated area of occupancy for the species, and 0.04% taking to account of the habitat impacted by the bushfires. Given the species mobility, nature of the project (i.e. string transmission lines) and areas of surrounding habitat it is unlikely the project would significantly reduce the area of occupancy for the species.

- *fragment an existing population into two or more populations*

Koalas do utilise agricultural land and will cross fences and cleared paddocks (see Kavanagh & Stanton, 2012) and use of scattered trees in paddocks is also documented (see Barth et al., 2019). Given the nature of the project (towers will be micro-sited, avoidance of riparian areas and transmission lines will span large area of vegetation), the current level of landscape permeability for Koala will not likely be impacted. The powerline corridor will be highly permeable and will not provide a barrier to Koala movement. There is a limited likelihood that the project will fragment an existing population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

The approved conservation advice the species outlines a number of important criteria to consider in terms of 'habitat critical for survival' of Koala including:

- whether the habitat is used during periods of stress (examples: flood, drought, or fire)
- whether the habitat is used to meet essential life cycle requirements (examples: foraging, breeding, nesting, roosting, social behaviour patterns or seed dispersal processes)
- the extent to which the habitat is used by important populations
- whether the habitat is necessary to maintain genetic diversity and long-term evolutionary development
- whether the habitat is necessary for use as corridors to allow the species to move freely between sites used to meet essential life cycle requirements
- whether the habitat is necessary to ensure the long-term future of the species or ecological community through reintroduction or re-colonisation
- any other way in which habitat may be critical to the survival of a listed threatened species or a listed threatened ecological community.

Part of the subject land has been recognized Area of Regional Koala Significance (ARKS) as outlined by the work done under the Saving our Species Iconic Koala Project. Arks identify the locations and extent of important populations. Therefore, it is considered that the project may adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

Portions of subject land are recognized ARKS. The project would result in the loss of 625.71 hectares of Koala habitat, however given the project will not create a barrier to movement and the availability of habitat in the surrounding area it is unlikely the project would disrupt the breeding cycle of a population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The presence of habitat for Koala is largely assessed here based on habitat surrogates given the presence of Koala use trees in the subject land. Koalas use trees are distributed across an extensive area of the Yengo and Wyong IBRA subregions and to a lesser degree within the Hunter subregion (in relation to the subject land locality). Consequently, the project will result in the loss of 625.71 hectares of Koala habitat, which therefore may modify, destroy, remove or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

The project is unlikely to result in an invasive species harmful to the Koala becoming established in the habitat. The potential for weed invasion was considered possible with a project of this nature and appropriate controls are required during construction and operation to reduce this threat. Invasive species would be managed under the construction environmental management plan using best practice methods. Consequently, there is no real chance or possibility that the project will result in invasive species that are harmful to Koala becoming established in the habitat.

- *introduce disease that may cause the species to decline*

Chlamydia bacteria in Koalas and Koala Retrovirus are primarily transmitted between Koala individuals (Department of Environment & Climate Change, 2008). It is likely that the disease is already present within the landscape. The project will implement best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. Therefore, the project is unlikely to further introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

The recovery plan for the species outlines a number of key objectives for the recovery effort of the species including:

- the area of occupancy and estimated size of populations that are declining, suspected to be declining, or predicted to decline are instead stabilised then increased
- the area of occupancy and estimated size of populations that are suspected and predicted to be stable are maintained or increased
- metapopulation processes are maintained or improved
- partners, communities, and individuals have a greater role and capability in listed Koala monitoring, conservation, and management.

The objectives of this recovery plan are underpinned by four supporting strategies and two on-ground (direct) strategies, or action areas, as a way of organising and implementing coordinated action:

- build and share knowledge (Strategy 1)
- engage and partner with the community in listed Koala conservation (Strategy 2)
- increase the area of protected habitat for the listed Koala (Strategy 3)
- integrate listed Koala conservation into policy, statutory and land use plans (Strategy 4)
- strategically restore listed Koala habitat (Strategy 5)
- actively manage listed Koala metapopulations (Strategy 6).

The project is unlikely to interfere with the recovery objectives or supporting strategies.

Conclusion

Based on the assessment above, it is likely the loss of 625.71 hectares of Koala habitat would result in a significant residual impact on the Koala.

B4.1.11 Spotted-tailed Quoll *(Dasyurus maculatus)*

The Spotted-tailed Quoll (southeastern mainland population) is listed as endangered under the EPBC Act. The Spotted-tailed Quoll (southeastern mainland population) is a nocturnal carnivorous marsupial that occurs from southern Queensland to southwestern Victoria. This species typically feeds on a wide variety of prey including small mammals (<5 kilograms), birds, reptiles, fish, amphibian and invertebrates (Threatened Species Scientific Committee, 2020c). They occur as solitary animals in low density with home ranges of up to a few thousand hectares for males and several hundred hectares for females (Threatened Species Scientific Committee, 2020c). Spotted-tailed Quolls inhabit a wide range of

vegetation types including closed forests, tall eucalypt forest, open woodlands, open forests, drier rain shadow woodlands and coastal heathlands (Threatened Species Scientific Committee, 2020c).

Since European settlement, habitat reduction and fragmentation for the Spotted-tailed Quoll has led to an estimated 50–90% reduction in population for mainland Australia and 25–50% reduction for populations in NSW (Threatened Species Scientific Committee, 2020c).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Listing Advice: *Threatened Species Scientific Committee (TSSC) (2004). Commonwealth Listing Advice on* Dasyurus maculatus maculatus *(Spot-tailed Quoll, Spotted-tailed Quoll, Tiger Quoll)*. Available from: http://www.environment.gov.au/biodiversity/threatened/species/tiger-quoll.html. In effect under the EPBC Act from 14 May 2004.
- Adopted/Made Recovery Plan: Department of Environment, Land, Water and Planning (2016). *National Recovery Plan for the Spotted-tailed Quoll* Dasyurus maculatus. Australian Government, Canberra. Available from: *http://www.environment.gov.au/biodiversity/threatened/recovery-plans/spotted-tailed-quoll*. In effect under the EPBC Act from 06 May 2016.
- Adopted/Made Threat Abatement Plans include:
  - Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
  - Department of the Environment, Water, Heritage and the Arts (2008). *Threat abatement plan for predation by the European red fox*. DEWHA, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox. In effect under the EPBC Act from 01 October 2008.
  - Policy Statement and Guidelines: *Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed under the* Environment Protection and Biodiversity Conservation Act 1999 (Department of Sustainability Environment Water Population and Communities, 2011).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The project is unlikely to have the potential to cause injury or mortality to individuals during clearing works, and it is considered unlikely that the project would lead to a long-term decrease in the size of a population. The project would not impact the carrying capacity of the habitats to the point that prey density would be detrimentally impacted, and the habitat was no longer viable for Spotted-tailed Quoll. The subject land contains poor quality breeding habitat, and the population is more likely to reside in the adjacent habitats in the National Parks, State Conservation Areas, Nature Reserves, and State Forests than the subject land in most cases. There is no real chance or possibility that the project would lead to a long-term decrease in the size of a population.

— *reduce the area of occupancy of the species*

The Spotted-tailed Quoll southeastern mainland population is widely distributed in southeastern Queensland, eastern New South Wales, Victoria, and the Australian Capital Territory. The extent of occurrence is estimated at 596,344 square kilometres and the area of occupancy at 2,512 square kilometres.

Habitat for the Spotted-tailed Quoll was impacted during the 2019–2020 bushfires. The approved conservation advice for the species notes that based on estimates 29% of the Spotted-tailed Quoll's distribution range was affected by fire. Approximately 139.99 hectares of assumed habitat for the species was impacted by the 2019–2020 bushfires within the subject land.

While the subject land is not located at the edge of the species distribution; given the impact of the bushfires on the species habitat within the subject land, it is considered the loss of 871.19 hectares of assumed habitat is likely to reduce the area of occupancy for the species.

— *fragment an existing population into two or more populations*

The maximum cleared area for a single tower footprint or laydown area would not exceed 0.5 hectares, and the easement width of the transmission line would be a maximum of approximately 200 metres wide which allows for micro-siting of the transmission line easement and transmission towers to avoid significant environmental constraints. Given this species ability to disperse over and around these cleared areas, and their large home ranges (88 to 5512 hectares), it is considered unlikely that the project would fragment an existing population into two or more populations.

— *adversely affect habitat critical to the survival of a species*

The recovery plan for Spotted-tailed Quoll defines habitat critical to the survival as habitat that includes large patches of forest with adequate denning resources and relatively high densities of medium-sized prey. However, thresholds are unknown, therefore it is not possible to define or map habitat critical to the survival for this species. The recovery plan considers all habitat within its distribution range that are known to be occupied as important.

The Spotted-tailed Quoll was not recorded during targeted surveys and has been captured as a predicted ecosystem credit based on habitat surrogates. Therefore, the habitat within the subject land is likely to be habitat critical to the survival of this species. The project is likely to adversely impact habitat critical to the survival of the species.

— *disrupt the breeding cycle of a population*

The Spotted-tailed Quoll was not recorded during targeted surveys. Maternal den sites include rock crevices, caves, boulder tumbles, hollow logs, hollow tree roots and burrow. The project will result in the loss of 871.78 hectares of assumed habitat, that may contain suitable denning habitat for the species. Therefore, there is a chance that the project could disrupt the breeding cycle of a population.

— *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will modify, destroy and/or remove 871.78 hectares of assumed habitat for the species. The habitat has been subjected to ongoing and historic agricultural and anthropogenic impacts. Given the large home range of the species (88 to 5512 hectares), and available habitat in the locality (145,548.50 hectares of associated PCTs habitat within a 10 kilometre buffer of the subject land) it is unlikely the project would modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.

— *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

The subject land has been previously disturbed and is subjected to ongoing disturbance such as invasive species. Invasive weeds and vertebrate pests such as rabbits, cats and foxes are already known to occur within the subject land. It is unlikely the loss of foraging habitat would result in additional species that are harmful to the Spotted-tailed Quoll and /or its habitats becoming established.

- *introduce disease that may cause the species to decline*

There is no disease known to impact the Spotted-tailed Quoll. The project will implement biosecurity protocols to minimise the threat of future diseases.

- *interfere substantially with the recovery of the species*

The recovery plan for the Spotted-tailed Quoll includes the following objectives:

- determine the distribution and status of Spotted-tailed Quoll populations throughout the range and identify key threats and implement threat abatement management practices
- investigate key aspects of the biology and ecology of the Spotted-tailed Quoll to acquire targeted information to aid recovery
- reduce the rate of habitat loss and fragmentation on private land
- evaluate and manage the risk posed by silvicultural practices
- determine and manage the threat posed by introduced predators (foxes, cats, wild dogs) and of predator control practices on Spotted-tailed Quoll populations
- determine and manage the impact of fire regimes on Spotted-tailed Quoll populations
- reduce deliberate killings of Spotted-tailed Quolls
- reduce the frequency of Spotted-tailed Quoll Road mortality
- assess the threat Cane Toads pose to Spotted-tailed Quolls and develop threat abatement actions if necessary
- determine the likely impact of climate change on Spotted-tailed Quoll populations
- increase community awareness of the Spotted-tailed Quoll and involvement in the Recovery Program.

The project is unlikely to substantially interfere with the recovery objectives outline above.

Conclusion

Based on the above assessment it is considered that the project would have a significant residual impact on the Spotted-tailed Quoll due to the loss of 871.78 hectares of assumed habitat.

B4.1.12 Large-eared Pied Bat *(Chalinolobus Dwyeri)*

The Large-eared Pied Bat is listed as endangered under the EPBC Act. The species is usually found in areas with cliffs, escarpments or rocky outcrops for roosting (typically sandstone but also rhyolite), area that have suitable caves, overhangs and cracks for roosting. The species has also been known to roost disused mine shafts and has also been observed roosting in abandoned Fairy Martin (*Petrochelidon ariel*) nests. Roosting habitat for the species is in close association with foraging habitat. The Large-eared Pied Bat been recorded foraging in fertile valleys and plains, as well as areas with moderately tall to taller trees in woodland along watercourses.

The Large-eared Pied Bat s patchily distributed in central eastern New South Wales (NSW) and southeastern and central Queensland (Qld), from the area bounded by Shoalwater Bay north of Rockhampton (Qld), south to Ulladulla, NSW. The species' distribution is fragmented, as most individuals occur in small and relatively isolated subpopulations due to specific requirements for foraging and roosting habitat.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Department of Climate Change, Energy, the Environment and Water (2023). *Conservation Advice for* Chalinolobus dwyeri *(large-eared pied bat)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/183-conservation-advice-15112023.pdf. In effect under the EPBC Act from 15 November 2023.

- Adopted/Made Recovery Plan: Department of Environment and Resource Management (2011). *National recovery plan for the large-eared pied bat* Chalinolobus dwyeri. Report to the Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-large-eared-pied-bat-chalinolobus-dwyeri. In effect under the EPBC Act from 10 February 2012.
- Adopted/Made Threat Abatement Plans: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Policy Statement and Guidelines: *Survey Guidelines for Australia's Threatened Bats.* (Department of the Environment, Water, Heritage and the Arts, 2010).

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The species' total population ranges between 10,000 individuals (Pennay & Thompson 2008) and 20,000 individuals (Woinarski et al. 2014), although the number of mature individuals is lower. The project will impact on 574.24 hectares of habitat for the species. Approximately 125,680.70 hectares of habitat (associated PCTs) occurs within a 10 kilometre buffer of the subject land. Given the mobility of the species and areas of available habitat within the surrounding area, it is unlikely the project would reduce the habitat resources within the subject land such that it would lead to a long-term decrease in the size of a population.

- *reduce the area of occupancy of a population*

Much of the known distribution of the Large-eared Pied Bat occurs in NSW (DERM 2011). In NSW, the species occurs in the Sydney sandstone region, Pilliga region and in the north-east at Coolah Tops and Mt Kaputar.
In Warrumbungle National Park and Mount Kaputar National Park. The area of occupancy for the species is estimated at 1500 square kilometres.

The species was impacted by the 2019–2020 bushfires, with 27% of the Large-eared Pied Bat's habitat occurring within fire affected area, and 19% intersecting with severe fires. Habitat within the subject land was burnt during the 2019–2020 bushfires with 4.46 hectares experiencing an extreme severity burn.

The loss of 574.24 hectares of partial clearing of Large-eared Pied Bat habitat represents approximately 0.4% of the species' geographic range. Given the mobility and extent of the species range it is unlikely the project would reduce the area of occupancy for the species.

- *fragment an existing population into two or more important populations*

The project may impact the movement of the Large-eared Pied Bat due to the placement of powerlines and towers. To minimise the impacts diverters will be installed on transmission lines within 1 kilometre (at a minimum) of wetland/riverine habitats to reduce impacts from collision with transmission lines and infrastructure. The exact position and diverter model will be finalised during detailed design. The mitigation measures are known to be effective in minimizing aerial species collision with transmission lines and infrastructure therefore if implemented it is unlikely the project would fragment an existing population in two or more populations.

— *adversely affect habitat critical to the survival of a species*

The species is dependent on the presence of diurnal roosts such as caves, overhangs, or other landscape features for shelter. The approved conservation advice for the species notes that any known roost site, or caves that could be roost sites, are considered habitat critical to the survival of the species. These features need to be within reasonable proximity of foraging habitat, which often occurs along water courses in relatively fertile valleys and plains (particularly in NSW) with moderately tall to taller trees. Habitat within the subject land may represent habitat to critical to the survival of the species. The 574.24 hectares of habitat associated with the project would adversely impact habitat critical to the survival of a species.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

— *disrupt the breeding cycle of an important population*

The approved conservation advice notes that the Large-eared Pied Bat relies on cliffs, escarpment, cracks or rocky outcrops for shelter for raising young. Maternity caves need to have indentations in the roof and be high and deep enough to allow the young to fly. The project has specific protocols that require surveys to be undertaken prior to any activities within 100 metres of these habitat features during the Large-eared Pied Bat breeding season. If the species is present then an assessment will be undertaken to determine if the activities can be undertaken, and what appropriate mitigation measures can be implemented to reduce disturbance. These measures may include cessation of work or selecting alternative plant equipment. The assessment may also determine that the activities cannot proceed until after the breeding season. In addition, measures will be implemented to reduce fragmentation associated within the transmission lines, therefore removing any barriers to the species movement. Providing the protocols and measures are implemented it is unlikely the project would disrupt the breeding cycle of an important population.

— *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Roosting habitat is in close association with foraging habitat, without both foraging and roosting habitat the species is unlikely to occur. Given the mobility of the species and areas of available habitat within the surrounding area (approximately 125,568.07 hectares) it is unlikely the project would reduce the habitat resources within the subject land such that it would modify the habitat to the extent the species is likely to decline.

— *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

The subject land has been previously disturbed and is subjected to ongoing disturbance such as invasive species. Invasive weeds and vertebrate pests such feral goats, foxes and rates are already known to occur within the subject land. It is unlikely the loss of foraging habitat would result in additional species that are harmful to the Large-eared Pied Bat and /or its habitats becoming established.

— *introduce disease that may cause the species to decline*

Pseudogymnoascus destructans is a fungus that causes white-nose syndrome in cave-dwelling bats. The fungus infects the species muzzle and can result in death. The fungus is not currently known to occur in Australia. Therefore, it is unlikely the project will introduce a disease that may cause the species to decline. Furthermore, the project will implement biosecurity protocols to minimise the threat of future diseases.

- *interfere substantially with the recovery of the species*

The overall objective of the recovery plan for the species is to ensure the persistence of a viable population of the Large-eared Pied Bat throughout its geographic range. The recovery plan set out several specific objectives including:

- identify priority roost and maternity sites for protection
- implement conservation and management strategies for priority sites, including the protection of known roost and associated foraging habitats
- educate the community and industry to understand and participate in the conservation of the large-eared pied bat
- research the Large-eared Pied Bat to augment biological and ecological data to enable conservation management
- determine the meta-population dynamics throughout the distribution of the Large-eared Pied Bat.

The project is likely to conflict with the protection of foraging habitat and the complete removal of 438.36 hectares and partial clearing of 135.88 hectares of confirmed habitat would substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above it is likely the project would result in a significant residual impact on the Large-eared Pied Bat.

B4.1.13 Hunter Valley Delma *(Delma vescolineata)*

The Hunter Valley Delma is listed as endangered under the EPBC Act. Until recently the Hunter Valley Delma was considered to be a subpopulation of *Delma impar*, however recent morphological and molecular studies have determined have that the Hunter subpopulation is a sperate species.

The Hunter Valley Delma is known almost entirely from a 25 kilometre wide corridor in the Hunter Valley NSW, between Maitland and Muswellbrook (Mahony et al. 2022). A further specimen has been identified from just north of Parraweena on the Liverpool plains, approximately 80 kilometres northwest of Muswellbrook.

The approved conservation advice states that the species is known to occur in secondary native grassland in association with sparse box gum or ironbark woodland. The primary canopy species consists of *Eucalyptus melliodora* (Yellow-box Gum) and *E. crebra* (Narrow-leaved Ironbark), with a diverse ground cover layer containing multiple grasses including *Austrostipa spp*. (Speargrass), *Bothriochloa spp*. (Beardgrass), and *Chloris spp*. (Finger Grass).

It has been found sheltering under rocks and discarded rubbish, including building rubble, metal and organic waste. The approved conservation advice notes that sites where the species has been detected include rehabilitated mine sites and pastoral land used for cattle grazing. The Hunter Valley Delma has also been detected under dried cow pats in agricultural land that is heavily disturbed by livestock and contains no natural surface refugia.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is the approved Conservation Advice- Department of Climate Change, Energy, the Environment and Water (2024). *Conservation Advice for* Delma vescolineata *(Hunter Valley delma)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/92599-conservation-advice-16072024.pdf. In effect under the EPBC Act from 16 July 2024.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of a population*

The Hunter Valley Delma was recorded within the subject land. The project is likely to directly impact on 353.53 hectares of confirmed habitat. Therefore, it is likely the project will lead to a long-term decrease in the size of a population.

- *reduce the area of occupancy of a population*

The Hunter Valley Delma is known almost entirely from a 25 kilometre wide corridor in the Hunter Valley NSW, between Maitland and Muswellbrook (Mahony et al. 2022). The subject land occurs at the limit of the species distribution. Therefore, given the small area of occupancy for this it is likely the loss 353.53 hectares of confirmed habitat would reduce the area of occupancy of this population.

- *fragment an existing population into two or more populations*

The Hunter Valley Delma is known almost entirely from a 25 kilometre wide corridor in the Hunter Valley NSW, between Maitland and Muswellbrook. The approved conservation advice for the species notes that the two distinct areas the species occur may be considered subpopulations or may represent a larger continuous population. Given this is yet to be confirmed and the scale and nature of the project, there is potential for the project to fragment a population in two or more populations.

- *adversely affect habitat critical to the survival of a species*

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development
- for the reintroduction of populations or recovery of the species or ecological community.

The approved conservation advice for this species notes that habitat critical to the survival is not well understood but likely to include the secondary native grassland of the Hunter Valley between Maitland and Muswellbrook. The project would remove 353.53 hectares of confirmed habitat within the subject land. Therefore, it is considered the project would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of a population*

The project would result in the loss of 353.53 hectares of confirmed habitat for the species. Given the habitat is likely to represent habitat critical for the species (i.e. necessary to maintain the species it is likely the project will lead to a decrease in the size of a population of Hunter Valley Delma.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Given the small area of occupancy and extent of habitat for this species, the loss of 353.53 hectares of confirmed habitat is likely to decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

It is not likely that invasive species (such as introduced predators) that are harmful to the Hunter Valley Delma would become further established because of the project. Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and pests such establishing in wetland habitat areas.

- *introduce disease that may cause the species to decline*

No. There are no known diseases that are likely to increase in the area as a result of the project.

- *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for this species. The approved conservation advice set out conservation and recovery actions for the species including:

- protect and prevent impacts to habitat for the species in the planning, construction and post construction phases of mining and other developments
- develop and implement fire management strategies that minimise the risk of severe and frequent fires
- management of invasive species.

The project would result in the loss 353.53 hectares of confirmed habitat for the species. Given the small area of occupancy and extent of habitat for this species, the project has the potential to interfere with the recovery of the species.

Conclusion

The Hunter Valley Delma is known almost entirely from a 25 kilometre wide corridor in the Hunter Valley NSW, between Maitland and Muswellbrook. The species was recorded within the subject land. The project will:

- result in the loss of 353.53 hectares of confirmed habitat for the species
- potentially fragment a population into 2 or more
- reduce the area of occupancy for the species.

Therefore, it is considered the project would have a significant residual impact on the Hunter Valley Delma.

B4.2 Listed vulnerable fauna

B4.2.1 Giant Barred Frog *(Mixophyes iteratus)*

The Giant Barred Frog is listed as vulnerable under the EPBC Act. The species is distributed along the coast and ranges from Eumundi in southeast Queensland to Warrimoo in the Blue Mountains. Declines appear to have occurred at the margins of the species' range, with no recent records south of the Hawkesbury River and disappearances from a number of streams in QLD. Northern NSW, particularly the Coffs Harbour-Dorrigo area, is a stronghold. Giant Barred Frogs are found along freshwater streams with permanent or semi-permanent water, generally (but not always) at lower elevation. Moist riparian habitats such as rainforest or wet sclerophyll forest are favoured for the deep leaf litter that they provide for shelter and foraging, as well as open perching sites on the forest floor. However, Giant Barred Frogs will also sometimes occur in other riparian habitats, such as those in drier forest or degraded riparian remnants, and even occasionally around dams.

Breeding takes place from late spring to summer. Once eggs are laid and fertilised in the water, the female kicks them out of the water where they stick onto a suitable bank (e.g. overhanging or steeply sloped). Hatchlings drop or wriggle into the water. Although generally found within about 20 metres the stream, outside the breeding season, the Giant Barred Frog may disperse away from the stream (e.g. 50 metres or further). It is a generalist feeder, with large insects, snails, spiders and frogs included in its diet.

Giant Barred Frogs were record during targeted surveys within Olney and Watagan State Forests (Wyong IBRA subregion), with juveniles to adults identified by sub-contractors (Stephen Mahony).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Threatened Species Scientific Committee (2021). *Conservation Advice* Mixophyes iteratus *Giant Barred Frog*. Canberra: Department of Agriculture, Water and the Environment. Available from: *http://www.environment.gov.au/biodiversity/threatened/species/pubs/1944-conservation-advice-13112021.pdf*. In effect under the EPBC Act from 13 November 2021.
- Adopted /Made Recovery Plan: Hines, H.B. & the South-east Queensland Threatened Frogs Recovery Team (2002). *Recovery plan for Stream Frogs of South-east Queensland 2001-2005*. Report to Environment Australia, Canberra. Queensland Parks and Wildlife Service, Brisbane. Available from: *http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-stream-frogs-south-east-queensland-2001-2005*. In effect under the EPBC Act from 13 October 2003 as *Mixophyes iteratus.*
- Adopted/Made Threat Abatement Plans:
  - Department of the Environment and Energy (2016). *Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis*. Canberra, ACT: Commonwealth of Australia. Available from: *http://www.environment.gov.au/biodiversity/threatened/publications/tap/infection-amphibians-chytrid-fungus-resulting-chytridiomycosis-2016.* In effect under the EPBC Act from 07 September 2016.
  - Department of the Environment and Energy (2017). *Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*)*. Canberra, ACT: Commonwealth of Australia. Available from: *http://www.environment.gov.au/biodiversity/threatened/publications/tap/feral-pig-2017*. In effect under the EPBC Act from 18 March 2017.
  - Department of Climate Change, Energy, the Environment and Water (2024*). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available* from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Policy Statements and Guidelines: *Survey Guidelines for Australia's Threatened Frogs.* (Department of the Environment, Water, Heritage and the Arts, 2010.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The approved conservation advice for the Giant Barred Frog notes that in NSW the species has declined severely with the species not recorded from a few areas that's once supported large number of the species. The Giant Barred Frog was recorded within the subject land and therefore it is an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Forty adult Giant Barred Frogs, and two records of tadpoles with over ten individuals present were recorded during targeted surveys within Olney and Watagan State Forests. The conservation advice states that the fires may have accelerated any population decline through direct mortality, and the unfavourable post-fire conditions (loss of shelter, increased susceptibility to predators, and loss of prey), as well as a reduction in future recruitment (egg and tadpole death and breeding site degradation). The project would result in the loss of 2.22 hectares of confirmed habitat 8.54 hectares of assumed habitat a total of 10.76 hectares within the subject land. Given the scale and nature of the project it is considered unlikely the project would the lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

The approved conservation advice for the species notes the Giant Barred Frog population can be divided into three broad distribution zones separated by intervening dry areas. The northern distribution: north and west of Brisbane, Queensland (including the Sunshine Coast hinterland), within the Mary River and Stanley River catchments; the central distribution: from areas west and southwest of the Gold Coast, Queensland to the ranges northwest of Newcastle, NSW; and the southern distribution: from the Hunter Valley, through the Hawkesbury River catchment, and to the Blue Mountains, NSW.

The extent of occurrence has been estimated at 132,654 square kilometres and the area of occupancy at 1,908 kilometres square. Therefore, the loss of 10.76 hectares of habitat associated with the project is unlikely to reduce the area of occupancy of an important population.

- *fragment an existing population into two or more important populations*

The approved conservation advice notes that studies have shown the individuals move up to 100 metres in a night but not more than 20 metres from the stream, with the majority staying within 10 metres. However, adults, especially females, may be found up to 150 metres from water. The towers will be micro-sited to ensure minimal impact on the species' habitat, and riparian habitats will be largely avoided. Although the species may use the terrestrial habitats for dispersal, given the nature of the projects (i.e. powerlines will be above the habitat) it is unlikely the project would result in a barrier to movement, or in an existing population into two or more important populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act is on the Register of Critical Habitat. Habitat critical for the survival is defined as areas required:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The approved conservation advice notes the species is a habitat specialist and stays in the riparian zone all year round, generally confined to a narrow strip of vegetation either side of a stream or river. Therefore, it is likely that riparian habitat within the subject land would be considered habitat critical to the survival of the species. The project will largely avoid the riparian habitats and therefore any impacts on habitat critical to the survival of the species is expected to be minimal.

- *disrupt the breeding cycle of an important population*

The Giant Barred Frog is a stream dwelling frog that lays its egg in the overhanging or steeply sloped banks or rocks of streams. Once hatched, the tadpoles then drop into the stream below. While the project is likely to result in the loss of habitat, breeding habitat will largely be avoided. It is unlikely the project would disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Impacts to Giant Barred Frog are based on the loss of 10.76 hectares of confirmed and assumed habitat. The impacts of tower locations will be minimal in riparian areas. These habitats will mostly be spanned by wires and the micro-siting process undertaken before construction begins and would further minimise impacts to the greatest extent possible. Given the extent of habitat within the locality (4,223.60 hectares) it is unlikely the loss of 10.76 hectares would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

The project is unlikely to result in an invasive species harmful to the Giant Barred Frog becoming established in the habitat. Introduced predators are well established. The potential for weed invasion was considered possible with a project of this nature and appropriate controls are required during construction and operation to reduce this threat. Invasive species would be managed under the construction environmental management plan using best practice methods. Consequently, there is no real chance or possibility that the project will result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

- *introduce disease that may cause the species to decline*

Infection of the frog with chytrid fungus (*Batrachochytrium dendrobatidis*) resulting in chytridiomycosis is an issue for this species. However, the project would be unlikely to increase the potential for significant disease vectors to affect the species. Best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens will be implemented. Therefore, there is no real chance or possibility that the project will introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

The Recovery plan for Stream Frogs of South-east Queensland 2001–2005 and the approved conservation advice for the giant barred Frog set out conservation measures for the species recovery including:

- monitoring of the geographical range
- further investigations into the species ecology
- increase awareness of the species and its threats across the species range
- fire management to protect unburnt areas
- hygiene protocols for managing disease and invasive species management (invasive weed and feral animals).

Biosecurity protocols will be implemented to reduce further impacts of invasive species and pathogens becoming established in the Giant Barred Frog habitat. Therefore, it is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

Whie mitigation measures will minimise the impacts associated with the project, given the decline in the species and species habitat it is unlikely the loss of 10.76 hectares would result in a significant residual impact on Giant Barred Frog.

B4.2.2 Stuttering Frog *(Mixophyes balbus)*

The Stuttering Frog is listed as vulnerable under the EPBC Act. This species is endemic to the southeast coast of Australia. Historically, it occurred in eastern-flowing streams of the Great Diving Range between the Clarence River catchment in northeastern NSW and the Cann River catchment in East Gippsland, Victoria. However, the species has undergone widespread decline and no longer occur in the wild in Victoria.

The approved conservation advice for *Mixophyes balbus* (DAWE 2021) notes that the species persists in the New England Tablelands, NSW North Coast, NSW South Western Slopes, South East Corner, South Eastern Highlands and Sydney Basin IBRA bioregions. The Dorrigo region in the NSW North Coast bioregion may be a stronghold for this species.

The Stuttering Frog is associated with flowing creeks and streams in temperate and sub-tropical rainforest, wet sclerophyll forest and Antarctic Beech forests (DAWE 2021). It has also been recorded in dry open tableland riparian vegetation and moist gullies in dry forest (DAWE 2021). The Stuttering Frog is known to prefer the interior of large tracts of forest, in areas with relatively cool mean annual temperatures (DAWE 2021). Such sites are minimally disturbed by land clearance, forest grazing or other anthropogenic influences, suggesting the Stuttering Frog is sensitive to disturbance.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Department of Agriculture, Water and the Environment (2021). *Conservation Advice for* Mixophyes balbus *(Stuttering Frog, Southern Barred Frog in Victoria)*. Canberra: Department of Agriculture, Water and the Environment. (http://www.environment.gov.au/biodiversity/threatened/species/pubs/1942-conservation-advice-23112021.pdf).
- Adopted/Made Recovery Plan: Hunter, D., & G.R. Gillespie (2011). *National Recovery Plan for the Stuttering Frog* Mixophyes balbus. Department of Sustainability and Environment, Melbourne. (http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-stuttering-frog-mixophyes-balbus) In effect under the EPBC Act from 10 February 2012.
- Adopted/Made Threat Abatement Plans include:
  - Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024.* Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
  - Department of the Environment and Energy (2016). *Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (2016)*. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/infection-amphibians-chytrid-fungus-resulting-chytridiomycosis-2016. In effect under the EPBC Act from 07 September 2016.
- *Policy Statements and Guidelines*: *Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines 6.3* (Department of the Environment, Water, Heritage and the Arts (DEWHA), 2010).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The approved conservation advice for the Stuttering Frog (DAWE 2021) states that there is insufficient information available to be able to describe, with spatial information, important populations of this species. Further research is needed to do this, if practicable to do so (see conservation actions). Until such information is available, all populations of this species should be considered important. Four-hundred and thirty-four stuttering frog tadpoles and adults were recorded within Olney and Watagan State Forests (Wyong IBRA subregion) during targeted surveys. Based on the survey's results it is considered an important population occurs within the subject land.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

In 2009, the estimated population size of the Stuttering Frog was fewer than 10,000 mature individuals (DAWE 2021). Additionally, no subpopulations were estimated to contain more than 1000 mature individuals.

The approved conservation advice for the species note that bushfires are predicted to contribute to declines in stream-dwelling frogs in eastern Australia, by increasing water temperature, altering water chemistry and creating sediment/ash runoff, which can impact aquatic ecosystems up to 80 kilometres downstream of burnt areas. Approximately 15.92 hectares of habitat for the Stuttering Frog was impacted within the subject land during the 2019–2020 bushfires.

The project would result in the loss of 191.99 hectares (184.28 hectares confirmed habitat and 7.71 hectares assumed) of habitat for the species, which has the potential to reduce resources for the species such that the project may lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

The Stuttering Frog is known to occur within the New England Tablelands, NSW North Coast, NSW South Western Slopes, South East Corner, South Eastern Highlands and Sydney Basin IBRA bioregions. The western extent of the species includes the Wollemi IBRA region which the project occurs north and east of. Therefore, there is a real chance or possibility that the project would reduce habitat in the western extent of the species range, this the area of occupancy for an important population.

- *fragment an existing population into two or more important populations*

Whilst there are no current studies on the movement patterns of the Stuttering Frog, the species may utilise habitats that are a considerable distance away from the riparian areas. This frog has been recorded on roads at least 100 metres from the nearest waterbody (DAWE 2021). The towers will be micro-sited to ensure minimal impact on the species habitat, and riparian habitats will be largely avoided. Although the species may use the terrestrial habitats for dispersal, given the nature of the projects (i.e. transmission line will be above the habitat) it is unlikely the project would result in a barrier to movement, or in an existing population into two or more important populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been included in the Register of Critical Habitat. The approved conservation advice notes that due to the lack of information it is not practical to describe habitat critical to the survival of the species. Given the loss, degradation, and fragmentation of habitat for the species, the approved conservation advice states that all habitat for the species is likely to represent habitat critical for the survival of the species. The loss of 191.99 hectares of habitat associated with the project is likely to adversely affect habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The Stuttering Frog is an obligate stream breeder and breeds during the spring and summer months, from October to February. The project will largely avoid impacts to stream and riparian habitat. Given the nature of the project, it is unlikely to represent a barrier to the species movement.

Based on the above it is unlikely the project would disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The impacts of tower locations will be minimal in riparian areas. These habitats will mostly be spanned by wires and the micro-siting process undertaken before construction begins would further minimise impacts to the greatest extent possible. Given the extent of habitat within the immediate vicinity (approximately 42,282.93 hectares within 10 kilometres of the subject land) it is unlikely the project would modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

The project is unlikely to result in an invasive species harmful to the Stuttering Frog becoming established in the habitat. Introduced predators are well established. The potential for weed invasion was considered possible with a project of this nature and appropriate controls are required during construction and operation to reduce this threat. Invasive species would be managed under the construction environmental management plan using best practice methods. Consequently, there is no real chance or possibility that the project will result in invasive species that are harmful to a vulnerable species becoming established in the species habitat.

- *introduce disease that may cause the species to decline*

Infection of the frog with chytrid fungus (*Batrachochytrium dendrobatidis*) resulting in chytridiomycosis is an issue for this species. However, the project would be unlikely to increase the potential for significant disease vectors to affect the species. It is the intention to use current best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. Consequently, there is no real chance or possibility that the project will introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

The recovery plan for the Stuttering Frog states that the specific recovery objectives for the recovery of the species are:

- determine the distribution, habitat requirements, conservation status, taxonomy, population demography and genetic structure of Stuttering Frog populations
- identify and address the causal factors of the decline and prevent the local extinction of important populations of the Stuttering Frog across its geographic range
- build community support for the Stuttering Frog recovery program.

The approved conservation advice for the species notes conservation and management priorities for the species including:

- designate protection zones around known site locations to ensure habitat is not fragmented by roads, timber harvesting or clearing of freehold land. Activities permitted in protection zones should be informed by further research into the effects of disturbance on the Stuttering Frog
- identify and conserve landscape characteristics that facilitate movement between subpopulations
- assess the effectiveness of current forestry management practices in ameliorating disturbance to the habitat of the Stuttering Frog, and revise management practices if necessary
- weed control and habitat restoration may be needed in localised areas to support habitat regeneration. Note that herbicide formulations can be toxic to frogs and tadpoles, particularly if they contain glyphosate and surfactants
- monitor and control damage to riparian areas by feral pigs and domestic stock
- minimise the spread of disease by implementing suitable hygiene protocols to protect priority subpopulations.

The project is unlikely to substantially interfere with the conservation actions for the recovery of the species. In addition, biosecurity (including hygiene) protocols will be implemented to further reduce disease and invasive species becoming established within the species habitat.

Conclusion

The project will result in the clearing of 191.99 hectares (184.28 hectares of confirmed habitat and 7.71 assumed habitat) for the Stuttering Frog, which is likely to result in the loss of habitat critical to the survival of the species and reduce the area of occupancy of an important population. Therefore, it is likely the project would result in a significant residual impact on the Stuttering Frog.

B4.2.3 Glossy Black-cockatoo *(Calyptorhynchus lathami)*

The Glossy Black-cockatoo is listed as vulnerable under the EPBC Act. It is a small dark cockatoo with a large bill, usually seen in pairs or small groups feeding quietly in sheoaks or calling whilst in flight. This species inhabits eucalypt open forest and woodland with hollow-bearing trees and a midstory of sheoaks. It nests in tree hollows, and forages exclusively in sheoak species shredding cones with their bill. Important food trees for coastal populations include *Allocasuarina littoralis* and *A. torulosa,* while inland populations rely on *Casuarina cristata, A. verticillata, A. diminuta, and A. gymnanthera*. They depend on large hollow-bearing eucalypts for nest sites.

The Glossy Black-cockatoo is distributed in the eastern third of NSW from the coast to the tablelands, with populations on the western slopes and plains (Pilliga-Goonoo to Weddin Mountains) tenuously (if at all) connected to those on the tablelands. Their distribution is continuous through the forested parts of the Great Dividing Range but becomes more scattered inland, to as far west as the Riverina in NSW.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: *Conservation Advice for* Calyptorhynchus lathami lathami *(South Eastern Glossy Black Cockatoo)* (Department of Climate Change, Energy, the Environment and Water, 2022)
- Adopted/Made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The distribution of this species is reasonably connected through south-eastern Australia and the level of genetic dispersal is likely cohesive that isolated populations are considered rare. It is considered that the eastern NSW is part of a contiguous population. As such it is assumed that the population related to the subject land is part of a key source population and therefore considered important.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The estimated number of Glossy Black-cockatoos is at 12,000 globally however this is considered uncertain. Some estimations predict the total population may have declined to near 10,000 individuals. On the basis of geographic distribution and density records, about 70% would occur in NSW, or about 8400 birds. The project will result in the loss of 18.52 hectares of assumed habitat for the species. This includes loss of foraging and breeding resources.

Approximately 133.14 hectares of habitat for this species was impacted by the 2019–2020 bushfires within the subject land. Glossy Black-cockatoo may be at risk of collision from powerlines, and electrocution may pose a risk, however, electrocution would require contact with different phases or conductor potentials, and the horizontal separation between individual conductors, or bundled conductors, exceeds the wingspan of the Glossy Black-cockatoo (~90 cm). Therefore, Electrocution is therefore considered unlikely. However, collision with powerlines while flying still poses a threat to Glossy Black-cockatoo. Mitigation measures will be implemented to reduce the risk of collision including installing bird diverters.

Given the species mobility, and habitat in the surrounding area (141,819.30 hectares of habitat within 10 kilometre buffer of the subject land), the loss of 18.52 hectares of assumed habitat is unlikely to lead to a long-term decrease in the size of an important population of the Glossy Black-cockatoo.

- *reduce the area of occupancy of an important population*

The Glossy Black-cockatoos are uncommon but widespread. They can be found from Mitchell, Queensland, through eastern New South Wales to East Gippsland. The extent of occurrence of the Glossy Black-Cockatoo is estimated at 450,000 square kilometres with an area of occupancy estimated at 40,000 square kilometres. The project will result in the loss of 18.52 hectares of habitat, with areas of preferred habitat available in the surrounding locality (141,819.30 hectares of habitat within 10 kilometre buffer of the subject land).

Given the mobility of the species and the modelled distribution of the species and its habitat (Mitchell, Queensland, through eastern NSW to East Gippsland, Victoria), it is unlikely the loss of habitat would reduce the area of occupancy for the species.

- *fragment an existing population into two or more important populations*

Highly mobile species such as Glossy Black-cockatoo are expected to be less impacted by fragmentation. This species moves freely over open areas and urban areas. Given the nature of the project (i.e. tower will be micro-sited, and wires span across the landscape) and species ability to move (including in urban areas) it is unlikely the project would be a barrier to movement for the species. Therefore, the project is unlikely to fragment an existing important population into 2 or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified in the Register of Critical Habitat.

According to the approved conservation advice for the species assessments relevant to the Glossy Black-cockatoo must consider that the species:

- has a highly specialised diet and preference of individual feed trees
- nests only occur in very old trees in large hollows, which take centuries to form naturally
- has a specific set of preferences in nesting tree species and hollow characteristics
- nests close to, or within, foraging habitat
- is a long-lived subspecies with a slow life cycle.

Habitat within the subject land is considered to have both foraging and breeding resources for the Glossy Black-cockatoo. The project will result in the loss 18.52 hectares of assumed Glossy Black-cockatoo habitat; therefore, it is likely the project would adversely affect habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The Glossy Black-cockatoo's nest is a hollow in a eucalypt, live or dead, commonly in a dead spout in a living tree, about 26 centimetres wide and up to 1.4 metres deep. A clutch of usually 1 egg is laid in autumn or winter, raising only a single chick per year if successful. The project will result in the loss of habitat that may contain suitable hollow nesting resources for the species. Therefore, it is likely the project could disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.*

The project will result is the loss of 18.52 hectares of Glossy Black-cockatoo habitat. Given the scale the impacts there is a real chance or possibility that the impacts would modify, destroy or decrease the quality of the habitat for the species. However, the towers will be micro-sited and mitigation measures will be implemented such as invasive species controls. These measures are likely to further reduce the impacts on the Glossy Black-cockatoo habitat. In addition, the project will not create barriers to movement, therefore given the species mobility and further habitat resources are available in the surrounding area, it is not predicted that the project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

The subject land has been previously disturbed and is subjected to ongoing disturbance such as invasive species. Invasive weeds and vertebrates are already known to occur within the subject land. It is unlikely the loss of foraging habitat would result in additional species that are harmful to the Glossy Black-cockatoo and /or its habitats becoming established.

- *introduce disease that may cause the species to decline*

Psittacine circoviral disease (PCD) is a virus which affects parrots and related species and is listed as a key threatening process under the EPBC Act. The virus causing the disease has been identified in many wild populations and is believed to occur naturally. This disease is not considered likely to increase in the area because of the project and therefore is unlikely to cause the Glossy Black-cockatoo to decline.

- *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for this species, however the approved conservation advice for the species includes protecting, restoring and enhancing the quality of known assumed habitat and enhancing or restoring regional corridors through strategic revegetation; and two actions to mitigate habitat fragmentation for this species. The project will not interfere substantially with these objectives.

Conclusion

Based on the assessment above the project is likely to adversely affect habitat critical to the survival of the species. Therefore, it is considered likely that the project would have a significant residual impact on the Glossy Black-cockatoo.

B4.2.4 Latham's Snipe *(Gallinago hardwickii)*

The Latham's Snipe is listed as vulnerable under the EPBC Act.

Latham's snipes are 29–33 cm long, have a wingspan of 50–54 cm, and weigh 150–230 g. It is a medium sized wader with a long, straight bill; rather short, broad, pointed wings; a long tail, and short legs. The species shows no sexual dimorphism and only demonstrates slight seasonal variation in plumage. Juveniles appear slightly different to adults.

Latham's snipe is a non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia (Higgins & Davies 1996). The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia, including the Adelaide plains, Mount Lofty Ranges, and the Eyre Peninsula.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

Relevant Commonwealth guidelines and policy statements that have been considered in this assessment include:

- Approved Conservation Advice: Department of Climate Change, Energy, the Environment and Water (2024). *Conservation Advice for* Gallinago hardwickii *(Latham's snipe)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/863-conservation-advice-05012024.pdf. In effect under the EPBC Act from 05-Jan-2024.
- Adopted/Made Threat Abatement Plan:
  - Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
  - Department of the Environment, Water, Heritage and the Arts (2008). *Threat abatement plan for predation by the European red fox*. DEWHA, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox. In effect under the EPBC Act from 01-Oct-2008.
- Wildlife Conservation Plans: Department of the Environment (2015). *Wildlife Conservation Plan for Migratory Shorebirds*. Canberra, ACT: Department of the Environment. This Wildlife Conservation Plan was made for this species prior to it being listed as threatened. The plan is no longer in effect for this species under 285(2) of the EPBC Act. Available from: http://www.environment.gov.au/biodiversity/publications/wildlife-conservation-plan-migratory-shorebirds-2016. In effect under the EPBC Act from 15-Jan-2016.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

In Australia, Latham's Snipe occurs in a single, dispersed non-breeding population. The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia (including the Adelaide plains and Mount Lofty Ranges, and the Eyre Peninsula). The range extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to west of the Great Dividing Range in New South Wales. Since this species wasn't recorded near the limit of its range, and isn't known to breed in Australia, it isn't considered to be an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

No important population of Latham's Snipe have been identified in the subject land. In addition, no important populations were identified in the approved conservation advice for the species. Therefore, it is unlikely the project would lead to a long-term decrease in the size of an important population of Latham's Snipe.

- *reduce the area of occupancy of an important population*

No important population of Latham's Snipe has been identified in the subject land; therefore, it is unlikely the project would reduce the area of occupancy of an important population for this species.

- *fragment an existing population into two or more important populations*

It is unlikely the project would fragment an existing important population into two or more populations, as no important populations of Latham's Snipe are known to occur within the subject land.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. The approved conservation advice notes that habitat critical to the survival of the species includes:

- areas that have previously been identified as internationally important for the species, or
- areas that support at least 18 individuals of the species.

The subject land has not been identified as internationally important for the species. Ecological surveys have only recorded 4 individuals within the subject land, with a further 11 records of the species identified nearby. Therefore, the project is unlikely to adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

No important population of the species has been identified in the subject land, nor does the species breed in Australia. Therefore, it is unlikely the proposed development would disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Based on the mapping the project will result in the loss of 10.59 hectares of foraging habitat for the species, although this is likely to be reduced due to micro-siting of the towers and infrastructure. In addition, approximately 2841.50 hectares of available foraging habitat for the species occurs with a 10 kilometre buffer of the subject land. The loss of foraging habitat associated with the project represents less than 0.4% of the available forging resources within the locality. Consequentially it is unlikely the project would modify or decrease the availability of habitat to the extent the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

The subject land has been previously disturbed and is subjected to ongoing disturbance such as invasive species. Invasive weeds and vertebrate pests such as cats and foxes are already known to occur within the subject land. It is unlikely the loss of foraging habitat would result in additional species that are harmful to the Latham's Snipe and/or its habitats becoming established.

- *introduce disease that may cause the species to decline*

There is no disease known to impact the Latham's Snipe. The project will implement biosecurity protocols to minimise the threat of future diseases.

- *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for this species, however the approved conservation advice for the species notes that the primary conservation outcome is a stable population over time, ensuring no further loss of habitat critical to the survival of the species, and protect and manage important feeding and roosting areas in Australia. It is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above, the loss of 10.59 hectares of assumed habitat for the Latham's Snipe unlikely to result in a significant residual impact on the species.

B4.2.5 Pilotbird *(Pycnoptilus floccosus)*

The Pilotbird is listed as vulnerable under the EPBC Act.

Pilotbirds are small, ground dwelling birds that occur in dense forests with heavy undergrowth. The species is largely sedentary and typically seen hopping briskly over the forest floor and foraging on damp ground or among leaflitter. Flight is described as fairly weak, though, if disturbed, birds can sometimes ascend into shrubs (but no more than 1–2 metres from the ground) (Higgins & Peter 2002). The species breeds between August and January in domed nests on or near the ground.

The species is endemic to southeast Australia, and is often recognised as two subspecies of Pilotbird:

- Upland Pilotbird which occurs above 600 metres in the Brindabella Ranges, Australian Capital Territory and in the Snowy Mountain in New South Wales and north-east Victoria.
- Lowland Pilotbird that occurs in forest from Blue Mountains west of Newcastle around the wetter forest of eastern Australia to the Dandenong Ranes in Victoria.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

Relevant Commonwealth guidelines and policy statements that have been considered in this assessment include:

- Approved Conservation Advice: Department of Agriculture, Water and the Environment (2022). *Conservation Advice for* Pycnoptilus floccosus *(Pilotbird)*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/525-conservation-advice-02032022.pdf. In effect under the EPBC Act from 02 March 2022.
- Adopted/Made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The subject land is near the limit of the species range. Although not recorded during the ecological surveys, if the species is present, it would represent an important population. Therefore, it has been considered as an important population for the purposes of this assessment.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The approved conservation advice for the species notes that there are estimated to be 77,000 (range 9,000–125,000) mature individuals in the lowland Pilotbirds wild population and 11,000 upland Pilotbirds. The project would result in the loss of 227.91 hectares of assumed habitat for the species. This includes loss of foraging and breeding resources. Approximately 33,396.42 hectares of habitat (based on PCTs) is mapped within 10 kilometres of the subject land. Given the extent of available habitat, it is considered unlikely that the project will lead to a long-term decrease in the size of an important population of the Pilotbird.

- *reduce the area of occupancy of an important population*

The area of occupancy for the species is estimated to be 26,600 square kilometres (Upland Pilotbird: range 300–3700 kilometres square); Lowland Pilotbird range 3400–30,800 square kilometres). The approved conservation advice notes that the area of occupancy for the species has contracted.

Approximately 76.55 hectares of habitat for the species was impacted by the 2019–2020 bushfires. Given the subject land is located at the limit of the species distribution and the loss of habitat due to bushfires, the removal of 227.91 hectares of assumed habitat would reduce the area of occupancy for the Pilotbird.

- *fragment an existing population into two or more important populations*

The species is largely a sedimentary ground dwelling species and flight has been described as week. Although the towers will be micro-sited and transmission lines will span across the habitat, there is potential for the project to result in fragmentation of the species habitat e.g. through access roads.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. The approved conservation advice notes that habitat critical to the survival of the species includes:

- wet sclerophyll forests in temperate zones in moist gullies with dense undergrowth and
- dry sclerophyll forests and woodlands occupying dry slopes and ridge.

It also includes any breeding or foraging habitat in areas where the species in known or likely to occur as defined by the distribution map in the approved conservation advice. The subject land is located within the distribution map, therefore would remove 227.91 hectares of assumed habitat for the species. Therefore, the project is likely to adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

Pilotbirds build their nest on the ground. The project will implement measures to minimise the impacts on sensitive habitats for threatened species including micro-siting towers. Providing theses measure are implemented it is unlikely the project would disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Approximately 33,396.42 hectares of habitat (based on PCTs) is mapped within 10 kilometres of the subject land. Therefore, given the extent of available resources it is considered unlikely the project would modify, destroy, remove or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

The subject land has been previously disturbed and is subjected to ongoing disturbance such as invasive species. Invasive weeds and vertebrate pests such as cats and foxes are already known to occur within the subject land. It is unlikely the loss of foraging habitat would result in additional species that are harmful to the Pilotbird and/or its habitats becoming established.

- *introduce disease that may cause the species to decline*

There is no disease known to impact the Pilotbird. The project will implement biosecurity protocols to minimise the threat of future diseases.

- *interfere substantially with the recovery of the species*

There is no adopted or made recovery plan for this species, however the approved conservation advice for the species notes that the primary conservation outcome is a stable population over time, enabled by a fire and forest management regime. The project will implement protocols to prevent the risk of bushfires including managing vegetation within the transmission corridor to prevent the risk of fires. It is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above, the loss of 227.91 hectares of assumed habitat for the Pilotbird would result in a significant residual impact on the species.

B4.2.6 Woodland birds

The following three bird species have been grouped together as they have similar habitat requirements and listing status:

- Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*) – vulnerable under the EPBC Act
- Diamond Firetail (*Stagonopleura guttata*) – vulnerable under the EPBC Act
- Painted Honeyeater (*Grantiella picta*) – vulnerable under the EPBC Act.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

Relevant Commonwealth guidelines and policy statements that have been considered in this assessment include:

- Approved Conservation Advice:
  - Department of Climate Change, Energy, the Environment and Water (2023). *Conservation Advice for* Climacteris picumnus victoriae *(brown treecreeper (south-eastern))*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/67062-conservation-advice-31032023.pdf. In effect under the EPBC Act from 31 March 2023.
  - Department of Climate Change, Energy, the Environment and Water (2023). *Conservation Advice for Stagonopleura guttata (*Diamond Firetail*)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/59398-conservation-advice-31032023.pdf. In effect under the EPBC Act from 31 March 2023.
  - Department of the Environment (2015). *Conservation Advice* Grantiella picta *Painted Honeyeater*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/470-conservation-advice.pdf. In effect under the EPBC Act from 08 July 2015.
- Adopted/Made Recovery Plan: Department of Agriculture, Water and the Environment (2021). *National Recovery Plan for the Painted Honeyeater (*Grantiella picta*)*. Department of Agriculture, Water and the Environment, Canberra. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/recovery/painted-honeyeater-2022. In effect under the EPBC Act from 16 Jun 2022.
- Adopted/made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024.* Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.

Is an important population likely to be present?

Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal.
- likely to be necessary for maintaining genetic diversity, and/or
- at or near the limit of the species range.

Based on the approved conservation advice for each of the woodland species and DCCEEWs Species Profile and Threats Database, none of these woodland species would be considered at the or near the limit of the species range or have been identified as a key sources population for breeding or for maintaining genetic diversity.

No important populations of the Brown Treecreeper, Diamond Firetail, and Painted Honeyeater are known to occur within the subject land.

Significant impact criteria

Under the EPBC Act, an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

No important populations of the woodland birds' species have been identified in the subject land. In addition, no important populations were identified in the approved conservation advice for each of the woodland bird species. Therefore, it is unlikely the project would lead to a long-term decrease in the size of an important population of Brown Treecreeper, Diamond Firetail, and Painted Honeyeater.

- *reduce the area of occupancy of an important population*

No important populations of Brown Treecreeper, Diamond Firetail, and Painted Honeyeater have been identified in the subject land; therefore, it is unlikely the project would reduce the area of occupancy of an important population of these woodland bird species.

- *fragment an existing population into two or more important populations*

It is unlikely the project would fragment an existing important population into two or more populations, as no important populations of Brown Treecreeper, Diamond Firetail, and Painted Honeyeater are known to occur within the subject land.

- *adversely affect habitat critical to the survival of a species*

Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Habitat critical to the survival of these species includes:

- **Brown treecreeper (south-eastern).** Areas that have a relatively undisturbed grassy woodland with native understorey. The habitat structure should be quite open at ground level so that birds are able to feed on or near the ground and maintain vigilance against predators. Living and dead trees are essential for roosting and nesting sites and fallen timber which provides essential foraging habitat. Habitat with hollows in standing dead or live trees and tree stumps is also essential for nesting.
- **Diamond firetail.** Identified areas of Eucalypt, acacia or casuarina woodlands, open forests, and other lightly timbered habitats, low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting, and breeding. The approved conservation advice also states that any known or likely habitat identified in map 1 of the approved conservation advice should be considered habitat critical to the survival of the species. The subject land falls within the area mapped as known habitat, therefore could be considered habitat critical to the species.
- **Painted Honeyeater.** Known or likely breeding habitat in Boree/Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) woodlands, box-gum woodlands, and box-ironbark forests on the inland slopes of the Great Dividing Range in New South Wales, Victoria, and southern Queensland. All preferred foraging species within known and likely foraging habitat particularly mistletoes of the genus *Amyema* growing on forest and woodland eucalypts and acacias. It is unlikely the subject land would provide habitat critical to the survival of the species.

The project will result in the loss of:

- 877.19 hectares of assumed habitat for the Brown Treecreeper
- 571.85 hectares for the assumed habitat Diamond Firetail
- 255.72 hectares for the assumed habitat Painted Honeyeater.

The habitat within the subject land is likely to contain habitat critical to the survival of the species. While the project will implement mitigation measures to reduce the impact on these species, such as micro-siting of towers, given the extent of the impacts it is likely the project would adversely affect habitat critical to the survival of the woodland bird species.

- *disrupt the breeding cycle of an important population*

No important populations of the three woodland bird species have been identified in the subject land, therefore it is unlikely the proposed development would disrupt the breeding cycle of an important population.

- *modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Habitat for the woodland bird species was impacted by the 2019–2020 bushfires within the subject land:

- 139.85 hectares of habitat for the Brown Treecreeper
- 75.37 hectares for the Diamond Firetail
- 85.18 hectares for the Painted Honeyeater.

Given the extent of habitat to be removed and impacts from the bushfires, it is considered likely the project would modify, remove or decrease the availability of habitat for the three woodland bird species to the extent that the Brown Treecreeper, Diamond Firetail or Painted Honeyeater may decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Habitat for the species in the subject land is varied in condition with much of the woodland and agricultural landscape in modified or poor condition, and many patches dominated by exotic ground species. Weed and pest species are both currently present throughout the landscape and it is considered unlikely that the project would substantially change the composition of the species habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species.

- *introduce disease that may cause the species to decline*

The project involves construction works that have potential to introduce disease or pathogens into the subject land and surrounding areas. This would be controlled through the implementation of appropriate mitigation measures, making the risk unlikely.

- *interfere substantially with the recovery of the species*

There is currently no adopted or made recovery plan for the Brown Treecreeper and Diamond Firetail. The approved conservation advice for the species identifies a number of regional and local priority actions for each species to assist in recovery including protecting woodland, open forest and, grassland habitat from clearing, fragmentation and disturbance.

The recovery plan for the Painted Honeyeater lists a number of strategies for the recovery of the species including:

- identify, protect, manage, and restore foraging and movement habitats, at the local, regional and landscape scales
- define, monitor, reduce and manage threats
- improve understanding of species movement and habitat use at a landscape scale in order to better target protection and restoration measures
- engage local communities and stakeholders in conservation
- coordinate, review and report on recovery progress.

The project is likely to result in the loss of assumed habitat for the species and therefore may interfere with the recovery of the Brown Treecreeper, Diamond Firetail or Painted Honeyeater.

Conclusion

While the subject land does not represent an important population of the Brown Treecreeper, Diamond Firetail or Painted Honeyeater, it is likely to have a significant residual impact on the woodland bird species due to loss of habitat critical to the survival of the species and interference with recovery of the species.

B4.2.7 White-throated Needletail *(Hirundapus caudacutus)*

White-throated Needletail (*Hirundapus caudacutus*) is listed as vulnerable under the EPBC Act. The White-throated Needletail breeds in Asia and migrates to Australia during the non-breeding season (September to April). The White-throated Needletail is known to favour wooded areas including open forest and rainforest. The species is almost exclusively aerial, though it does roost in tree hollows or in the crowns of tall trees in forest habitats, and forages within the foliage canopy. In coastal areas they have been recorded flying over sandy beaches mudflats and coast cliffs.

The White-throated Needletail is widespread in eastern and southeastern Australia. In eastern Australia, the species is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Dividing Range and occasionally onto the adjacent inland plains.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

Relevant Commonwealth guidelines and policy statements that have been considered in this assessment include:

- Approved Conservation Advice: Threatened Species Scientific Committee (2019). *Conservation Advice* Hirundapus caudacutus *White-throated Needletail*. Canberra: Department of the Environment and Energy. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/682-conservation-advice-04072019.pdf. In effect under the EPBC Act from 04 July 2019.
- Policy Statement and Guidelines: *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act* (Department of the Environment, 2015).
- Adopted/Made Threat Abatement Plans: No Threat Abatement Plan has been identified as being relevant for this species.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The White-throated Needletail was recorded during the ecological surveys. The population is estimated to be at least 10,000 individuals but probably fewer than 100,000. The Draft Referral guidelines for 14 birds listed as migratory species under the EPBC Act notes that a nationally ecological significant portion of a population would be 10 individual birds. While only one White-throated Needletail was recorded during the ecological surveys, a previous sighting has recorded up to 12 near Lake Liddel in the Upper Hunter. Therefore, for the purpose of this assessment the White-throated Needletail is an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The White-throated Needletail is a non-breeding visitor to Australia, therefore habitat within the subject land only represents forging and roost habitat. The project will remove 900.56 hectares of foraging habitat for the White-throated Needletail. Approximately 135,809.10 hectares of available foraging habitat for the species occurs within a 10 kilometre buffer of the subject land. The loss of foraging habitat associated with the project represents less than 0.6% of the available habitat within the locality. Given the mobility of the species, it is unlikely the species would be dependent on the resources within the subject land.

In addition, the species is susceptible to collision with transmission lines. To minimise the impacts diverters will be installed on transmission lines to reduce impacts from collision with transmission lines and infrastructure. The exact position and diverter model will be finalised during detailed design. The mitigation measures are known to be effective in minimizing aerial species collision with transmission lines and infrastructure therefore if implemented it is unlikely this would have a significant impact on the species population.

Based on the above, it is considered unlikely the project would lead to a long-term decline in the size of an important population.

- *reduce the area of occupancy of an important population*

The approved conservation advice for the White-throated Needletail states that the extent of occurrence is estimated at >20,000 square kilometres and the area of occupancy estimated at >18,000 square kilometres. Given the species mobility, it is unlikely the loss of 900.56 hectares of foraging habitat, which represents 0.05% of the area of occupancy for this species, would significantly reduce the area of occupancy of an important population.

- *fragment an existing population into two or more important populations*

The White-throated Needletail is an international migratory species flying thousands of kilometres a year between the northern and southern hemispheres. The project may result in fragmentation of the species habitat due to the potential collision with the transmission lines. However, mitigation measures are known to be effective in minimizing aerial species collision with transmission lines and infrastructure therefore if implemented, therefore it is unlikely the project would fragment an existing population into two or more. The species regularly flies across areas that might represent barriers to other species.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. Habitat critical is defined as habitat that is necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The White-throated Needletail only occurs in Australia during the non-breeding season. Habitat for the White-throated Needletail within the project is limited to foraging habitat. Based on the mapping the project will result in the loss of 900.56 hectares of foraging habitat for the species.

Approximately 135,809.10 hectares of available foraging habitat for the species occurs within a 10 kilometre buffer of the subject land. The loss of foraging habitat associated with the project represents less than 0.6% of the available foraging resources within the locality. Given the extent of foraging habitat, it is unlikely the project would be critical to the survival of the species, therefore the project would not result in an adverse impact to habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The species breeds in wooded lowlands and sparsely vegetated hills, as well as mountains covered with coniferous forests in eastern Siberia, northeastern China, the Korean Peninsula and Japan. The project will remove foraging habitat that may be considered necessary to the species' ability to migrate to the breeding ground. Therefore, there is a real chance or possibility that the project would disrupt the breeding cycle of the species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Based on the mapping the project will result in the loss of 900.56 hectares of foraging habitat for the species, although this is likely to be reduced due to micro-siting of the towers and infrastructure. In addition, approximately 135,809.10 hectares of available foraging habitat for the species occurs with a 10 kilometre buffer of the subject land. The loss of foraging habitat associated with the project represents less than 0.6% of the available forging resources within the locality. Consequentially it is unlikely the project would modify or decrease the availability of habitat to the extent the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

The subject land has been previously disturbed and is subjected to ongoing disturbance such as invasive species. Invasive weeds and vertebrate pests such as cats and foxes are already known to occur within the subject land. It is unlikely the loss of foraging habitat would result in additional species that are harmful to the White-throated Needletail and/or its habitats becoming established.

- *introduce disease that may cause the species to decline*

There are no known diseases impacting this species that would be introduced by the project.

- *interfere substantially with the recovery of the species*

There is no made or adopted recovery plan for the White-throated Needletail. The approved conservation advice for the species sets out priority actions include:

- seek the support of governments in East Asia to protect remaining old growth forests within the breeding range of the species
- identify requirements of important habitat in Australia
- support initiatives to improve habitat management at key sites in Australia
- enhance existing White-throated Needletail monitoring programs, such as BirdLife Australia's Swift Monitoring Sites, particularly to improve coverage in under surveyed parts of Australia
- improve knowledge of the species including the life history, population size, distribution and ecological requirements in Australia and threatening process.

The project will not hinder the priority actions above, therefore unlikely to substantially interfere with the recovery of the species.

Conclusion

Based on the above assessment, it is unlikely the project would result in the modification and loss of habitat for the species, that may lead to a decline in an important population. Therefore, the project is unlikely to have a significant residual impact on the species.

B4.2.8 Parma Wallaby *(Notamacropus parma)*

The Parma Wallaby is listed as vulnerable under the EPBC Act. This species current distribution is limited to the coastal and mountainous areas of central and northern NSW, ranging from around Olney State Forest southwest of Newcastle, to south of Tenterfield and Casino. The Parma Wallaby occurs in wet sclerophyll forest, with a matrix of thick scrubby understorey for shelter paired with grassy patches for foraging considered optimum habitat (Department of Climate Change, Energy, the Environment and Water, 2022).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements used in this assessment this species is as follows:

- Approved Conservation Advice: Department of Climate Change, Energy, the Environment and Water (2022). *Conservation Advice for* Notamacropus parma *(Parma wallaby)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/89289-conservation-advice-05102022.pdf. In effect under the EPBC Act from 05 October 2022.
- Adopted/Made Threat Abatement Plans:
  - Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
  - Department of the Environment, Water, Heritage and the Arts (2008). *Threat abatement plan for predation by the European red fox*. DEWHA, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox. In effect under the EPBC Act from 01 October 2008.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The approved conservation advice for the species notes that populations important to the survival of the Parma Wallaby include populations at the limits of the species' range, outlying populations, stronghold populations, research populations and other populations where recovery actions, such as predator control and reintroductions, are being implemented. Twenty Parma Wallaby were recorded within the Corrabare State Forest, within the Wyong IBRA subregion Given the records and the location of the project; it is likely this population represents an important population of the species.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The species is known to experience low subpopulation densities with relatively sparse, disjunct distribution (there is no known home range for the NSW population of Parma Wallaby). The approved conservation advice for the species notes that there has been a continuing decline in the number of mature individuals within the species distribution. The species was impacted by the 2019–2020 bushfires, with the overall population expected to decline by 16% across the next three generations due to the impacts associated with the 2019–2020 bushfire sand ongoing threats.

Approximately 27.07 hectares of habitat for the species was impacted within the subject land during the 2019–2020 bushfires. The project will result in the complete removal of 27.72 hectares of confirmed habitat and 363.02 hectares of assumed habitat, totalling 390.74 hectares of habitat for the Parma Wallaby. Therefore, it is likely the loss of habitat resources for the species could lead to a long-term decrease in the size of an important population due to habitat restriction.

- *reduce the area of occupancy of an important population*

The area of occupancy of the Parma Wallaby is estimated at 590 square kilometres. The area occupied by this species is likely to be reduced by the project, with the removal or modification of 390.74 hectares of habitat. Given the low area of occupancy for this species, the impacts from the project are likely to reduce the area of occupancy for the Parma Wallaby.

- *fragment an existing population into two or more important populations*

The distance the species travels is largely unknown, the approved conservation advice notes that studies in New Zealand have shown the species moves approximately 5 hectares, however in Australia this is expected to be larger given the larger area of habitat for the species. The towers will be micro-sited to ensure minimal impact on the species habitat. Although the species may use the terrestrial habitats for dispersal, given the nature of the projects (i.e. powerlines will be above the habitat) it is unlikely the project would result in a barrier to movement, or the fragmentation of an existing population into two or more important populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. The approved conservation advice for the species notes that habitat critical to the survival of the species includes:

- occupied forested habitat
- unoccupied forested areas adjacent or near known occurrences, which can provide future habitat for natural range expansion, dispersal or translocation
- areas of habitat that supported the species in the past, but from which they are now absent.

The project will remove 390.74 hectares of habitat that represents habitat critical to the survival of the species. Given the distribution of the species and known records within the subject land, it is considered likely that the project will adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The Parma Wallaby is normally solitary, with year-round birth after a gestational period of 33-36 days. Pouch life is estimated at 30 weeks. Due to the permeability of the project design and the flexible breeding cycle of the species, it is unlikely the proposed development will disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will result in the loss of 390.74 hectares of habitat for the Parma Wallaby. Given the limited distribution of the species, it is likely the loss of this habitat may result in a decrease in the availability of the habitat for the species.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Invasive species are currently present throughout the landscape, and it is considered unlikely that the project would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. Mitigation measures to minimise invasive species (e.g. weed controls) outlined in Section 8 of the BDAR would be implemented for the project to address potential invasive species introduction. As such the project is considered unlikely to result in invasive species becoming established in the habitat.

- *introduce disease that may cause the species to decline*

There are no known disease issues affecting this species in relation to the project. The project would be unlikely to increase the potential for significant disease vectors to affect the species. It is the intention to use current best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. Consequently, there is no real chance or possibility that the project will introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

There is currently no recovery plan for the Parma Wallaby. However, the conservation and management priorities within the species' approved conservation advice outline the following impacts as interfering with its recovery:

- fire
- climate change and sever weather impacts
- habitat loss, degradation and modification
- invasive species.

As habitat loss and modification are identified as impacts interfering with the species' recovery, and 390.74 hectares of habitat would be impacted by the project, there is the potential for the project to interfere with the recovery of the species.

Conclusion

The project will result in the removal of 390.74 hectares of habitat (including 363.02 hectares of assumed habitat) for the Parma Wallaby, which is likely to lead to a decline in a long-term population and reduce the availability of habitat and the area of occupancy of the species. Therefore, it is likely the project will have a significant residual impact on the Parma Wallaby.

B4.2.9 Yellow-Bellied Glider *(Petaurus australis)*

The Yellow-bellied Glider is listed under as vulnerable under the EPBC Act. The species is the second largest glider in Australia and found at altitudes ranging from sea level to 1400 metres above sea level and has a widespread but patchy distribution from southeastern Queensland to far southeastern South Australia, near the Victorian boarder. In NSW the species predominantly occurs in forests along the eastern coast but is known to extend inland to the western slopes of the Great Dividing Range in parts of NSW.

The Yellow-bellied Glider occurs in eucalypt-dominated woodlands and forests, with a preference for habitats that contain a high proportion of winter-flowering and smoot-barked eucalyptus. The subspecies is social and lives in family groups of two to six individuals (though usually three to four) of varying age and sex composition, throughout an exclusive home range of approximately 25–85 hectares.

The large home range is required to maintain the populations' viability. The Yellow-bellied Glider has very low dispersal capabilities over spaces larger than its gliding distance. The maximum gliding distance may be up to 120-140 metres. Hollow-bearing trees are used for dens and therefore are a critical habitat feature for the Yellow-bellied Glider.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

Relevant Commonwealth guidelines and policy statements that have been considered in this assessment include:

- Approved Conservation Advice: Department of Agriculture, Water and the Environment (2022). *Conservation Advice for* Petaurus australis australis *(yellow-bellied glider (south-eastern))*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/87600-conservation-advice-02032022.pdf. In effect under the EPBC Act from 02 March 2022.
- Adopted/Made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 Dec 2024.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The subject land is not included in the areas identified as having an important population in the approved conservation advice. However, the advice notes that the list is not exhaustive and in the absence of information all populations should be considered important. The Yellow-bellied Glider was recorded during the ecological surveys, therefore represents part of an important population of the species.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The approved conservation advice for the species notes that there is no reliable estimate of the population size of the Yellow-bellied Glider. There are estimates of over 100,000 mature individuals, however, due to ongoing decline and the 2019–2020 bushfires, the current population size is likely to be below 100,000 mature individuals but still substantially above 10,000 mature individuals. The project would remove 521.47 hectares of assumed habitat which may reduce resources for the species and lead to a long-term decline in the species population.

- *reduce the area of occupancy of an important population*

The area of occupancy is estimated at 12,724 square kilometres, based on the mapping of point records from a 20-year period (2000–2020) obtained from state governments, museums and CSIRO. The approved conservation advice notes that the area of occupancy is likely significantly under-estimated due to limited sampling across the occupied range. The project does occur near the western limit of the species distribution. Given the decline in the species area of occupancy post the 2019-2020 bushfires, it is considered that the loss of 521.47 hectares of assumed habitat may reduce the area of occupancy for the Yellow-bellied Glider.

- *fragment an existing population into two or more important populations*

The project has the potential to limit connectivity due to clearance requirements under the transmission lines. Where the construction area will impact habitat connectivity the areas are to be investigated and where appropriate glider poles will be installed. The exact location and design of under-transmission line glider poles and/or rope bridges will be nominated as part of a guided Connectivity Strategy. Where poles are proposed to be installed on land adjacent to the easement, they will be subject to landowner agreement and captured in the property management plan. These measures have been used in previous linear projects and are considered effective in maintaining connectivity for the species. Providing these measures are implemented it is unlikely the project would fragment an existing population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. The approved conservation advice notes that habitat critical to the survival of the Yellow-bellied Glider may be broadly defined as areas containing the following attributes (noting that geographic areas containing habitat critical to survival needs to be defined by forest type on a regional basis):

- large contiguous areas of floristically diverse eucalypt forest, which are dominated by winter-flowering and smooth-barked eucalypts, including mature living hollow-bearing trees and sap trees
- areas identified as refuges under future climate change scenarios
- short or long-term post-fire refuges (i.e. unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonise burnt areas
- habitat corridors required to facilitate dispersal of the species between fragmented habitat patches and/or that enable recolonization or movement away from threats
- areas in which some trees have evidence of use for sap extraction by Yellow-bellied Glider.

Habitat within the subject land is likely to contain features that would represent habitat critical to the survival of the species including winter-flowering plants, smooth barked eucalyptus and hollows suitable for denning. Therefore, the loss of 521.47 hectares of assumed habitat is likely to adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

This species utilises hollow bearing trees, primarily living, smooth-barked eucalypts of multiple species. The project will result in the loss 521.47 hectares of assumed habitat that may contain suitable hollow bearing trees. The loss of these trees combined with the potential fragmentation may disrupt the breeding cycle of the species.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The loss of 521.47 hectares of assumed habitat including the potential loss of tree hollows, associated with the project, is considered likely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Many assumed habitat patches in the project study area are dominated by exotic ground species. Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the project would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. There is potential for the project to introduce additional weeds and pathogens within the subject land and surrounding locality. Mitigation measures outlined in Section 8 of the BDAR would be implemented for the project to address potential invasive species introduction. As such the project is considered unlikely to result in invasive species becoming established in the habitat.

- *introduce disease that may cause the species to decline*

There are no known disease issues affecting this species in relation to the project. The project would be unlikely to increase the potential for significant disease vectors to affect the species. It is the intention to use current best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. Consequently, there is no real chance or possibility that the project will introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

There is currently no recovery plan for the Yellow-bellied Glider. The species approved conservation advice states that the primary conservation outcome is to stabilise populations by protecting areas of habitat from extensive severe fire, fragmentation and timber harvesting, known threats are mitigated and key habitat features (e.g., sap trees, hollow-bearing trees) and habitat connectivity are retained. As the project will affect 521.47 hectares of assumed habitat, it is possible that it will interfere with the recovery of the species.

Conclusion

Based on the above assessment it is likely the project would have a significant residual impact on the Yellow-bellied Glider.

B4.2.10 Brush-Tailed Rock Wallaby *(Petrogale penicillata)*

Brush-tailed Rock-wallaby is listed as vulnerable under the EPBC Act. Brush-tailed Rock-wallaby occupy a disjoined range in southeastern Australia, mostly associated with the Great Dividing Range, from the Grampians, in western Victoria, to Yarraman, in south-eastern Queensland. This species historically inhabited a large range, but since 2004 many sub-populations have been extirpated. Brush-tailed Rock-wallaby are a social animal and live in colonies of approximately 30 individuals or less.

The Brush-tailed Rock-wallaby tend to rest and bask in rugged north facing rocky areas, including rock faces and outcrops during the day. At night, this species will forage for grasses, fungi, fruit, flowers and bark in grassy forest, pastures and woodland habitats close to their daytime resting areas. As a group the Brush-tailed Rock-wallaby territory is approximately 15 hectares, however individual foraging areas are smaller at 2–3 hectares.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: *The Conservation Advice for* Petrogale penicillata *(Brush-tailed Rock-wallaby)* (Department of Agriculture Water and the Environment, 2022).
- Recovery Plan*: National Recovery Plan for the Brush-tailed Rock-wallaby* Petrogale penicillata. (Department of Agriculture, 2022).
- Adopted/Made Threat Abatement Plan/s:
  - *Department of Climate Change, Energy, the Environment and Water (2024). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.*
  - *Threat abatement plan for competition and land degradation by rabbits* (Department of Environment and Energy, 2016).
  - *Threat abatement plan for competition and land degradation by unmanaged goats* (Department of the Environment Water Heritage and the Arts, 2008d).

- *Threat abatement plan for predation by the European red fox* (Department of the Environment Water Heritage and the Arts, 2008e).

- Policy Statements and Guidelines: *Survey Guidelines for Australia's threatened mammals. EPBC Act survey guidelines 6.5* (Department of Sustainability, Environment, Water, Population and Communities)

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The approved conservation advice for the Brush-tailed rock-wallaby identifies important populations of the species (in this case sub-populations). Populations important to the survival of the Brush-tailed rock-wallaby include stronghold populations, populations at the limits of the species range, outlying populations, research populations, captive populations, and other populations where recovery actions, such as predator control or reintroductions, are being implemented. Important populations identified in NSW include (not exhaustive):

- Warrumbungle Range/Mount Kaputar populations (NSW)
- Shoalhaven population (NSW)
- Nattai National Park population (NSW)
- Wollemi National Park and Jenolan Caves populations (NSW)
- Wolgan population (NSW)
- Watagans population (NSW)
- Big Yango population (NSW)
- Barnard River population (NSW)
- Macleay Gorges population (NSW)
- Shanno Creek population (NSW)
- Guy Fawkes River population (NSW)
- Green Gully population (NSW).

The subject land includes habitat within the known population range for both the Watagans and Big Yango important populations of Brush-tailed rock-wallaby.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The subject land includes habitat within the known population range for both the Watagans and Big Yango important populations of Brush-tailed rock-wallaby. It is estimated that approximately 50% of the Brush-tailed Rock-wallaby distribution occurs within the area impacted by the 2019–2020 bushfires. The impacts of bushfires on the species are not only limited to habitat loss but can also incur an increase in predators such as cats or other species that compete food resources.

Twenty-seven Brush-tailed Rock-wallabies were recorded across the Pokolbin, Corrabare and Watagan. Approximately 14.17 hectares of habitat for the species within the subject land was burnt during the 2019–2020 bushfires. The project will result in the 153.46 hectares of confirmed habitat within the subject land (breeding and foraging), and 10.50 hectares of assumed habitat (total of 163.96 hectares) could lead to a long decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

The subject land includes habitat within the known population range for both the Watagans and Big Yango important populations of Brush-tailed rock-wallaby. The loss of 163.96 hectares of habitat (153.46 hectares of confirmed habitat and 10.50 hectares of assumed habitat) could amount to a reduction in area of occupancy for the species.

- *fragment an existing population into two or more important populations*

The subject land includes habitat within the known population range for both the Watagans and Big Yango important populations of Brush-tailed rock-wallaby. As the nature of the project is highly permeable, it is unlikely that fragmentation of a population would occur for terrestrial species.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

The approved conservation advice notes that habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species

The approved conservation advice for the species states that it is not practicable to describe habitat critical to the survival of this species. The species eligibility for listing, and key threats being the loss, degradation and fragmentation of habitat suggests that all habitat for the species either now or at some point in the near future is likely to be critical to the survival of the species. Therefore, the loss of 163.96 hectares of habitat is likely to adversely affect habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The subject land includes habitat within the known population range for both the Watagans and Big Yango important populations of Brush-tailed Rock-wallaby. As the nature of the project is highly permeable, it is unlikely that fragmentation of a population would occur that could lead to breeding cycle disruption (i.e. dispersal).

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The impact to Brush-tailed Rock-wallaby is estimated at approximately 153.46 hectares of confirmed foraging or movement habitat and 10.50 hectares of assumed habitat. Given the inclusion of habitat of known populations within the subject land, it is likely the loss of habitat could cause change to the extent that the species may decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

The project is unlikely to result in an invasive species harmful to the Brush-tailed Rock-wallaby becoming established in the habitat. Introduced predators are well established. The potential for weed invasion was considered possible with a project of this nature, and appropriate controls are required during construction and operation to reduce this threat. Invasive species would be managed under the construction environmental management plan using best practice methods. Consequently, there is no real chance or possibility that the project will result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

- *introduce disease that may cause the species to decline*

There are no known disease issues affecting this species in relation to the project. The project would be unlikely to increase the potential for significant disease vectors to affect the species. It is the intention to use current best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. It is unlikely the project will introduce disease that may cause the species to decline.

- *interfere substantially with the recovery of the species*

The national recovery plan for the Brush-tailed Rock-wallaby outlines the following objectives for recovery of the species:

- determine and manage threats to the Brush-tailed Rock-wallaby and its habitat
- determine distribution, abundance, population trends and viability for the Brush-tailed Rock-wallaby
- establish and maintain separate, viable captive populations derived from the Southern and Central Evolutionarily Significant Units (ESUs)
- undertake translocations to improve the genetic and demographic robustness of populations and to establish new colonies of Brush-tailed Rock-wallabies
- investigate key aspects of Brush-tailed Rock-wallaby biology and ecology for conservation management
- increase community awareness and support for Brush-tailed Rock-wallaby conservation.

The project will not interfere with any of the identified recovery objectives, therefore unlikely to substantially interfere with the recovery of the species.

Conclusion

Based on the above assessment it is likely the project would result in a significant residual impact on the Brush-tailed Rock-wallaby.

B4.2.11 Long-Nosed Potoroo *(Potorous tridactylus)*

The Long-nosed Potoroo is listed as vulnerable under the EPBC Act. The Long-nosed Potoroo is a compact, medium-sized marsupial that occurs in a range of vegetation types from coastal scrub and heathy woodland to wet sclerophyll forest and rainforest. The species' preferred habitat has a dense understorey layer to provide cover, but with sufficient open space beneath the sub-canopy to allow foraging. The species has often been recorded in gullies and near creeks, which provide refuge during fire and drought.

The species has a fragmented distribution and generally occurs between sea level and up to 800 metres above sea level in habitat that receives an annual rainfall greater than 760 millimetres. The species is split into two subspecies: northern and southern. The Long-nosed Potoroo has a broad, though highly fragmented distribution across two major bioregions (Southeast Queensland and New South Wales north coast) and occurs between Many Peaks Range (near Gladstone) in the north to the northern boundaries of the Sydney Basin.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements used in this assessment include:

- Approved Conservation Advice: Department of Agriculture, Water and the Environment (2022). *Conservation Advice for* Potorous tridactylus tridactylus *(Northern Long-nosed Potoroo)*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/66645-conservation-advice-15022022.pdf. In effect under the EPBC Act from 15 February 2022.

- Adopted/Made Threat Abatement Plan:
  - Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
  - Department of the Environment, Water, Heritage and the Arts (2008). *Threat abatement plan for predation by the European red fox*. DEWHA, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox. In effect under the EPBC Act from 01 October 2008.
- Policy Statements and Guidelines: *Survey guidelines for Australia's threatened mammals. EPBC Act survey guidelines 6.5* (Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC, 2011).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The approved conservation advice for the species notes that populations important to the survival of the northern long-nosed potoroo include populations at the limits of the species' range, outlying populations, stronghold populations, island populations, research populations and other populations where recovery actions, predator control and reintroductions are being implemented. The Long-nose Potoroo was recorded within the subject land. The approved conservation advice does not identify this area as one of the important populations. Therefore, without further information a precautionary approach has been taken, as it may represent an outlying or island population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The species conservation advice (including the listing advice) notes that the species population is estimated between 7,750 to 70,144 mature individuals. The home range of the species ranges between 2 to 5 hectares. The project would remove approximately 168.33 hectares of habitat for the species, made up of 20.38 hectares of confirmed habitat and 147.95 hectares assumed habitat. Given the small home range, and the extent of the impacts it is considered likely that the project may lead to a long-term decline in the size of this important population.

- *reduce the area of occupancy of an important population*

The extent of occurrence in this assessment is estimated at 92,897 square kilometres with an area of occupancy of 512 square kilometres. Approximately 1.91 hectares of habitat for the species was impacted by the 2019–2020 bushfire, representing less than 0.00023% of the species area of occupancy. The project would result in the loss of 168.33 hectares of habitat for the species, which represents 0.33% of the area of occupancy for the Long-nosed Potoroo. Given the project is not at the limit of the species distribution it is unlikely the project would reduce the area of occupancy for the species.

- *fragment an existing population into two or more important populations*

The species approved conservation advice notes that many of the extant subpopulations are isolated by distance or separated by uninhabitable fragmented landscapes. The Long-nosed Potoroo has low dispersal capability (less than 8 kilometres) and small home ranges (0.19 square kilometres for females and 1 square kilometres for males) making it susceptible to fragmentation

The project will result in the loss of 168.33 hectares of habitat for the species. However, towers will be micro-sited to avoid area of sensitive habitats, and transmission lines will span over the habitat therefore reducing impacts of fragmentation. Therefore, it is unlikely the project would result in an existing population being split into two populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. The species approved conservation advice identifies habitat critical to the survival as:

- occupied forested habitats larger than 0.1 square kilometres
- unoccupied forested areas larger than 0.1 square kilometres, which are either adjacent or proximal to extant subpopulations
- areas of habitat that supported the northern long-nosed potoroo in the past, but from which they are now absent.

The Long-nosed Potoroo was recorded within the subject land, therefore the area to be removed may form part of the occupied habitat. The loss of 168.33 hectares of confirmed habitat is likely to adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The Long-nosed Potoroo breed throughout the year but more frequently in late winter to early spring and late summer. The species approved conservation advice notes fragmentation may impact the genetic diversity of the species and ability to successfully breed. However, the loss of 168.33 hectares of habitat for a species with limited dispersal capabilities may disrupt the breeding cycle of an important population due to lack of foraging resources.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Given the small home range of the species, it is likely the loss of 168.33 hectares of habitat will modify or decrease the availability of habitat to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Invasive species likely to be harmful to the Long-nosed Potoroo (e.g. cats and foxes) are already well established within the landscape. The potential for weed invasion was considered possible with a project of this nature, and appropriate controls are required during construction and operation to reduce this threat. Invasive species would be managed under the construction environmental management plan using best practice methods. It is unlikely the project will result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

- *introduce disease that may cause the species to decline*

The approved conservation advice notes there are two disease which are known to impact the Long-nosed Potoroo. Infestation of native vegetation by *Phytophthora cinnamomi* can result in the degradation of habitat and reduce food availability for the species. This is of particular concern during the breeding or survival cycle.

Toxoplasma gondii is a virulent pathogen that can cause the disease toxoplasmosis. The pathogen is spread by cats and can result in death or may affect the species' behaviour making it more suspectable to predation.

Both *Phytophthora cinnamomi* and *Toixoplasma gondii* are found throughout the Long-nosed Potoroo range. Therefore, it is unlikely the project would introduce a disease that may cause the decline of the species. In addition, biosecurity protocols will be implemented to minimise *Phytophthora cinnamomi* and *Toixoplasma gondii* spread where possible.

- *interfere substantially with the recovery of the species*

There is no made or adopted recovery plan for the species, however the approved conservation advice for the Long-nosed Potoroo includes the following conservation priorities:

- where *Phytophthora cinnamomi* occurs within or proximal to the Northern Long-nosed Potoroo subpopulations, develop hygiene controls
- develop and implement strategies to control predation by the European red fox and feral cats and where relevant, competition from feral pigs, as detailed in the relevant threat abatement plans or management strategies
- avoid further loss and fragmentation of habitat, including loss of vegetation connecting areas of habitat for the species or the creation or increase of barriers to movement between subpopulations
- where feasible, promote the restoration and enhancement of habitat connectivity between fragmented habitat patches to allow safe movement of individuals.

The project will result in the loss of 168.33 hectares of habitat; therefore, it is likely to be in conflict with the conservation priorities. However, with the implementation of mitigation measures to reduce clearing it is unlikely to substantially interfere with the recovery of the species.

Conclusion

The project is likely to have a significant residual impact on the Long-nosed Potoroo due to the loss of 168.33 hectares of habitat.

B4.2.12 New-Holland Mouse *(Pseudomys novaehollandiae)*

The New Holland Mouse is a small, terrestrial, burrowing rodent native to Australia, and is listed as vulnerable under the EPBC Act. The New Holland Mouse has a disjunct, fragmented distribution extending across southern Qld, NSW, the Australian Capital Territory (ACT), Victoria, and Tasmania. The species primarily occurs in coastal areas; however, its range extends inland to around 100 kilometres in northern NSW and southern Queensland.

The species habitat includes open heathland, woodland and dry sclerophyll forest with a heath understorey, grasslands and vegetated sand dune. It nests communally in underground burrows during the day and feeds on the surface at night on seeds, leave, flowers, fungi and invertebrates.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements used in this assessment include:

- Approved Conservation Advice: Department of Climate Change, Energy, the Environment and Water (2024). *Conservation Advice for* Pseudomys novaehollandiae *(New Holland mouse, Pookila)*. Canberra: Department of Climate Change, Energy, the Environment and Water. In effect under the EPBC Act from 05 July 2024.
- Adopted/Made Threat Abatement Plans:
  - Department of the Environment and Energy (2018). *Threat abatement plan for disease in natural ecosystems caused by* Phytophthora cinnamomi. Canberra: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/threat-abatement-plan-disease-natural-ecosystems-caused-phytophthora-cinnamomi-2018. In effect under the EPBC Act from 22 February 2019.

- Department of Climate Change, Energy, the Environment and Water (2024*). Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

If present, this would likely be an important population.

The approved conservation advice for the species notes that all populations of the New Holland Mouse are important for the long-term recovery and survival of this species due to the patchiness and isolated nature of the species' populations along with evidence of declines. While the species was not recorded during the ecological surveys several records are known to occur within the subject land, therefore it is considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable Species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

The population of the New Holland Mouse is estimated to range between 13,100 to 26,300 mature individuals. The project is likely to remove 59.73 hectares of the assumed habitat for the species. Approximately 1.79 hectares of assumed habitat for the species within the subject land was impacted by the 2019–2020 bushfires. Noting the home range of the species is between 0.14 hectares to 2.14 hectares, if present in the subject land the loss of this habitat may result in a long-term decrease in the size of the population.

- *reduce the area of occupancy of an important population*

The approved conservation advice notes the average area of occupancy for the species is estimated at 694 square kilometres. The project would result in the loss of 0.08% of the area of occupancy for the species. Given the project is not at the limit of the species distribution it is unlikely it would reduce the area of occupancy for the species.

- *fragment an existing population into two or more important populations*

The New Holland Mouse has been recorded moving distances of 37 metres in one hour and up to 206 meters in one night. The home range of the species have been recorded ranging between 0.14 hectares to 2.14 hectares. The towers will be micro-sited to ensure minimal impact on the species habitat. Although the species may use the terrestrial habitats for dispersal, given the nature of the projects (i.e. powerlines will be above the habitat) it is unlikely the project would result in a barrier to movement or fragment an existing population into two or more important populations.

- *adversely affect habitat critical to the survival of a species*

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. The approved conservation advice notes that habitat critical to the survival of the New Holland Mouse can be broadly defined as: the current area of occupancy of the species; areas in which the species previously occurred but has since become locally extinct; patches of assumed habitat that may not be currently occupied by the species; and assumed habitat into which the New Holland Mouse could disperse or be translocated.

The species was not recorded within the subject land and there are no records of the species previously occurring, however habitat within the subject land may represent suitable habitat that may not be currently occupied. The project would result in the loss of 59.73 hectares of assumed habitat for the new Holland Mouse. Therefore, the project is likely to adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

The New Holland Mouse nests in burrows during the day and forages at night. Breeding typically occurs from late winter to early spring or autumn in the north, and from late spring to early summer in the south of its range. The timing of breeding is related to abundance and quality of foraging habitat.

The construction of the access roads and towers may require some excavation works which may impact on burrows, in addition to the loss of 59.73 hectares of suitable foraging habitat. Therefore, there is a real chance or possibility that the project could disrupt the breed cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The project will require clearing of 59.73 hectares of assumed habitat for the species and excavation works that may impact on burrows. Mitigation measures will be implemented to reduce these impacts including micro-siting of the towers to avoid sensitive habitats. However, given the small home range of the species, the project may modify, destroy or decrease the availability of habitat for the New Holland Mouse to the extent that the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

The project is unlikely to result in an invasive species harmful to the New Holland Mouse becoming established in the habitat. Introduced predators are well established. The potential for weed invasion was considered possible with a project of this nature, and appropriate controls are required during construction and operation to reduce this threat. Invasive species would be managed under the construction environmental management plan using best practice methods. Consequently, it is unlikely the project will result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

- *introduce disease that may cause the species to decline*

The approved conservation advice notes there are two diseases which are known to impact the new Holland Mouse. Infestation of native vegetation by *Phytophthora cinnamomi* can result in the degradation of habitat and reduce food availability for the species. This is of particularly concern during the breeding or survival cycle.

Toixoplasma gondii is a virulent pathogen that can cause the disease toxoplasmosis. The pathogen is spread by cats and can result in death or may affect the species' behaviour making it more suspectable to predation.

Both *Phytophthora cinnamomi* and *Toixoplasma gondii* are found throughout the species range. Therefore, it is unlikely the project would introduce a disease that may cause the decline of the species. In addition, biosecurity protocols will be implemented to minimise *Phytophthora cinnamomi* and *Toixoplasma gondii* spread where possible.

- *interfere substantially with the recovery of the species*

There is no made or adopted recovery plan for this species. Conservation and recovery actions outlined in the species approved conservation advice include:

- ensure that habitat occupied by the New Holland Mouse, and habitat that is currently unoccupied but is important to support the recovery of the species, is protected from disturbance by development or other land use change
- control access routes to suitably constrain public access to known sites on public land
- restrict adverse impacts from land use at sites where the species is known to occur
- protect subpopulations from impacts of habitat change caused by *Phytophthora cinnamomi*

- manage fire regimes to improve habitat suitability for the New Holland Mouse
- manage impacts of introduced predators on New Holland Mouse subpopulations.

The project will implement mitigation measures including micro-siting towers, avoiding sensitive habitat where possible, biosecurity and invasive species controls which are consistent with the species recovery action. However, the project results in the loss of 59.73 hectares assumed habitat, therefore the project is likely to interfere with the first recovery action.

Conclusion

Based on the assessment above it is likely the loss of 59.73 hectares of assumed habitat would result in a significant residual impact on the New Holland Mouse.

B4.2.13 Grey-headed Flying-fox *(Pteropus poliocephalus)*

The Grey-headed Flying-fox is listed as vulnerable under the EPBC Act and is one of the largest bats in the world. The species is regularly found from the coast, inland to the tablelands and western slopes of northern New South Wales and the tablelands of southern Queensland. Breeding camps have been recorded as far north as Ingham in far north Queensland and more recently, the species has become established in South Australia, the Australian Capital Territory and Victoria and inland areas of New South Wales.

The species forages over extensive areas and has been known to fly as far as 40 kilometres to feed, before returning to their roost the same night. They have no biological adaptations to withstand food shortages (e.g. torpor) and migrate in response to changes in the quantity and location of food. Grey-headed Flying-foxes roost in large aggregations, known as camps, in the exposed branches of trees.

Camps that have contained ≥ 10,000 Grey-headed Flying-fox in more than one year in the last 10 years or have been occupied by more than 2500 Grey-headed Flying-fox permanently or seasonally every year for the last 10 years, are identified as nationally important Grey-headed Flying-foxes camps. The species can move long distances between camps.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Listing Advice: threatened Species Scientific Committee (2001). *Commonwealth Listing Advice on* Pteropus poliocephalus *(Grey-headed Flying-fox).* Available from: http://www.environment.gov.au/biodiversity/threatened/species/p-poliocephalus.html. In effect under the EPBC Act from 06 December 2001.
- Adopted/Made Recovery Plan: Department of Agriculture, Water and the Environment (2021). *National Recovery Plan for the Grey-headed Flying-fox* Pteropus poliocephalus. Canberra: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/grey-headed-flying-fox. In effect under the EPBC Act from 19 March 2021.
- Adopted/Made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024.* Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Policy Statements and Guidelines:
  - *Survey Guidelines for Australia's Threatened Bats. EPBC Act survey guidelines 6.1* (Department of the Environment, Water, Heritage and the Arts, 2010).
  - *Referral guideline for management actions in Grey-headed and Spectacled flying-fox camps* (Department of the Environment, 2015).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery. Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

This species was determined as present through targeted surveys and would likely be an important population given that there are no separate or distinct populations due to the constant genetic exchange and movement between camps throughout the species' entire geographic range.

Significant impact criteria

An action is likely to have a significant impact on a vulnerable Species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

Based on the CSIRO National Flying-fox Monitoring Program (https://data.csiro.au/collection/csiro:64370) the population of Grey-headed Flying-fox is estimated to be between 330,000 and 990,000, with strong seasonal variation depending on the reproductive cycle and availability of foraging resources within the species range.

There are nationally important Grey-headed Flying-fox camps within 50 kilometres of the subject land, but no camps were recorded within the subject land during targeted surveys. The species was recorded in PCTs 3263, 3315 and 3438, and is also associated with PCT 3029, 3087, 3150, 3151, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3250, 3314, 3431, 3433, 3436, 3439, 3444, 3446, 3489, 3581, 3582, 3583, 3599, 3605, 3617, 3621, 4039, 4042, 4044 and 4089.

While the project is unlikely to impact a Grey-headed Flying-fox camp, it will clear approximately 775.27 hectares of foraging habitat for the species, which may contain essential winter foraging resources. In addition, the Grey-headed Flying-fox is prone to accidental injury and death from various artificial obstacles. Animals can be electrocuted on powerlines; however, electrocution would require contact with different phases or conductor potentials, and the horizontal separation between individual conductors, or bundled conductors, exceeds the wingspan of the Grey-headed Flying-fox (~1 m). Electrocution is therefore considered unlikely. However, collision with powerlines while flying still poses a threat to Grey-headed Flying-fox (Commonwealth of Australia 2021), therefore there is a real chance or possibility that the collision risk or loss of this habitat could lead to a long-term decline in an important population.

- *reduce the area of occupancy of an important population*

The listing advice for the species notes that distribution of the Grey-headed Flying-foxes is not precarious for the survival of the species nor limited. The range of the species extending from Bundaberg in Queensland to Melbourne in Victoria and from the coast inland to the western slopes of New South Wales. Therefore, it is unlikely the project would significantly reduce the area of occupancy of an important population of the species.

- *fragment an existing population into two or more important populations*

There are no separate or distinct populations due to the constant genetic exchange and movement between camps throughout the species' entire geographic range. The species is known to occur from Queensland to Adelaide.

The project has the potential to limit connectivity due to the transmission lines. However, given the mobility of the species and extent of the population distribution it is unlikely the project would fragment an existing population into two or more populations.

- *adversely affect habitat critical to the survival of a species*

Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The recovery plan for the Grey-headed Flying-fox identifies habitat critical to the survival as that vegetation containing winter and spring foraging species as *Eucalyptus tereticornis, E. albens, E. crebra, E. fibrosa, E. melliodora, E. paniculata, E. pilularis, E. robusta, E. seeana, E. sideroxylon, E. siderophloia, Banksia integrifolia, Castanospermum australe, Corymbia citriodora citriodora, C. eximia, C. maculata, Grevillea robusta, Melaleuca quinquenervia or Syncarpia glomulifera*.

The habitat within the subject land includes the some of the foraging species identified above. Therefore, given the extent of foraging habitat to be cleared it is likely the project would adversely impact habitat critical to the survival of the species.

- *disrupt the breeding cycle of an important population*

There is no breeding habitat known to occur within the subject land, and the land to be developed will not impact on any known roosting or maternity camp. However, the loss of foraging resources may reduce the species ability to breed. However, given the species mobility and additional resources within 50 kilometres of the nationally important camps it is unlikely the Grey-headed Flying-fox would be dependent on the resource in the subject land. As such the project is unlikely to disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

Approximately 21 hectares of habitat for the Grey-headed Flying-fox was impacted during the 2019–2021 bushfires. One study identified that the bushfires had a substantial impact on Grey-headed Flying-fox roosting habitat, with 134 roosts having some or all roosting habitat directly affected by the bushfires (Mo, et al., 2024). This equates to 15% of all known Grey-headed Flying-fox roost locations. The impact of the fires not only impacts roosting habitat but also foraging habitat, with the study showing that the majority of the unburnt roosts were within 27 km of burnt areas that may be used or foraging.

The project will result in the loss of approximately 775.27 hectares of foraging habitat for the Grey-headed Flying-fox which may contain essential winter foraging species. Therefore, it is likely the project would decrease the availability of foraging habitat to the extent the species is likely to decline.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Habitat for the species in the subject land is varied in condition, with weeds and pest species both present throughout the landscape. Therefore, with the implementation of biosecurity measures and pest controls it is considered unlikely that the project would substantially change the composition of the species habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species.

- *introduce disease that may cause the species to decline*

As there are no known diseases likely to impact this species, given the impacts are well known it is considered unlikely that the project would introduce disease that would cause the decline of the species.

- *interfere substantially with the recovery of the species*

The overall objective of the national recovery plan for the Grey-headed Flying-fox is to improve the population trend by reducing the threats to the species and assist the Grey-headed Flying-fox and communities to coexist. While the project will result in the loss 775.27 hectares of foraging habitat for the species, given the available resources in the locality and species mobility it is unlikely to substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above the project is likely to result in the loss of habitat critical to the survival of the species. It is therefore likely the project would have a significant residual impact on the Grey-headed Flying-fox.

B4.2.14 Corben's Long-eared Bat *(Nyctophilus corbeni)*

The Corben's Long-eared Bat is listed as vulnerable under the EPBC Act, the species is found in southern central Queensland, central western New South Wales, north-western Victoria and eastern South Australia. In NSW the species inhabits a variety of vegetation types, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of New South Wales.

The species forages around concentrated patches of trees in the landscape, with many individuals from different species of bat sharing the same foraging area. Corben's Long-eared Bat roost mainly in dead trees and the sprouts of lining trees. These roost sites may only be used for a day with the species recorded traveling up to 4 kilometres over might to other sites.

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Listing Advice: Threatened Species Scientific Committee (2001). *Commonwealth Listing Advice on ten species of Bats*. Available from: http://www.environment.gov.au/biodiversity/threatened/species/bats.html. In effect under the EPBC Act from 04 April 2001.
- Approved Conservation Advice: Threatened Species Scientific Committee (2015). *Conservation Advice* Nyctophilus corbeni *south-eastern long-eared bat*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/83395-conservation_advice-01102015.pdf. In effect under the EPBC Act from 01 October 2015.
- Adopted/Made Threat Abatement Plan: Department of Climate Change, Energy, the Environment and Water (2024). *Threat abatement plan for predation by feral cats 2024*. Canberra: Commonwealth of Australia. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats. In effect under the EPBC Act from 24 December 2024.
- Policy Statements and Guidelines: *Survey Guidelines for Australia's Threatened Bats. EPBC Act survey guidelines 6.1* (Department of the Environment, Water, Heritage and the Arts, 2010).

Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The species was not recorded during the ecological surveys and no important populations have been identified. Based on the approved conservation advice for the species a large portion of the subject land is located outside of the species distribution, however the remaining areas are within the eastern limit of the species range. For the purpose of this assessment the species is considered an important population.

Significant impact criteria

An action is likely to have a significant impact on a critically endangered Species if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population*

There is limited information on the Corben's Long-eared Bat. The species is associated with PCT 3315, 3438 and 4039. The area of impact (36.94 hectares) has been calculated based on the PCTs' distribution across the subject land. The species is mobile and approximately 16,733.55 hectares of associated PCTs occurs within a 10 kilometres buffer of the subject land. Given the extent of the species distribution and mobility of the species, it is unlikely the project would lead to a long-term decrease in the size of an important population.

- *reduce the area of occupancy of an important population*

The approved conservation advice for the species notes that the species occurs throughout much of inland New South Wales. A portion of the project occurs at the eastern limit of the species distribution. Habitat for the species within the subject land was impacted by the 2019–2020 bushfires with 11.56 hectares of habitat burnt. Approximately 16,733.55 hectares of associated PCTs occurs within a 10 kilometres buffer of the subject land. Therefore, given the species mobility it is unlikely the loss of 36.94 hectares would significantly reduce the area of occupancy for the species.

- *fragment an existing population into two or more important populations*

The project may impact the movement of the Corben's Long-eared Bat due to the placement of powerlines and towers. The project will implement measures to minimise the impacts including micro-siting towers to avoid sensitive habitat and installing diverters to reduce impacts from collision with transmission lines and infrastructure. The exact position and diverter model will be finalised during detailed design. The mitigation measures are known to be effective in minimizing aerial species collision with transmission lines and infrastructure therefore if implemented it is unlikely the project would fragment an existing population in two or more populations.

- *adversely affect habitat critical to the survival of a species*

Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Habitat critical to the survival of the species is not identified in the species approved conservation advice. However, the conservation advice notes that the species requires large areas of land, therefore some areas within the subject land may represent habitat critical to the survival of the species. The project would result in the loss of 36.94 hectares of assumed habitat for the species. As the impacts are based on the PCTs across the entire project this impact likely to be significantly smaller. Therefore, given the extent of habitat for the species west of the project it is unlikely the project would adversely affect impact habitat critical to the survival of the species. In addition, approximately 16,733.55 hectares of associated PCTs occurs within a 10 kilometre buffer of the subject land.

- *disrupt the breeding cycle of an important population*

The project will result in the loss of breeding and foraging habitat for the Corben's Long-eared Bat. However, habitat for this species occurs west of the project, therefore given the species mobility it is unlikely to disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

A portion of the project occurs at the eastern limit of the species distribution, however habitat for the species is well represented within the immediate vicinity of the subject land (approximately 16,733.55 hectares of associated PCTs occurs within a 10 kilometres buffer of the subject land). Therefore, it is unlikely the project would destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. In addition, mitigation measures will be implemented to minimise the impacts including micro-siting the towers to avoid sensitive habitat.

- *result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat*

Habitat for the species in the subject land is varied in condition, with weeds and pest species are both present throughout the landscape. Therefore, with the implementation of biosecurity measures and pest controls it is considered unlikely that the project would substantially change the composition of the species habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species.

- *introduce disease that may cause the species to decline*

As there are no known diseases likely to impact this species, given the impacts are well known it is considered unlikely that the project would introduce diseases that would cause the decline of the species.

- *interfere substantially with the recovery of the species*

The approved conservation advice for the species set out a number of conservation actions for the recovery of the species including:

- protect known and assumed habitat of key populations, including within conservation reserves, from habitat loss and fragmentation
- provide relevant state government land management agencies, regional bodies and local shires with the location of key populations under their jurisdiction to incorporate these into planning mechanisms to assist in habitat protection
- incorporate findings of research into the impact of forestry practices into forest management to protect key populations
- retain hollow-bearing trees and provide for hollow tree recruitment where possible
- implement control programs of feral species identified as having a known or potential impact on key populations.

While the project will result in the loss 36.94 hectares habitat for the species, protocols and mitigation measures will be implemented to minimise the loss of hollow trees and reduce invasive species. Therefore, it is unlikely the project would substantially interfere with the recovery of the species.

Conclusion

A portion of the project occurs at the eastern limit of the species distribution, however habitat for the species is well represented within the immediate vicinity of the subject land (approximately 16,733.55 hectares of associated PCTs occurs within a 10 kilometre buffer of the subject land). Therefore, it is unlikely the project would result in a significant residual impact on the species.

B5. Commonwealth land (plants and animals)

The project will transect the Singleton Military Area (SMA), which is considered Commonwealth land under the EPBC Act. The assessment of Commonwealth land must consider the 'environment' on Commonwealth land. The EPBC Act defines environment to include: (a) ecosystems and their constituent parts, including people and communities; (b) natural and physical resources; (c) the qualities and characteristics of locations, places and areas; (d) heritage values of places; and (e) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b), or (c).

In accordance with the *Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth Land, and actions by Commonwealth agencies (Significant Impact Guidelines 1.2)* the component of the environment considered in relation to biodiversity includes the plants and animals). This includes common species, threatened species and ecological communities listed under the BC Act and the EPBC Act, and migratory species listed under the EPBC Act likely or known to occur within the subject land on Commonwealth land (SMA).

B5.1 Impacts on plants

The *Significant Impact Guidelines 1.2* provides guidance to identify the environmental context for an action. In relation to plants the guidelines considers this in relation to vegetation types and vegetation species. Therefore, the assessment below considers the impacts associated with the project on native vegetation on Commonwealth land (SMA).

The project is expected to impact on 120.1 hectares of land in the subject land on the SMA. This includes 108.8 hectares of native vegetation, of which 46.3 hectares comprise EPBC listed threatened ecological communities. The break-down of impact across vegetation types, TECs and threatened flora is shown in Table B.2.

Table B.2 Impact of the project on native vegetation and listed EPBC Act and BC Act threatened species and ecological communities within Singleton Military Area

Impacted entity	Impact area (ha)
Native vegetation	
PCT 3241- Lower North White Mahogany-Spotted Gum Moist Forest (Mod-good condition)	1.21
PCT3314 - Central Hunter Slopes Grey Box Forest (Thinned condition)	0.11
PCT3315 - Central Hunter Ironbark-Spotted Gum Forest (Derived condition)	17.04
PCT3315 - Central Hunter Ironbark-Spotted Gum Forest (Thinned condition)	9.26
PCT3431 - Central Hunter Ironbark Grassy Woodland (Disturbed Grassland)	6.66
PCT3431 - Central Hunter Ironbark Grassy Woodland (Plantation)	2.70
PCT3431 - Central Hunter Ironbark Grassy Woodland (Thinned condition)	25.52
PCT3439 - Hunter Escarpment Grey Gum Sheltered Forest (Mod-good condition)	6.79
PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Derived condition)	1.62
PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Mod-good condition)	34.91
PCT3446 - Lower North Foothills Ironbark-Box-Gum Grassy Forest (Mod-good condition)	1.13
PCT4015 - Central Hunter Swamp Oak Riparian Forest (Derived condition)	0.03

Impacted entity	Impact area (ha)
PCT4015 - Central Hunter Swamp Oak Riparian Forest (Thinned condition)	0.69
PCT4039 - Hunter Range Creekflat Apple-Red Gum Forest (Mod-good condition)	0.76
PCT4072 - Hunter River Oak Mesic Forest (Mod-good condition)	0.37
Total (native vegetation)	***108.79***
Grand total vegetation	***120.12***
EPBC listed threatened ecological communities	
Central Hunter Valley eucalypt forest and woodland	45.51
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	0.76
Total	***46.26***
BC Act threatened ecological communities	
Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	34.40
Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	9.56
Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	1.13
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	37.78
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	0.76
Total	***83.62***

Under the EPBC Act a significant impact may occur where there a real chance or possibility that the action will:

- *involve medium or large-scale native vegetation clearance*

The proposed transmission line aims to avoid and/or minimise impacts on native vegetation within the SMA by co-locating the project with the existing transmission infrastructure and locating a large portion of the transmission line through the highly disturbed agricultural land of the valley floor and lower slopes that has been cleared of native vegetation. This design resulted in the lowest overall potential impact to PCTs (avoidance of about 15 hectares of native vegetation) and TECs (avoidance of about 10 hectares of EPBC Act and BC Act). However, the project will clear 108.79 hectares of PCTs within the subject land on the SMA including 46.26 hectares of EPBC listed threatened ecological communities and 83.62 hectares of BC Act threatened ecological communities.

The loss of native vegetation represents:

- 0.08% loss of the PCTs across NSW with the highest level of loss being within PCT 3444 (0.73% of the NSW extent)
- 0.39% of the PCTs within the SMA.

Although PCT 3314 was recorded in the subject land on the SMA, this PCT was not identified in the State Vegetation Type Map (SVTM) for the area. Therefore, the loss of the PCT across the SMA cannot be estimated. However, this PCT is well represented within NSW (see Table B.3).

The project will implement mitigation measures including micro-siting the transmission towers to further minimise vegetation clearance. Given the nature and scale of the impacts, extent of the PCTs within the locality and across NSW, it is likely the loss of 108.79 hectares would represent a moderate scale native clearance.

Table B.3 Vegetation clearance across PCTs within Commonwealth Land

PCT	Clearance area (hectares)	Extent within Singleton Military Area (SVTM)	% loss in Singleton Military Area	NSW Extent	% loss NSW
3241	1.21	22.07	5.5	55109	0.002
3314	0.11	Not mapped by SVTM	NA	15287	0.001
3315	26.29	2616.52	1.01	12473	0.211
3431	34.88	22424.26	1.66	14853	0.235
3438	6.79	1129.89	0.71	6316	0.108
3444	36.53	1153.01	3.77	5021	0.728
3446	1.13	138.85	0.90	23841	0.005
4015	0.72	419.29	0.17	2647	0.027
4039	0.76	70.79	1.08	7639	0.010
4072	0.37	86.89	0.43	488	0.076
Total	**108.79**	**28061.57**	**0.39**	**143674**	**0.076**

— *involve any clearance of any vegetation containing a listed threatened species which is likely to result in a long-term decline in a population or which threatens the viability of the species*

Two threatened plant species were recorded within the subject land on the Singleton Military Area and 1 endangered population listed under the BC Act. Based on the database searches and ecological surveys, a further 8 species were assumed present due to their association with PCTs within the Singleton Military Area.

Pterostylis gibbosa is known to occur in a small number of populations in the Hunter region (Milbrodale), the Illawarra region (Albion Park and Yallah) and the Shoalhaven region (near Nowra) of New South Wales. The approved conservation advice for the species notes that the population in the Hunter Valley was estimated at 400 plants. The project would remove 4.75 hectares of confirmed and 1.14 hectares of assumed habitat for the species within the SMA. The area to be impacted is small and it is unlikely the loss of this habitat would result in a long-term decrease in the size of a population.

Prostanthera cineolifera is restricted to only a few localities near Scone, Cessnock and St Albans. *Prostanthera cineolifera* was recorded extensively within Pokolbin State Forest and neighbouring private properties (Yengo IBRA subregion) during the ecological surveys. The project would result in the loss of 10.11 hectares of habitat for the species within the SMA. Mitigation measures will be implemented to minimise the impacts of the project on habitat for threatened species, including micro-siting the transmission line infrastructure, biosecurity procedures to reduce weeds and sedimentation control measures to manage run-off and erosion. Given the extensive records within the biodiversity study area, and providing the mitigation measures are implemented, it is unlikely that the loss of habitat would result a long-term decrease in the size of a population of *Prostanthera cineolifera*.

In addition, one *Cymbidium canaliculatum* was recorded within the subject land. The species is part of an endangered population. The loss of one plant is unlikely to lead to a long term decline in the population.

The project has the potential to remove small areas of assumed habitat for the remaining eight threatened flora species. However, given that none of these species were recorded despite extensive, seasonally appropriate targeted surveys, and considering the relatively limited extent of habitat to be impacted, the loss of assumed habitat is unlikely to result in a long-term population decline or compromise the viability of these species.

Based on the above assessment it is unlikely the project would clear vegetation that would result in a long-term decline in a threatened species population.

— *introduce potentially invasive species*

Invasive species are already known to occur within the SMA, and it is considered unlikely that invasive species would become further established as a result of the project. In addition, the project will implement mitigation measures to minimise potential weed dispersal associated with earthworks during construction including wash down procedures of equipment and vehicles.

— *involve the use of chemicals which substantially stunt the growth of native vegetation, or involve large-scale controlled burning or any controlled burning in sensitive areas, including areas which contain listed threatened species?*

The project will not result in any controlled burning. Earthworks associated with the project may result in the mobilisation of fertilisers, herbicides or other chemicals. It is considered that, with the implementation of the mitigation measures such as sediment and erosion stabilisation and biosecurity measures (wash down procedures), any impacts will be contained and unlikely to substantially stunt the growth of native vegetation.

Conclusion

The project will clear approximately 108.79 hectares of native vegetation within the SMA. Based on the assessment above it is unlikely the project would result in the clearance of vegetation containing which is likely to result in a long-term decline in a threatened species population.

Table B.4 Threatened plant species likelihood of occurrence in the subject land on Singleton Military Area

Scientific name	Common name	EPBC Act[1]	BC Act[1]	Habitat	Likelihood of occurrence
Acacia bynoeana	Bynoe's Wattle	V	E	Occurs in heath or dry sclerophyll forest on sandy soils with a preference for open, sometimes slightly disturbed sites e.g., trail margins, edges of roadside spoil mounds and in recently burnt patches. This species is associated with Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple.	Assumed habitat. Species associated with PCT 3315 and 4039.
Allocasuarina glareicola	-	E	E	The species grows in Castlereagh woodland on lateritic soil. It is generally found in open woodland with *Eucalyptus parramattensis, Eucalyptus fibrosa, Angophora bakeri, Eucalyptus sclerophylla and Melaleuca decora.* Common associated understorey species include *Melaleuca nodosa, Hakea dactyloides, Hakea sericea, Dillwynia tenuifolia, Micromyrtus minutiflora, Acacia elongata, Acacia brownei, Themeda australis and Xanthorrhoea minor.*	Low. *Allocasuarina glareicola* is restricted to the Sydney region of NSW and known to occur within an area of approximately 27 km² around Castlereagh and Londonderry. An outlier population is also present on Commonwealth land at the Holsworthy Military Area, southwest of Sydney.

Scientific name	Common name	EPBC Act[1]	BC Act[1]	Habitat	Likelihood of occurrence
Brachyscome brownii	-	CE	-	This species is endemic to NSW, with four possibly extant populations located between Windsor and Cessnock. Associations with riparian zones, and sandy zones in dry sclerophyll forest, within approximately 100 m of watercourses.	Low. Habitat occurs outside of the SMA.
Cymbidium canaliculatum – endangered population	*Cymbidium canaliculatum* population in the Hunter Catchment	-	EP	*Cymbidium canaliculatum* is typically grows in the hollows, fissures, trunks and forks of trees in dry sclerophyll forest or woodland, where its host trees typically occur on Permian Sediments of the Hunter Valley floor.	Recorded. Species associated with PCTs 3314, 3315, 3431 and 3438.
Cynanchum elegans	White-flowered Wax Plant	E	E	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation as well as littoral rainforest; Coastal Tea-tree *Leptospermum laevigatum*– Coastal Banksia coastal scrub; Forest Red Gum aligned open forest and woodland; Spotted Gum aligned open forest and woodland; and Bracelet Honeymyrtle scrub to open scrub.	Low. Habitat not present in subject land within the SMA.
Diuris tricolor	Pine Donkey Orchid	-	V	The species is known to occur in sclerophyll forest among grass, often with native Cypress Pine (*Callitris* spp.). It is found in sandy soils, either on flats or small rises. Associated species include *Callitris glaucophylla, Eucalyptus populnea, Eucalyptus intertexta*, Ironbark and *Acacia* shrubland. The understorey is often grassy with herbaceous plants such as *Bulbine* species.	Assumed habitat. Species associated with PCTs 3314, 3315 and 3431.
Euphrasia arguta	-	CE	-	Little is known about the ecology if this species, although it has been recorded in the open understorey of eucalypt forest with a mixed grass and shrub understorey, in sites that had been disturbed by logging or historic clearing. It has been estimated as favouring grassy areas near rivers at elevations up to 700 m above sea level, with an annual rainfall of 600 mm.	Low. The species is now known from six sites up to 25 km apart in the area of Nundle State Forest, south east of Tamworth, NSW. All sites are in the Nandewar Bioregion (subregion 4) of northern New South Wales, in the south-east section of Namoi NRM region
Eucalyptus glaucina	Slaty Red Gum	V	V	Occurs in grassy woodland and dry eucalypt forest on deep, moderately fertile and well-watered soils.	Assumed habitat. Species associated with PCT 3241, 3314, 3315, 3431 and 3466.

Scientific name	Common name	EPBC Act[1]	BC Act[1]	Habitat	Likelihood of occurrence
Eucalyptus pumila	Pokolbin Mallee	V	V	The single known population occupies north-west-facing slopes derived from sandstone within dry sclerophyll woodland, with a canopy comprising *Eucalyptus fibrosa*, *Callitris endlicheri* and, to a lesser extent, *Corymbia maculata.*	Low. Despite targeted surveys, the species has not been recorded within the subject land.
Leionema lamprophyllum subsp. fractum	-	CE	CE	Found in sparse heathland or very open low woodland in skeletal sandy soils on exposed northerly to north-westerly facing rocky terrain. This species is associated with *Corymbia maculate*, *Eucalyptus sparsifolia, Pultenaea spinosa, Leptospermum trinervium, Acacia parvipinnula, Dillwynia sieberi, Persoonia linearis, Leucopogon muticus, Astrotricha sp. Quorrobolong, Correa reflexa var. reflexa, Patersonia sericea, Entolasia stricta, Cleistochloa rigida, Pomax umbellate, Lepidosperma gunnii and Lomandra confertifolia subsp. Rubiginosa.*	Low. Despite targeted surveys, the species was not recorded within the subject land.
Ozothamnus tesselatus	-	V	V	The species occurs within the Hunter-Central Rivers Region. Grows in eucalypt woodland.	Assumed habitat. Species associated PCTs 3315 and 3431 within the subject land.
Picris evae	Hawkweed	V	V	Picris evae mainly inhabits open Eucalypt forest including a canopy of *Eucalyptus melliodora, E. crebra, E. populnea, E. albens, Angophora subvelutina, Allocasuarina torulosa*, and/or *Casuarina cunninghamiana* with a *Dichanthium* grassy understory.	Low. Habitat not present. Species is known in NSW north from the Inverell area, in the north-western slopes and plains regions.
Pomaderris brunnea	Brown Pomaderris	V	E	The species is endemic to south-eastern Australia, where majority of the sub-populations occur in south-west Sydney. Brown Pomaderris grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	Low. Pomaderris brunnea is found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It also occurs near Walcha on the New England tablelands and in far eastern Gippsland in Victoria.

Scientific name	Common name	EPBC Act[1]	BC Act[1]	Habitat	Likelihood of occurrence
Pomaderris queenslandica	Scant Pomaderris	-	E	Occurs in moist eucalypt forest or sheltered woodlands with a shrubby understorey, and occasionally along creeks.	Assumed habitat. Species associated with PCTs 3431.
Prasophyllum petilum	Tarengo Leek Orchid	E	E	Found within open natural temperate grassland at known sites, as well as in grassy woodland in association with *Poa labillardieri, Eucalyptus aggregate and Leptospermum spp. near* Queanbeyan and within the grassy ground layer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford. This species is only retained at little-grazed travelling stock reserves and in cemeteries at some locales. The population near Muswellbrook is considered small.	Assumed habitat. Species associated with PCTs 3314, 3315,3431, 3438 and 3444. Not recorded during targeted surveys.
Prasophyllum sp. Wybong	Leek Orchid	CE	-	This species is known to occur in open eucalypt woodland and grassland.	Assumed habitat. Species associated with PCTs 3314, 3315, 3431, 3438 and 3444. Not recorded during targeted surveys.
Prostanthera cineolifera	Singleton Mint Bush	V	V	Grows in open woodlands on exposed sandstone ridges in association with shallow or skeletal sands.	Recorded. Species associated with PCTs 3315, 3438, 3444 and 3446.
Pterostylis chaetophora	-	-	V	The species preferred habitat is seasonally moist, dry sclerophyll forest with a grass and shrub understorey. The most commonly observed habitat is vegetation characterised by grassy open forests or derived native grasslands of *Eucalyptus amplifolia* and *Eucalyptus moluccana* on gentle flats, or that are dominated by *Corymbia maculata with any of Eucalyptus fibrosa, Eucalyptus sideroploia or Eucalyptus crebra*.	Assumed habitat. Species associated with PCTs 3314, 3315, 3431, 3438, 3444 and 3446.
Pterostylis gibbosa	Illawarra Greenhood	E	E	All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage. In the Hunter region, the species grows in open woodland dominated by *Eucalyptus crebra* and *Callitris endlicheri*.	Recorded. Confirmed present within PCT 3431. Species also associated with PCT 3438.

Scientific name	Common name	EPBC Act[1]	BC Act[1]	Habitat	Likelihood of occurrence
Rhizanthella slateri	Eastern Australian Underground Orchid	E	V	Habitat requirements are poorly understood, and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest.	Low. Despite targeted surveys the species was not recorded.
Rhodamnia rubescens	Scrub Turpentine	CE	CE	Scrub Turpentine occupies littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Recorded. Habitat associated with PCTs 3446.
Rutidosis heterogama	Heath Wrinklewort	V	V	Grows in heath on sandy soils and moist areas in open forest, with records along disturbed roadsides.	Low. Species was not recorded. Known and predicted habitat occurs outside of the SMA.
Syzygium paniculatum	Magenta Lilly Pilly	V	V	On the central coast Syzygium paniculatum occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities.	Low. Not recorded during targeted surveys. Known and predicted habitat occurs outside of the SMA.
Thesium australe	Austral Toadflax	V	V	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*).	Low Species was not recorded during targeted.
Thismia clavarioides	-	E	-	*Thismia clavariodes* is known from two records in New South Wales (NSW). One, at the type locality at Fairy Bower Falls in Morton National Park southeast of Bundanoon and Barrington Tops National Park in the North Coast region of NSW.	Low. Habitat not present.

(1) CE = Critically endangered, E= Endangered, EP= Endangered population, V=Vulnerable

B5.2 Impacts on animals

The Significant Impact Guidelines 1.2 provides guidance to identify the environmental context for an action. In relation to animals the guidelines consider this in relation to terrestrial and marine species. Therefore, the assessment below considers the impacts associated with the project on fauna within the SMA.

Fauna habitat features within the SMA included foraging, breeding and shelter habitat for both common animal species and threatened fauna. The condition of the habitat varies across the site with most of the habitat having been previously disturbed by existing transmission infrastructure and agricultural practices.

Is there a real chance or possibility that the action will:

- *cause a long-term decrease in, or threaten the viability of, a native animal population or populations, through death, injury or other harm to individuals*

Impacts likely to result in harm to native fauna associated with the project include:

- Fauna mortality resulting from vegetation clearing activities and interactions with vehicles: as with any land clearing activities involving the removal of native vegetation, there is always an inherent risk of native fauna mortality, especially those fauna species actively sheltering or breeding in microhabitats (i.e. hollows) during vegetation clearing.
- Vehicle strike: Increased traffic as a result of the project has the potential to result in vehicle strike to native animals. Vehicle collision is a direct impact that reduces local population numbers and is a common occurrence in Australia (Coffin 2007; Rowden et al. 2008). Areas in the Hunter Valley are near existing infrastructure and highly disturbed areas. During operation in the State forests, vehicle speeds would be very low due to the topography and nature of the roads, combined with speed limits. Overall, vehicle strike would therefore not appear to be a significant concern for the project.
- Increased risk of collision with the transmission line: the general fauna group most likely to have potential for powerline strike are those groups of birds which are likely to fly at heights where powerlines are located and are not familiar with local habitat attribute. Such birds can include, birds of prey, quail, and other birds, many of which move in response to changing distributions of resources usually associated with water. A fauna risk assessment is provided in Appendix I of the BDAR and identifies the following threatened species as a high risk of collision with powerline infrastructure:
  - Gang-gang Cockatoo
  - South-eastern Glossy Black-Cockatoo
  - Powerful Owl (*Ninox strenua*).

  All of these species are wide-ranging in the vicinity of the project's greenfield locations.
- Electrical and magnetic fields (EMF) impacts from new infrastructure: fauna likely to be impacted by EMF include birds moving through the alignment. Although it is considered unlikely that birds would be at high risk of electrocution, as electrocution would require contact with different phases or conductor potentials, and the horizontal separation between individual conductors, or bundled conductors, exceeds the wingspans (WS) of all birds, including the largest migratory birds, such as Brolgas (WS~2.4 m) Pelicans (WS~2.4–2.6 m) Black Swans (WS~2.0 m) and Australian Shelduck (WS~1.2 m) (Pizzey and Knight 2012).

  Birds of prey, which are resident in habitats associated with the alignment, are part of the group of birds which are most likely at risk to longer periods of exposure to EMFs because they often use the infrastructure for perching, but most particularly if they use the infrastructure for nesting. Most of the project's alignment occurs within areas within areas where woodlands and forests are within the landscape, and which offer an abundance of suitably elevated nesting opportunities for birds of prey and so birds of prey using tower infrastructure for nesting purposes for this project are considered to be rare.

Table 8.28 of the BDAR outlines mitigation measures that will be implemented to reduce the above impacts on animals' species, including (but not limited to):

- bird diverters will be installed on transmission lines at appropriate locations to reduce impacts on aerial fauna species from collision with transmission lines and infrastructure. Installation of the bird diverters will occur within 2 weeks of transmission line installation or as soon as practical, and will remain in place and/or replaced as required
- the location and extent of areas to be protected (e.g. hollow-bearing trees, nests, burrows and other habitat features) located inside the construction area or in close proximity to the clearing areas will be identified prior to commencing clearing works
- two-phase clearing process to allow fauna to move into adjoining habitat
- measures to be implemented on site to clearly demarcate areas to be retained as 'no go areas'
- pre-clearing surveys are to be carried out within 48 hours prior to the commencement of clearing works in each construction area, The surveys will:
  - identify any fauna that will require relocation prior to clearing, including inspection of any built structures and wooden fence posts to be demolished
  - confirm that biodiversity exclusion zones are demarcated
  - confirm that hollow-bearing trees within and adjacent to the clearing extents are prominently marked/tagged
  - confirm that nest boxes are in place (where required) in suitable locations adjacent to areas to be cleared, or suitable locations for installation have been identified.

Given the nature and scale of the impact above on native animals on the SMA within the subject land, it is unlikely the project would result in a long-term decrease in, or threaten the viability of, a native animal population or populations. In addition, mitigation measures would be implemented to further minimise the impacts that would result in death, injury or other harm to individuals so that a native animal population would declines.

Further information on the indirect impacts associated with project and mitigation measures is provided in section 8.2 and 8.4 of the BDAR respectively.

- *displace or substantially limit the movement or dispersal of native animal populations or substantially reduce or fragment available habitat for native species*

The project will largely be co-located with existing transmission infrastructure and within the previously disturbed agricultural areas. It is expected that existing roads will be used and/or upgraded to access the site. Vegetation up to 2 metres in height will be retained within the transmission line, providing habitat for small birds, mammals, and reptiles.

The transmission lines are unlikely to substantially affect terrestrial movement, given the project would be highly permeable. The nature of the potential impacts to connectivity primarily relate to aerial species such as birds and bats, through the interaction with the proposed transmission line towers and associated powerlines. Research of powerlines on smaller bats is scarce, but a decrease in bat activity close to powerlines has been shown (Kahnonitch, Lubin *et al*. 2018). Powerline-associated collision and electrocution have been proven to lead to high mortality rates of birds across the world, including in Italy and the United States (Rubolini, Gustin *et al.* 2005; Loss, Will et al. 2014). As discussed above, mitigation measure will be implemented to minimise the impacts associated with Powerline-associated collision and electrocution.

Two creeks occur within the SMA, Monkey Place Creek and Peach Tree Creek, wish provide habitat for fish and aquatic macroinvertebrates. works would be mostly limited to above-ground construction, with appropriate ground disturbance and water management measures to be implemented. Temporary impacts associated with vehicle water crossings during the construction phase will be limited where possible to existing forestry and farm tracks and crossing points.

Mitigation measures in section 8.4 of the BDAR outline that any riparian areas subject to disturbance would be stabilised and rehabilitated, and that only vegetation of the tree-stratum can be cleared (with tree trunks to be retained to a safe operational height), protecting the understory in such areas. Each riparian area would continue to function as it currently performs. It is considered unlikely that temporary impacts would result in any long-term degradation of fish habitat. Therefore, it is unlikely the project would impact a native fish population.

The project is planned to occur in some likely movement corridors, where it may affect aerial and arboreal species. Arboreal mammals (e.g. Sugar Glider, Common Brushtail Possum) may be impacted where gaps in habitat are greater than 40 meters. Specific mitigation measures will be implemented to minimise these impacts including maintaining vegetation height within the transmission lines to 2 metres in height, and glider poles which are known to be effective. Overall, the nature of the project means that it would be highly permeable and is highly unlikely to result in any substantial impacts to local or regional connectivity for aerial or terrestrial species.

- *reduce or fragment available habitat for listed threatened species, which is likely to displace a population, result in a long-term decline in a population, or threaten the viability of the species*

Twenty threatened fauna species were recorded within the subject land on the SMA during the ecological surveys including 11 mammal species, 8 bird species and 1 reptile species (Table B.5). An additional 18 species were predicted as likely to occur within the subject land based on BioNet records within a 5 kilometres radius, and observations from fieldwork (i.e. presences of habitat features, habitat condition and connectivity (Table B.5).

The project has been designed to minimise impacts on threatened species. This includes co-locating infrastructure within the existing transmission line and previously disturbed agricultural land. However, the project will reduce available habitat for listed threatened species, which is likely to displace a population, result in a long-term decline in a population, or threaten the viability of the species within the SMA.

Birds

Eight threatened birds were recorded on SMA, with habitat or assumed habitat identified for a further 12 threatened birds (Table B.5). Threatened birds likely to be at greater risk from the project would be those where: the extent of habitat loss is high, important habitat will be significantly impacted; and/or, at increased risk of bird strike with transmission lines and EMF impacts from new infrastructure. There is a real chance or possibility that the project would result in a long-term decline in a population of a threatened species known occur or with assumed habitat within the SMA.

The SMA is mapped as an important habitat area for the Swift Parrot and Regent Honeyeater and identified as a Key Biodiversity Area (KBA) for both species. The approved conservation advice for the Swift Parrot notes that the SMA has been identified as a KBA because it regularly supports significant numbers of the critically endangered Regent Honeyeater and Swift Parrot. The project would result in the loss of 41.45 hectares of habitat for the Regent Honeyeater and 40.14 hectares of habitat for the Swift Parrot within the SMA. Given the extent of habitat loss of breeding and foraging resources to be reduced it is likely the project would lead to long-term decrease in the populations.

As noted above the Gang-gang Cockatoo, South-eastern Glossy Black-Cockatoo and Powerful Owl are at a high risk of collision with powerline infrastructure. All of these species are wide-ranging in the vicinity of the project's greenfield locations and therefore this impact is unlikely to lead to a lead to long-term decrease in the population. In addition, mitigation measures will be implemented (section 8.4 of the BDAR), to minimise impacts associated with collision risk.

A number of woodland birds were recorded or have assumed habitat on the SMA. Habitat for these species within the subject land would be reduced by the project. The project will largely be located on previously disturbed agricultural land and within existing the transmission infrastructure corridor. The transmission lines will span large areas of woodland habitat therefore reducing impacts associated with fragmentation for these species.

Mammals

Eleven threatened mammals were recorded on the SMA with assumed habitat for a further six threatened mammals likely to occur within the subject land (Table B.5). The project is likely to clear approximately 108.79 hectares of native vegetation within the subject land on the SMA. These habitats are widely represented across the SMA (9042.28 hectares).

Many of the threatened mammals recorded or with assumed habitat within the subject area are known to traverse large areas of habitat and are considered highly mobile (e.g. Spotted tail quoll), therefore given the extensive available habitat within the immediate vicinity of the project it is unlikely the loss of habitat would lead to long-term decrease in the populations.

The project is likely to result in fragmentation for sedentary threatened mammal species. Sedentary species are considered to be species with small territories that they rarely leave, due to the necessity of familiar cover to protect them from predatory animals. Such species are highly dependent upon the integrity of corridor habitats to maintain contact between populations at either end of the corridor. The Common Planigale, Squirrel Glider and Southern Greater Glider are considered sedentary species that are known to occur on the SMA.

The proposed operational corridor will effectively result in stepping stones of maintained vegetation within the outer areas of the transmission lines, and vegetation up to two metres high within the transmission lines, which will specifically facilitate the movement of most terrestrial fauna species as per minimum gap requirements, including sedentary species except for canopy dependent arboreal mammals (e.g. Squirrel Glider). Specific mitigation measures will be implemented to minimise the impacts of fragmentation for the threatened glider species including the use of glider poles (section 8.4 of the BDAR). These methods are known to be effective; therefore, it is unlikely the project would lead to a lead to long-term decrease in the population of Squirrel Glider and Southern Greater Glider.

Fish

Monkey Place Creek which is mapped at habitat for the Southern Purple Spotted Gudgeon which is listed as endangered under the NSW *Fisheries Management Act 1994.* As noted above the works would be mostly limited to above-ground construction, with appropriate ground disturbance and water management measures to be implemented. Transmission line towers would be located around 50 to 100 metres from the watercourses to minimise impact to riparian areas.

All waterway crossing will be designed in accordance with Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge 2003) and Policy & Guidelines for Fish Habitat Conservation & Management (2013 update) (Department of Primary Industries, 2013). Where the project involves works within 40 metres of the high bank of any river, lake or wetlands (collectively waterfront land), such as waterway crossings, the work will be designed and implemented in accordance with the DPI Guidelines for Controlled Activities on Waterfront Land.

At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently performs. It is considered unlikely that temporary impacts would result in any long-term degradation of mapped key fish habitat areas. Further information on the impacts to aquatic biodiversity is provided in section 8.3.5 and Appendix L of the BDAR. Mitigation measures are provided in section 8.4.

Reptiles

One threatened reptile, Hunter Valley Delma, was recorded within the subject land within the SMA. The species is known almost entirely from a 25 kilometre wide corridor in the Hunter Valley NSW, between Maitland and Muswellbrook (Mahony et al. 2022). A further specimen has been identified from just north of Parraweena on the Liverpool plains, approximately 80 kilometres north-west of Muswellbrook. Given the extent of habitat to be reduced (63.63 hectares) it is likely that the project would lead to a long-term decline the species population.

- *introduce exotic species which will substantially reduce habitat or resources for native species, or undertake large-scale controlled burning or any controlled burning in areas containing listed threatened species*

The project does not include any controlled burning. Habitat for the species in the subject land is varied in condition, with weed and pest species both present throughout the landscape. Therefore, with the implementation of biosecurity measures and pest control it is considered unlikely that the project would introduce new exotic species that would reduce habitat or resources for native species.

Conclusion

The project will clear approximately 108.79 hectares of habitat for native animal species on Commonwealth land. This loss of habitat would reduce available habitat for listed threatened species which is likely to result in a long-term decline in populations of these species.

Table B.5 Threatened fauna species likelihood of occurrence within the subject land on the Singleton Military Area

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Amphibians					
Heleioporus australiacus australiacus	Giant Burrowing Frog	E	V	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Spending more than 95% of its time in non-breeding habitat below the soil surface in areas up to 300 m from breeding sites. Breeding habitat of this species generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water.	Low. Species was not recorded.
Litoria aurea	Green and Golden Bell Frog	V	E	This species inhabits marshes, dams and stream-sides, particularly those containing bullrushes or spikerushes that are unshaded, free of predatory fish such as Plague Minnow, have a grassy area nearby and diurnal sheltering sites available. Can occur in highly disturbed areas.	Low. Habitat associated PCTs not present. Species was not recorded.
Litoria booroolongensis	Booroolong Frog	E	E	Found along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. This species occurs on or near cobble banks and other rock structures within stream margins where they shelter under rocks or amongst vegetation near the ground on the stream edge.	Low. Habitat associated PCTs not present. Species was not recorded targeted surveys.
Mixophyes balbus	Stuttering Frog	V	E	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Adults live in deep leaf litter and thick understorey vegetation on the forest floor out of breeding season. Breeding occurs in small flowing streams with rock shelves or shallow riffles connected to deep permanent pools.	Low. Habitat associated PCTs not present. Species was not recorded.
Birds					
Anthochaera phrygia	Regent Honeyeater	CE	CE	Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	Assumed habitat present. Species associated with PCT 3239, 3241, 3244, 3314, 3315, 3431, 3438, 3444, 3446, 3489, 3581, 3582, 3583 and 4039.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Apus pacificus	Fork-tailed Swift	M	--	Mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines.	Assumed habitat present. Records from ALA and BioNet within the locality and diverse range of habitat preferences.
Botaurus poiciloptilus	Australasian Bittern	E	E	This species favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spikerushes.	Assumed habitat present. Species associated with PCT 4015, 4039, and 4072.
Calidris acuminata	Sharp-tailed Sandpiper	V, M	V	This migratory species may stop at coastal salt marshes, lagoons and mudflats during migration.	Low. Species rarely occurs away from the coast and preferred habitat not present.
Calidris ferruginea	Curlew Sandpiper	CE, M	CE	Spends non-breeding season in Australia where it occurs around most of the Australian coastline (including Tasmania). It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland	Low. Species rarely occurs away from the coast and preferred habitat not present. Species not associated with any impacted PCTs.
Calidris melanotos	Pectoral Sandpiper	M	-	In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands	Low. Very few records within the locality and preferred habitat not present.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Callocephalon fimbriatum	Gang-gang Cockatoo	E	E	Occurs from southern Victoria through south- and central-eastern New South Wales and ACT. In New South Wales, it occurs from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes – it is rare at the extremities of its range. Occurs in wetter tall mountain forests and woodlands in autumn/winter, and in spring/summer moves to lower altitudes in drier more open eucalypt forests and woodlands particularly box-gum and box-ironbark assemblages. Often found in urban areas. Favours old growth forest and woodland attributes for nesting and roosting.	Assumed habitat present Species PCTs include, 3239, 3241, 3244, 3314, 3315, 3431, 3438, 3444, 3446, 3489, 4015, 4039, and 4072.
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	Occurs from central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia.	Assumed habitat present. Species associated PCTs include 3151, 3244, 3314, 3315, 3438, 3444, 3446, 3489, 4015, 4039, 4072.
Chthonicola sagittata	Speckled Warbler	-	V	The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area.	Recorded. Associated with PCT 3314, 3315, 3431, 3438, 3439, 3444, 3446, 4015, 4039, 4072.
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	This species is endemic to the south-eastern Australia, occupying dry open eucalypt forests and relatively undisturbed grassy woodlands.	Recorded. Species associated with PCT 3239, 3241, 3242, 3244, 3314, 3315, 3431, 3438, 3444, 3446, 3489, 4015, 4039, and 4072.
Cuculus optatus	Oriental Cuckoo	V, M	-	It mainly inhabits forests, occurring in coniferous, deciduous and mixed forest. It feeds mainly on insects and their larvae, foraging for them in trees and bushes as well as on the ground.	Low. Very few recent records from the locality

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Daphoenositta chrysoptera	Varied Sittella	-	V	Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland	Recorded. Species associated with PCT 3314, 3315, 3431, 3438, 3439, 3444, 3446, 4015, 4039 and 4072
Erythrotriorchis radiatus	Red Goshawk	E	E	The species inhabits open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers.	Assumed habitat present. Species associated PCTs include 3315, 4039 and 3446.
Falco hypoleucos	Grey Falcon	V	V	Distributed primarily throughout the Murray-Darling Basin, with the occasional vagrant found east of the Great Dividing Range within open woodland. This species is generally restricted to arid and semi-arid regional grassland, shrubland and wooded watercourses.	Low. No records within the subject land.
Gallinago hardwickii	Latham's Snipe	V, M	V	A non-breeding migrant to south-east Australia, they are found in freshwater wetland on or near the coast, often with dense vegetation cover including grasses, sedges or rushes. Occasionally occurring in saltmarshes and along creek edges.	Low. Preferred habitat not present.
Grantiella picta	Painted Honeyeater	V	V	Found in low densities this nomadic species breeds west of the Great Dividing Range. Preferred habitat includes Boree/ Weeping Myall, Brigalow, and Box-Gum Woodlands and Box-Ironbark Forests.	Assumed habitat present. Species associated with PCT 3244, 3489 and 4015.
Glossopsitta pusilla	Little Lorikeet	-	V	Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	Recorded. Species associated with PCT 3314, 3315, 3438, 3444, 3446, 4015, 4039 and 4072.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Hirundapus caudacutus	White-throated Needletail	V, M	V	A migratory species, it is recorded along most of coastal eastern Australia west to the Great Dividing Range. Occurring as an aerial species over a broad range of habitats, roosting within dense canopy foliage or tree hollows.	Recorded. Species associated with PCT 3239, 3241, 3244, 3314, 3315, 3328, 3431, 3438, 3444, 3446, 3489, 4015, 4039, and 4072.
Lathamus discolor	Swift Parrot	CE	E	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen, and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and nomadic, moving about in response to changing food availability. The subject land did not occur within important mapped areas.	Assumed habitat present. Species associated with PCT 3239, 3241, 3242, 3244, 3314, 3315, 3438, 3439, 3444, 4015, 4039 and 4072.
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E	E	This species occurs in dry eucalypt and acacia woodlands and shrublands, found in south-eastern Australia.	Assumed habitat present. Suitable habitat is found within the subject land. Species associated with PCT 3244, 3489 and 4015.
Motacilla flava	Yellow Wagtail	M	-	Migrants from Northern Hemisphere to Australia. Known to frequent Hunter River Estuary.	Low. Very few records from the locality.
Neophema chrysostoma	Blue-winged Parrot	V	V	Blue-winged parrots inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zone.	Low. Preferred habitat not present.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Ninox strenua	Powerful Owl	-	V	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. Nests in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old.	Recorded. Species associated with PCT, 3314, 3315, 3431, 3438, 3439, 3444, 4015, 4039 and 4072.
Pandion Haliaetus	Osprey	M	-	Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging	Low. Preferred open water habitats not present.
Petroica boodang	Scarlet Robin	-	V	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat.	Recorded. Species associated with PCT 3314, 3315, 3431, 3444, 3446 and 4072.
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern)	-	V	Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts.	Recorded. Species associated with PCT 3315, 3431, 3438, 3444, 3446, 4015, 4039 and 4072.
Pycnoptilus floccosus	Pilotbird	V	V	Lowland Pilotbirds occur in forests from the Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong near Melbourne. Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth. Its natural habitat is temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris.	Low. Preferred habitat associations not present.
Rostratula australis	Australian Painted Snipe	E	E	Important locations within NSW, with recent records, include the Clarence and lower Hunter Valleys. This species occupies swamp and dam fringes as well as nearby marshy areas with accompanying grass, low scrub or open timber cover.	Assumed habitat present. Species associated with PCT 4015, 4039, and 4072.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Stagonopleura guttata	Diamond Firetail	V	V	Occurs on the south-east mainland of Australia, with the distribution stretching across NSW expanding 300km inland from the sea. This species occupies eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees.	Assumed habitat present. Species associated with PCT 3239, 3244, 3314, 3315, 3431, 3433, 3446, and 3489.
Tyto Novaehollandiae	Masked Owl	-	V	This species inhabits dry eucalypt forests and woodlands from sea level up to around 1,100 metres in elevation. It is primarily a forest-dwelling owl but frequently hunts along forest edges, including roadsides. Its diet mainly consists of arboreal and ground-dwelling mammals, particularly rats. Breeding pairs occupy large home ranges of 1,000 hectares or more, depending on prey availability, and roost and breed in moist, forested eucalypt gullies, typically using large trees.	Assumed habitat present. Species associated with PCTs 3314, 3315, 3431, 3438, 3439, 3444.
Tringa nebularia	Common Greenshank	E,M	E	The common greenshank is widespread in coastal regions across Australia. In NSW, the species is widespread west of the Great Dividing Range. This species occurs at the edge of wetlands, mudflats in channels or within shallows around the edge of waterbodies.	Low. Limited suitable habitat is found and the species not recorded despite targeted surveys.
Fish					
Epinephelus daemelii	Black Cod Fish	V	-	The species is known to occur from southern Queensland through NSW to northern Victoria. The NSW coastline forms the species' main range, both in Australia and internationally. Black cod are known to occur to some degree in all six NSW Marine Parks – Lord Howe, Cape Byron, Solitary Island, Port Stephens, Jervis Bay and Batemans Bay. Black cods generally inhabit near-shore rocky and offshore coral reefs at depths down to 50 m. In coastal waters adult Black cod are found in rock caves, rock gutters and on rock reefs	Low. Preferred habitat does not present in the subject land.
Mogurnda adspersa	Southern Purple Spotted Gudgeon	E	-	Monkey Place Creek is mapped at habitat for the Southern Purple Spotted Gudgeon.	Assumed habitat present. Monkey Place Creek is mapped at habitat for the Southern Purple Spotted Gudgeon.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Mammals					
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	Found in well-timbered areas containing gullies. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Occurs mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes.	Recorded. Species recorded in PCT 3444. Also associated with PCT 3239, 3241, 3242, 3244, 3314, 3315, 3431, 3438 and 3439.
Dasyurus maculatus	Spotted-tail Quoll	E	V	Occupies a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest to the coast.	Assumed habitat. Species associated with PCT 3230, 3237, 3238, 3239, 3241, 3244, 3314, 3315, 3438, 3439, 3489, 3444, 3446, 3431, 4015, and 4072.
Micronomus norfolcensis	Eastern Coastal Free-tailed Bat	-	V	Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in man-made structures.	Assumed habitat present. Species associated with PCT 3314, 3315, 3431, 3444, 3446, 4015, and 4039.
Miniopterus australis	Little Bent-winged Bat	-	V	Inhabit moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	Recorded. Species associated with PCT 3087, 3314, 3315, 3431, 3438, 3439, 3444, and 4039.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Miniopterus orianae oceanensis	Large Bent-winged Bat	-	V	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Hunt in forested areas, catching moths and other flying insects above the tree tops.	Recorded. Species associated with PCT 3087, 3314, 3315, 3431, 3438, 3439, 3444, 3446., 4015, and 4039.
Myotis macropus	Southern Myotis	-	V	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. The species generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, wharves, bridges and in dense foliage and forages over streams and pools catching insects and small fish by raking their feet across the water surface.	Recorded. Species associated with PCT, 3314, 3315, 3431, 3438, 3444, 4015and 4039.
Notamacropus parma	Parma Wallaby	V	V	This species prefers moist eucalypt forest, with a dense shrubby understorey adjacent to grassy areas, rainforest margins and sometimes drier eucalypt forest.	Low. Preferred habitat association not present.
Nyctophilus corbeni	Corben's Long-eared Bat	V	V	Found in a variety of vegetation types, including mallee, bulloke Allocasuarina luehmannii and box eucalypt dominated communities. A preference is shown for box/ironbark/cypress-pine vegetation along the western slopes and plains of NSW.	Assumed habitat present. Suitable habitat may be present within the subject land, with limited records from the broader locality. This species is associated with PCTs 3315, 3438 and 4039.
Petauroides volans	Southern Greater Glider	E	E	The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The distribution may be patchy even in suitable habitat. The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.	Recorded. Species recorded in PCT 3314. 3315 and 4039.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Petaurus australis australis	Yellow-bellied Glider	V	V	Found in tall mature eucalypt forest in areas with high rainfall, with mixed coastal forests to dry escarpment forests utilised in the north, and moist coastal gullies and creek flats to tall montane forests in the south.	Recorded. Species associated with PCT 3239, 3241, 3244, 3438, and 3444.
Petaurus norfolcensis	Squirrel Glider	-	V	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstory. Require abundant tree hollows for refuge and nest sites	Recorded. Species associated with PCT 3314, 3315, 3431, 3444, 3446, 4015, 4039.
Petrogale penicillata	Brush-tailed Rock Wallaby	V	E	The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Found in rocky areas in a wide variety of habitats including rainforest gullies, wet and dry sclerophyll forest, open woodland, and rocky outcrops in semi-arid country. Commonly sites have a northerly aspect with numerous ledges, caves, and crevices.	Assumed habitat present. Species associated with PCT, 3314, 3315, 3444, 3446, 4015 and 4039.
Phascolarctos cinereus	Koala	E	E	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	Assumed habitat present. Species recorded outside SMA in PCT 3239.
Planigale maculata	Common Planigale	-	V	Common Planigales inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water. They are active at night and during the day shelter in saucer-shaped nests built in crevices, hollow logs, beneath bark or under rocks. The female builds a nest lined with grass, eucalypt leaves or shredded bark	Recorded. This species has been recorded within the subject land. Species associated with PCT 3314, 3315, 3431, 3438, 3439.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Potorous tridactylus tridactylus	Long-nosed Potoroo	V	V	Occurs in coastal heaths and dry and wet sclerophyll forests featuring a dense understorey with occasional open areas. Habitat may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas on a sandy loam soil. is also a common feature.	Low. Preferred habitat associated PCTs are not present within the SMA. As a result, the species is unlikely to occur on the subject land and is not expected to be impacted by the project.
Pseudomys novaehollandiae	New Holland Mouse	V	V	Occupies open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes.	Assumed habitat present Suitable habitat may be present within the subject land, with a number of records from the broader locality. The species is associated with PCT 3244, 3315 and 3446.
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Bats commute daily to foraging areas, usually within 15 km of the day roost although some individuals may travel up to 70 km.	Recorded. Species associated with PCT 3239, 3241, 3244, 3314, 3315, 3431, 3433, 3436, 3438, 3444, 3446, 3489 and 4039.
Scoteanax rueppellii	Greater Broad-nosed Bat	-	V	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	Recorded. Species associated with PCT 3315, 3431, 3446.

Scientific name	Common name	EPBC Act	BC Act	Habitat	Likelihood of occurrence
Vespadelus troughtoni	Eastern Cave Bat	-	V	This species is a cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals.	Recorded. Species associated with PCTs 3239, 3241, 3244, 3314, 3315, 3431, 3438, 3444, 3446, 3489, 4015, and 4039.
Reptiles					
Delma vescolineata	Hunter Valley Delma	E	E	The species is known almost entirely from a 25 km wide corridor in the Hunter Valley, between Maitland and Muswellbrook. Habitat suitable for the species occurs in secondary native grasslands remaining after the removal or dieback of previous woody canopy vegetation.	Recorded. Species associated with PCT 3314, 3315, 3431, 3438, and 3439.
Delma impar	Striped Legless Lizard	V	V	Occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Found in natural temperate grassland, secondary grassland and open box-gum woodland. Habitat is typically dominated by perennial, tussock-forming grasses such as Kangaroo Grass Themeda australis, spear-grasses Austrostipa spp. and poa tussocks Poa spp., and occasionally wallaby grasses Austrodanthonia spp., though can occur in modified grasslands with a significant content of exotic grasses.	Low. Species was not recorded in subject land.
Hoplocephalus bungaroides	Broad-headed Snake	V	E	This species shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring and moves to shelters in crevices or hollows in large trees within 500 m of escarpments in summer.	Low. Species was not recorded in subject land.

(1) CE= critically endangered, E = Endangered, V = Vulnerable, M = Migratory under the EPBC Act.

B6. References

Barth, B.J., FitzGibbon, S.I., Gillett, A., Wilson, R.S., Moffitt, B., Pye, G.W., Adam, D., Preece, H. and Ellis, W.A. (2019). Scattered paddock trees and roadside vegetation can provide important habitat for koalas (*Phascolarctos cinereus*) in an agricultural landscape. Australian Mammalogy, 42(2), pp.194-203.

Davey C & Mulvaney M (2020) Report on a survey of breeding activity of the Gang-gang Cockatoo within urban Canberra 2019-2020. Canberra Bird Notes, 45, 3.

DAWE (Department of Agriculture, Water and the Environment). (2020a). *Priority TECs for recovery activity for each fire affected NRM Region*. Retrieved from https://www.dcceew.gov.au/sites/default/files/env/pages/cae21f42-9328-45ee-b558-a79628aaf68f/files/priority-tecs-nrm-region.pdf.

DAWE (Department of Agriculture, Water and the Environment). (2020b). *National and state ecological communities (terrestrial) that were substantially fire affected in the 2019-2020 bushfires* (as at September 2020). Retrieved from https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.dcceew.gov.au%2Fsites%2Fdefault%2Ffiles%2Fenv%2Fpages%2Fcae21f42-9328-45ee-b558-a79628aaf68f%2Ffiles%2Ftecs-threats-and-actions.docx&wdOrigin=BROWSELINK.

DAWE (Department of Agriculture, Water and the Environment). (2020c). *Preliminary Area for Environmental Analysis – 2019/2020 Fires*. Retrieved from https://www.dcceew.gov.au/sites/default/files/env/pages/a8d10ce5-6a49-4fc2-b94d-575d6d11c547/files/preliminary-analysis-area-19-jan-2020.pdf.

DAWE (Department of Agriculture, Water and the Environment). (2020d). Conservation Advice for the River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/154-conservation-advice.pdf. In effect under the EPBC Act from 15 Dec 2020.

DAWE (Department of Agriculture, Water and the Environment). (2021a). Conservation Advice for the Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/171-conservation-advice.pdf. In effect under the EPBC Act from 08-Dec-2021.

DAWE (Department of Agriculture, Water and the Environment). (2021b). Coastal Swamp Sclerophyll Forest of NSW and South East Queensland ecological community: a nationally protected ecological community. Canberra: Commonwealth of Australia. Available from: https://www.legislation.gov.au/F2021L01729/latest/text.

Department of Agriculture, Water and the Environment (2021). Conservation Advice for *Prasophyllum petilum* (Tarengo Leek Orchid). Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/55144-conservation-advice-29092021.pdf. In effect under the EPBC Act from 29-Sep-2021.

Department of Agriculture, Water and the Environment (2022). Conservation Advice for *Litoria littlejohni* (Littlejohn's Tree Frog). Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/64733-conservation-advice-18022022.pdf. In effect under the EPBC Act from 18 Feb 2022.

Department of Agriculture, Water and the Environment (2022b). Conservation Advice for *Callocephalon fimbriatum* (Gang-gang Cockatoo). Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/768-conservation-advice-02032022.pdf. In effect under the EPBC Act from 02 Mar 2022.

Department of Climate Change, Energy, the Environment and Water (2022). Conservation Advice for *Calyptorhynchus lathami lathami* (South-eastern Glossy Black Cockatoo). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/67036-conservation-advice-10082022.pdf. In effect under the EPBC Act from 10 Aug 2022.

Department of Climate Change, Energy, the Environment and Water (2023). Conservation Advice *for Syzygium paniculatum* (magenta lilly pilly). Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/20307-conservation-advice-31082023.pdf. In effect under the EPBC Act from 31 Aug 2023.

DCCEEW (Department of Climate Change, Energy, the Environment and Water) (2024a). Conservation Advice for *Brachyscome brownii*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/91093-conservation-advice-16072024.pdf. In effect under the EPBC Act from 16 Jul 2024.

DoE (Department of the Environment). (2013a). *Significant Impact Guideline 1.1 - Matters of National Environmental.* Canberra, ACT.

DoE (Department of the Environment). (2013b). *Significant impact guidelines 1.2 - Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies*. Canberra, ACT.

DoE (Department of the Environment). (2014a). Conservation Advice *Corunastylis sp. Charmhaven (NSW896673) Wyong midge orchid 2*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/86263-conservation-advice.pdf. In effect under the EPBC Act from 19-Jul-2014.

Department of the Environment (2014b). Approved Conservation Advice for *Heleioporus Australiacus* (giant burrowing frog). Canberra: Department of the Environment.

Department of the Environment. (2014). Conservation Advice Thelymitra adorata Wyong sun orchid. Canberra: Department of the Environment. Retrieved from http://www.environment.gov.au/biodiversity/threatened/species/pubs/84724-conservation-advice.pdf.

Department of the Environment and Energy. (2020, January 20). Analysis of species listed under the Environment Protection and Biodiversity Conservation Act 1999 which occur in areas affected by bushfires. Retrieved from https://www.dcceew.gov.au/sites/default/files/env/pages/a8d10ce5-6a49-4fc2-b94d-575d6d11c547/files/protected-species-in-fire-affected-areas-20Jan.xlsx.

DoE (Department of the Environment). (2015a). Approved Conservation Advice (including listing advice) for the Central Hunter Valley eucalypt forest and woodland ecological community. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/130-conservation-advice.pdf. In effect under the EPBC Act from 07 May 2015.

Department of the Environment (2016). Central Hunter Valley eucalypt forest and woodland: a nationally protected ecological community.

Department of Environment & Climate Change (2008) Recovery plan for the koala (*Phascolarctos cinereus*). NSW Department of Environment and Climate Change Sydney.

Department of Environment and Conservation (NSW) (2006). *Zieria involucrata* recovery plan. Department of Environment and Conservation (NSW), Hurstville, NSW. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/zieria-involucrata-recovery-plan. In effect under the EPBC Act from 09- May 2007.

DEE (Department of the Environment and Energy). (2016a). *Central Hunter Valley eucalypt forest and woodland: a nationally protected ecological community*. Commonwealth of Australia. Available from: https://www.dcceew.gov.au/sites/default/files/documents/central-hunter-valley-eucalypt-forest-guide.pdf.

Department of the Environment and Energy (2016). Threat abatement plan for competition and land degradation by rabbits. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits-2016. In effect under the EPBC Act from 07 Jan 2017.

Department of the Environment and Energy (2016b). Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (2016). Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/infection-amphibians-chytrid-fungus-resulting-chytridiomycosis-2016. In effect under the EPBC Act from 07-Sep-2016.

Department of the Environment and Energy (2017). Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*). Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/feral-pig-2017. In effect under the EPBC Act from 18 Mar 2017.

DEE (Department of the Environment and Energy). (2020a). *Analysis of species listed under the Environment Protection and Biodiversity Conservation Act 1999 which occur in areas affected by bushfires between 1 August 2019 and 13 January 2020 in southern and eastern Australia*. Retrieved from https://www.dcceew.gov.au/sites/default/files/env/pages/a8d10ce5-6a49-4fc2-b94d-575d6d11c547/files/protected-species-in-fire-affected-areas-20Jan.xlsx.

Department of Environment, Climate Change and Water (NSW) (2010). NON-CURRENT National Recovery Plan for *Prasophyllum petilum*. Department of Environment and Climate Change and Water (NSW), Hurstville. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-prasophyllum-petilum. In effect under the EPBC Act from 21 Apr 2011. Ceased to be in effect under the EPBC Act from 04 Jun 2024.

Department of Environment and Resource Management (DERM) (2011). National recovery plan for the large-eared pied bat *Chalinolobus dwyeri*. Report to the Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Department of the Environment, Water, Heritage and the Arts (2008). Approved Conservation Advice for *Cynanchum elegans* (White-flowered Wax Plant). Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/12533-conservation-advice.pdf. In effect under the EPBC Act from 26 Mar 2008.

Department of the Environment, Water, Heritage and the Arts (2008b). Threat abatement plan for competition and land degradation by unmanaged goats. DEWHA, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-unmanaged-goats. In effect under the EPBC Act from 01 Oct 2008.

Department of the Environment, Water, Heritage and the Arts (2008c). Approved Conservation Advice for *Angophora inopina*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/64832-conservation-advice.pdf. In effect under the EPBC Act from 26 Mar 2008.

Department of the Environment, Water, Heritage and the Arts (2008d). Approved Conservation Advice for *Asperula asthenes*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/14004-conservation-advice.pdf. In effect under the EPBC Act from 26 Mar 2008.

Department of the Environment, Water, Heritage and the Arts (2008e). Approved Conservation Advice for *Olearia cordata*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/6710-conservation-advice.pdf. In effect under the EPBC Act from 26 Mar 2008.

Department of the Environment, Water, Heritage and the Arts (2008f). Approved Conservation Advice for *Ozothamnus tesselatus.* Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/56203-conservation-advice.pdf. In effect under the EPBC Act from 01 Oct 2008.

Department of the Environment, Water, Heritage and the Arts (2008g). Approved Conservation Advice for *Prostanthera cineolifera.* Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/11233-conservation-advice.pdf. In effect under the EPBC Act from 03 Jul 2008.

Department of the Environment, Water, Heritage and the Arts (2008h). Approved Conservation Advice for Velleia perfoliata. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/17190-conservation-advice.pdf. In effect under the EPBC Act from 26 Mar 2008.

Department of the Environment, Water, Heritage and the Arts (2009). Approved Conservation Advice for *Prasophyllum* sp. Wybong (C. Phelps ORG 5269) (a leek-orchid). Canberra, ACT: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/81964-conservation-advice.pdf. In effect under the EPBC Act from 13 Nov 2009.

Department of Primary Industries (2013). Policy and Guidelines for Fish Friendly Waterway Crossings.

Fairfull, S. and Witheridge, G. (2003) Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings. NSW DPI, Cronulla, 16 pp.

Gallagher RV. 2020. *National prioritisation of Australian plants affected by the 2019-2020 bushfire season* – Report to the Commonwealth Department of Agriculture, Water and Environment.

Garnett, S. T.; Crowley, G. M. (2000). The action plan for Australian birds 2000. Environment Australia, Canberra.

Green, M.C., Michael, D.R., Turner, J.M., Wright, L.J. and Nimmo, D.G. (2024). The influence of severe wildfire on a threatened arboreal mammal. Wildlife Research, 51(8).

Higgins PJ, Peter JM, Steele WK (Eds) (2001). Handbook of Australian, New Zealand and Antarctic Birds. Volume 5: Tyrant-flycatchers to Chats. Oxford University Press.

Higgins PJ & Peter JM (Eds) (2002) Handbook of Australian, New Zealand and Antarctic Birds. Volume 6: Pardalotes to Shrike-thrushes. Oxford University Press, Melbourne.

Kahnonitch, I., Lubin, Y. and Korine, C. (2018). Insectivorous bats in semi-arid agroecosystems− effects on foraging activity and implications for insect pest control. Agriculture, Ecosystems & Environment, 261, pp.80-92.

Kavanagh, R.P. and Stanton, M.A. (2012). Koalas use young Eucalyptus plantations in an agricultural landscape on the Liverpool Plains, New South Wales. Ecological Management & Restoration, 13(3), pp.297-305.

Klop-Toker, Kaya & Wallace, Samantha & Stock, Sarah & Hayward, Matt & Mahony, Michael. (2021). The Decline of Australian Heath Frogs and Summary of Current Threats. 10.1016/B978-0-12-821139-7.00145-8.

Legge, S., Woinarski, J., Garnett, S., Geyle, H., Lintermans, M., Nimmo, D., . . . Catullo, R. (2021). Estimates of the impacts of the 2019–20 fires on populations of native animal species. Brisbane: NESP Threatened Species Recovery Hub. Available from: https://www.nespthreatenedspecies.edu.au/media/0rbocx3h/8-3-2-estimates-of-the-impacts-of-the-2019-2020-fires-on-populations-of-native-animal-species-report_v9.pdf.

Loss, S.R., Will, T. and Marra, P.P. (2014). Refining estimates of bird collision and electrocution mortality at power lines in the United States. PloS one, 9(7), p.e101565.

Mahony M, Moses B, Mahony SV, Lemckert FL, & Donnellan S (2020). A new species of frog in the *Litoria ewingii* species group (Anura: Pelodryadidae) from south-eastern Australia. Zootaxa 4858(2), 201-230.

Mahony SV, Cutajar T, and Rowley JJL (2022). A new species of Delma Gray 1831 (Squamata: Pygopodidae) from the Hunter Valley and Liverpool Plains of New South Wales. Zootaxa 5162, 541-556

Mo, M., Meade, J., Roff, A., Timmiss, L.A., Gibson, R. and Welbergen, J.A. (2024). Impact assessment of the Australian 2019–20 megafires on roost sites of the vulnerable grey-headed flying-fox (*Pteropus poliocephalus*). Global Ecology and Conservation, 50, p.e02822.

NPWS (National Parks & Wildlife Service) (2002). Threatened Species Information: *Cynanchum elegans*. Hurstville, NSW: NSW Department of Environment and Conservation (currently known as Department of Environment and Climate Change). Available from: http://www.npws.nsw.gov.au/wildlife/thr_profiles/Celegans_profile.pdf.

NSW Scientific Committee (2009). *Cynanchum elegans* (Benth.) Domin - Review of Current Information in NSW – Additional information.

NSW Scientific Committee (2015a). *Genoplesium insigne* D.L.Jones – critically endangered species listing – final determination

Office of Environment and Heritage (2012). National Recovery Plan Magenta Lilly Pilly *Syzygium paniculatum*. Office of Environment and Heritage NSW, Sydney. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-magenta-lilly-pilly-syzygium-paniculatum. In effect under the EPBC Act from 24 Jul 2012 as *Syzygium paniculatum.*

Pegg GS, Giblin FR, McTaggart AR, Guymer GP, Taylor H, Ireland KB, Shivas RG, Perry S (2014) *Puccinia psidii* in Queensland, Australia: disease symptoms, distribution and impact. Plant Pathology 63, 1005–1021.

Penman, T., F. Lemckert & M. Mahony (2004). Two hundred and ten years of looking for giant burrowing frog. Australian Zoologist. 32 (4):597-604.

Pennay M and Thomson B (2008) The IUCN Red List of Threatened Species Version 2011.2. Viewed: 26 August 2022.

PlantNET (2024). Asperula asthenes Airy Shaw & Turrill. Available at https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Asperula~asthenes.

PlantNET (2023). *Prostanthera cineolifera* R.T.Baker & H.G.Sm. Available at https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Prostanthera~cineolifera.

Pizzey, G and Knight, F (2012). The Field Guide to the Birds of Australia 9th Edition.

Quinn, F, Williams, JB, Gross, CL & Bruhl, J 1995, Report on rare and threatened plants of north-eastern New South Wales, University of New England Armidale.

Renner, Towle & Weston. (2022). *Two new species of Genoplesium R.Br. sensu lato* (Orchidaceae: Prasophyllinae) *from the Central Coast of New South Wales*. Telopea 25, 285-299. doi: https://doi.org/10.7751/telopea15648.

Rubolini, D., Gustin, M., Bogliani, G. and Garavaglia, R., 2005. Birds and powerlines in Italy: an assessment. Bird Conservation International, 15(2), pp.131-145.

Swift Parrot Recovery Team (2001). 'National Swift Parrot Recovery Plan 2001-2005'. (Department of Primary Industries, Water and Environment: Hobart).

Threatened Species Scientific Committee (2016). Approved Conservation Advice (including listing advice) for the Warkworth Sands Woodland of the Hunter Valley ecological community. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/143-conservation-advice-05052016.pdf. In effect under the EPBC Act from 05 May 2016.

Threatened Species Scientific Committee (2016b). Conservation Advice *Pterostylis gibbosa* Illawarra greenhood. Canberra: Department of the Environment and Energy. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/4562-conservation-advice-16122016.pdf. In effect under the EPBC Act from 16-Dec-2016.

TSSC (Threatened Species Scientific Committee) (2020a). Conservation Advice *Rhodamnia rubescens* Scrub Turpentine. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/15763-conservation-advice-11122020.pdf. In effect under the EPBC Act from 11 Dec 2020.

Threatened Species Scientific Committee (2020b). Conservation Advice *Rhodomyrtus psidioides* Native Guava. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/19162-conservation-advice-12122020.pdf. In effect under the EPBC Act from 12 Dec 2020.

Threatened Species Scientific Committee (2020c). Conservation Advice *Dasyurus maculatus maculatus* (southeastern mainland population) Spotted-tailed Quoll, south eastern mainland. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/75184-conservation-advice-01092020.pdf. In effect under the EPBC Act from 01 Sep 2020.

Towle, Brian. (2022). Reproductive success and rarity of the variable midge orchid *Genoplesium insigne. Cunninghamia,* 22, 45-52.

Towle, B. (2023). A review of the fire response of Genoplesium R. Br. sensu lato (Orchidaceae) and implications of fire management on habitat. *Cunninghamia*, 23, 1–10.

Woinarski J, Burbidge AA & Harrison PL (2014). The Action Plan for Australian Mammals 2012.CSIRO Publishing, Collingwood, NSW.

Zauza EA, Alfenas AC, Old K, Couto MM, Graça RN, Maffia LA (2010) Myrtaceae species resistance to rust caused by *Puccinia psidii*. Australasian Plant Pathology 39, 406–411.

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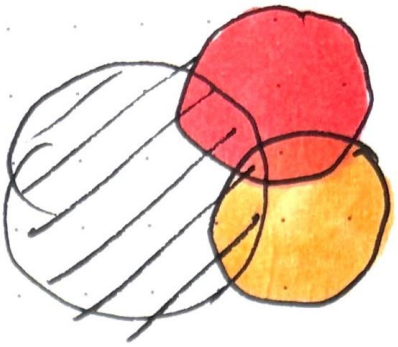

Appendix D

Vegetation survey data

Appendix D-1
BAM vegetation integrity plots

D1 BAM vegetation integrity plots

D1.1 3029 – Lower North Wet Gully Palm Rainforest (Mod-good)

HTP-MS-43

Date	6/19/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-43		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3029	Mod-good	37	37	9	7	0	2	7	12	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	240.3	240.3	137.6	21.7	0	0.8	37	43.2	0	0	
Acmena smithii	25	20	TG		25								
Adiantum hispidulum	1	30	EG						1				
Arthropteris beckleri	0.1	1	EG						0.1				
Blechnum cartilagineum	15	100	EG						15				
Callicoma serratifolia	10	8	SG			10							
Calochlaena dubia	0.4	5	OG							0.4			
Ceratopetalum apetalum	55	50	TG		55								
Cordyline stricta	1	5	OG							1			
Cryptocarya glaucescens	20	40	TG		20								
Diploglottis australis	0.2	3	TG		0.2								
Doryphora sassafras	35	30	TG		35								
Geitonoplesium cymosum	0.1	1	OG							0.1			
Gymnostachys anceps	0.4	10	FG					0.4					
Gynochthodes jasminoides	5	40	OG							5			
Lastreopsis decomposita	20	100	EG						20				
Marsdenia flavescens	0.1	1	OG							0.1			
Marsdenia suaveolens	0.1	1	OG							0.1			
Microsorum pustulatum subsp. pustulatum	0.4	10	EG						0.4				
Neolitsea dealbata	0.4	3	TG		0.4								
Palmeria scandens	5	30	OG							5			
Pandorea pandorana	0.4	5	OG							0.4			
Parsonsia straminea	1	10	OG							1			
Pittosporum multiflorum	5	40	SG			5							
Pseuderanthemum variabile	0.4	30	FG					0.4					
Psychotria loniceroides	0.4	5	SG			0.4							
Pteris tremula	0.4	5	EG						0.4				
Pyrrosia confluens var. confluens	0.1	2	EG						0.1				
Ripogonum fawcettianum	10	50	OG							10			
Sarcopetalum harveyanum	0.1	1	OG							0.1			
Schizomeria ovata	0.4	5	TG		0.4								
Smilax australis	20		OG							20			
Solanum stelligerum	0.2	5	SG			0.2							
Synoum glandulosum subsp. glandulosum	5	10	SG			5							
Syzygium australe	0.1	3	SG			0.1							
Tasmannia insipida	1	5	SG			1							
Tristaniopsis collina	1	5	TG		1								
Trochocarpa laurina	0.6	1	TG		0.6								

Easting	343338
Northing	6343067
Orientation	267
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	13
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	1
Length logs (m)	126
BAM Attributes 1x1 plot (%)	79
Litter (%)	85
	95
	65
	60
	90

HTP-MS-52

Date	6/24/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	343847
Plot Name	HTP-MS-52		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6341817
PCT	3029	Mod-good	30	30	10	6	0	1	3	10	0	0		Orientation	30
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	223.3	223.3	102.8	39.3	0	0.4	0.3	80.5	0	0		BAM Attributes 20x50m plot	
Acmena smithii	15	12	TG		15									Stem classes	
Ceratopetalum apetalum	30	20	TG		30									80+	1
Cissus hypoglauca	25	5	OG							25				50-79	3
Cordyline stricta	0.4	5	OG							0.4				30-49	11
Cryptocarya glaucescens	15	10	TG		15									20-29	Yes
Cryptocarya microneura	0.4	2	TG		0.4									10-19	Yes
Cryptocarya rigida	8	10	SG			8								5-9	Yes
Cyathea leichhardtiana	1	2	OG							1				<5	Yes
Diploglottis australis	0.4	1	TG		0.4									Hollows	1
Doodia australis	0.1	1	EG						0.1					Length logs (m)	82
Doryphora sassafras	15	20	TG		15										
Elaeocarpus reticulatus	1	3	SG			1								BAM Attributes 1x1 plot (%)	85
Eucalyptus saligna	15	4	TG		15									Litter (%)	95
Gynochthodes jasminoides	5	40	OG							5					90
Neolitsea dealbata	2	3	TG		2										85
Palmeria scandens	25	50	OG							25					65
Pandorea pandorana subsp. pandorana	1	5	OG							1					90
Parsonsia straminea	3	5	OG							3					
Platycerium bifurcatum	0.1	1	EG						0.1						
Pseuderanthemum variabile	0.4	50	FG					0.4							
Pyrrosia confluens var. confluens	0.1	1	EG						0.1						
Ripogonum fawcettianum	15	50	OG							15					
Sarcopetalum harveyanum	0.1	1	OG							0.1					
Smilax australis	5	40	OG							5					
Syncarpia glomulifera subsp. glomulifera	5	2	TG		5										
Synoum glandulosum subsp. glandulosum	10	15	SG			10									
Tasmannia insipida	20	50	SG			20									
Trochocarpa laurina	5	10	TG		5										
Wilkiea huegeliana	0.1	1	SG			0.1									
Zieria arborescens	0.2	3	SG			0.2									

HTP-MS-59

Date	6/26/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-59		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3029	Mod-good	50	50	10	12	1	2	11	14	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	233.5	233.5	89.6	32.6	0.1	4	25	82.2	0	0	
Abrophyllum ornans	0.1	2	SG			0.1							
Acmena smithii	15	10	TG		15								
Adiantum formosum	2	80	EG						2				
Adiantum silvaticum	0.4	20	EG						0.4				
Archontophoenix cunninghamiana	45	1000	OG							45			
Arthropteris tenella	2	30	EG						2				
Asplenium australasicum	2	10	EG						2				
Backhousia myrtifolia	15	10	SG			15							
Blechnum cartilagineum	3	40	EG						3				
Calanthe triplicata	3	50	FG					3					
Callicoma serratifolia	10	4	SG			10							
Ceratopetalum apetalum	35	30	TG		35								
Cissus hypoglauca	15	10	OG							15			
Cordyline stricta	1	30	OG							1			
Cryptocarya glaucescens	10	20	TG		10								
Cryptocarya rigida	0.1	1	SG			0.1							
Cyathea leichhardtiana	0.4	1	OG							0.4			
Cymbidium suave	0.1	1	OG							0.1			
Dioscorea transversa	0.4	10	OG							0.4			
Doodia australis	1	30	EG						1				
Doryphora sassafras	5	10	TG		5								
Embelia australiana	0.8	10	OG							0.8			
Endiandra discolor	1	5	TG		1								
Eupomatia laurina	0.4	5	SG			0.4							
Ficus coronata	1	5	SG			1							
Guioa semiglauca	1	5	TG		1								
Gymnostachys anceps	1	40	FG					1					
Gynochthodes jasminoides	5	50	OG							5			
Hymenophyllum cupressiforme	0.4	50	EG						0.4				
Lastreopsis decomposita	3	50	EG						3				
Marsdenia flavescens	0.4	5	OG							0.4			
Marsdenia suaveolens	0.1	1	OG							0.1			
Microsorum scandens	10	100	EG						10				
Oplismenus imbecillis	0.1	5	GG				0.1						
Palmeria scandens	5	20	OG							5			
Pittosporum multiflorum	1	10	SG			1							
Pittosporum revolutum	0.1	1	SG			0.1							
Polyosma cunninghamii	2	10	TG		2								
Psychotria loniceroides	0.1	1	SG			0.1							
Pteris tremula	0.4	5	EG						0.4				
Pyrrosia confluens var. confluens	0.8	20	EG						0.8				
Ripogonum fawcettianum	2	20	OG							2			
Sloanea australis	5	10	TG		5								
Smilax australis	4	50	OG							4			
Stenocarpus salignus	0.4	2	SG			0.4							
Syncarpia glomulifera subsp. glomulifera	15	2	TG		15								
Syzygium australe	0.4	3	SG			0.4							
Tasmannia insipida	4	20	SG			4							
Trochocarpa laurina	0.6	3	TG		0.6								
Trophis scandens	3	50	OG							3			

Easting	346881
Northing	6335977
Orientation	172
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	3
50-79	4
30-49	8
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	3
Length logs (m)	38
BAM Attributes 1x1 plot (%)	86
Litter (%)	95
	80
	85
	90
	80

HTP-MS-63

Date	6/27/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-63		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3029	Mod-good	33	33	7	6	3	2	5	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	154.5	154.5	109	27.6	0.6	0.4	2.3	14.6	0	0	
Acmena smithii	10	20	TG		10								
Adiantum formosum	0.1	5	EG						0.1				
Allocasuarina torulosa	12	7	TG		12								
Archontophoenix cunninghamiana	0.1	5	OG							0.1			
Blechnum cartilagineum	0.4	10	EG						0.4				
Blechnum nudum	1	10	EG						1				
Blechnum wattsii	0.4	10	EG						0.4				
Callicoma serratifolia	15	8	SG			15							
Ceratopetalum apetalum	45	80	TG		45								
Cissus hypoglauca	5	20	OG							5			
Cordyline stricta	3	50	OG							3			
Cryptocarya glaucescens	1	5	TG		1								
Cryptocarya rigida	0.1	1	SG			0.1							
Cyathea leichhardtiana	0.2	1	OG							0.2			
Doryphora sassafras	15	40	TG		15								
Eucalyptus scias subsp. scias	18	2	TG		18								
Gahnia sieberiana	0.4	5	GG				0.4						
Gymnostachys anceps	0.3	4	FG					0.3					
Gynochthodes jasminoides	0.1	3	OG							0.1			
Lastreopsis decomposita	0.4	5	EG						0.4				
Lomandra confertifolia	0.1	1	GG				0.1						
Oplismenus imbecillis	0.1	5	GG				0.1						
Palmeria scandens	0.1	1	OG							0.1			
Pittosporum revolutum	0.4	3	SG			0.4							
Pseuderanthemum variabile	0.1	2	FG					0.1					
Psychotria loniceroides	0.1	5	SG			0.1							
Ripogonum fawcettianum	2	20	OG							2			
Sarcopetalum harveyanum	0.1	1	OG							0.1			
Smilax australis	3	50	OG							3			
Synoum glandulosum subsp. glandulosum	10	30	SG			10							
Tasmannia insipida	2	10	SG			2							
Todea barbara	1	4	OG							1			
Trochocarpa laurina	8	40	TG		8								

Easting	346612
Northing	6336991
Orientation	197
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	5
30-49	8
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	89
BAM Attributes 1x1 plot (%)	86
Litter (%)	80
	95
	90
	75
	90

D1.2 3086 – Lower North Hinterland Riparian Dry Rainforest (Mod-good)

HTP-MS-74

Date	2/3/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-74		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3086	Mod-good	57	56	11	15	3	5	9	13	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	163.2	162.2	47.2	47.8	6.1	16	31.2	13.9	0	1	
Abrophyllum ornans	0.1	2	SG			0.1							
Adiantum formosum	5	100	EG						5				
Adiantum hispidulum var. hispidulum	2	50	EG						2				
Alectryon subcinereus	1	5	SG			1							
Aneilema acuminatum	0.4	20	FG					0.4					
Arthropteris tenella	5	100	EG						5				
Backhousia myrtifolia	5	10	SG			5							
Baloghia inophylla	5	20	TG		5								
Breynia oblongifolia	0.4	5	SG			0.4							
Calochlaena dubia	5	100	OG							5			
Capparis arborea	0.2	2	SG			0.2							
Carex longebrachiata	1	20	GG				1						
Ceratopetalum apetalum	25	30	TG		25								
Cissus antarctica	3	30	OG							3			
Cissus hypoglauca	1	5	OG							1			
Claoxylon australe	25	10	SG			25							
Clerodendrum tomentosum	0.1	1	TG		0.1								
Cryptocarya glaucescens	1	5	TG		1								
Cyperus tetraphyllus	0.1	5	GG				0.1						
Dendrocnide excelsa	2	10	TG		2								
Diospyros australis	0.4	3	SG			0.4							
Diploglottis australis	0.1	1	TG		0.1								
Doodia australis	4	100	EG						4				
Doryphora sassafras	5	20	TG		5								
Elaeodendron australe	0.1	1	SG			0.1							
Embelia australiana	0.1	3	OG							0.1			
Ficus coronata	10	10	SG			10							
Guioa semiglauca	1	5	TG		1								
Gymnostachys anceps	0.1	1	FG					0.1					
Gynochthodes jasminoides	1	20	OG							1			
Hibiscus heterophyllus subsp. heterophyllus	0.4	5	SG			0.4							
Lantana camara	1	5	HT									1	
Lastreopsis decomposita	5	100	EG						5				
Legnephora moorei	0.4	3	OG							0.4			
Marsdenia rostrata	0.4	5	OG							0.4			
Mischocarpus australis	5	20	TG		5								
Oplismenus imbecillis	5	100	GG				5						
Palmeria scandens	1	10	OG							1			
Pandorea pandorana	0.1	1	OG							0.1			
Pellaea falcata	2	50	EG						2				
Pellaea paradoxa	0.2	10	EG						0.2				
Pittosporum multiflorum	1	20	SG			1							
Planchonella australis	2	10	TG		2								
Pollia crispata	15	200	FG					15					
Pseuderanthemum variabile	0.4	30	FG					0.4					
Psychotria loniceroides	0.8	10	SG			0.8							
Pteris tremula	5	100	EG						5				
Pyrrosia rupestris	3	100	EG						3				
Ripogonum album	0.4	5	OG							0.4			
Rubus rosifolius	0.4	5	SG			0.4							
Sarcomelicope simplicifolia subsp. simplicifolia	1	10	SG			1							
Stellaria flaccida	0.1	5	FG					0.1					
Stephania japonica	0.1	1	OG							0.1			
Streblus brunonianus	1	10	TG		1								
Trophis scandens	1	5	OG							1			
Tylophora paniculata	0.4	20	OG							0.4			
Wilkiea huegeliana	2	20	SG			2							

Easting	333339
Northing	6361760
Orientation	207
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	51
BAM Attributes 1x1 plot (%)	80
Litter (%)	95
	60
	70
	85
	90

D1.3 3087 – Lower North Ranges Riparian Turpentine Forest (Mod-good)

TC-19

Date	1/31/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-19		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3087	Mod-good	32	32	5	10	1	4	4	8	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	106.7	106.7	47.1	31.2	10	6.2	4.2	8	0	0	
Acacia schinoides	4	3	SG			4							
Alectryon subcinereus	1	2	SG			1							
Alphitonia excelsa	0.1	3	TG		0.1								
Astrotricha latifolia	5	30	SG			5							
Backhousia myrtifolia	12	28	SG			12							
Cissus hypoglauca	2	4	OG							2			
Clematis glycinoides	0.1	5	OG							0.1			
Commersonia fraseri	2	20	SG			2							
Doodia aspera	0.1	2	EG						0.1				
Eucalyptus punctata	5	1	TG		5								
Goodenia ovata	3	4	SG			3							
Gynochthodes jasminoides	1	5	OG							1			
Hibbertia dentata	0.5	8	OG							0.5			
Hydrocotyle laxiflora	5	50	FG					5					
Lastreopsis decomposita	3	3	EG						3				
Notelaea longifolia	1	1	TG		1								
Oplismenus aemulus	10	20	GG				10						
Pandorea pandorana	1	4	OG							1			
Passiflora herbertiana	0.3	20	OG							0.3			
Pellaea falcata	0.1	3	EG						0.1				
Plectranthus parviflorus	0.1	4	FG					0.1					
Pseuderanthemum variabile	1	7	FG					1					
Pyrrosia rupestris	1	1	EG						1				
Scolopia braunii	1	4	TG		1								
Smilax australis	3	13	OG							3			
Solanum prinophyllum	0.1	3	FG					0.1					
Solanum stelligerum	3	8	SG			3							
Stenocarpus salignus	0.1	1	SG			0.1							
Stephania japonica	0.1	2	OG							0.1			
Syncarpia glomulifera	40	6	TG		40								
Synoum glandulosum subsp. glandulosum	1	1	SG			1							
Zieria smithii	0.1	1	SG			0.1							

Easting	334058
Northing	6356771
Orientation	42
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	77
BAM Attributes 1x1 plot (%)	46
Litter (%)	40
	50
	60
	40
	40

TC-40

Date	8/5/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC40		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3086	Mod-good	44	42	6	12	4	6	3	11	1	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	183.2	103	22.4	47.8	3.2	3.3	16.2	10.1	0.2	80	
Adiantum formosum	0.2	2	EG						0.2				
Alchornea ilicifolia	0.2	1	SG			0.2							
Alectryon subcinereus	10	2	SG			10							
Alphitonia excelsa	2	5	TG		2								
Aneilema acuminatum	0.2	5	FG					0.2					
Breynia oblongifolia	0.1	1	SG			0.1							
Carex longebrachiata	2	8	GG				2						
Cayratia clematidea	0.5	10	OG							0.5			
Cissus antarctica	2	5	OG							2			
Cissus hypoglauca	4	6	OG							4			
Claoxylon australe	1	5	SG			1							
Clematis glycinoides	0.5	10	OG							0.5			
Commersonia fraseri	0.4	2	SG			0.4							
Cyperus tetraphyllus	0.5	10	GG				0.5						
Dichondra repens	1	100	FG					1					
Diospyros australis	0.4	3	SG			0.4							
Eucalyptus acmenoides	15	1	TG		15								
Geitonoplesium cymosum	0.4	10	OG							0.4			
Glycine clandestina	0.4	10	OG							0.4			
Hibiscus heterophyllus subsp. heterophyllus	0.3	1	SG			0.3							
Hydrocotyle laxiflora	0.4	15	FG					0.4					
Lantana camara	80	20	HT									80	
Lepidosperma cf. laterale	0.2	1	GG				0.2						
Maclura cochinchinensis	1	5	OG							1			
Mallotus philippensis	2	8	TG		2								
Melaleuca styphelioides	15	16	SG			15							
Melia azedarach	2	2	TG		2								
Melicope micrococca	18	10	SG			18							
Notelaea longifolia	0.4	3	TG		0.4								
Oplismenus imbecillis	0.5	20	GG				0.5						
Pandorea pandorana	0.4	15	OG							0.4			
Passiflora edulis	0.2	1	EX								0.2		
Pellaea falcata	15	100	EG						15				
Pittosporum revolutum	0.2	1	SG			0.2							
Pseuderanthemum variabile	0.5	50	FG					0.5					
Pteris tremula	1	7	EG						1				
Rubus moluccanus	0.2	1	SG			0.2							
Rubus rosifolius	2	15	SG			2							
Sarcopetalum harveyanum	0.3	3	OG							0.3			
Sigesbeckia orientalis subsp. orientalis	0.2	3	FG					0.2					
Smilax australis	0.3	5	OG							0.3			
Stellaria flaccida	1	50	FG					1					
Stephania japonica var. discolor	0.3	5	OG							0.3			
Streblus brunonianus	1	3	TG		1								

Easting	334953
Northing	6362962
Orientation	24
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	3
BAM Attributes 1x1 plot litter (%)	50
Litter (%)	40
	60
	50
	55
	45

D1.4 3150 – Hunter Coast Ranges Turpentine Wet Forest (Mod-good)

LCSM-19

Date	9/25/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	High Threat	56
Plot Name	LCSM-19		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3150	Mod-good	35	36	7	14	1	4	2	8	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	109.33	99.53	91.31	4.82	1	0.9	0.2	1.3	0	0	
Acacia parvipinnula	0.2	1	SG			0.2							
Acmena smithii	0.1	1	TG		0.1								
Acronychia spp.	0.1	2	SG			0.1							
Allocasuarina torulosa	0.11		TG		0.11								
Breynia oblongifolia	0.2	1	SG			0.2							
Cissus antarctica	0.1	1	OG							0.1			
Clematis aristata	0.1	1	OG							0.1			
Commersonia dasyphylla	1	10	SG			1							
Cryptocarya rigida	0.1	1	SG			0.1							
Dianella caerulea	0.2	10	FG					0.2					
Diospyros australis	0.1	1	SG			0.1							
Doodia aspera	0.1	10	EG						0.1				
Elaeocarpus reticulatus	0.1	1	SG			0.1							
Eucalyptus agglomerata	10	1	TG		0.1								
Eucalyptus pilularis	30	3	TG		30								
Eucalyptus punctata	30	8	TG		30								
Eucalyptus saligna	1	1	TG		1	0.1							
Gahnia microstachya	1	10	GG				1						
Geitonoplesium cymosum	0.1	1	OG							0.1			
Gymnostachys anceps	0.5	5	FG					0.5					
Hibbertia dentata	0.2	5	OG							0.2			
Hibbertia scandens	0.1	1	OG							0.1			
Hydrocotyle sibthorpioides	0.1	1	FG					0.1					
Leucopogon juniperinus	0.1	1	SG			0.1							
Ozothamnus diosmifolius	0.1	1	SG			0.1							
Parsonsia straminea	0.1	1	OG							0.1			
Passiflora herbertiana	0.1	1	OG							0.1			
Prostanthera incisa	0.12		SG			0.12							
Pseuderanthemum variabile	0.1	1	FG					0.1					
Psychotria loniceroides	0.5	5	SG			0.5							
Pteridium esculentum	0.1	2	EG						0.1				
Rubus rosifolius	0.1	1	SG			0.1							
Smilax australis	0.5	10	OG							0.5			
Syncarpia glomulifera	30	20	TG		30								

Easting	341995
Northing	6343912
Orientation	4
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	1
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	37
BAM Attributes 1x1 plot (%)	91
Litter (%)	95
	90
	95
	90
	85

HTP-MS-42

Date	6/19/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-42		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3150	Mod-good	43	43	14	11	5	3	0	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	146.4	146.4	65.2	37.4	30.8	1.5	0	11.5	0	0	
Acacia irrorata subsp. irrorata	5	10	SG			5							
Acacia prominens	1	5	TG		1								
Acacia schinoides	6	10	SG			6							
Acmena smithii	15	40	TG		15								
Allocasuarina torulosa	2	5	TG		2								
Cissus hypoglauca	4	10	OG							4			
Cordyline stricta	0.2	5	OG							0.2			
Cryptocarya glaucescens	0.2	2	TG		0.2								
Cryptocarya microneura	0.4	5	TG		0.4								
Cryptocarya rigida	5	10	SG			5							
Dianella caerulea	0.1	3	FG					0.1					
Elaeocarpus reticulatus	2	10	SG			2							
Eucalyptus deanei	10	3	TG		10								
Eucalyptus saligna	3	1	TG		3								
Gahnia melanocarpa	0.1	2	GG				0.1						
Gahnia sieberiana	30	80	GG				30						
Guioa semiglauca	0.8	5	TG		0.8								
Gymnostachys anceps	0.6	10	FG					0.6					
Gynochthodes jasminoides	0.4	10	OG							0.4			
Lepidosperma laterale	0.2	5	GG				0.2						
Lomandra longifolia	0.1	1	GG				0.1						
Marsdenia flavescens	0.1	3	OG							0.1			
Notelaea longifolia	0.6	3	TG		0.6								
Ottochloa gracillima	0.4	10	GG				0.4						
Palmeria scandens	1	10	OG							1			
Parsonsia straminea	0.1	1	OG							0.1			
Pittosporum multiflorum	0.4	5	SG			0.4							
Pittosporum revolutum	0.4	5	SG			0.4							
Polyosma cunninghamii	0.1	1	TG		0.1								
Prostanthera incisa	8	50	SG			8							
Pseuderanthemum variabile	0.8	50	FG					0.8					
Psychotria loniceroides	0.4	5	SG			0.4							
Ripogonum fawcettianum	0.4	5	OG							0.4			
Rubus nebulosus	0.2	3	OG							0.2			
Sarcopetalum harveyanum	0.1	1	OG							0.1			
Schizomeria ovata	0.1	1	TG		0.1								
Smilax australis	5	40	OG							5			
Stenocarpus salignus	0.1	1	SG			0.1							
Syncarpia glomulifera subsp. glomulifera	30	15	TG		30								
Synoum glandulosum subsp. glandulosum	10	20	SG			10							
Tasmannia insipida	0.1	1	SG			0.1							
Tristaniopsis collina	1	10	TG		1								
Trochocarpa laurina	1	10	TG		1								

Easting	343969
Northing	6341205
Orientation	336
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	7
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	63
BAM Attributes 1x1 plot (%)	80
Litter (%)	80
	95
	65
	70
	90

HTP-MS-44

Date	6/19/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-44		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3150	Mod-good	40	40	5	13	5	4	0	13	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	130	130	65	47.3	1.5	2.7	0	13.5	0	0	
Acacia schinoides	5	10	SG			5							
Acmena smithii	5	10	TG		5								
Astrotricha latifolia	3	20	SG			3							
Calochlaena dubia	1	10	OG							1			
Cissus hypoglauca	2	20	OG							2			
Commersonia fraseri	1	5	SG			1							
Cordyline stricta	0.6	5	OG							0.6			
Cryptocarya glaucescens	5	10	TG		5								
Cryptocarya rigida	3	5	SG			3							
Cymbidium suave	0.1	1	OG							0.1			
Dianella caerulea	0.8	10	FG					0.8					
Elaeocarpus reticulatus	6	40	SG			6							
Entolasia marginata	0.4	5	GG				0.4						
Entolasia stricta	0.2	10	GG				0.2						
Eucalyptus deanei	15	10	TG		15								
Eucalyptus pilularis	30	20	TG		30								
Gahnia melanocarpa	0.1	1	GG				0.1						
Gahnia sieberiana	0.4	3	GG				0.4						
Gymnostachys anceps	0.1	1	FG					0.1					
Gynochthodes jasminoides	2	20	OG							2			
Hibbertia dentata	0.4	5	OG							0.4			
Lasiopetalum ferrugineum var. cordatum	5	40	SG			5							
Leucopogon juniperinus	0.6	5	SG			0.6							
Lobelia purpurascens	0.8	40	FG					0.8					
Lomandra longifolia	0.4	5	GG				0.4						
Myrsine variabilis	0.1	1	SG			0.1							
Pandorea pandorana subsp. pandorana	0.1	1	OG							0.1			
Parsonsia straminea	0.4	5	OG							0.4			
Passiflora herbertiana	0.1	1	OG							0.1			
Prostanthera incisa	15	100	SG			15							
Pseuderanthemum variabile	1	50	FG					1					
Psychotria loniceroides	2	5	SG			2							
Ripogonum fawcettianum	1	10	OG							1			
Sarcopetalum harveyanum	0.8	10	OG							0.8			
Smilax australis	3	50	OG							3			
Smilax glyciphylla	2	20	OG							2			
Stenocarpus salignus	0.6	2	SG			0.6							
Syncarpia glomulifera subsp. glomulifera	10	5	TG		10								
Synoum glandulosum subsp. glandulosum	2	10	SG			2							
Zieria smithii	4	40	SG			4							

Easting	343369
Northing	6343010
Orientation	99
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	4
30-49	21
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	28
BAM Attributes 1x1 plot (%)	85
Litter (%)	90
	95
	85
	75
	80

HTP-MS-56

Date	6/25/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-56		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3150	Mod-good	36	36	11	10	1	2	2	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	247.2	247.2	143.6	27.2	0.1	0.7	0.8	74.8	0	0	
Acmena smithii	20	15	TG		20								
Blechnum cartilagineum	0.4	10	EG						0.4				
Ceratopetalum apetalum	15	10	TG		15								
Cissus hypoglauca	20	10	OG							20			
Clerodendrum tomentosum	2	3	TG		2								
Cordyline stricta	3	40	OG							3			
Cryptocarya glaucescens	20	15	TG		20								
Cryptocarya microneura	3	5	TG		3								
Cryptocarya rigida	5	10	SG			5							
Dianella caerulea	0.1	4	FG					0.1					
Doryphora sassafras	35	40	TG		35								
Elaeocarpus reticulatus	10	20	SG			10							
Eucalyptus agglomerata	14	2	TG		14								
Eucalyptus saligna	26	8	TG		26								
Eupomatia laurina	0.8	3	SG			0.8							
Gahnia melanocarpa	0.1	1	GG				0.1						
Geitonoplesium cymosum	1	10	OG							1			
Geitonoplesium cymosum	0.8	3	OG							0.8			
Gymnostachys anceps	0.6	5	FG					0.6					
Lastreopsis decomposita	0.4	10	EG						0.4				
Marsdenia flavescens	1	5	OG							1			
Notelaea longifolia	0.6	2	TG		0.6								
Palmeria scandens	2	10	OG							2			
Parsonsia straminea	5	10	OG							5			
Pittosporum multiflorum	2	20	SG			2							
Pittosporum revolutum	0.4	1	SG			0.4							
Psychotria loniceroides	3	8	SG			3							
Ripogonum fawcettianum	30	50	OG							30			
Rubus nebulosus	2	10	OG							2			
Smilax australis	10	50	OG							10			
Stenocarpus salignus	2	5	SG			2							
Syncarpia glomulifera subsp. glomulifera	5	3	TG		5								
Synoum glandulosum subsp. glandulosum	1	5	SG			1							
Tasmannia insipida	1	10	SG			1							
Trochocarpa laurina	3	8	TG		3								
Wilkiea huegeliana	2	5	SG			2							

Easting	343730
Northing	6342221
Orientation	10
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	14
30-49	10
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	44
BAM Attributes 1x1 plot (%)	79
Litter (%)	90
	65
	70
	90
	80

HTP-MS-58

Date	6/25/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	HTP-MS-58		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3150	Mod-good	40	40	13	6	1	4	3	13	0	0
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	201.6	201.6	86.6	40.5	0.8	2	3.1	68.6	0	0
Acmena smithii	15	10	TG		15							
Acrotriche divaricata	0.1	1	SG			0.1						
Allocasuarina torulosa	4	5	TG		4							
Archontophoenix cunninghamiana	0.1	10	OG							0.1		
Blechnum cartilagineum	2	20	EG						2			
Cissus hypoglauca	10	5	OG							10		
Cordyline stricta	0.4	5	OG							0.4		
Cryptocarya glaucescens	2	5	TG		2							
Cryptocarya microneura	2	10	TG		2							
Cryptocarya rigida	35	80	SG			35						
Cyclophyllum longipetalum	0.4	2	TG		0.4							
Dianella caerulea	0.4	10	FG					0.4				
Elaeocarpus reticulatus	1	5	SG			1						
Eucalyptus acmenoides	15	4	TG		15							
Eucalyptus piperita	2	1	TG		2							
Eucalyptus saligna	12	3	TG		12							
Gahnia sieberiana	0.8	20	GG				0.8					
Geitonoplesium cymosum	0.2	5	OG							0.2		
Gymnostachys anceps	1	10	FG					1				
Gynochthodes jasminoides	1	30	OG							1		
Lastreopsis decomposita	1	20	EG						1			
Notelaea longifolia	10	40	TG		10							
Palmeria scandens	8	20	OG							8		
Pandorea pandorana subsp. pandorana	2	5	OG							2		
Parsonsia straminea	0.8	10	OG							0.8		
Pittosporum revolutum	0.4	2	SG			0.4						
Platycerium bifurcatum	0.1	1	EG						0.1			
Polyosma cunninghamii	0.4	1	TG		0.4							
Pseuderanthemum variabile	0.4	40	FG					0.4				
Ripogonum album	0.1	1	OG							0.1		
Ripogonum fawcettianum	35	50	OG							35		
Rubus nebulosus	0.2	1	OG							0.2		
Schelhammera undulata	0.2	10	FG					0.2				
Schizomeria ovata	0.8	2	TG		0.8							
Smilax australis	10	50	OG							10		
Stephania japonica	0.8	10	OG							0.8		
Syncarpia glomulifera subsp. glomulifera	18	5	TG		18							
Synoum glandulosum subsp. glandulosum	1	3	SG			1						
Tasmannia insipida	3	20	SG			3						
Trochocarpa laurina	5	10	TG		5							

Easting	345959
Northing	6338310
Orientation	42
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	5
30-49	9
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	3
Length logs (m)	93
BAM Attributes 1x1 plot (%)	86
Litter (%)	95
	90
	80
	90
	75

D1.5 3150 – Hunter Coast Ranges Turpentine Wet Forest (Plantation)

LCSM-15

Date	9/22/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-15		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3150	Plantation	29	28	4	12	4	1	1	6	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	109.6	107.6	41.6	62.8	2.1	0.1	0.1	0.9	2	0	
Acacia parvipinnula	40	20	SG			40							
Adiantum aethiopicum	0.1	5	EG						0.1				
Astrotricha latifolia	0.3	1	SG			0.3							
Celastrus spp.	0.3	1	OG							0.3			
Clerodendrum tomentosum	0.5	1	TG		0.5								
Commersonia fraseri	10	20	SG			10							
Cordyline australis	2	20	EX								2		
Cryptocarya meissneriana	0.1	1	SG			0.1							
Cryptocarya rigida	5	3	SG			5							
Eucalyptus saligna	40	10	TG		40								
Gahnia aspera	0.5	5	GG				0.5						
Gahnia microstachya	0.5	5	GG				0.5						
Gahnia sieberiana	1	10	GG				1						
Melicope micrococca	3	3	SG			3							
Myrtaceae shrub	0.2	1	SG			0.2							
Notelaea longifolia	0.1	1	TG		0.1								
Oplismenus imbecillis	0.1	1	GG				0.1						
Passiflora herbertiana	0.1	1	OG							0.1			
Pittosporum spinescens	0.5	5	SG			0.5							
Polyscias sambucifolia	0.1	1	SG			0.1							
Pseuderanthemum variabile	0.1	10	FG					0.1					
Rhodamnia rubescens	0.3	4	SG			0.3							
Rubus rosifolius	0.3	3	SG			0.3							
Sarcopetalum harveyanum	0.1	5	OG							0.1			
Smilax australis	0.1	5	OG							0.1			
Stephania japonica	0.2	5	OG							0.2			
Syncarpia glomulifera	1	10	TG		1								
Unknown native vine	0.1	2	OG							0.1			
Zieria arborescens	3	3	SG			3							

Easting	342727
Northing	6342643
Orientation	319
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	No
<5	Yes
Hollows	0
Length logs (m)	74
BAM Attributes 1x1 plot (%)	83
Litter (%)	85
	80
	90
	85
	75

HTP-MS-50

Date	6/21/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-50		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3150	Plantation	41	41	7	12	2	2	4	14	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	132.9	132.9	48.5	53.7	0.5	0.2	11.5	18.5	0	0	
Acacia maidenii	0.4	2	TG		0.4								
Acacia schinoides	10	40	SG			10							
Acmena smithii	5	20	TG		5								
Adiantum aethiopicum	0.1	5	EG						0.1				
Calochlaena dubia	5	50	OG							5			
Cayratia clematidea	0.1	1	OG							0.1			
Clematis aristata	0.2	10	OG							0.2			
Commersonia fraseri	5	50	SG			5							
Cordyline stricta	2	30	OG							2			
Cryptocarya glaucescens	12	30	TG		12								
Cryptocarya rigida	3	3	SG			3							
Diploglottis australis	0.1	1	TG		0.1								
Embelia australiana	0.8	10	OG							0.8			
Eucalyptus agglomerata	4	3	TG		4								
Eucalyptus deanei	2	1	TG		2								
Eucalyptus saligna	25	10	TG		25								
Eupomatia laurina	3	30	SG			3							
Gahnia melanocarpa	0.1	1	GG				0.1						
Gahnia sieberiana	0.4	10	GG				0.4						
Geitonoplesium cymosum	0.1	3	OG							0.1			
Gynochthodes jasminoides	0.1	10	OG							0.1			
Hydrocotyle sibthorpioides	0.1	1	FG					0.1					
Lastreopsis decomposita	0.4	10	EG						0.4				
Melicope micrococca	8	20	SG			8							
Palmeria scandens	3	20	OG							3			
Parsonsia straminea	0.1	1	OG							0.1			
Pellaea falcata	1	50	EG						1				
Pittosporum multiflorum	1	20	SG			1							
Pteris tremula	10	30	EG						10				
Rhodamnia rubescens	0.2	2	SG			0.2							
Ripogonum fawcettianum	6	50	OG							6			
Rubus rosifolius	20	200	SG			20							
Sarcopetalum harveyanum	0.4	10	OG							0.4			
Smilax australis	0.4	20	OG							0.4			
Solanum stelligerum	0.1	1	SG			0.1							
Stenocarpus salignus	2	1	SG			2							
Stephania japonica	0.1	1	OG							0.1			
Synoum glandulosum subsp. glandulosum	1	10	SG			1							
Tylophora paniculata	0.2	5	OG							0.2			
Urtica incisa	0.1	1	FG					0.1					
Wilkiea huegeliana	0.4	5	SG			0.4							

Easting	343708
Northing	6342269
Orientation	11
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	6
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	135
BAM Attributes 1x1 plot (%)	79
Litter (%)	75
	85
	80
	70
	85

D1.6 3150 – Hunter Coast Ranges Turpentine Wet Forest (Derived)

LCEB_HTP4

Date	9/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCEB_HTP4		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3150	Derived	43	41	7	10	3	5	3	13	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	94.4	94	37.3	16.5	2.6	2.1	0.5	35	0	0.3	
Acacia implexa	2	10	SG			2							
Acmena smithii	0.5	1	TG		0.5								
Adiantum aethiopicum	0.1	10	EG						0.1				
Alpinia caerulea	0.4	2	FG					0.4					
Archontophoenix cunninghamiana	2	5	OG							2			
Breynia oblongifolia	0.1	1	SG			0.1							
Calochlaena dubia	1	50	OG							1			
Cayratia clematidea	0.1	1	OG							0.1			
Cissus hypoglauca	10	50	OG							10			
Cordyline stricta	10	50	OG							10			
Cryptocarya glaucescens	10	20	TG		10								
Cryptocarya microneura	25	50	TG		25								
Cyathea australis	5	20	OG							5			
Cyathochaeta diandra	0.5	5	GG				0.5						
Dioscorea transversa	0.5	50	OG							0.5			
Doodia Aspera	0.3	30	EG						0.3				
Elaeocarpus reticulatus	0.4	1	SG			0.4							
Ficus coronata	2	1	SG			2							
Gahnia clarkei	2	20	GG				2						
Geitonoplesium cymosum	0.1	1	OG							0.1			
Grona varians	0.1	10	OG							0.1			
Gynochthodes jasminoides	0.1	1	OC										
Hibbertia dentata	1	100	OG							1			
Hibbertia scandens	0.1	1	OG							0.1			
Hydrocotyle sibthorpioides	0.1	10	FG					0.1					
Lantana camara	0.3	1	HT									0.3	
Oplismenus imbecillis	0.1	20	GG				0.1						
Pittosporum multiflorum	1	20	SG			1							
Pseuderanthemum variabile	0.5	100	FG					0.5					
Psychotria loniceroides	0.1	1	SG			0.1							
Pteridium esculentum	0.1	1	EG						0.1				
Rubus rosifolius	0.5	10	SG			0.5							
Schelhammera undulata	1	1000	FG					1					
Schizomeria ovata	0.3	1	TG		0.3								
Sloanea australis	1	10	TG		1								
Smilax australis	5	50	OG							5			
Syncarpia glomulifera	0.4	1	TG		0.4								
Synoum glandulosum subsp. glandulosum	10	50	SG			10							
Tasmannia insipida	0.1	1	SG			0.1							
Tetrastigma nitens	0.1	1	OG							0.1			
Trochocarpa laurina	0.1	1	TG		0.1								
Viola silicestris	0.1	20	FG					0.1					
Wilkiea huegeliana	0.3	1	SG			0.3							

Easting	346410
Northing	6335099
Orientation	310
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	317
BAM Attributes 1x1 plot (%)	90
Litter (%)	90
	85
	90
	95
	90

LCEB_HTP7

Date	9/11/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCEB_HTP7		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3150	Derived	51	50	3	18	6	3	5	15	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	113.7	113.2	35.1	54.1	13	2.3	1.8	6.9	0	0.5	
Acacia schinoides	10	10	SG			10							
Adiantum aethiopicum	0.1	10	EG						0.1				
Allocasuarina torulosa	0.1	1	TG		0.1								
Archontophoenix cunninghamiana	0.1	1	OG							0.1			
Astrotricha latifolia	1	10	SG			1							
Breynia oblongifolia	0.2	1	SG			0.2							
Calochlaena dubia	1	100	OG							1			
Cassytha glabella	1	100	OG							1			
Cheilanthes sieberi	0.1	10	EG						0.1				
Cissus antarctica	1	20	OG							1			
Commersonia fraseri	40	100	SG			40							
Cordyline stricta	0.5	5	OG							0.5			
Daviesia ulicifolia	0.1	1	SG			0.1							
Denhamia silvestris	0.1	1	SG			0.1							
Doodia Aspera	1	100	EG						1				
Entolasia stricta	5	500	GG				5						
Eucalyptus pilularis	5	2	TG		5								
Eustrephus latifolius	0.1	1	OG							0.1			
Gahnia clarkei	1	10	GG				1						
Geitonoplesium cymosum	0.1	10	OG							0.1			
Goodenia ovata	0.1	1	SG			0.1							
Grona varians	0.1	1	OG							0.1			
Hibbertia dentata	2	200	OG							2			
Hibbertia scandens	0.1	1	OG							0.1			
Howittia trilocularis	0.2	1	SG			0.2							
Imperata cylindrica	1	100	GG				1						
Kennedia rubicunda	0.1	1	OG							0.1			
Lantana camara	0.5	10	HT									0.5	
Lepidosperma laterale	0.5	5	GG				0.5						
Leucopogon juniperinus	0.1	5	SG			0.1							
Lobelia purpurascens	2	2000	FG					2					
Lomandra longifolia	0.5	5	GG				0.5						
Olearia nernstii	0.1	1	SG			0.1							
Oplismenus imbecillis	5	3000	GG				5						
Oxalis perennans	0.1	10	FG					0.1					
Ozothamnus diosmifolius	0.1	1	SG			0.1							
Persoonia linearis	0.5	2	SG			0.5							
Platycerium bifurcatum	0.1	1	EG						0.1				
Pomaderris ligustrina	1	10	SG			1							
Pseuderanthemum variabile	0.2	20	FG					0.2					
Psychotria loniceroides	0.1	1	SG			0.1							
Pteridium esculentum	0.5	50	EG						0.5				
Rhodamnia rubescens	0.2	1	SG			0.2							
Rubus moluccanus	0.1	1	SG			0.1							
Sarcopetalum harveyanum	0.5	10	OG							0.5			
Smilax australis	0.1	1	OG							0.1			
Stephania japonica	0.1	1	OG							0.1			
Syncarpia glomulifera	30	25	TG		30								
Synoum glandulosum subsp. glandulosum	0.1	1	SG			0.1							
Tetrastigma nitens	0.1	1	OG							0.1			
Zieria pilosa	0.1	1	SG			0.1							

Easting	345935
Northing	6334767
Orientation	104
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	144

BAM Attributes 1x1 plot (%)	87
Litter (%)	90
	85
	85
	95
	80

D1.7 3151 – Northwest Sydney Sandstone Grey Myrtle Dry Rainforest (Mod-good)

HTP-MS-75

Date	2/3/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-75		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3151	Mod-good	46	45	3	17	4	6	5	10	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	93.2	91.2	4.4	66.2	2.7	1.6	8.4	7.9	0	2	
Adiantum aethiopicum	1	40	EG						1				
Adiantum hispidulum var. hispidulum	1	50	EG						1				
Alectryon subcinereus	1	5	SG			1							
Aneilema acuminatum	0.4	40	FG					0.4					
Backhousia myrtifolia	40	100	SG			40							
Breynia oblongifolia	0.1	1	SG			0.1							
Bursaria spinosa	1	10	SG			1							
Cayratia clematidea	0.4	5	OG							0.4			
Cissus hypoglauca	3	20	OG							3			
Claoxylon australe	1	5	SG			1							
Clematis aristata	0.4	10	OG							0.4			
Clerodendrum tomentosum	1	5	TG		1								
Cyperus tetraphyllus	0.1	10	GG				0.1						
Denhamia silvestris	0.1	1	SG			0.1							
Dianella caerulea	0.1	1	FG					0.1					
Dichondra sp. Inglewood	0.4	50	FG					0.4					
Dioscorea transversa	1	10	OG							1			
Diospyros australis	1	10	SG			1							
Doodia australis	5	100	EG						5				
Elaeodendron australe	2	5	SG			2							
Ficus coronata	1	5	SG			1							
Galium leiocarpum	0.1	1	FG					0.1					
Geitonoplesium cymosum	0.4	10	OG							0.4			
Grona varians	0.1	2	OG							0.1			
Gynochthodes jasminoides	2	20	OG							2			
Lantana camara	2	20	HT									2	
Lepidosperma cf. laterale	0.2	5	GG				0.2						
Marsdenia suaveolens	0.1	1	OG							0.1			
Melaleuca styphelioides	15	8	SG			15							
Melicope micrococca	1	5	SG			1							
Microlaena stipoides var. stipoides	0.4	10	GG				0.4						
Myrsine variabilis	1	5	SG			1							
Notelaea longifolia	0.4	3	TG		0.4								
Oplismenus imbecillis	2	100	GG				2						
Pandorea pandorana	0.4	5	OG							0.4			
Pellaea falcata	1	50	EG						1				
Pellaea paradoxa	0.4	20	EG						0.4				
Phyllanthus gunnii	0.1	2	SG			0.1							
Pittosporum multiflorum	0.4	5	SG			0.4							
Plectranthus parviflorus	0.2	5	FG					0.2					
Pseuderanthemum variabile	0.4	30	FG					0.4					
Rubus moluccanus	0.1	1	SG			0.1							
Solanum stelligerum	1	20	SG			1							
Stephania japonica	0.1	2	OG							0.1			
Streblus brunonianus	3	10	TG		3								
Synoum glandulosum subsp. glandulosum	0.4	2	SG			0.4							

Easting	333224
Northing	6361272
Orientation	73
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	17
BAM Attributes 1x1 plot (%)	69
Litter (%)	90
	65
	40
	80
	70

D1.8 3152 – Hunter Range Turpentine-Grey Myrtle Gully Forest (Mod-good)

TL-02

Date	8/28/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TL02		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3152	Mod-good	43	42	6	15	2	7	4	8	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	115.4	115.3	81	17.6	0.9	3	3	9.8	0.1	0	
Acacia prominens	0.2	1	TG		0.2								
Acacia schinoides	2	7	SG			2							
Astrotricha latifolia	2	10	SG			2							
Backhousia myrtifolia	60	30	TG		60								
Cirsium vulgare	0.1	1	EX								0.1		
Cissus antarctica	0.3	2	OG							0.3			
Claoxylon australe	0.2	1	SG			0.2							
Clerodendrum tomentosum	0.2	2	TG		0.2								
Commersonia fraseri	10	12	SG			10							
Dianella caerulea	0.3	4	FG					0.3					
Doodia aspera	2	40	EG						2				
Elaeocarpus reticulatus	0.4	2	SG			0.4							
Ficus rubiginosa	0.3	1	TG		0.3								
Galium leiocarpum	0.3	5	FG					0.3					
Geitonoplesium cymosum	0.3	5	OG							0.3			
Hibbertia dentata	1	25	OG							1			
Hydrocotyle sibthorpioides	1	30	FG					1					
Melicope micrococca	0.2	1	SG			0.2							
Microlaena stipoides var. stipoides	0.4	10	GG				0.4						
Myrsine variabilis	0.2	1	SG			0.2							
Notelaea longifolia	0.3	2	TG		0.3								
Notelaea venosa	0.5	5	SG			0.5							
Oplismenus imbecillis	0.5	25	GG				0.5						
Oxalis perennans	0.1	1	FG					0.1					
Pandorea pandorana	0.4	10	OG							0.4			
Parsonsia purpurascens	2	1	OG							2			
Passiflora herbertiana	0.5	20	OG							0.5			
Pellaea paradoxa	0.3	3	EG						0.3				
Pittosporum undulatum	0.2	2	SG			0.2							
Plectranthus parviflorus	0.3	3	FG					0.3					
Pomaderris ferruginea	0.3	2	SG			0.3							
Prostanthera incisa	0.5	2	SG			0.5							
Pseuderanthemum variabile	0.5	60	FG					0.5					
Psychotria loniceroides	0.3	2	SG			0.3							
Pteris tremula	0.5	10	EG						0.5				
Pyrrosia rupestris	0.2	3	EG						0.2				
Smilax australis	5	30	OG							5			
Solanum brownii	0.2	2	SG			0.2							
Solanum prinophyllum	0.5	6	FG					0.5					
Solanum stelligerum	0.3	2	SG			0.3							
Stenocarpus salignus	0.3	1	SG			0.3							
Stephania japonica var. discolor	0.3	1	OG							0.3			
Syncarpia glomulifera	20	10	TG		20								

Easting	333647
Northing	6357513
Orientation	262
Plot size	20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	32
BAM Attributes 1x1 plot (%)	50
Litter (%)	40
	60
	55
	45
	50

D1.9 3230 – Central Coast Escarpment Moist Forest (Mod-good)

LSCM-03

Date	9/19/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-03		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	32	32	3	9	5	5	2	8	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	132.1	132.1	82	4.8	32.2	0.8	0.6	11.7	0	0	
Acacia spp.	0.5	1	SG			0.5							
Acacia ulicifolia	0.5	5	SG			0.5							
Acrotriche divaricata	1	10	SG			1							
Adiantum spp.	0.1	2	EG						0.1				
Allocasuarina torulosa	2	20	TG		2								
Banksia marginata	0.5	1	SG			0.5							
Cyathochaeta diandra	0.1	1	GG				0.1						
Dampiera purpurea	0.1	10	FG					0.1					
Dampiera stricta	0.3	20	FG					0.3					
Dianella caerulea	0.1	10	FG					0.1					
Entolasia stricta	30	1000	GG				30						
Eucalyptus piperita	60	50	TG		60								
Gahnia spp.	1	10	GG				1						
Geitonoplesium cymosum	0.1	2	OG							0.1			
Glycine clandestina	0.1	10	OG							0.1			
Gompholobium grandiflorum	1	25	SG			1							
Grona varians	0.1	1	OG							0.1			
Hibbertia dentata	10	2000	OG							10			
Hibbertia spp.	0.1	1	SG			0.1							
Lepidosperma spp.	0.1	2	GG				0.1						
Lomandra longifolia	1	50	GG				1						
Lomatia silaifolia	0.1	1	SG			0.1							
Pandorea pandorana	0.2	1	OG							0.2			
Parsonsia straminea	1	10	OG							1			
Patersonia spp.	0.2	20	FG					0.2					
Persoonia linearis	1	10	SG			1							
Pteridium esculentum	0.5	20	EG						0.5				
Smilax australis	0.1	1	OG							0.1			
Smilax glyciphylla	0.1	10	OG							0.1			
Syncarpia glomulifera	20	20	TG		20								
Synoum glandulosum subsp. glandulosum	0.1	1	SG			0.1							
Viola hederacea	0.1	5	FG					0.1					

Easting	344076
Northing	6335959
Orientation	303
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	64
BAM Attributes 1x1 plot (%)	78
Litter (%)	80
	85
	70
	85
	70

LSCM-08

Date	9/20/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-08		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	27	27	3	10	4	3	1	6	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	118.1	118.1	90	15.3	10.6	0.4	0.2	1.6	0	0	
Acrotriche divaricata	1.5	2	SG			1.5							
Allocasuarina torulosa	10	20	TG		10								
Banksia marginata	0.1	1	SG			0.1							
Calochlaena dubia	0.1	5	OG							0.1			
Clematis spp.	0.1	1	OG							0.1			
Cryptocarya rigida	7	10	SG			7							
Dianella caerulea	0.2	15	FG					0.2					
Elaeocarpus reticulatus	0.1	1	SG			0.1							
Entolasia stricta	5	200	GG				5						
Eucalyptus piperita	40	10	TG		40								
Gahnia spp.	0.1	5	GG				0.1						
Hibbertia dentata	1	50	OG							1			
Leucopogon lanceolatus	0.1	1	SG			0.1							
Lobelia purpurascens	0.1	2	FG					0.1					
Lomandra longifolia	5	50	GG				5						
Lomatia silaifolia	1	20	SG			1							
Pandorea pandorana	0.1	1	OG							0.1			
Parsonsia straminea	0.1	3	OG							0.1			
Persoonia linearis	0.3	1	SG			0.3							
Pseuderanthemum variabile	0.1	2	FG					0.1					
Psychotria spp.	0.1	1	SG			0.1							
Pteridium esculentum	0.2	20	EG						0.2				
Schoenus melanostachys	0.5	10	GG				0.5						
Smilax australis	0.2	50	OG							0.2			
Syncarpia glomulifera	40	10	TG		40								
Synoum glandulosum subsp. glandulosum	5	50	SG			5							
Xylomelum pyriforme	0.1	1	SG			0.1							

Easting	344071
Northing	6339967
Orientation	22
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	82
BAM Attributes 1x1 plot (%)	87
Litter (%)	85
	90
	90
	75
	95

LSCM-11

Date	9/21/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-11		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	40	40	6	11	5	5	3	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	113.4	113.4	70.8	3.3	20.3	0.5	5.2	13.3	0	0	
Acacia maidenii	0.2	1	TG		0.2								
Acacia ulicifolia	0.2	1	SG			0.2							
Acrotriche divaricata	0.3	10	SG			0.3							
Allocasuarina torulosa	10	20	TG		10								
Archontophoenix cunninghamiana	0.1	1	OG							0.1			
Banksia marginata	0.2	5	SG			0.2							
Calochlaena dubia	10	100	OG							10			
Cissus hypoglauca	0.1	20	OG							0.1			
Clematis spp.	0.1	1	OG							0.1			
Cryptocarya rigida	0.1	1	SG			0.1							
Cryptostylis erecta	0.1	1	FG					0.1					
Cyathea australis	2	6	OG							2			
Cyathochaeta diandra	0.1	10	GG				0.1						
Dianella caerulea	0.1	10	FG					0.1					
Elaeocarpus reticulatus	1	5	SG			1							
Entolasia stricta	5	200	GG				5						
Eucalyptus piperita	20	2	TG		20								
Gahnia spp.	15	80	GG				15						
Gleichenia dicarpa	0.1	20	EG						0.1				
Gynochthodes jasminoides	0.1	1	OG							0.1			
Hibbertia dentata	0.1	25	OG							0.1			
Hibbertia spp.	0.1	1	SG			0.1							
Histiopteris incisa	0.1	1	EG						0.1				
Kennedia rubicunda	0.1	1	OG							0.1			
Leptospermum polygalifolium	0.5	10	SG			0.5							
Lobelia purpurascens	0.1	1	FG					0.1					
Lomandra longifolia	0.1	1	GG				0.1						
Parsonsia straminea	0.2	10	OG							0.2			
Persoonia linearis	0.2	5	SG			0.2							
Pseuderanthemum variabile	0.1	10	FG					0.1					
Psychotria loniceroides	0.1	1	SG			0.1							
Pteridium esculentum	5	30	EG						5				
Rubus rosifolius	0.1	1	SG			0.1							
Schizomeria ovata	0.5	6	TG		0.5								
Schoenus melanostachys	0.1	1	GG				0.1						
Smilax australis	0.5	50	OG							0.5			
Syncarpia glomulifera	40	20	TG		40								
Synoum glandulosum subsp. glandulosum	0.5	2	SG			0.5							
Trochocarpa laurina	0.1	5	TG		0.1								
Unknown native forb	0.1	1	FG					0.1					

Easting	343918
Northing	6340234
Orientation	210
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	113

BAM Attributes 1x1 plot (%)	83
Litter (%)	95
	75
	85
	65
	95

LSCM-29

Date	9/27/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-29		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	40	41	5	10	10	4	1	11	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	153.8	153.9	80.5	26.7	43.5	0.4	0.2	2.6	0	0	
Acacia irrorata subsp. irrorata	25	50	SG			25							
Acacia maidenii	0.3	3	TG		0.3								
Allocasuarina torulosa	0.2	1	TG		0.2								
Angophora floribunda	20	10	TG		20								
Billardiera scandens	0.1	1	OG							0.1			
Breynia oblongifolia	0.2	2	SG			0.2							
Clematis glycinoides	0.1	1	OG							0.1			
Dianella caerulea	0.1	10	FG					0.1					
Entolasia stricta	40	2000	GG				40						
Eragrostis spp.	0.1	1	GG				0.1						
Eucalyptus agglomerata	40	50	TG		40								
Eucalyptus saligna	20	10	TG		20								
Eustrephus latifolius	0.1	2	OG							0.1			
Exocarpos strictus	0.1	1	SG			0.1							
Gahnia microstachya	0.1	1	GG				0.1						
Gahnia sieberiana	0.3	3	GG				0.3						
Geitonoplesium cymosum	0.1	10	OG							0.1			
Glycine clandestina	0.1	10	OG							0.1			
Gonocarpus spp.	0.1	1	FG					0.1					
Goodenia heterophylla	0.1	3	FG					0.1					
Hardenbergia violacea	1	200	OG							1			
Hibbertia scandens	0.1	1	OG							0.1			
Imperata cylindrica	2	50	GG				2						
Jacksonia spp.	0.1	1	SG			0.1							
Kennedia rubicunda	0.2	2	OG							0.2			
Lepidosperma laterale	0.3	1	GG				0.3						
Lomandra cylindrica	0.1	1	GG				0.1						
Lomandra longifolia	0.2	2	GG				0.2						
Opercularia aspera	0.1	2	FG					0.1					
Ozothamnus diosmifolius	0.1	1	SG			0.1				0.1			
Panicum simile	0.3	3	GG				0.3						
Passiflora herbertiana	0.5	5	OG							0.5			
Persoonia linearis	0.1	1	SG			0.1							
Polyscias sambucifolia	0.5	5	SG			0.5							
Psychotria loniceroides	0.3	3	SG			0.3							
Pteridium esculentum	0.2	5	EG						0.2				
Rubus parvifolius	0.1	1	SG			0.1							
Smilax australis	0.2	1	OG							0.2			
Synoum glandulosum subsp. glandulosum	0.2	1	SG			0.2							
Themeda triandra	0.1	1	GG				0.1						

Easting	335014
Northing	6351093
Orientation	352
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	91

BAM Attributes 1x1 plot (%)	69
Litter (%)	70
	75
	85
	65
	50

HTP-MS-13

Date	8/31/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS13		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	43	43	9	11	7	5	1	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	163.1	163.1	41.1	73.5	37.1	1.4	0.4	9.6	0	0	
Acacia parvipinnula	45	500	SG			45							
Allocasuarina torulosa	1	2	TG		1								
Angophora costata	3	2	TG		3								
Angophora floribunda	5	6	TG		5								
Billardiera scandens	3	50	OG							3			
Breynia oblongifolia	0.4	3	SG			0.4							
Clematis glycinoides	0.1	1	OG							0.1			
Clerodendrum tomentosum	1	4	TG		1								
Corymbia maculata	1	1	TG		1								
Denhamia silvestris	0.2	5	SG			0.2							
Dianella caerulea var. producta	0.6	10	FG					0.6					
Dichondra repens	0.1	10	FG					0.1					
Entolasia marginata	5	50	GG				5						
Entolasia stricta	15	100	GG				15						
Eucalyptus agglomerata	3	1	TG		3								
Eucalyptus piperita	22	8	TG		22								
Eucalyptus punctata	5	1	TG		5								
Gahnia aspera	0.1	1	GG				0.1						
Geitonoplesium cymosum	1	20	OG							1			
Glycine clandestina	0.2	10	OG							0.2			
Gonocarpus teucrioides	0.2	10	FG					0.2					
Goodenia heterophylla	0.4	5	FG					0.4					
Hardenbergia violacea	0.8	10	OG							0.8			
Hibbertia dentata	2	30	OG							2			
Hibbertia scandens	0.4	5	OG							0.4			
Imperata cylindrica	1	30	GG				1						
Kennedia rubicunda	1	15	OG							1			
Leucopogon juniperinus	0.1	2	SG			0.1							
Lomandra longifolia	0.6	8	GG				0.6						
Notelaea longifolia	0.1	1	TG		0.1								
Oplismenus imbecillis	0.4	20	GG				0.4						
Ozothamnus diosmifolius	1	10	SG			1							
Panicum simile	15	100	GG				15						
Passiflora herbertiana subsp. herbertiana	0.1	1	OG							0.1			
Persoonia linearis	1	5	SG			1							
Platysace lanceolata	20	200	SG			20							
Podolobium ilicifolium	1	10	SG			1							
Polyscias sambucifolia	3	20	SG			3							
Pomaderris spp.	1	20	SG			1							
Pteridium esculentum	0.4	10	EG						0.4				
Senecio diaschides	0.1	3	FG					0.1					
Smilax australis	1	30	OG							1			
Solanum stelligerum	0.8	10	SG			0.8							

Easting	334817
Northing	6352096
Orientation	109
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	8
BAM Attributes 1x1 plot (%)	67
Litter (%)	60
	75
	55
	80
	65

HTP-MS-48

Date	6/20/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-48		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	40	40	7	9	6	9	1	8	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	120	120	56	34.4	3.4	2.2	0.1	23.9	0	0	
Acacia schinoides	3	8	SG			3							
Acrotriche divaricata	20	100	SG			20							
Allocasuarina torulosa	3	10	TG		3								
Angophora euryphylla	1	2	TG		1								
Calochlaena dubia	20	100	OG							20			
Corybas aconitiflorus	0.1	25	FG					0.1					
Cymbidium suave	0.1	1	OG							0.1			
Dianella caerulea	0.4	20	FG					0.4					
Elaeocarpus reticulatus	0.6	3	SG			0.6							
Entolasia stricta	0.4	20	GG				0.4						
Eucalyptus acmenoides	4	2	TG		4								
Eucalyptus agglomerata	8	6	TG		8								
Eucalyptus saligna	25	8	TG		25								
Gahnia sieberiana	0.4	5	GG				0.4						
Geitonoplesium cymosum	0.1	1	OG							0.1			
Hibbertia dentata	1	30	OG							1			
Hydrocotyle sibthorpioides	0.1	5	FG					0.1					
Lagenifera stipitata	0.1	5	FG					0.1					
Lepidosperma laterale	0.4	10	GG				0.4						
Leucopogon juniperinus	4	50	SG			4							
Lindsaea microphylla	0.1	5	EG						0.1				
Lobelia purpurascens	0.8	50	FG					0.8					
Lomandra longifolia	2	30	GG				2						
Oplismenus aemulus	0.1	3	GG				0.1						
Oplismenus imbecillis	0.1	5	GG				0.1						
Oxalis exilis	0.1	3	FG					0.1					
Parsonsia straminea	0.2	20	OG							0.2			
Persoonia linearis	4	10	SG			4							
Pittosporum multiflorum	0.4	5	SG			0.4							
Pseuderanthemum variabile	0.4	60	FG					0.4					
Psychotria loniceroides	1	10	SG			1							
Pterostylis spp.	0.1	5	FG					0.1					
Schelhammera undulata	0.1	10	FG					0.1					
Smilax australis	2	50	OG							2			
Smilax glyciphylla	0.4	10	OG							0.4			
Syncarpia glomulifera subsp. glomulifera	12	5	TG		12								
Trochocarpa laurina	3	2	TG		3								
Tylophora barbata	0.1	2	OG							0.1			
Zieria arborescens	0.4	4	SG			0.4							
Zieria smithii	1	10	SG			1							

Easting	342686
Northing	6343935
Orientation	81
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	17
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	15
BAM Attributes 1x1 plot (%)	76
Litter (%)	90
	75
	70
	65
	80

HTP-MS-60

Date	6/26/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-60		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	37	37	6	8	4	7	2	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	84	84	55.3	15.2	3.4	2.9	4.1	3.1	0	0	
Acacia maidenii	0.1	1	TG		0.1								
Acacia ulicifolia	0.6	10	SG			0.6							
Acrotriche divaricata	5	30	SG			5							
Allocasuarina torulosa	8	20	TG		8								
Archontophoenix cunninghamiana	0.1	5	OG							0.1			
Billardiera scandens	0.1	2	OG							0.1			
Brunoniella australis	0.1	1	FG					0.1					
Calochlaena dubia	1	20	OG							1			
Cissus hypoglauca	0.1	1	OG							0.1			
Dampiera stricta	0.1	5	FG					0.1					
Dianella caerulea	0.4	10	FG					0.4					
Elaeocarpus reticulatus	0.4	5	SG			0.4							
Entolasia stricta	1	50	GG				1						
Eucalyptus pilularis	32	16	TG		32								
Glycine clandestina	0.1	2	OG							0.1			
Guioa semiglauca	0.1	1	TG		0.1								
Hibbertia dentata	1	40	OG							1			
Hibbertia scandens	0.1	1	OG							0.1			
Lepidosperma laterale	0.4	10	GG				0.4						
Leucopogon lanceolatus	0.4	5	SG			0.4							
Lindsaea microphylla	0.1	5	EG						0.1				
Lomandra longifolia	1	20	GG				1						
Microlaena stipoides var. stipoides	1	30	GG				1						
Pandorea pandorana subsp. pandorana	0.1	1	OG							0.1			
Patersonia glabrata	2	60	FG					2					
Persoonia linearis	5	50	SG			5							
Platysace lanceolata	0.4	10	SG			0.4							
Podolobium ilicifolium	3	40	SG			3							
Pomax umbellata	0.1	5	FG					0.1					
Pseuderanthemum variabile	0.1	20	FG					0.1					
Pteridium esculentum	4	50	EG						4				
Schizomeria ovata	0.1	1	TG		0.1								
Smilax australis	0.4	5	OG							0.4			
Smilax glyciphylla	0.1	2	OG							0.1			
Syncarpia glomulifera subsp. glomulifera	15	30	TG		15								
Synoum glandulosum subsp. glandulosum	0.4	5	SG			0.4							
Xanthosia tridentata	0.1	2	FG					0.1					

Easting	347041
Northing	6336027
Orientation	19
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	3
30-49	7
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	54
BAM Attributes 1x1 plot (%)	69
Litter (%)	90
	85
	75
	40
	55

HTP-MS-62

Date	6/26/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-62		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	50	50	9	10	10	4	4	13	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	108.2	108.2	50.3	7	31.7	0.8	3.9	14.5	0	0	
Acacia maidenii	0.1	1	TG		0.1								
Acrotriche divaricata	5	40	SG			5							
Adiantum aethiopicum	0.4	20	EG						0.4				
Allocasuarina torulosa	8	20	TG		8								
Alphitonia excelsa	0.1	1	TG		0.1								
Amyema miquelii	0.1	1	OG							0.1			
Angophora floribunda	1	1	TG		1								
Archontophoenix cunninghamiana	0.1	5	OG							0.1			
Billardiera scandens	0.2	10	OG							0.2			
Breynia oblongifolia	0.1	2	SG			0.1							
Calanthe triplicata	0.1	1	FG					0.1					
Calochlaena dubia	5	50	OG							5			
Cissus hypoglauca	1	1	OG							1			
Cordyline stricta	1	30	OG							1			
Dianella caerulea	0.4	10	FG					0.4					
Doodia australis	0.4	10	EG						0.4				
Elaeocarpus reticulatus	0.1	1	SG			0.1							
Entolasia marginata	1	20	GG				1						
Entolasia stricta	5	80	GG				5						
Eucalyptus pilularis	24	8	TG		24								
Gahnia sieberiana	20	80	GG				20						
Glochidion ferdinandi	1	2	TG		1								
Guioa semiglauca	0.1	1	TG		0.1								
Hibbertia dentata	5	100	OG							5			
Hibbertia scandens	0.4	5	OG							0.4			
Imperata cylindrica	2	50	GG				2						
Lasiopetalum ferrugineum var. cordatum	0.4	5	SG			0.4							
Lepidosperma laterale	0.4	10	GG				0.4						
Leucopogon lanceolatus	0.1	3	SG			0.1							
Lindsaea microphylla	0.1	5	EG						0.1				
Lomandra confertifolia	0.4	5	GG				0.4						
Lomandra longifolia	2	30	GG				2						
Microlaena stipoides var. stipoides	0.1	5	GG				0.1						
Opercularia varia	0.1	5	FG					0.1					
Oplismenus imbecillis	0.6	20	GG				0.6						
Pandorea pandorana subsp. pandorana	0.4	5	OG							0.4			
Parsonsia straminea	0.1	3	OG							0.1			
Persoonia linearis	0.2	1	SG			0.2							
Polyscias sambucifolia	0.4	3	SG			0.4							
Pseuderanthemum variabile	0.2	30	FG					0.2					
Psychotria loniceroides	0.1	1	SG			0.1							
Pteridium esculentum	3	50	EG						3				
Rubus moluccanus var. trilobus	0.2	5	SG			0.2							
Rubus nebulosus	0.1	1	OG							0.1			
Schoenus melanostachys	0.2	3	GG				0.2						
Smilax australis	1	20	OG							1			
Smilax glyciphylla	0.1	3	OG							0.1			
Syncarpia glomulifera subsp. glomulifera	15	20	TG		15								
Synoum glandulosum subsp. glandulosum	0.4	5	SG			0.4							
Trochocarpa laurina	1	3	TG		1								

Easting	347055
Northing	6335771
Orientation	8
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	7
30-49	10
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	36
BAM Attributes 1x1 plot (%)	69
Litter (%)	75
	85
	65
	75
	45

TC-09

Date	1/28/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-09		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Mod-good	42	42	7	11	8	5	2	9	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	111.4	111.4	36.2	12.2	51.9	6.2	1.1	3.8	0	0	
Acacia parramattensis	10	15	TG		10								
Allocasuarina torulosa	1	4	TG		1								
Amyema spp.	0.2	1	OG							0.2			
Angophora costata	5	8	TG		5								
Angophora floribunda	18	15	TG		18								
Billardiera scandens	0.1	1	OG							0.1			
Breynia oblongifolia	1	5	SG			1							
Cheilanthes sieberi	0.1	1	EG						0.1				
Cissus hypoglauca	0.1	3	OG							0.1			
Clerodendrum tomentosum	0.1	1	TG		0.1								
Dianella caerulea	0.5	7	FG					0.5					
Dichondra repens	5	100	FG					5					
Echinopogon ovatus	0.1	1	GG				0.1						
Eucalyptus piperita	2	1	TG		2								
Gahnia sieberiana	10	25	GG				10						
Galium spp.	0.1	1	FG					0.1					
Glycine clandestina	0.1	2	OG							0.1			
Hibbertia scandens	2	5	OG							2			
Hydrocotyle laxiflora	0.5	20	FG					0.5					
Imperata cylindrica	20	100	GG				20						
Jacksonia scoparia	0.1	1	SG			0.1							
Kennedia rubicunda	0.1	1	OG							0.1			
Lepidosperma laterale	1	10	GG				1						
Leucopogon juniperinus	2	5	SG			2							
Lomandra longifolia	0.3	2	GG				0.3						
Myrsine variabilis	0.8	6	SG			0.8							
Notelaea longifolia	0.1	1	TG		0.1								
Oplismenus aemulus	10	20	GG				10						
Oplismenus imbecillis	10	50	GG				10						
Oxalis perennans	0.1	3	FG					0.1					
Ozothamnus diosmifolius	0.3	3	SG			0.3							
Pandorea pandorana subsp. pandorana	0.1	1	OG							0.1			
Persoonia linearis	0.2	1	SG			0.2							
Pittosporum revolutum	0.3	2	SG			0.3							
Poa labillardierei var. labillardierei	0.5	3	GG				0.5						
Polyscias sambucifolia	1	3	SG			1							
Psychotria loniceroides	0.5	3	SG			0.5							
Pteridium esculentum	1	4	EG						1				
Rubus parvifolius	5	12	SG			5							
Smilax australis	1	5	OG							1			
Stephania japonica	0.1	3	OG							0.1			
Synoum glandulosum subsp. glandulosum	1	2	SG			1							

Easting	335547
Northing	6351220
Orientation	165
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	1
30-49	9
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	4
BAM Attributes 1x1 plot (%)	46
Litter (%)	50
	60
	40
	35
	45

D1.10 3230 – Central Coast Escarpment Moist Forest (Plantation)

LCSM-12

Date	9/21/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-12		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Plantation	35	35	5	12	4	4	1	9	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	134.1	134.1	61.7	51.5	2.7	0.4	2	15.8	0	0	
Acacia parvipinnula	0.5	2	SG			0.5							
Acacia schinoides	40	20	SG			40							
Acrotriche divaricata	0.1	1	SG			0.1							
Allocasuarina torulosa	0.1	1	TG		0.1								
Astrotricha latifolia	5	50	SG			5							
Billardiera scandens	0.1	1	OG							0.1			
Cassytha glabella	0.1	5	OG							0.1			
Clematis glycinoides	0.1	1	OG							0.1			
Clerodendrum tomentosum	0.1	1	TG		0.1								
Comesperma spp.	0.1	1	SG			0.1							
Dianella caerulea	0.1	5	FG					0.1					
Entolasia stricta	0.1	20	GG				0.1						
Eucalyptus agglomerata	60	40	TG		60								
Eucalyptus saligna	0.5	4	TG		0.5								
Gahnia microstachya	0.1	1	GG				0.1						
Gahnia sieberiana	0.5	15	GG				0.5						
Geitonoplesium cymosum	0.1	2	OG							0.1			
Gonocarpus spp.	0.1	1	FG					0.1					
Hibbertia aspera	0.1	1	SG			0.1							
Hibbertia dentata	15	250	OG							15			
Hibbertia scandens	0.1	1	OG							0.1			
Hydrocotyle sibthorpioides	0.1	1	FG					0.1					
Lasiopetalum ferrugineum	5	20	SG			5							
Lobelia purpurascens	0.1	30	FG					0.1					
Lomandra longifolia	2	25	GG				2						
Ozothamnus diosmifolius	0.3	5	SG			0.3							
Parsonsia straminea	0.1	3	OG							0.1			
Pimelea latifolia subsp. hirsuta	0.1	10	SG			0.1							
Platysace lanceolata	0.1	20	SG			0.1							
Pteridium esculentum	2	20	EG						2				
Rubus rosifolius	0.1	5	SG			0.1							
Smilax australis	0.1	30	OG							0.1			
Stephania japonica	0.1	1	OG							0.1			
Syncarpia glomulifera	1	2	TG		1								
Synoum glandulosum subsp. glandulosum	0.1	10	SG			0.1							

Easting	343674
Northing	6340781
Orientation	0
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	82
Litter (%)	75
	85
	90
	80
	80

LCSM-14

Date	9/22/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-14		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Plantation	31	30	4	10	4	3	3	6	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	124.9	114.9	20.4	88.2	4.2	0.3	0.7	1.1	10	0	
Acacia spp.	40	20	SG			40							
Acmena smithii	0.1	1	TG		0.1								
Adiantum aethiopicum	0.1	10	EG						0.1				
Astrotricha latifolia	10	20	SG			10							
Cassytha glabella	0.1	1	OG							0.1			
Clematis glycinoides	0.1	5	OG							0.1			
Commersonia fraseri	30	50	SG			30							
Cordyline australis	10	50	EX								10		
Cryptocarya rigida	5	10	SG			5							
Eucalyptus agglomerata	20	5	TG		20								
Gahnia aspera	0.1	1	GG				0.1						
Gahnia microstachya	2	20	GG				2						
Gymnostachys anceps	0.1	1	FG					0.1					
Hydrocotyle sibthorpioides	0.1	10	FG					0.1					
Lepidosperma laterale	2	20	GG				2						
Logania albiflora	0.1	1	SG			0.1							
Malvaceae shrub	0.5	5	SG			0.5							
Marsdenia spp.	0.1	1	OG							0.1			
Microlaena stipoides	0.1	1	GG				0.1						
Notelaea longifolia	0.1	2	TG		0.1								
Pellaea falcata	0.1	10	EG						0.1				
Pimelea spp.	0.1	1	SG			0.1							
Pittosporum spinescens	0.4	4	SG			0.4							
Pseuderanthemum variabile	0.1	10	FG					0.1					
Rhodamnia rubescens	0.1	5	SG			0.1							
Sarcopetalum harveyanum	0.1	1	OG							0.1			
Smilax australis	0.3	1	OG							0.3			
Stephania japonica	0.4	2	OG							0.4			
Syncarpia glomulifera	0.2	1	TG		0.2								
Unknown native fern	0.5	5	EG						0.5				
Zieria arborescens	2	20	SG			2							

Easting	342906
Northing	6342296
Orientation	7
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	No
Hollows	0
Length logs (m)	141
BAM Attributes 1x1 plot (%)	60
Litter (%)	50
	70
	60
	55
	65

LCSM-17

Date	9/25/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Plantation	27	26	3	13	3	0	1	6	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	116.5	116	41	42.3	25.7	0	0.1	6.9	0.5	0	
Acacia parvipinnula	30	20	SG			30							
Acronychia spp.	0.2	1	SG			0.2							
Adiantum aethiopicum	0.1	5	EG						0.1				
Astrotricha latifolia	10	25	SG			10							
Clematis aristata	0.1	1	OG							0.1			
Clerodendrum tomentosum	1	2	TG		1								
Cordyline australis	0.5	5	EX								0.5		
Cryptocarya rigida	0.1	1	SG			0.1							
Denhamia silvestris	0.2	1	SG			0.2							
Eucalyptus saligna	30	15	TG		30								
Eustrephus latifolius	0.2	5	OG							0.2			
Gahnia sieberiana	0.2	2	GG				0.2						
Geitonoplesium cymosum	0.5	20	OG							0.5			
Lepidosperma laterale	25	500	GG				25						
Lomandra longifolia	0.5	5	GG				0.5						
Melicope micrococca	0.1	1	SG			0.1							
Passiflora herbertiana	1	100	OG							1			
Phebalium spp.	0.1	1	SG			0.1							
Pimelea spp.	0.1	1	SG			0.1							
Pittosporum spinescens	0.2	2	SG			0.2							
Polyscias sambucifolia	0.1	1	SG			0.1							
Rhodamnia rubescens	1	5	SG			1							
Rhodomyrtus psidioides	0.1	1	SG			0.1							
Smilax australis	5	50	OG							5			
Stenocarpus salignus	0.1	1	SG			0.1							
Stephania japonica	0.1	1	OG							0.1			
Syncarpia glomulifera	10	5	TG		10								

Easting	342494
Northing	6343128
Orientation	187
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	67
BAM Attributes 1x1 plot (%)	80.4
Litter (%)	80
	78
	92
	80
	72

HTP-MS-57

Date	6/25/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-57		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Plantation	45	44	5	12	6	10	2	9	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	108.2	108.1	30.9	12.1	52.4	1.6	3.1	8	0.1	0	
Acacia irrorata subsp. irrorata	1	2	SG			1							
Acacia ulicifolia	0.4	5	SG			0.4							
Acrotriche divaricata	3	10	SG			3							
Allocasuarina torulosa	1	1	TG		1								
Asterolasia correifolia	5	20	SG			5							
Billardiera scandens	0.1	5	OG							0.1			
Calochlaena dubia	0.1	2	OG							0.1			
Cissus hypoglauca	0.1	1	OG							0.1			
Clematis aristata	0.1	2	OG							0.1			
Cryptostylis spp.	0.1	3	FG					0.1					
Dianella caerulea	0.1	5	FG					0.1					
Entolasia stricta	3	50	GG				3						
Eucalyptus agglomerata	22	30	TG		22								
Eucalyptus scias subsp. scias	0.8	1	TG		0.8								
Gompholobium latifolium	0.4	5	SG			0.4							
Gymnostachys anceps	0.4	5	FG					0.4					
Hibbertia aspera	0.1	2	SG			0.1							
Hibbertia dentata	5	100	OG							5			
Hibbertia scandens	0.4	5	OG							0.4			
Hydrocotyle sibthorpioides	0.1	20	FG					0.1					
Hypochaeris radicata	0.1	2	EX								0.1		
Imperata cylindrica	45	500	GG				45						
Leucopogon lanceolatus	0.1	2	SG			0.1							
Lindsaea microphylla	0.1	5	EG						0.1				
Lobelia purpurascens	0.4	50	FG					0.4					
Lomandra longifolia	1	20	GG				1						
Microlaena stipoides var. stipoides	0.4	10	GG				0.4						
Oplismenus imbecillis	1	20	GG				1						
Ozothamnus diosmifolius	0.4	10	SG			0.4							
Parsonsia straminea	0.1	2	OG							0.1			
Patersonia glabrata	0.1	5	FG					0.1					
Persoonia linearis	0.1	1	SG			0.1							
Platysace lanceolata	0.4	10	SG			0.4							
Polyscias sambucifolia	1	10	SG			1							
Pseuderanthemum variabile	0.1	10	FG					0.1					
Pteridium esculentum	3	50	EG						3				
Pterostylis spp.	0.1	4	FG					0.1					
Rhodamnia rubescens	0.2	1	SG			0.2							
Schelhammera undulata	0.1	5	FG					0.1					
Schizomeria ovata	0.1	1	TG		0.1								
Schoenoplectus mucronatus	2	10	GG				2						
Smilax australis	2	50	OG							2			
Stephania japonica	0.1	1	OG							0.1			
Syncarpia glomulifera subsp. glomulifera	7	15	TG		7								
Viola hederacea	0.1	5	FG					0.1					

Easting	344023
Northing	6340649
Orientation	227
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
30-49	10
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	18
BAM Attributes 1x1 plot (%)	53
Litter (%)	95
	50
	40
	35
	45

D1.11 3230 – Central Coast Escarpment Moist Forest (Derived)

LECB-HTP1

Date	9/9/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCEB_HTP1		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Derived	55	52	7	16	11	10	1	7	1	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	106.8	106.4	4.2	5	93.6	1.7	1	0.9	0.1	0.3	
Acacia elongata	0.1	1	SG			0.1							
Acacia maidenii	0.1	1	TG		0.1								
Acrotriche divaricata	2	20	SG			2							
Allocasuarina torulosa	0.1	2	TG		0.1								
Andropogon virginicus	0.2	20	HT									0.2	
Angophora floribunda	0.1	1	TG		0.1								
Aristida vagans	0.1	10	GG				0.1						
Astrotricha latifolia	0.1	1	SG			0.1							
Billardiera scandens	0.2	20	OG							0.2			
Breynia oblongifolia	0.1	1	SG			0.1							
Callicoma serratifolia	0.1	1	SG			0.1							
Cassytha glabella	0.1	1	OG							0.1			
Comesperma ericinum	0.1	1	SG			0.1							
Conyza bonariensis	0.1	2	EX								0.1		
Cymbopogon refractus	1	100	GG				1						
Daviesia ulicifolia	0.3	5	SG			0.3							
Denhamia silvestris	0.1	1	SG			0.1							
Dianella caerulea	0.1	1	FG					0.1					
Digitaria spp.	0.1	10	GG				0.1						
Elaeocarpus reticulatus	0.4	4	SG			0.4							
Entolasia stricta	1	100	GG				1						
Eragrostis spp.	0.1	10	GG				0.1						
Eucalyptus pilularis	3	25	TG		3								
Gahnia clarkei	0.5	2	GG				0.5						
Glochidion ferdinandi	0.2	1	TG		0.2								
Glycine clandestina	0.1	10	OG							0.1			
Gonocarpus tetragynus	0.2	25	FG					0.2					
Goodenia heterophylla subsp. heterophylla	0.1	1	FG					0.1					
Grona varians	0.1	10	FG					0.1					
Hibbertia dentata	0.2	1	OG							0.2			
Hibbertia scandens	0.1	1	OG							0.1			
Imperata cylindrica	80	5000	GG				80						
Kennedia rubicunda	0.1	5	OG							0.1			
Lantana camara	0.1	1	HT									0.1	
Lepidosperma laterale	10	100	GG				10						
Leucopogon juniperinus	0.1	1	SG			0.1							
Leucopogon lanceolatus	0.1	1	SG			0.1							
Lobelia purpurascens	0.2	20	FG					0.2					
Lomandra filiformis subsp. filiformis	0.1	5	GG				0.1						
Lomandra longifolia	0.2	10	GG				0.2						
Oxalis perennans	0.1	10	FG					0.1					
Ozothamnus diosmifolius	0.2	2	SG			0.2							
Pandorea pandorana	0.1	1	OG							0.1			
Persoonia linearis	0.1	1	SG			0.1							
Platysace lanceolata	1	20	SG			1							
Polyscias sambucifolia	0.1	1	SG			0.1							
Pomaderris ferruginea	0.1	1	SG			0.1							
Pomax umbellata	0.2	50	FG					0.2					
Pseuderanthemum variabile	0.1	3	FG					0.1					
Pteridium esculentum	1	10	EG						1				
Solenogyne bellioides	0.1	1	FG					0.1					
Syncarpia glomulifera	0.5	1	TG		0.5								
Themeda triandra	0.5	20	GG				0.5						
Trochocarpa laurina	0.2	2	TG		0.2								
Viola hederacea	0.5	100	FG					0.5					

Easting	346485
Northing	6335149
Orientation	313
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	7

BAM Attributes 1x1 plot (%)	66
Litter (%)	70
	60
	65
	50
	85

LECB-HTP5

Date	9/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCEB_HTP5		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Derived	33	32	3	9	8	6	2	4	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	110	80	1.6	32.1	42.7	1	1.1	1.5	0	30	
Acacia ulicifolia	1	10	SG			1							
Acrotriche divaricata	0.5	10	SG			0.5							
Allocasuarina torulosa	1	5	TG		1								
Andropogon virginicus	30	1000	HT									30	
Breynia oblongifolia	0.1	1	SG			0.1							
Calochlaena dubia	0.1	1	OG							0.1			
Cheilanthes sieberi	0.1	20	EG						0.1				
Cordyline stricta	0.3	3	OG							0.3			
Daviesia ulicifolia	15	25	SG			15							
Echinopogon caespitosus	0.1	10	GG				0.1						
Elaeocarpus reticulatus	0.2	1	SG			0.2							
Entolasia stricta	10	1000	GG				10						
Eucalyptus pilularis	0.1	1	TG		0.1								
Gahnia clarkei	1	10	GG				1						
Gonocarpus tetragynus	0.1	10	FG					0.1					
Hibbertia dentata	1	100	OG							1			
Hibbertia scandens	0.1	1	OG							0.1			
Hypericum gramineum	0.1	20	FG					0.1					
Imperata cylindrica	25	2000	GG				25						
Lepidosperma laterale	1	10	GG				1						
Leptospermum polygalifolium	15	60	SG			15							
Lomandra longifolia	5	50	GG				5						
Oxalis perennans	0.1	1	FG					0.1					
Ozothamnus diosmifolius	0.1	1	SG			0.1							
Panicum simile	0.1	1	GG				0.1						
Persoonia linearis	0.1	1	SG			0.1							
Platysace lanceolata	0.1	1	SG			0.1							
Pomax umbellata	0.5	50	FG					0.5					
Pteridium esculentum	1	50	EG						1				
Pterostylis spp.	0.1	10	FG					0.1					
Schoenus melanostachys	0.5	1	GG				0.5						
Solenogyne bellioides	0.1	10	FG					0.1					
Trochocarpa laurina	0.5	2	TG		0.5								

Easting	347230
Northing	6335844
Orientation	214
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	0
Litter (%)	0
	0
	0
	0
	0

HTP-MS-61

Date	6/26/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-61		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230	Derived	36	35	6	12	6	4	1	6	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	100	99.9	0.8	20.7	63	0.4	5	10	0	0.1	
Acacia maidenii	0.1	2	TG		0.1								
Acacia ulicifolia	0.6	2	SG			0.6							
Acrotriche divaricata	5	50	SG			5							
Allocasuarina torulosa	0.1	1	TG		0.1								
Astrotricha latifolia	0.4	5	SG			0.4							
Billardiera scandens	0.1	3	OG							0.1			
Breynia oblongifolia	1	30	SG			1							
Calochlaena dubia	0.4	10	OG							0.4			
Centella asiatica	0.1	10	FG					0.1					
Daviesia ulicifolia	0.1	1	SG			0.1							
Denhamia silvestris	0.1	5	SG			0.1							
Drosera spp.	0.1	5	FG					0.1					
Elaeocarpus reticulatus	0.6	5	SG			0.6							
Entolasia stricta	1	40	GG				1						
Eucalyptus pilularis	0.1	4	TG		0.1								
Gahnia sieberiana	2	20	GG				2						
Glochidion ferdinandi	0.2	5	TG		0.2								
Gonocarpus teucrioides	0.1	5	FG					0.1					
Hibbertia dentata	8	100	OG							8			
Hibbertia scandens	0.4	5	OG							0.4			
Imperata cylindrica	55	500	GG				55						
Lantana camara	0.1	1	HT									0.1	
Lepidosperma laterale	1	30	GG				1						
Lomandra longifolia	1	15	GG				1						
Oxalis spp.	0.1	1	FG					0.1					
Persoonia linearis	2	15	SG			2							
Phyllanthus hirtellus	0.1	5	SG			0.1							
Platysace lanceolata	0.4	10	SG			0.4							
Polyscias sambucifolia	0.4	3	SG			0.4							
Pomaderris ferruginea	10	60	SG			10							
Pteridium esculentum	5	100	EG						5				
Schizomeria ovata	0.1	3	TG		0.1								
Schoenus melanostachys	3	20	GG				3						
Smilax australis	1	20	OG							1			
Smilax glyciphylla	0.1	1	OG							0.1			
Trochocarpa laurina	0.2	1	TG		0.2								

Easting	357088
Northing	6335709
Orientation	231
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	12
Litter (%)	15
	5
	5
	25
	10

D1.12 3237 – Hunter Range Blue Gum Gully Forest (Mod-good)

HTP-MS-78

Date	2/4/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-78		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3237	Mod-good	58	58	8	18	7	7	0	18	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	97.4	97.4	46.8	26.2	7.4	5.2	0	11.8	0	0	
Acacia irrorata subsp. irrorata	5	20	SG			5							
Acacia maidenii	3	10	TG		3								
Acacia parvipinnula	0.2	2	SG			0.2							
Allocasuarina torulosa	3	8	TG		3								
Arthropodium minus	0.1	1	FG					0.1					
Astrotricha latifolia	1	10	SG			1							
Billardiera scandens	0.1	1	OG							0.1			
Brachychiton populneus	1	2	TG		1								
Breynia oblongifolia	5	50	SG			5							
Cissus antarctica	2	10	OG							2			
Cissus hypoglauca	0.8	5	OG							0.8			
Clematis glycinoides	1	30	OG							1			
Clerodendrum tomentosum	0.8	5	TG		0.8								
Croton verreauxii	2	10	SG			2							
Cymbidium suave	0.1	1	OG							0.1			
Denhamia silvestris	1	10	SG			1							
Dianella caerulea	1	40	FG					1					
Dichondra repens	0.4	50	FG					0.4					
Digitaria ramularis	1	40	GG				1						
Dodonaea triquetra	1	10	SG			1							
Echinopogon ovatus	0.4	10	GG				0.4						
Entolasia marginata	2	80	GG				2						
Eucalyptus saligna	8	4	TG		8								
Eucalyptus sparsifolia	15	10	TG		15								
Eustrephus latifolius	1	20	OG							1			
Geitonoplesium cymosum	2	20	OG							2			
Glycine clandestina	0.2	20	OG							0.2			
Grona varians	0.4	10	OG							0.4			
Gymnostachys anceps	0.1	1	FG					0.1					
Gynochthodes jasminoides	0.1	1	OG							0.1			
Hardenbergia violacea	1	20	OG							1			
Hibbertia scandens	0.1	2	OG							0.1			
Lepidosperma cf. laterale	1	40	GG				1						
Lobelia purpurascens	3	50	FG					3					
Lomandra longifolia	1	30	GG				1						
Maekawaea rhytidophylla	0.4	20	OG							0.4			
Microlaena stipoides	1	30	GG				1						
Notelaea longifolia	1	5	TG		1								
Oplismenus imbecillis	1	50	GG				1						
Pandorea pandorana	0.4	5	OG							0.4			
Parsonsia straminea	0.6	3	OG							0.6			
Passiflora herbertiana	0.4	5	OG							0.4			
Persoonia linearis	2	10	SG			2							
Phyllanthus gunnii	2	40	SG			2							
Pittosporum multiflorum	1	10	SG			1							
Pittosporum revolutum	0.4	5	SG			0.4							
Pittosporum undulatum	0.1	1	SG			0.1							
Plectranthus parviflorus	0.4	20	FG					0.4					
Podolobium ilicifolium	0.1	1	SG			0.1							
Polyscias sambucifolia	0.4	3	SG			0.4							
Pseuderanthemum variabile	0.2	30	FG					0.2					
Psychotria loniceroides	2	10	SG			2							
Rubus parvifolius	1	20	SG			1							
Smilax australis	1	20	OG							1			
Solanum stelligerum	1	20	SG			1							
Stephania japonica	0.2	5	OG							0.2			
Syncarpia glomulifera	15	5	TG		15								
Trema tomentosa var. aspera	1	5	SG			1							

Easting	331618
Northing	6368594
Orientation	20
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	1
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	2
Length logs (m)	59
BAM Attributes 1x1 plot (%)	73
Litter (%)	95
	70
	30
	90
	80

HTP-MS-79

Date	2/4/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	331691
Plot Name	HTP-MS-79		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6368428
PCT	3237	Mod-good	54	53	6	17	5	10	3	12	0	1		Orientation	64
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	99.9	99.8	34	24.8	13.4	4	0.9	22.7	0	0.1		BAM Attributes 20x50m plot	
Acacia irrorata subsp. irrorata	5	20	SG			5								Stem classes	
Acacia maidenii	1	3	TG		1									80+	0
Acacia parvipinnula	1	5	SG			1								50-79	4
Adiantum aethiopicum	0.1	5	EG						0.1					30-49	1
Allocasuarina torulosa	5	10	TG		5									20-29	Yes
Angophora euryphylla	8	2	TG		8									10-19	Yes
Astrotricha latifolia	2	10	SG			2								5-9	Yes
Breynia oblongifolia	1	10	SG			1								<5	Yes
Cayratia clematidea	0.4	5	OG							0.4				Hollows	1
Cissus antarctica	3	30	OG							3				Length logs (m)	51
Cissus hypoglauca	10	50	OG							10					
Clematis glycinoides	0.4	10	OG							0.4				BAM Attributes 1x1 plot (%)	74
Clerodendrum tomentosum	1	5	TG		1									Litter (%)	45
Croton verreauxii	2	5	SG			2									55
Denhamia silvestris	0.2	5	SG			0.2									85
Dianella caerulea	0.6	20	FG					0.6							90
Dichondra repens	0.1	10	FG					0.1							95
Digitaria ramularis	0.4	10	GG				0.4								
Doodia australis	0.4	20	EG						0.4						
Entolasia marginata	5	100	GG				5								
Eucalyptus saligna	15	3	TG		15										
Eucalyptus sparsifolia	4	2	TG		4										
Eustrephus latifolius	0.4	5	OG							0.4					
Galium leiocarpum	0.1	5	FG					0.1							
Geitonoplesium cymosum	1	20	OG							1					
Glycine clandestina	0.2	10	OG							0.2					
Grona varians	1	50	OG							1					
Hydrocotyle sibthorpioides	0.1	10	FG					0.1							
Lantana camara	0.1	1	HT									0.1			
Lomandra longifolia	1	10	GG				1								
Microlaena stipoides	2	50	GG				2								
Myrsine variabilis	1	5	SG			1									
Oplismenus imbecillis	5	100	GG				5								
Oxalis exilis	0.1	1	FG					0.1							
Ozothamnus diosmifolius	0.4	5	SG			0.4									
Pandorea pandorana	0.2	5	OG							0.2					
Parsonsia straminea	1	1	OG							1					
Passiflora herbertiana	0.1	5	OG							0.1					
Persoonia linearis	1	10	SG			1									
Phyllanthus gunnii	2	20	SG			2									
Pittosporum undulatum	1	1	SG			1									
Plectranthus parviflorus	2	80	FG					2							
Polyscias sambucifolia	0.4	10	SG			0.4									
Pseuderanthemum variabile	0.4	30	FG					0.4							
Psychotria loniceroides	2	20	SG			2									
Pteridium esculentum	0.4	10	EG						0.4						
Rubus moluccanus	1	10	SG			1									
Rubus parvifolius	1	10	SG			1									
Sigesbeckia orientalis subsp. orientalis	0.4	5	FG					0.4							
Solanum prinophyllum	0.1	2	FG					0.1							
Solanum stelligerum	0.8	10	SG			0.8									
Stephania japonica	5	50	OG							5					
Trema tomentosa var. aspera	3	10	SG			3									
Wahlenbergia gracilis	0.1	1	FG					0.1							

HTP-MS-80

Date	2/5/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-80		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3237	Mod-good	65	65	5	20	10	15	2	13	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	106.8	106.8	38	18.4	38.5	5.4	0.3	6.2	0	0	
Acacia irrorata subsp. irrorata	5	30	SG			5							
Allocasuarina torulosa	12	20	TG		12								
Arthropodium minus	0.2	20	FG					0.2					
Astrotricha latifolia	1	5	SG			1							
Austrostipa pubescens	1	50	GG				1						
Billardiera scandens	0.1	3	OG							0.1			
Brachyscome trisecta	0.1	5	FG					0.1					
Breynia oblongifolia	1	10	SG			1							
Brunoniella australis	0.2	20	FG					0.2					
Cassinia trinerva	1	2	SG			1							
Cheilanthes sieberi	0.1	5	EG						0.1				
Cissus antarctica	0.2	5	OG							0.2			
Cissus hypoglauca	0.4	5	OG							0.4			
Clematis aristata	0.8	20	OG							0.8			
Clerodendrum tomentosum	3	10	TG		3								
Coronidium elatum	0.1	3	SG			0.1							
Croton verreauxii	0.4	2	SG			0.4							
Denhamia silvestris	2	10	SG			2							
Dianella caerulea	0.4	10	FG					0.4					
Dichondra repens	1	100	FG					1					
Diospyros australis	0.4	2	SG			0.4							
Echinopogon caespitosus var. caespitosus	3	50	GG				3						
Entolasia marginata	2	50	GG				2						
Eucalyptus michaeliana	5	1	TG		5								
Eucalyptus punctata	15	4	TG		15								
Eustrephus latifolius	1	30	OG							1			
Exocarpos strictus	0.4	3	SG			0.4							
Galium leiocarpum	0.1	10	FG					0.1					
Geitonoplesium cymosum	0.2	5	OG							0.2			
Geranium homeanum	0.1	5	FG					0.1					
Glycine clandestina	1	50	OG							1			
Grona varians	0.4	40	OG							0.4			
Hibbertia scandens	0.1	2	OG							0.1			
Hydrocotyle sibthorpioides	0.6	40	FG					0.6					
Indigofera australis	0.1	1	SG			0.1							
Lepidosperma cf. laterale	0.1	1	GG				0.1						
Lobelia purpurascens	2	100	FG					2					
Lomandra longifolia	3	20	GG				3						
Markawaea rhytidophylla	0.1	1	OG							0.1			
Marsdenia flavescens	0.8	10	OG							0.8			
Mentha satureioides	0.1	10	FG					0.1					
Microlaena stipoides	1	50	GG				1						
Myrsine variabilis	0.8	2	SG			0.8							
Oplismenus aemulus	25	500	GG				25						
Oxalis perennans	0.1	5	FG					0.1					
Paspalidium distans	0.4	10	GG				0.4						
Pellaea falcata	0.2	10	EG						0.2				
Persoonia linearis	0.1	1	SG			0.1							
Phyllanthus gunnii	3	30	SG			3							
Pittosporum undulatum	1	3	SG			1							
Plectranthus parviflorus	0.1	5	FG					0.1					
Poa affinis	2	50	GG				2						
Polyscias sambucifolia	0.1	2	SG			0.1							
Pseuderanthemum variabile	0.2	20	FG					0.2					
Psychotria loniceroides	1	5	SG			1							
Rhodamnia rubescens	0.1	1	SG			0.1							
Rubus parvifolius	0.4	10	SG			0.4							
Smilax australis	0.1	1	OG							0.1			
Solanum stelligerum	0.4	10	SG			0.4							
Stephania japonica	1	20	OG							1			
Syncarpia glomulifera	3	2	TG		3								
Themeda triandra	1	30	GG				1						
Trema tomentosa var. aspera	0.1	1	SG			0.1							
Vernonia cinerea	0.1	5	FG					0.1					
Veronica plebeia	0.1	10	FG					0.1					

Easting	331183
Northing	6370690
Orientation	58
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	4
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	31
BAM Attributes 1x1 plot (%)	74
Litter (%)	75
	85
	80
	70
	60

D1.13 3238 – Hunter Range Colluvial Apple-Gum Forest (Mod-good)

Benchmark

D1.14 3239 – Hunter Range Sheltered Grey Gum Forest (Mod-good)

HTP-MS-18

Date	9/26/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	336632
Plot Name	HTP-MS18		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6348221
PCT	3239	Mod-good	49	49	6	16	8	7	1	11	0	0		Orientation	38
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	96.9	96.9	36.4	26.1	23.9	3	0.1	7.4	0	0		BAM Attributes 20x50m plot	
Acacia schinoides	3	8	SG			3								Stem classes	
Acrotriche latifolia	3	40	SG			3								80+	0
Allocasuarina torulosa	2	6	TG		2									50-79	3
Angophora costata	5	4	TG		5									30-49	4
Austrostipa pubescens	0.8	5	GG				0.8							20-29	Yes
Billardiera scandens	0.2	5	OG							0.2				10-19	Yes
Brachyscome spp.	0.4	10	FG					0.4						5-9	Yes
Breynia oblongifolia	0.4	1	SG			0.4								<5	Yes
Cassinia spp.	4	40	SG			4								Hollows	1
Cassytha glabella	0.1	1	OG							0.1				Length logs (m)	70
Cheilanthes sieberi	0.1	5	EG						0.1						
Cissus hypoglauca	0.1	2	OG							0.1				BAM Attributes 1x1 plot (%)	81
Claoxylon australe	1	3	SG			1								Litter (%)	45
Clematis glycinoides	0.1	1	OG							0.1					95
Denhamia silvestris	0.8	4	SG			0.8									80
Dianella caerulea	1	20	FG					1							100
Echinopogon caespitosus	0.8	20	GG				0.8								85
Entolasia marginata	3	50	GG				3								
Entolasia stricta	15	200	GG				15								
Eucalyptus agglomerata	8	6	TG		8										
Eucalyptus punctata	3	5	TG		3										
Exocarpos strictus	0.1	1	SG			0.1									
Gahnia melanocarpa	3	20	GG				3								
Galium spp.	0.1	5	FG					0.1							
Geitonoplesium cymosum	0.1	1	OG							0.1					
Goodenia heterophylla	0.8	15	FG					0.8							
Grona varians	0.1	3	OG							0.1					
Hardenbergia violacea	0.1	2	OG							0.1					
Hibbertia aspera	2	30	SG			2									
Hibbertia dentata	0.8	10	OG							0.8					
Hydrocotyle sibthorpioides	0.1	5	FG					0.1							
Lepidosperma cf. laterale	0.8	10	GG				0.8								
Leucopogon juniperinus	0.2	1	SG			0.2									
Lomandra confertifolia subsp. rubiginosa	0.4	5	GG				0.4								
Notelaea longifolia	0.4	2	TG		0.4										
Oplismenus imbecillis	0.1	5	GG				0.1								
Ozothamnus diosmifolius	0.2	3	SG			0.2									
Parsonsia straminea	0.4	5	OG							0.4					
Persoonia linearis	5	20	SG			5									
Pittosporum multiflorum	0.8	5	SG			0.8									
Pittosporum undulatum	0.6	4	SG			0.6									
Platysace lanceolata	3	40	SG			3									
Podolobium ilicifolium	1	10	SG			1									
Pseuderanthemum variabile	0.2	5	FG					0.2							
Psychotria loniceroides	1	6	SG			1									
Sarcopetalum harveyanum	0.4	5	OG							0.4					
Smilax australis	5	80	OG							5					
Solanum prinophyllum	0.4	5	FG					0.4							
Syncarpia glomulifera	18	25	TG		18										

HTP-MS-19

Date	10/5/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-19		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	44	46	7	15	12	7	0	5	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	88.3	127.3	69	38.2	14.2	3.3	0	2.6	0	0	
Acacia schinoides	4	15	SG			4							
Acrotriche divaricata	0.4	5	SG			0.4							
Allocasuarina torulosa	3	4	TG		3								
Angophora costata	3	5	TG		3								
Astrotricha latifolia	1	8	SG			1							
Austrostipa pubescens	1	10	GG				1						
Billardiera scandens	0.1	3	OG							0.1			
Brachyscome multifida	0.8	20	FG					0.8					
Cassinia cunninghamii	0.1	1	SG			0.1							
Daviesia genistifolia	2	10	SG			2							
Dianella caerulea	1	20	FG					1					
Dichelachne crinita	0.6	15	GG				0.6						
Dichelachne micrantha	0.4	5	GG				0.4						
Entolasia marginata	5	100	GG				5						
Entolasia stricta	4	50	GG				4						
Eucalyptus agglomerata	10	4	TG		10								
Eucalyptus punctata	8	3	TG		8								
Euchiton involucratus	0.1	4	FG					0.1					
Exocarpos strictus	0.1	1	SG			0.1							
Galium leiocarpum	0.2	10	FG					0.2					
Geitonoplesium cymosum	0.4	5	OG							0.4			
Gonocarpus teucrioides	0.2	5	FG					0.2					
Goodenia heterophylla	0.4	10	FG					0.4					
Hardenbergia violacea	1	20	OG							1			
Imperata cylindrica	0.4	10	GG				0.4						
Kennedia rubicunda	1	10	OG							1			
Lepidosperma laterale	0.2	5	GG				0.2						
Leucopogon juniperinus	0.1	1	SG			0.1							
Lomandra confertifolia subsp. rubiginosa	0.4	5	GG				0.4						
Lomandra filiformis	0.4	20	GG				0.4						
Lomandra longifolia	0.8	6	GG				0.8						
Oplismenus imbecillis	0.2	5	GG				0.2						
Ozothamnus diosmifolius	1	10	SG			1							
Persoonia linearis	0.1	1	SG			0.1							
Pittosporum revolutum	0.2	2	SG			0.2							
Pittosporum undulatum	0.1	1	SG			0.1							
Platysace lanceolata	8	100	SG			8							
Plectranthus parviflorus	0.6	15	FG					0.6					
Poa affinis	0.8	20	GG				0.8						
Podolobium ilicifolium	20	100	SG			20							
Polyscias sambucifolia	0.1	1	SG			0.1							
Prostanthera incana	1	8	SG		8	1							
Smilax australis	0.1	1	OG		25					0.1			
Syncarpia glomulifera subsp. glomulifera	6	5	TG		12								

Easting	335733
Northing	6349364
Orientation	347
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	2
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	12

BAM Attributes 1x1 plot (%)	78
Leaf Litter (%)	75
	80
	65
	85
	85

HTP-MS-25

Date	10/10/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-25		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	40	40	8	14	9	4	1	4	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	96.6	96.6	41	34.2	11.5	4	0.2	5.7	0	0	
Eucalyptus crebra	12	3	TG		12								
Eucalyptus punctata	8	2	TG		8								
Angophora euryphylla	5	3	TG		5								
Syncarpia glomulifera	4	1	TG		4								
Allocasuarina torulosa	4	8	TG		4								
Eucalyptus acmenoides	1	1	TG		1								
Corymbia maculata	2	3	TG		2								
Acacia parvipinnula	8	15	SG			8							
Astrotricha latifolia	5	30	SG			5							
Dodonaea triquetra	1	20	SG			1							
Podolobium ilicifolium	10	80	SG			10							
Cassinia cunninghamii	5	50	SG			5							
Plectranthus parviflorus	3	50	FG					3					
Lomandra confertifolia subsp. rubiginosa	2	40	GG				2						
Phyllanthus hirtellus	0.8	30	SG			0.8							
Entolasia stricta	5	100	GG				5						
Ozothamnus diosmifolius	1	20	SG			1							
Denhamia silvestris	0.8	10	SG			0.8							
Hibbertia empetrifolia subsp. empetrifolia	0.6	10	SG			0.6							
Schoenus melanostachys	0.2	3	GG				0.2						
Dianella caerulea	0.8	10	FG					0.8					
Lepidosperma laterale	0.8	20	GG				0.8						
Pittosporum multiflorum	1	10	SG			1							
Lomandra longifolia	1	10	GG				1						
Eucalyptus sparsifolia	5	2	TG		5								
Goodenia ovata	0.4	5	SG			0.4							
Hardenbergia violacea	5	40	OG							5			
Echinopogon caespitosus var. caespitosus	2	50	GG				2						
Xanthorrhoea resinosa	0.4	2	OG							0.4			
Austrostipa pubescens	0.2	5	GG				0.2						
Persoonia linearis	0.4	3	SG			0.4							
Correa reflexa	0.1	2	SG			0.1							
Pandorea pandorana	0.1	1	OG							0.1			
Pyrrosia rupestris	0.2	5	EG						0.2				
Panicum simile	0.2	10	GG				0.2						
Kennedia rubicunda	0.2	5	OG							0.2			
Brachyscome multifida	0.1	4	FG					0.1					
Dianella revoluta	0.1	1	FG					0.1					
Rytidosperma pilosum	0.1	1	GG				0.1						
Platysace lanceolata	0.1	1	SG			0.1							

Easting	334603
Northing	6353872
Orientation	184
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	5
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	13
BAM Attributes 1x1 plot (%)	79
Leaf Litter (%)	75
	80
	65
	90
	85

LCSM-26

Date	9/27/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-26		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	34	34	6	11	3	4	1	9	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	110.8	110.8	60.3	6.9	40.3	0.4	1	1.9	0	0	
Acacia schinoides	1.3	20	SG			1.3							
Allocasuarina torulosa	0.2	5	TG		0.2								
Angophora costata	20	15	TG		20								
Astrotricha latifolia	0.5	15	SG			0.5							
Billardiera scandens	0.1	20	OG							0.1			
Breynia oblongifolia	0.1	3	SG			0.1							
Cassinia spp.	0.5	20	SG			0.5							
Clerodendrum tomentosum	0.1	1	TG		0.1								
Dianella caerulea	0.1	20	FG					0.1					
Dianella longifolia	0.1	1	FG					0.1					
Entolasia stricta	40	1000	GG				40						
Eucalyptus agglomerata	20	3	TG		20								
Eucalyptus punctata	10	10	TG		10								
Eustrephus latifolius	0.2	30	OG							0.2			
Geitonoplesium cymosum	0.1	20	OG							0.1			
Goodenia heterophylla	0.1	1	FG					0.1					
Hardenbergia violacea	1	100	OG							1			
Hibbertia scandens	0.1	5	OG							0.1			
Kennedia rubicunda	0.1	1	OG							0.1			
Lomandra cylindrica	0.1	10	GG				0.1						
Lomandra longifolia	0.2	10	GG				0.2						
Ozothamnus diosmifolius	0.2	5	SG			0.2							
Pandorea pandorana	0.1	1	OG							0.1			
Passiflora herbertiana	0.1	1	OG							0.1			
Persoonia linearis	0.5	7	SG			0.5							
Pittosporum revolutum	0.1	1	SG			0.1							
Platysace lanceolata	0.5	30	SG			0.5							
Podolobium ilicifolium	3	100	SG			3							
Polyscias sambucifolia	0.1	1	SG			0.1							
Pomax umbellata	0.1	5	FG					0.1					
Psychotria loniceroides	0.1	1	SG			0.1							
Pteridium esculentum	1	30	EG						1				
Smilax australis	0.1	5	OG							0.1			
Syncarpia glomulifera	10	1	TG		10								

Easting	335939
Northing	6349101
Orientation	240
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	16
BAM Attributes 1x1 plot (%)	93
Litter (%)	90
	95
	95
	90
	95

TS-17

Date	19/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TS-17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	27	26	6	4	6	5	1	4	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	118.5	118.4	32.5	4.7	42.4	2.1	0.1	36.6	0	0	
Adiantum aethiopicum	0.1	2	EG						0.1				
Allocasuarina torulosa	1	5	TG		1								
Angophora costata	1	1	TG		1								
Calochlaena dubia	35	50	OG							35			
Calotis cuneifolia	0.2	20	FG					0.2					
Calotis dentex	0.2	10	SG			0.2							
Clematis glycinoides	0.1	1	OG										
Cynodon dactylon	2	20	GG				2						
Dianella caerulea	1	20	FG					1					
Doryphora sassafras	0.5	1	TG		0.5								
Entolasia stricta	40	100	GG				40						
Eucalyptus agglomerata	10	15	TG		10								
Eucalyptus punctata	5	30	TG		5								
Gahnia aspera	0.1	1	GG				0.1						
Glycine latifolia	0.5	20	OG							0.5			
Hardenbergia violacea	0.1	1	OG							0.1			
Leucopogon juniperinus	0.5	2	SG			0.5							
Lomandra confertifolia	0.1	2	GG				0.1						
Lomandra multiflora subsp. multiflora	0.1	1	GG				0.1						
Persoonia linearis	1	1	SG			1							
Podolobium ilicifolium	3	20	SG			3							
Pomax umbellata	0.2	10	FG					0.2					
Pseuderanthemum variabile	0.2	10	FG					0.2					
Rytidosperma pilosum	0.1	20	GG				0.1						
Smilax australis	1	20	OG							1			
Syncarpia glomulifera	15	20	TG		15								
Veronica spp.	0.5	20	FG					0.5					

Easting	335997
Northing	6349426
Orientation	321
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	18
BAM Attributes 1x1 plot (%)	61
Litter (%)	60
	65
	50
	70
	60

TS-18

Date	19/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TS-18		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	21	21	4	9	3	4	0	1	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	197.1	197.1	63.7	83.4	40.6	9.2	0	0.2	0	0	
Acacia elongata	0.1	1	SG			0.1							
Acacia implexa	0.5	10	TG		0.5								
Acacia parvipinnula	0.2	5	SG			0.2							
Allocasuarina torulosa	0.2	1	TG		0.2								
Angophora costata	3	10	TG		3								
Calotis dentex	0.1	1	FG					0.1					
Daviesia ulicifolia	40	50	SG			40							
Dianella caerulea	0.5	10	GG				0.5						
Entolasia stricta	40	100	GG				40						
Eucalyptus agglomerata	60	30	TG		60								
Gahnia aspera	0.1	1	GG				0.1						
Gonocarpus tetragynus	4	50	FG					4					
Gonocarpus teucrioides	0.1	10	FG					0.1					
Grona varians	5	100	FG					5					
Hardenbergia violacea	0.2	20	OG							0.2			
Ozothamnus diosmifolius	0.1	1	SG			0.1							
Persoonia linearis	0.5	10	SG			0.5							
Pimelea latifolia subsp. latifolia	20	30	SG			20							
Podolobium ilicifolium	20	30	SG			20							
Polyscias sambucifolia	2	10	SG			2							
Pultenaea microphylla	0.5	2	SG			0.5							

Easting	335660
Northing	6350122
Orientation	188
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	9
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	23
BAM Attributes 1x1 plot (%)	44
Litter (%)	50
	45
	50
	35
	40

TC-46

Date	8/14/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC46		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	58	57	7	17	5	10	5	13	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	**Cover**	**Abundance**	170.6	170.4	90.8	47.1	3.4	11.8	1.9	15.4	0.2	0	
Acacia longifolia	0.3	1	SG			0.3							
Acacia parvipinnula	10	20	SG			10							
Acacia schinoides	3	6	SG			3							
Adiantum aethiopicum	1	30	EG						1				
Adiantum formosum	0.2	1	EG						0.2				
Allocasuarina torulosa	3	10	TG		3								
Astrotricha latifolia	0.3	2	SG			0.3							
Billardiera scandens	0.5	15	OG							0.5			
Celastrus subspicata	2	10	OG							2			
Cheilanthes sieberi	0.2	5	EG						0.2				
Cissus hypoglauca	1	5	OG							1			
Claoxylon australe	0.5	5	SG			0.5							
Clematis glycinoides	0.3	5	OG							0.3			
Clerodendrum tomentosum	0.5	5	TG		0.5								
Cymbidium suave	0.3	1	OG							0.3			
Dianella caerulea	0.5	5	FG					0.5					
Doodia aspera	0.4	5	EG						0.4				
Entolasia stricta	0.5	10	GG				0.5						
Eucalyptus acmenoides	40	3	TG		40								
Eucalyptus fergusonii	7	3	TG		7								
Eucalyptus punctata	5	2	TG		5								
Galium leiocarpum	0.4	20	FG					0.4					
Geitonoplesium cymosum	0.5	10	OG							0.5			
Geranium homeanum	0.4	5	FG					0.4					
Glycine clandestina	0.4	15	OG							0.4			
Hardenbergia violacea	0.2	1	OG							0.2			
Hibbertia dentata	4	30	OG							4			
Hydrocotyle laxiflora	0.5	50	FG					0.5					
Indigofera australis	0.4	2	SG			0.4							
Lomandra longifolia	1	5	GG				1						
Microlaena stipoides var. stipoides	0.4	10	GG				0.4						
Myrsine variabilis	0.3	3	SG			0.3							
Notelaea longifolia	0.3	2	TG		0.3								
Oplismenus aemulus	1	50	GG				1						
Ozothamnus diosmifolius	0.5	3	SG			0.5							
Pandorea pandorana subsp. Pandorana	0.5	3	OG							0.5			
Passiflora edulis	0.2	2	EX								0.2		
Passiflora herbertiana subsp. Herbertiana	0.3	5	OG							0.3			
Pellaea spp.	0.1	2	EG						0.1				
Persoonia linearis	0.2	1	SG			0.2							
Phyllanthus gunnii	0.5	5	SG			0.5							
Pittosporum multiflorum	0.4	3	SG			0.4							
Pittosporum revolutum	0.5	4	SG			0.5							
Plectranthus parviflorus	8	50	FG					8					
Poa affinis	0.5	4	GG				0.5						
Polyscias sambucifolia	1	7	SG			1							
Prostanthera rhombea	25	100	SG			25							
Pseuderanthemum variabile	0.5	20	FG					0.5					
Psychotria loniceroides	3	15	SG			3							
Rhodamnia rubescens	0.2	1	SG			0.2							
Sigesbeckia orientalis subsp. Orientalis	0.5	15	FG					0.5					
Smilax australis	5	40	OG							5			
Solanum prinophyllum	0.2	1	FG					0.2					
Solanum stelligerum	1	20	SG			1							
Stephania japonica	0.4	5	OG							0.4			
Syncarpia glomulifera subsp. Glomulifera	35	30	TG		35								
Veronica plebeia	0.3	10	FG					0.3					
Viola hederacea	0.5	25	FG					0.5					

Easting	333085
Northing	6358391
Orientation	285
Plot size	20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	5
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	38
BAM Attributes 1x1 plot litter (%)	**48**
Litter (%)	40
	55
	65
	35
	45

DL-20

Date	1/23/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_20		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	52	52	6	15	11	10	3	7	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	90.4	90.4	37.5	20	8.1	13.2	0.3	11.3	0	0	
Acacia buxifolia	1	5	SG			1							
Acacia implexa	0.2	1	SG			0.2							
Acacia irrorata	0.5	2	SG			0.5							
Acacia linearifolia	0.5	6	TG		0.5								
Allocasuarina torulosa	5	6	TG		5								
Angophora euryphylla	10	4	TG		10								
Billardiera scandens	0.2	15	OG							0.2			
Blechnum nudum	0.1	15	EG						0.1				
Brachyscome multifida	0.2	20	FG					0.2					
Breynia oblongifolia	0.3	5	SG			0.3							
Cissus antarctica	0.1	5	OG							0.1			
Cyperus gracilis	0.1	30	GG				0.1						
Desmodium spp.	0.2	200	OG							0.2			
Dianella caerulea var. caerulea	2	20	FG					2					
Dianella prunina	0.1	2	FG					0.1					
Entolasia stricta	5	200	GG				5						
Eucalyptus punctata	1	1	TG		1								
Eucalyptus sparsifolia	20	22	TG		20								
Eustrephus latifolius	0.2	20	OG							0.2			
Gonocarpus teucrioides	0.1	2	FG					0.1					
Goodenia heterophylla	0.3	100	FG					0.3					
Hardenbergia violacea	0.5	4	OG							0.5			
Hibbertia empetrifolia subsp. empetrifolia	0.1	4	SG			0.1							
Jacksonia scoparia	0.1	2	SG			0.1							
Lepidosperma laterale	0.1	2	GG				0.1						
Lindsaea microphylla	0.1	2	EG						0.1				
Lobelia purpurascens	0.1	5	FG					0.1					
Lomandra confertifolia	0.1	20	GG				0.1						
Lomandra filiformis subsp. filiformis	0.2	2	GG				0.2						
Lomandra longifolia	0.5	2	GG				0.5						
Lomandra obliqua	0.2	50	GG				0.2						
Lomatia silaifolia	0.4	2	SG			0.4							
Macrozamia communis	10	50	OG							10			
Microlaena stipoides	0.7	50	GG				0.7						
Myrsine howittiana	1	20	SG			1							
Oplismenus aemulus	0.3	50	GG				0.3						
Ozothamnus diosmifolius	0.1	2	SG			0.1							
Persoonia linearis	5	30	SG			5							
Pittosporum revolutum	0.1	2	SG			0.1							
Platysace lanceolata	3	60	SG			3							
Plectranthus parviflorus	10	100	FG					10					
Poa labillardierei var. labillardierei	0.5	2	GG				0.5						
Podolobium ilicifolium	3	20	SG			3							
Polyscias sambucifolia	5	15	SG			5							
Psychotria loniceroides	0.2	2	SG			0.2							
Pteridium esculentum	0.1	2	EG						0.1				
Smilax australis	0.1	2	OG							0.1			
Solanum prinophyllum	0.1	5	FG					0.1					
Syncarpia glomulifera	1	3	TG		1								
Themeda triandra	0.4	5	GG				0.4						
Viola sieberiana	0.2	100	FG					0.2					
Wahlenbergia stricta subsp. stricta	0.1	5	FG					0.1					

Easting	332463
Northing	6366517
Orientation	150
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	5
30-49	8
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	3
Length logs (m)	29
BAM Attributes 1x1 plot (%)	92.6
Litter (%)	95
	98
	95
	90
	85

D1.15 3239 – Hunter Range Sheltered Grey Gum Forest (Plantation)

HTP-MS-76

Date	2/4/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-76		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Plantation	58	53	5	15	11	18	0	4	4	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	138.2	131.4	51.8	43.6	15.5	18.2	0	2.3	6	0.8	
Acacia parvipinnula	25	50	SG			25							
Allocasuarina torulosa	0.4	3	TG		0.4								
Angophora costata	20	50	TG		20								
Arthropodium minus	0.4	20	FG					0.4					
Brachyscome multifida	2	100	FG					2					
Breynia oblongifolia	1	40	SG			1							
Bursaria spinosa	1	5	SG			1							
Cassinia decipiens	0.1	1	SG			0.1							
Clematis glycinoides	0.1	2	OG							0.1			
Conyza bonariensis	3	50	EX								3		
Coronidium elatum subsp. elatum	0.1	5	SG			0.1							
Cymbopogon refractus	2	100	GG				2						
Denhamia silvestris	0.2	5	SG			0.2							
Dianella caerulea	1	50	FG					1					
Dianella revoluta	2	80	FG					2					
Digitaria sanguinalis	0.4	10	EX								0.4		
Eragrostis leptostachya	1	30	GG				1						
Eucalyptus agglomerata	30	40	TG		30								
Eucalyptus punctata	1	10	TG		1								
Euchiton involucratus	3	100	FG					3					
Exocarpos strictus	1	10	SG			1							
Gamochaeta coarctata	0.6	50	EX								0.6		
Geitonoplesium cymosum	1	30	OG							1			
Gonocarpus teucrioides	1	80	FG					1					
Goodenia heterophylla	2	100	FG					2					
Goodenia ovata	4	80	SG			4							
Grona varians	0.4	30	OG							0.4			
Hardenbergia violacea	0.8	20	OG							0.8			
Hibbertia aspera	1	40	SG			1							
Hypericum gramineum	0.4	50	FG					0.4					
Hypochaeris radicata	2	100	EX								2		
Juncus usitatus	0.1	5	GG				0.1						
Lagenifera stipitata	0.4	50	FG					0.4					
Lepidosperma cf. laterale	1	50	GG				1						
Lobelia purpurascens	1	100	FG					1					
Lomandra longifolia	0.8	20	GG				0.8						
Microlaena stipoides	5	200	GG				5						
Oplismenus aemulus	2	100	GG				2						
Ozothamnus diosmifolius	0.2	2	SG			0.2							
Panicum simile	1	40	GG				1						
Pittosporum revolutum	3	20	SG			3							
Platysace lanceolata	1	50	SG			1							
Poa affinis	0.8	20	GG				0.8						
Poa labillardierei var. labillardierei	0.8	20	GG				0.8						
Podolobium ilicifolium	1	10	SG			1							
Polyscias sambucifolia	4	80	SG			4							
Pomax umbellata	1	50	FG					1					
Senecio madagascariensis	0.8	50	HT									0.8	
Sigesbeckia orientalis subsp. orientalis	1	100	FG					1					
Solanum prinophyllum	0.4	10	FG					0.4					
Solanum stelligerum	1	40	SG			1							
Stackhousia viminea	0.6	50	FG					0.6					
Syncarpia glomulifera	0.4	2	TG		0.4								
Themeda triandra	1	50	GG				1						
Vernonia cinerea	0.4	20	FG					0.4					
Veronica plebeia	0.8	80	FG					0.8					
Viola betonicifolia	0.4	30	FG					0.4					
Wahlenbergia gracilis	0.4	30	FG					0.4					

Easting	331490
Northing	6369984
Orientation	269
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	7
BAM Attributes 1x1 plot (%)	11.4
Litter (%)	2
	10
	15
	10
	20

HTP-MS-77

Date	2/4/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-77		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Plantation	44	38	5	9	9	12	0	3	5	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	120.7	88.5	28	33.5	11.6	10.2	0	5.2	31.8	0.4	
Acacia parvipinnula	20	100	SG			20							
Allocasuarina torulosa	1	5	TG		1								
Angophora costata	5	20	TG		5								
Brachyscome multifida	2	80	FG					2					
Bursaria spinosa	2	15	SG			2							
Centaurium tenuiflorum	5	200	EX								5		
Cirsium vulgare	1	20	EX								1		
Conyza bonariensis	5	200	EX								5		
Cynodon dactylon	1	30	GG				1						
Daviesia ulicifolia	1	10	SG			1							
Dichelachne micrantha	0.4	10	GG				0.4						
Eucalyptus agglomerata	15	20	TG		15								
Eucalyptus punctata	2	5	TG		2								
Eucalyptus racemosa	5	10	TG		5								
Euchiton involucratus	0.4	20	FG					0.4					
Exocarpos strictus	0.1	1	SG			0.1							
Gamochaeta purpurea	0.8	50	EX								0.8		
Geitonoplesium cymosum	0.1	1	OG							0.1			
Goodenia heterophylla subsp. heterophylla	1	80	FG					1					
Hardenbergia violacea	5	100	OG							5			
Hypochaeris radicata	20	1000	EX								20		
Juncus continuus	0.4	5	GG				0.4						
Lepidosperma cf. laterale	0.4	5	GG				0.4						
Lobelia purpurascens	0.8	50	FG					0.8					
Microlaena stipoides	5	100	GG				5						
Oplismenus imbecillis	1	30	GG				1						
Oxalis perennans	0.1	5	FG					0.1					
Ozothamnus diosmifolius	3	20	SG			3							
Phyllanthus hirtellus	0.4	10	SG			0.4							
Platysace lanceolata	1	30	SG			1							
Poa labillardierei var. labillardierei	0.4	10	GG				0.4						
Podolobium ilicifolium	5	40	SG			5							
Polyscias sambucifolia	1	10	SG			1							
Pomax umbellata	1	40	FG					1					
Poranthera microphylla	0.1	5	FG					0.1					
Scleria mackaviensis	1	50	GG				1						
Senecio madagascariensis	0.4	20	HT									0.4	
Sigesbeckia orientalis subsp. orientalis	4	100	FG					4					
Stackhousia viminea	0.4	40	FG					0.4					
Stephania japonica	0.1	2	OG							0.1			
Themeda triandra	2	50	GG				2						
Veronica plebeia	0.2	10	FG					0.2					
Viola betonicifolia	0.1	5	FG					0.1					
Wahlenbergia communis	0.1	10	FG					0.1					

Easting	331361
Northing	6370053
Orientation	156
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	0
20-29	No
10-19	No
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	2
BAM Attributes 1x1 plot (%)	21
Litter (%)	60
	10
	5
	20
	10

D1.16 3241 – Lower North White Mahogany-Spotted Gum Moist Forest (Mod-good)

DL-67

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-67		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3241	Mod-good	45	41	8	5	10	4	4	10	2	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	152.6	149	95.4	23	17.6	3.5	3.4	6.1	0.2	3.4	
Acacia linifolia	0.1	1	SG			0.1							
Acmena smithii	50	30	TG		50								
Adiantum aethiopicum	3	100	EG						3				
Adiantum hispidulum	0.2	5	EG						0.2				
Aphanopetalum resinosum	0.6	5	OG							0.6			
Austrostipa verticillata	2	10	GG				2						
Bidens subalternans	0.1	1	EX								0.1		
Brachychiton populneus	1	1	TG		1								
Bursaria spinosa	2	10	SG			2							
Cayratia clematidea	0.5	20	OG							0.5			
Cheilanthes austrotenuifolia	0.1	2	EG						0.1				
Cissus hypoglauca	0.1	2	OG							0.1			
Clematicissus opaca	0.1	3	OG							0.1			
Clerodendrum tomentosum	2	5	TG		2								
Conyza spp.	0.1	1	EX								0.1		
Cryptocarya glaucescens	2	5	TG		2								
Cyperus gracilis	2	20	GG				2						
Cyperus spp.	0.4	10	GG				0.4						
Dichondra repens	0.3	1000	FG					0.3					
Digitaria parviflora	1	10	GG				1						
Entolasia marginata	0.5	10	GG				0.5						
Eucalyptus acmenoides	15	8	TG		15								
Eucalyptus punctata	10	4	TG		10								
Eustrephus latifolius	0.6	20	OG							0.6			
Geitonoplesium cymosum	2	50	OG							2			
Glochidion ferdinandi	15	6	TG		15								
Glycine tabacina	1	10	OG							1			
Imperata cylindrica	0.2	3	GG				0.2						
Lantana camara	3	5	HT									3	
Lepidosperma gunnii	0.1	3	GG				0.1						
Lobelia purpurascens	2	200	FG					2					
Lomandra longifolia	1	15	GG				1						
Notelaea longifolia	0.4	1	TG		0.4								
Oplismenus aemulus	10	500	GG				10						
Oplismenus imbecillis	0.4	40	GG				0.4						
Oxalis radicosa	0.7	200	FG					0.7					
Pellaea falcata	0.1	2	EG						0.1				
Pimelea latifolia	0.5	3	SG			0.5							
Polymeria calycina	0.1	3	OG							0.1			
Rubus parvifolius	0.4	20	SG			0.4							
Senecio madagascariensis	0.4	10	HT									0.4	
Sigesbeckia australiensis	0.5	20	FG					0.5					
Stephania japonica	1	50	OG							1			
Trema tomentosa var. aspera	20	50	SG			20							
Tylophora barbata	0.1	3	OG							0.1			

Easting	329920
Northing	6374057
Orientation	233
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	4
20-29	yes
10-19	yes
5-9	yes
<5	Yes
Hollows	0
Length logs (m)	62
BAM Attributes 1x1 plot (%)	58
Litter (%)	50
	45
	85
	60
	50

HTP-MS-20

Date	10/5/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-20		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3241	Mod-good	57	57	7	17	13	12	0	8	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	110	127.4	54	40.4	18.5	9.9	0	4.6	0	0	
Eucalyptus deanei	2	1	TG		4								
Eucalyptus acmenoides	15	20	TG		20								
Solanum stelligerum	0.2	5	SG			0.2							
Alphitonia excelsa	0.4	3	TG		0.4								
Galium leiocarpum	0.1	5	FG					0.1					
Clematis glycinoides	0.1	1	OG							0.1			
Gahnia melanocarpa	0.1	1	GG				0.1						
Persoonia linearis	0.1	1	SG			0.1							
Dichelachne micrantha	0.4	5	GG				0.4						
Imperata cylindrica	0.6	10	GG				0.6						
Diospyros australis	1	5	SG			1							
Glycine microphylla	0.1	3	OG							0.1			
Myrsine variabilis	0.1	2	SG			0.1							
Acacia implexa	1	5	SG			2							
Entolasia stricta	1	30	GG				1						
Leucopogon juniperinus	0.2	2	SG			0.2							
Goodenia heterophylla	0.4	5	FG					0.4					
Geitonoplesium cymosum	0.8	5	OG							0.8			
Pomax umbellata	0.2	5	FG					0.2					
Astrotricha latifolia	20	100	SG			20							
Echinopogon caespitosus	0.4	5	GG				0.4						
Hibbertia scandens	0.4	5	OG							0.4			
Panicum simile	1	40	GG				1						
Ozothamnus diosmifolius	0.8	10	SG			0.8							
Brachyscome multifida	0.1	5	FG					0.1					
Oxytes brachypoda	0.4	10	FG					0.4					
Solanum pungetium	0.1	1	FG					0.1					
Pomaderris ferruginea	0.1	3	SG			0.1							
Microlaena stipoides var. stipoides	2	100	GG				2						
Digitaria parviflora	1	80	GG				1						
Dianella tasmanica	0.1	5	FG					0.1					
Indigofera australis	0.8	10	SG			0.8							
Lepidosperma laterale	1	30	GG				1						
Oplismenus imbecillis	2	40	GG				2						
Entolasia marginata	5	100	GG				5						
Smilax australis	1	20	OG							1			
Arthropodium milleflorum	0.1	5	FG					0.1					
Billardiera scandens	0.4	20	OG							0.4			
Dichondra repens	0.8	50	FG					0.8					
Acacia longissima	0.4	5	SG			0.4							
Hardenbergia violacea	1	10	OG							1			
Geitonoplesium cymosum	0.8	5	OG							0.8			
Acacia irrorata subsp. irrorata	5	100	SG			5							
Austrostipa pubescens	3	70	GG				3						
Dianella caerulea	4	50	FG					4					
Lomandra longifolia	1	20	GG				1						
Dianella revoluta	0.6	10	FG					0.6					
Pittosporum revolutum	0.1	1	SG			0.1							
Acacia schinoides	0.8	5	SG			1							
Clerodendrum tomentosum	0.6	3	TG		0.6								
Breynia oblongifolia	0.4	5	SG			0.4							
Stenocarpus salignus	0.2	2	SG			0.2							
Ehretia acuminata var. acuminata	0.8	5	TG		1								
Plectranthus parviflorus	3	50	FG					3					
Pittosporum multiflorum	8	70	SG			8							
Allocasuarina torulosa	1	3	TG		3								
Angophora floribunda	18	30	TG		25								

Easting	335063
Northing	6350774
Orientation	163
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	6
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	17

BAM Attributes 1x1 plot (%)	81
Leaf Litter (%)	85
	80
	65
	90
	85

HTP-MS-81

Date	2/5/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-81		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3241	Mod-good	34	34	4	10	8	9	0	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	73.8	73.8	40	13	13.5	4.2	0	3.1	0	0	
Allocasuarina torulosa	8	10	TG		8								
Angophora costata	12	5	TG		12								
Billardiera scandens	0.1	1	OG							0.1			
Brachyscome brownii	0.1	15	FG					0.1					
Corymbia maculata	10	3	TG		10								
Cymbopogon refractus	0.8	20	GG				0.8						
Denhamia silvestris	3	50	SG			3							
Dianella caerulea	0.4	5	FG					0.4					
Dianella revoluta	1	40	FG					1					
Entolasia stricta	1	30	GG				1						
Eucalyptus racemosa	10	20	TG		10								
Gompholobium latifolium	1	10	SG			1							
Goodenia hederacea	0.4	20	FG					0.4					
Goodenia heterophylla	1	30	FG					1					
Hardenbergia violacea	1	20	OG							1			
Hibbertia aspera	0.1	2	SG			0.1							
Indigofera australis	0.8	10	SG			0.8							
Lepidosperma cf. laterale	0.4	10	GG				0.4						
Leucopogon lanceolatus	2	20	SG			2							
Lomandra confertifolia	0.4	10	GG				0.4						
Lomandra filiformis subsp. filiformis	0.8	40	GG				0.8						
Lomandra longifolia	0.1	1	GG				0.1						
Lomandra obliqua	5	100	GG				5						
Lomatia silaifolia	1	5	SG			1							
Macrozamia reducta	2	10	OG							2			
Persoonia linearis	2	10	SG			2							
Platysace ericoides	2	40	SG			2							
Podolobium ilicifolium	1	10	SG			1							
Pomax umbellata	1	20	FG					1					
Rytidosperma pallidum	5	100	GG				5						
Solanum stelligerum	0.1	2	SG			0.1							
Thysanotus tuberosus	0.1	3	FG					0.1					
Vernonia cinerea	0.1	5	FG					0.1					
Xanthosia pilosa	0.1	3	FG					0.1					

Easting	334977
Northing	6371413
Orientation	58
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	16

BAM Attributes 1x1 plot (%)	64
Litter (%)	70
	55
	65
	60
	70

HTP-MS-82

Date	2/5/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-82		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3241	Mod-good	38	38	4	11	7	13	0	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	93.3	93.3	32	17.8	27.4	10.6	0	5.5	0	0	
Acacia irrorata subsp. irrorata	0.1	1	SG			0.1							
Acrotriche divaricata	1	10	SG			1							
Angophora euryphylla	1	1	TG		1								
Billardiera scandens	0.1	1	OG							0.1			
Brachyscome brownii	0.1	12	FG					0.1					
Bursaria spinosa	2	30	SG			2							
Corymbia maculata	18	5	TG		18								
Daviesia ulicifolia	0.1	1	SG			0.1							
Dianella caerulea	0.4	10	FG					0.4					
Dianella revoluta	1	30	FG					1					
Dianella tasmanica	0.1	1	FG					0.1					
Dichelachne micrantha	2	50	GG				2						
Eucalyptus punctata	3	1	TG		3								
Eucalyptus sparsifolia	10	5	TG		10								
Gompholobium latifolium	0.1	3	SG			0.1							
Goodenia hederacea	2	80	FG					2					
Goodenia heterophylla	5	200	FG					5					
Hardenbergia violacea	0.4	10	OG							0.4			
Hibbertia aspera	0.4	5	SG			0.4							
Lagenifera stipitata	0.2	20	FG					0.2					
Lobelia purpurascens	0.4	20	FG					0.4					
Lomandra filiformis subsp. filiformis	1	50	GG				1						
Lomandra multiflora subsp. multiflora	0.4	10	GG				0.4						
Macrozamia reducta	5	40	OG							5			
Microlaena stipoides var. stipoides	1	40	GG				1						
Opercularia varia	0.1	10	FG					0.1					
Ozothamnus diosmifolius	1	30	SG			1							
Persoonia linearis	1	10	SG			1							
Platysace lanceolata	2	50	SG			2							
Poa affinis	5	100	GG				5						
Podolobium ilicifolium	10	200	SG			10							
Polyscias sambucifolia	0.1	1	SG			0.1							
Pomax umbellata	0.4	10	FG					0.4					
Poranthera microphylla	0.4	30	FG					0.4					
Rytidosperma pallidum	10	100	GG				10						
Stylidium graminifolium	0.1	1	FG					0.1					
Themeda triandra	8	100	GG				8						
Xanthosia pilosa	0.4	20	FG					0.4					

Easting	335526
Northing	6368329
Orientation	25
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	7
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	12
BAM Attributes 1x1 plot (%)	65
Litter (%)	80
	75
	45
	70
	55

TC-36

Date	7/30/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC36		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3241	Mod-good	57	54	8	12	6	14	2	12	3	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	174	173.4	72.7	26.4	64.5	4.9	1.3	3.6	0.6	0	
Acacia implexa	20	64	SG			20							
Acianthus spp.	0.3	20	FG					0.3					
Adiantum aethiopicum	1	40	EG						1				
Allocasuarina torulosa	0.5	1	TG		0.5								
Bidens pilosa	0.2	3	EX								0.2		
Brachychiton populneus	0.3	3	TG		0.3								
Breynia oblongifolia	0.7	6	SG			0.7							
Bursaria spinosa	1	19	SG			1							
Cayratia clematidea	0.2	3	OG							0.2			
Cheilanthes sieberi	0.3	15	EG						0.3				
Cissus antarctica	0.4	5	OG							0.4			
Clematicissus opaca	0.3	5	OG							0.3			
Clematis aristata	0.2	3	OG							0.2			
Corymbia maculata	55	26	TG		55								
Dianella caerulea	0.2	2	FG					0.2					
Dianella prunina	0.4	5	FG					0.4					
Dichondra repens	0.3	20	FG					0.3					
Dichondra sp. Inglewood	0.5	50	FG					0.5					
Digitaria spp.	0.5	15	GG				0.5						
Eremophila debilis	0.3	5	SG			0.3							
Eucalyptus crebra	1	3	TG		1								
Eucalyptus moluccana	15	5	TG		15								
Eucalyptus punctata	0.4	1	TG		0.4								
Eustrephus latifolius	0.2	3	OG							0.2			
Galium binifolium	0.3	20	FG					0.3					
Geitonoplesium cymosum	0.3	8	OG							0.3			
Geranium solanderi	0.2	5	FG					0.2					
Glochidion ferdinandi	0.3	3	TG		0.3								
Glycine clandestina	0.2	5	OG							0.2			
Grona varians	0.2	5	OG							0.2			
Hardenbergia violacea	0.4	4	OG							0.4			
Imperata cylindrica	55	500	GG				55						
Indigofera australis	1	15	SG			1							
Lepidosperma cf. laterale	1	5	GG				1						
Lobelia purpurascens	0.5	40	FG					0.5					
Macrozamia communis	0.5	3	OG							0.5			
Olearia elliptica subsp. elliptica	2	44	SG			2							
Oplismenus imbecillis	1	20	GG				1						
Oxytes brachypoda	0.2	1	FG					0.2					
Ozothamnus diosmifolius	0.2	1	SG			0.2							
Pandorea pandorana	0.3	10	OG							0.3			
Pittosporum revolutum	0.2	1	SG			0.2							
Pittosporum undulatum	0.3	1	SG			0.3							
Plectranthus parviflorus	1	40	FG					1					
Poa labillardierei var. labillardierei	5	20	GG				5						
Pseuderanthemum variabile	0.2	5	FG					0.2					
Pterostylis spp.	0.2	10	FG					0.2					
Rubus parvifolius	0.2	2	SG			0.2							
Sigesbeckia orientalis subsp. orientalis	0.4	30	FG					0.4					
Solanum nigrum	0.2	2	EX								0.2		
Solanum stelligerum	0.3	3	SG			0.3							
Stephania japonica	0.4	3	OG							0.4			
Syncarpia glomulifera subsp. glomulifera	0.2	1	TG		0.2								
Themeda triandra	2	20	GG				2						
Trema tomentosa var. aspera	0.2	1	SG			0.2							
Verbena rigida var. rigida	0.2	3	EX								0.2		
Veronica plebeia	0.2	6	FG					0.2					

Easting	330058
Northing	6372175
Orientation	145
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	11
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	28
BAM Attributes 1x1 plot (%)	32
Litter (%)	30
	40
	25
	35
	30

TC-39

Date	8/5/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC39		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3241	Mod-Good	57	55	6	15	7	14	2	11	0	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	128.7	126.6	76.6	11.6	27.5	5.1	0.5	5.3	0	2.1	
Acacia decurrens	0.3	1	TG		0.3								
Allocasuarina torulosa	1	5	TG		1								
Amyema spp.	2	4	OG							2			
Astrotricha latifolia	0.2	1	SG			0.2							
Austrostipa pubescens	5	20	GG				5						
Billardiera scandens	0.4	15	OG							0.4			
Brachyscome multifida var. multifida	0.5	10	FG					0.5					
Cheilanthes sieberi	0.2	10	EG						0.2				
Choretrum sp. A	0.2	1	SG			0.2							
Cissus antarctica	0.4	4	OG							0.4			
Clematis glycinoides	0.2	3	OG							0.2			
Clerodendrum tomentosum	0.1	1	TG		0.1								
Cymbopogon refractus	0.4	5	GG				0.4						
Daucus glochidiatus	0.2	5	FG					0.2					
Denhamia silvestris	0.5	100	SG			0.5							
Desmodium rhytidophyllum	0.3	5	FG					0.3					
Dianella caerulea	0.5	6	FG					0.5					
Dichondra repens	0.5	20	FG					0.5					
Elaeodendron australe	0.3	1	SG			0.3							
Entolasia marginata	0.4	5	GG				0.4						
Eucalyptus acmenoides	40	17	TG		40								
Eucalyptus fergusonnii	35	14	TG		35								
Geitonoplesium cymosum	0.3	15	OG							0.3			
Geranium homeanum	0.5	15	FG					0.5					
Glycine clandestina	0.6	30	OG							0.6			
Goodenia rotundifolia	0.5	30	FG					0.5					
Hardenbergia violacea	0.3	5	OG							0.3			
Hibbertia aspera	0.4	4	SG			0.4							
Hibbertia scandens	0.4	5	OG							0.4			
Hydrocotyle laxiflora	0.3	10	FG					0.3					
Imperata cylindrica	0.3	5	GG				0.3						
Indigofera australis	3	84	SG			3							
Lantana camara	2	16	HT									2	
Lepidosperma cf. laterale	1	8	GG				1						
Leucopogon juniperinus	2	5	SG			2							
Lobelia purpurascens	0.5	30	FG					0.5					
Marsdenia rostrata	0.2	1	OG							0.2			
Myoporum montanum	0.4	1	SG			0.4							
Myrsine variabilis	0.5	30	SG			0.5							
Notelaea longifolia	0.2	1	TG		0.2								
Oplismenus imbecillis	0.4	10	GG				0.4						
Ozothamnus diosmifolius	0.2	1	SG			0.2							
Pandorea pandorana subsp. pandoran	0.4	10	OG							0.4			
Pellaea paradoxa	0.3	5	EG						0.3				
Persoonia linearis	2	4	SG			2							
Pittosporum multiflorum	0.3	3	SG			0.3							
Pittosporum revolutum	1	8	SG			1							
Plantago debilis	0.3	15	FG					0.3					
Plectranthus parviflorus	0.2	2	FG					0.2					
Poa labillardierei var. labillardierei	20	65	GG				20						
Prostanthera cineolifera	0.3	1	SG			0.3							
Pseuderanthemum variabile	0.2	15	FG					0.2					
Rubus parvifolius	0.3	4	SG			0.3							
Senecio madagascariensis	0.1	2	HT									0.1	
Stellaria flaccida	0.4	20	FG					0.4					
Stephania japonica	0.1	1	OG							0.1			
Vernonia cinerea	0.2	3	FG					0.2					

Easting	335047
Northing	6363198
Orientation	200
Plot size	20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	11
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	14

BAM Attributes 1x1 plot litter (%)	62
Litter (%)	65
	75
	80
	60
	30

D1.17 3242 – Lower North Ranges Turpentine Moist Forest (Mod-good)

HTP-MS-11

Date	8/31/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS11		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3242	Mod-good	50	50	6	17	8	9	2	8	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	121.7	121.7	31.6	50.9	12.3	3	3	20.9	0	0	
Acacia irrorata subsp. irrorata	0.2	2	SG			0.2							
Acacia spp.	0.1	1	SG			0.1							
Acronychia oblongifolia	1	2	SG			1							
Allocasuarina torulosa	3	5	TG		3								
Astrotricha latifolia	20	100	SG			20							
Breynia oblongifolia	0.8	5	SG			0.8							
Carex spp.	0.1	2	GG				0.1						
Cissus antarctica	0.8	6	OG							0.8			
Cissus hypoglauca	3	10	OG							3			
Claoxylon australe	0.6	2	SG			0.6							
Corymbia maculata	15	8	TG		15								
Denhamia silvestris	0.4	5	SG			0.4							
Dianella caerulea	2	20	FG					2					
Dichondra repens	0.1	20	FG					0.1					
Diospyros australis	5	10	SG			5							
Doodia aspera	1	50	EG						1				
Eucalyptus acmenoides	3	2	TG		3								
Eucalyptus agglomerata	10	4	TG		10								
Eucalyptus punctata	0.4	1	TG		0.4								
Gahnia melanocarpa	0.4	2	GG				0.4						
Geitonoplesium cymosum	0.1	5	OG							0.1			
Geranium homeanum	0.1	5	FG					0.1					
Gymnostachys anceps	0.1	2	FG					0.1					
Hibbertia scandens	0.8	10	OG							0.8			
Hydrocotyle sibthorpioides	0.2	20	FG					0.2					
Imperata cylindrica	0.1	5	GG				0.1						
Indigofera australis	2	40	SG			2							
Lepidosperma laterale	0.2	10	GG				0.2						
Lomandra confertifolia subsp. pallida	0.1	1	GG				0.1						
Lomandra longifolia	1	10	GG				1						
Melicope micrococca	1	3	SG			1							
Myrsine variabilis	1	8	SG			1							
Notelaea longifolia	0.2	5	TG		0.2								
Oplismenus imbecillis	0.4	50	GG				0.4						
Pandorea pandorana	0.2	10	OG							0.2			
Passiflora herbertiana subsp. herbertiana	15	30	OG							15			
Pellaea falcata	2	50	EG						2				
Persoonia linearis	1	1	SG			1							
Pittosporum multiflorum	0.8	15	SG			0.8							
Plectranthus parviflorus	0.1	1	FG					0.1					
Poa affinis	10	80	GG				10						
Pseuderanthemum variabile	0.2	50	FG					0.2					
Psychotria loniceroides	1	8	SG			1							
Rubus moluccanus	0.2	5	SG			0.2							
Rubus parvifolius	15	40	SG			15							
Smilax australis	0.6	5	OG							0.6			
Solanum stelligerum	0.8	10	SG			0.8							
Stellaria flaccida	0.1	3	FG					0.1					
Veronica plebeia	0.1	2	FG					0.1					
Xanthorrhoea arborea	0.4	3	OG							0.4			

Easting	337515
Northing	6347133
Orientation	70
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	38
BAM Attributes 1x1 plot (%)	72
Litter (%)	70
	65
	60
	80
	85

HTP-MS-17

Date	9/26/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3242	Mod-good	47	47	7	14	7	6	3	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	115.2	115.2	58	37.7	2.5	1.8	3.8	11.4	0	0	
Acacia irrorata subsp. irrorata	0.2	3	SG			0.2							
Acacia schinoides	0.4	3	SG			0.4							
Acronychia oblongifolia	2	5	SG			2							
Adiantum aethiopicum	0.8	15	EG						0.8				
Astrotricha latifolia	15	100	SG			15							
Billardiera scandens	0.4	10	OG							0.4			
Brachychiton spp.	2	1	TG		2								
Breynia oblongifolia	0.4	5	SG			0.4							
Carex longebrachiata	0.8	10	GG				0.8						
Cissus antarctica	5	30	OG							5			
Cissus hypoglauca	2	15	OG							2			
Clematis glycinoides	0.1	1	OG							0.1			
Corymbia maculata	6	3	TG		6								
Cymbidium suave	0.1	3	OG							0.1			
Daphnandra apatela	3	8	TG		3								
Dianella caerulea	0.1	4	FG					0.1					
Dichondra repens	0.2	20	FG					0.2					
Diospyros australis	10	15	SG			10							
Doodia australis	1	50	EG						1				
Entolasia marginata	0.2	6	GG				0.2						
Eucalyptus acmenoides	12	3	TG		12								
Eucalyptus punctata	2	1	TG		2								
Eupomatia laurina	1	5	SG			1							
Gahnia melanocarpa	0.6	5	GG				0.6						
Geitonoplesium cymosum	0.8	20	OG							0.8			
Gymnostachys anceps	0.4	5	FG					0.4					
Hibbertia dentata	1	20	OG							1			
Hydrocotyle sibthorpioides	0.4	20	FG					0.4					
Indigofera australis	0.4	5	SG			0.4							
Lepidosperma laterale	0.2	5	GG				0.2						
Lomandra longifolia	0.4	5	GG				0.4						
Melicope micrococca	0.8	5	SG			0.8							
Myrsine variabilis	1	10	SG			1							
Notelaea longifolia	1	5	TG		1								
Olearia elliptica	0.4	5	SG			0.4							
Oplismenus imbecillis	0.1	5	GG				0.1						
Parsonsia straminea	1	10	OG							1			
Pellaea falcata	2	60	EG						2				
Pittosporum multiflorum	1	10	SG			1							
Poa affinis	0.2	5	GG				0.2						
Pseuderanthemum variabile	0.6	20	FG					0.6					
Psychotria loniceroides	5	30	SG			5							
Sarcopetalum harveyanum	0.2	3	OG							0.2			
Solanum stelligerum	0.1	1	SG			0.1							
Syncarpia glomulifera	32	60	TG		32								
Veronica plebeia	0.1	2	FG					0.1					
Xanthorrhoea arborea	0.8	5	OG							0.8			

Easting	338691
Northing	6345682
Orientation	284
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	3
30-49	2
20-29	No
10-19	Yes
5-9	Yes
<5	Yes
Hollows	3
Length logs (m)	68
BAM Attributes 1x1 plot (%)	73
Litter (%)	90
	30
	90
	60
	95

HTP-MS-46

Date	6/20/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-46		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3242	Mod-good	50	50	10	14	7	8	1	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	95.5	95.5	46.7	22.6	18.2	1.3	1	5.7	0	0	
Acacia irrorata subsp. irrorata	2	10	SG			2							
Acronychia oblongifolia	0.4	3	SG			0.4							
Acrotriche divaricata	3	30	SG			3							
Allocasuarina torulosa	1	3	TG		1								
Astrotricha latifolia	0.4	3	SG			0.4							
Calochlaena dubia	1	20	OG							1			
Cissus antarctica	0.1	1	OG							0.1			
Cissus hypoglauca	0.4	5	OG							0.4			
Clematis aristata	0.1	1	OG							0.1			
Clerodendrum tomentosum	0.1	1	TG		0.1								
Corybas aconitiflorus	0.1	25	FG					0.1					
Cryptocarya glaucescens	0.1	1	TG		0.1								
Denhamia silvestris	0.1	2	SG			0.1							
Dianella caerulea	0.4	20	FG					0.4					
Dichondra repens	0.1	5	FG					0.1					
Doryphora sassafras	0.1	1	TG		0.1								
Elaeocarpus reticulatus	5	15	SG			5							
Entolasia marginata	1	20	GG				1						
Entolasia stricta	0.6	10	GG				0.6						
Eucalyptus acmenoides	8	5	TG		8								
Eucalyptus agglomerata	12	15	TG		12								
Eucalyptus deanei	8	3	TG		8								
Eucalyptus punctata	15	8	TG		15								
Gahnia sieberiana	1	10	GG				1						
Gymnostachys anceps	0.1	1	FG					0.1					
Gynochthodes jasminoides	0.4	5	OG							0.4			
Hibbertia dentata	0.4	10	OG							0.4			
Hydrocotyle sibthorpioides	0.1	5	FG					0.1					
Leucopogon juniperinus	2	20	SG			2							
Lobelia purpurascens	0.2	20	FG					0.2					
Lomandra confertifolia subsp. pallida	0.1	5	GG				0.1						
Lomandra longifolia	15	100	GG				15						
Microlaena stipoides var. stipoides	0.1	3	GG				0.1						
Myrsine variabilis	1	10	SG			1							
Oplismenus imbecillis	0.4	10	GG				0.4						
Parsonsia straminea	0.1	2	OG							0.1			
Persoonia linearis	1	5	SG			1							
Pittosporum multiflorum	0.4	10	SG			0.4							
Plectranthus parviflorus	0.1	1	FG					0.1					
Podolobium ilicifolium	0.1	1	SG			0.1							
Pseuderanthemum variabile	0.2	10	FG					0.2					
Psychotria loniceroides	4	20	SG			4							
Pteridium esculentum	1	20	EG						1				
Schizomeria ovata	0.4	2	TG		0.4								
Smilax australis	2	50	OG							2			
Smilax glyciphylla	0.8	20	OG							0.8			
Synoum glandulosum subsp. glandulosum	3	10	SG			3							
Trochocarpa laurina	2	10	TG		2								
Tylophora barbata	0.4	20	OG							0.4			
Zieria smithii	0.2	5	SG			0.2							

Easting	343159
Northing	6343587
Orientation	169
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	3
30-49	21
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	58
BAM Attributes 1x1 plot (%)	79
Litter (%)	85
	65
	70
	90
	85

HTP-MS-54

Date	6/24/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-54		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3242	Mod-good	58	57	5	17	6	12	4	13	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	143.6	143.5	29	58.6	34	2.4	6.2	13.3	0.1	0	
Acacia implexa	2	3	SG			2							
Acacia irrorata subsp. irrorata	8	15	SG			8							
Adiantum silvaticum	1	40	EG						1				
Ajuga australis	0.1	3	FG					0.1					
Amyema pendula	0.2	2	OG							0.2			
Astrotricha latifolia	0.4	3	SG			0.4							
Breynia oblongifolia	0.1	1	SG			0.1							
Calochlaena dubia	1	20	OG							1			
Carex longebrachiata	5	40	GG				5						
Cayratia clematidea	0.4	5	OG							0.4			
Cissus antarctica	5	20	OG							5			
Cissus hypoglauca	3	10	OG							3			
Clematis aristata	0.4	20	OG							0.4			
Commersonia fraseri	15	40	SG			15							
Cryptocarya rigida	2	5	SG			2							
Cymbidium suave	0.1	1	OG							0.1			
Dianella caerulea	0.4	10	FG					0.4					
Dichondra repens	0.4	20	FG					0.4					
Diospyros australis	1	5	SG			1							
Ehretia acuminata var. acuminata	3	10	TG		3								
Eucalyptus acmenoides	8	1	TG		8								
Eucalyptus piperita	5	1	TG		5								
Eucalyptus saligna	12	3	TG		12								
Galium leiocarpum	0.1	5	FG					0.1					
Geitonoplesium cymosum	0.8	5	OG							0.8			
Grona varians	0.1	5	OG							0.1			
Gynochthodes jasminoides	0.1	5	OG							0.1			
Hibbertia scandens	1	10	OG							1			
Homalanthus populifolius	0.4	2	SG			0.4							
Hydrocotyle sibthorpioides	0.2	10	FG					0.2					
Imperata cylindrica	2	40	GG				2						
Leucopogon juniperinus	0.4	5	SG			0.4							
Lobelia purpurascens	0.2	20	FG					0.2					
Lomandra longifolia	5	50	GG				5						
Melicope micrococca	20	40	SG			20							
Myrsine variabilis	3	10	SG			3							
Oplismenus imbecillis	5	50	GG				5						
Ottochloa gracillima	12	100	GG				12						
Oxalis exilis	0.1	5	FG					0.1					
Pellaea falcata	4	50	EG						4				
Phyllanthus gunnii	0.1	5	SG			0.1							
Physalis peruviana	0.1	1	EX								0.1		
Platycerium bifurcatum	0.2	1	EG						0.2				
Plectranthus parviflorus	0.2	10	FG					0.2					
Poa affinis	5	30	GG				5						
Pseuderanthemum variabile	0.4	20	FG					0.4					
Psychotria loniceroides	1	5	SG			1							
Pyrrosia rupestris	1	10	EG						1				
Rubus moluccanus var. trilobus	2	10	SG			2							
Rubus rosifolius	3	30	SG			3							
Sarcopetalum harveyanum	0.4	5	OG							0.4			
Schelhammera undulata	0.1	5	FG					0.1					
Sigesbeckia orientalis subsp. orientalis	0.1	5	FG					0.1					
Smilax australis	0.8	10	OG							0.8			
Solanum stelligerum	0.1	1	SG			0.1							
Toona ciliata	1	2	TG		1								
Trema tomentosa var. aspera	0.1	1	SG			0.1							
Urtica incisa	0.1	5	FG					0.1					

Easting	341154
Northing	6345089
Orientation	76
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	4
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	87
BAM Attributes 1x1 plot (%)	56
Litter (%)	40
	75
	45
	65
	55

HTP-MS-55

Date	6/25/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-55		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3242	Mod-good	62	62	11	14	7	9	6	15	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	157.4	157.4	57	44.9	14	3	4.3	34.2	0	0	
Acacia irrorata subsp. irrorata	1	5	SG			1							
Acacia maidenii	0.8	3	TG		0.8								
Adiantum formosum	0.1	1	EG						0.1				
Alectryon subcinereus	0.1	3	SG			0.1							
Allocasuarina torulosa	1	3	TG		1								
Angophora floribunda	5	1	TG		5								
Cayratia clematidea	0.4	10	OG							0.4			
Cissus antarctica	10	20	OG							10			
Cissus hypoglauca	15	30	OG							15			
Clematis aristata	0.6	20	OG							0.6			
Clerodendrum tomentosum	0.1	1	TG		0.1								
Cryptocarya rigida	0.8	5	SG			0.8							
Cymbidium suave	0.1	1	OG							0.1			
Cyperus laevis	0.1	5	GG				0.1						
Dianella caerulea	0.8	20	FG					0.8					
Dichondra repens	0.4	30	FG					0.4					
Diospyros australis	20	40	SG			20							
Diploglottis australis	2	2	TG		2								
Doodia australis	2	50	EG						2				
Ehretia acuminata var. acuminata	8	5	TG		8								
Entolasia marginata	0.1	5	GG				0.1						
Entolasia stricta	1	10	GG				1						
Eucalyptus acmenoides	22	5	TG		22								
Ficus rubiginosa	5	5	TG		5								
Gahnia sieberiana	1	5	GG				1						
Geitonoplesium cymosum	0.8	10	OG							0.8			
Grona varians	0.4	30	OG							0.4			
Gymnostachys anceps	0.4	5	FG					0.4					
Hibbertia scandens	2	40	OG							2			
Hydrocotyle sibthorpioides	0.2	20	FG					0.2					
Imperata cylindrica	1	20	GG				1						
Leucopogon juniperinus	1	5	SG			1							
Lobelia purpurascens	0.4	30	FG					0.4					
Lomandra confertifolia	0.8	10	GG				0.8						
Lomandra longifolia	10	80	GG				10						
Marsdenia flavescens	0.1	1	OG							0.1			
Melicope micrococca	8	20	SG			8							
Myrsine variabilis	0.4	4	SG			0.4							
Neolitsea dealbata	1	3	TG		1								
Pandorea pandorana subsp. pandorana	0.4	2	OG							0.4			
Parsonsia straminea	1	5	OG							1			
Pellaea falcata	0.6	50	EG						0.6				
Pellaea paradoxa	0.2	20	EG						0.2				
Persoonia linearis	0.4	1	SG			0.4							
Phyllanthus gunnii	0.1	10	SG			0.1							
Pittosporum multiflorum	2	20	SG			2							
Pittosporum undulatum	5	2	SG			5							
Platycerium bifurcatum	0.4	2	EG						0.4				
Plectranthus parviflorus	0.1	5	FG					0.1					
Pseuderanthemum variabile	0.4	50	FG					0.4					
Psychotria loniceroides	5	30	SG			5							
Pyrrosia rupestris	1	20	EG						1				
Rubus parvifolius	0.1	2	SG			0.1							
Sarcopetalum harveyanum	0.4	5	OG							0.4			
Schelhammera undulata	0.1	5	FG					0.1					
Smilax australis	2	20	OG							2			
Solanum prinophyllum	0.2	5	FG					0.2					
Solanum stelligerum	1	20	SG			1							
Syncarpia glomulifera subsp. glomulifera	12	3	TG		12								
Trochocarpa laurina	0.1	1	TG		0.1								
Tylophora barbata	0.2	5	OG							0.2			
Xanthorrhoea arborea	0.8	2	OG							0.8			

Easting	341847
Northing	6344611
Orientation	88
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	8
30-49	7
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	4
Length logs (m)	55
BAM Attributes 1x1 plot (%)	68
Litter (%)	50
	80
	70
	60
	80

HTP-MS-83

Date	2/6/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-83		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3242	Mod-good	45	43	6	13	5	9	2	8	2	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	106.1	105	31	56.8	11	3	0.2	3	1.1	0	
Acacia prominens	3	10	TG		3								
Acacia schinoides	5	20	SG			5							
Asplenium flabellifolium	0.1	5	EG						0.1				
Astrotricha latifolia	20	100	SG			20							
Backhousia myrtifolia	20	80	SG			20							
Clerodendrum tomentosum	1	10	TG		1								
Conyza bonariensis	0.1	1	EX								0.1		
Croton verreauxii	1	5	SG			1							
Dendrobium speciosum	0.1	3	FG					0.1					
Dendrobium striolatum	0.2	20	OG							0.2			
Dianella caerulea	0.1	5	FG					0.1					
Entolasia marginata	3	100	GG				3						
Eucalyptus deanei	3	1	TG		3								
Eucalyptus punctata	18	10	TG		18								
Galium leiocarpum	0.2	20	FG					0.2					
Goodenia ovata	2	50	SG			2							
Hydrocotyle sibthorpioides	0.4	20	FG					0.4					
Kennedia procurrens	0.4	2	OG							0.4			
Liparis reflexa	0.1	1	OG							0.1			
Microlaena stipoides var. stipoides	2	50	GG				2						
Notelaea longifolia	1	10	TG		1								
Oplismenus imbecillis	2	80	GG				2						
Pandorea pandorana	0.4	5	OG							0.4			
Panicum simile	3	100	GG				3						
Parsonsia straminea	0.1	1	OG							0.1			
Passiflora edulis	1	1	EX								1		
Passiflora herbertiana	0.4	10	OG							0.4			
Pittosporum revolutum	1	5	SG			1							
Plectranthus parviflorus	1	40	FG					1					
Poa affinis	1	40	GG				1						
Polyscias sambucifolia	0.1	1	SG			0.1							
Pomaderris elliptica subsp. elliptica	0.4	5	SG			0.4							
Pomaderris ligustrina	0.4	5	SG			0.4							
Prostanthera incisa	5	100	SG			5							
Pseuderanthemum variabile	0.2	20	FG					0.2					
Pyrrosia rupestris	0.1	1	EG						0.1				
Sigesbeckia orientalis subsp. orientalis	0.4	10	FG					0.4					
Smilax australis	1	10	OG							1			
Solanum prinophyllum	0.4	10	FG					0.4					
Solanum stelligerum	0.8	20	SG			0.8							
Stenocarpus salignus	0.1	1	SG			0.1							
Stephania japonica	0.4	10	OG							0.4			
Syncarpia glomulifera subsp. glomulifera	5	6	TG		5								
Synoum glandulosum subsp. glandulosum	1	5	SG			1							
Veronica plebeia	0.2	20	FG					0.2					

Easting	333800
Northing	6357116
Orientation	324
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	14
BAM Attributes 1x1 plot (%)	57
Litter (%)	40
	35
	80
	70
	60

LCSM-28

Date	9/27/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-28		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3242	Mod-good	51	51	9	16	5	5	2	14	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	161.6	161.6	77.6	51.2	21.9	0.8	0.2	9.9	0	0	
Acacia irrorata subsp. irrorata	40	1000	SG			40							
Acacia maidenii	0.2	2	TG		0.2								
Acacia prominens	0.1	1	TG		0.1								
Allocasuarina torulosa	0.2	2	TG		0.2								
Angophora floribunda	20	10	TG		20								
Billardiera scandens	0.1	1	OG							0.1			
Breynia oblongifolia	0.3	3	SG			0.3							
Cissus antarctica	0.1	1	OG							0.1			
Cissus hypoglauca	0.1	1	OG							0.1			
Clematis aristata	0.1	1	OG							0.1			
Clerodendrum tomentosum	2	15	TG		2								
Dianella caerulea	0.2	5	FG					0.2					
Diospyros australis	0.2	1	SG			0.2							
Doodia aspera	0.1	1	EG						0.1				
Entolasia stricta	20	500	GG				20						
Eucalyptus eugenioides	5	10	TG		5								
Eucalyptus saligna	10	10	TG		10								
Gahnia spp.	0.2	2	GG				0.2						
Geitonoplesium cymosum	0.2	10	OG							0.2			
Glycine tabacina	0.1	10	OG							0.1			
Grona varians	0.1	10	OG							0.1			
Hardenbergia violacea	0.1	1	OG							0.1			
Hibbertia scandens	0.5	5	OG							0.5			
Hydrocotyle sibthorpioides	0.2	10	FG					0.2					
Indigofera australis	2	25	SG			2							
Kennedia rubicunda	0.1	1	OG							0.1			
Lepidosperma laterale	0.2	2	GG				0.2						
Leucopogon juniperinus	0.3	5	SG			0.3							
Myrsine variabilis	0.1	4	SG			0.1							
Notelaea longifolia	0.1	1	TG		0.1								
Oplismenus imbecillis	0.5	20	GG				0.5						
Ozothamnus diosmifolius	0.1	1	SG			0.1							
Panicum simile	1	100	GG				1						
Passiflora herbertiana	3	100	OG							3			
Phyllanthus gunnii	0.1	1	SG			0.1							
Pittosporum spinescens	0.1	5	SG			0.1							
Psychotria loniceroides	2	20	SG			2							
Pteridium esculentum	0.1	1	EG						0.1				
Rhodamnia rubescens	0.1	3	SG			0.1							
Rubus moluccanus	0.1	1	SG			0.1							
Rubus parvifolius	0.1	10	SG			0.1							
Rubus rosifolius	0.5	1	SG			0.5							
Senecio spp.	0.1	2	FG					0.1					
Smilax australis	0.2	2	OG							0.2			
Solenogyne spp.	0.1	10	FG					0.1					
Stephania japonica	0.2	2	OG							0.2			
Syncarpia glomulifera	40	2000	TG		40								
Synoum glandulosum subsp. glandulosum	0.2	1	SG			0.2							
Xanthorrhoea spp.	5	5	OG							5			
Xerochrysum bracteatum	0.2	10	FG					0.2					
Zieria smithii	5	25	SG			5							

Easting	335129
Northing	6350385
Orientation	356
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	8
BAM Attributes 1x1 plot (%)	38
Litter (%)	50
	35
	25
	40
	40

TC-11

Date	1/29/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-11		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3242	Mod-good	36	36	3	9	3	11	3	7	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	90.7	90.7	24.1	41.5	10	2.1	4.2	8.8	0	0	
Acacia irrorata	5	5	SG			5							
Acacia maidenii	0.1	1	TG		0.1								
Brachyscome trisecta	0.1	5	FG					0.1					
Breynia oblongifolia	0.1	1	SG			0.1							
Cayratia clematidea	0.1	2	OG							0.1			
Cissus antarctica	0.5	5	OG							0.5			
Cissus hypoglauca	2	5	OG							2			
Claoxylon australe	1	2	SG			1							
Dianella caerulea	0.1	2	FG					0.1					
Dichondra repens	0.1	10	FG					0.1					
Erigeron spp.	0.1	3	FG					0.1					
Eucalyptus agglomerata	8	1	TG		8								
Eupomatia laurina	4	6	SG			4							
Eustrephus latifolius	0.1	1	OG							0.1			
Galium spp.	0.1	10	FG					0.1					
Gymnostachys anceps	0.2	3	FG					0.2					
Lastreopsis decomposita	2	20	EG						2				
Lomandra longifolia	2	10	GG				2						
Oplismenus imbecillis	5	30	GG				5						
Oxalis perennans	0.1	10	FG					0.1					
Ozothamnus diosmifolius	0.2	1	SG			0.2							
Passiflora herbertiana subsp. herbertiana	0.1	1	OG							0.1			
Pellaea falcata	2	20	EG						2				
Plectranthus parviflorus	0.2	10	FG					0.2					
Poa labillardierei var. labillardierei	3	15	GG				3						
Pseuderanthemum variabile	0.1	15	FG					0.1					
Psychotria loniceroides	0.2	5	SG			0.2							
Pteridium esculentum	0.2	5	EG						0.2				
Rubus moluccanus	15	5	SG			15							
Rubus rosifolius	15	5	SG			15							
Senecio linearifolius	0.5	15	FG					0.5					
Sigesbeckia orientalis subsp. orientalis	0.5	20	FG					0.5					
Smilax australis	5	15	OG							5			
Stephania japonica	1	10	OG							1			
Syncarpia glomulifera	16	10	TG		16								
Synoum glandulosum subsp. glandulosum	1	15	SG			1							

Easting	335159
Northing	6351012
Orientation	285
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	93
BAM Attributes 1x1 plot (%)	52
Litter (%)	70
	40
	30
	60
	60

D1.18 3244 – Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest (Mod-good)

DL-18

Date	1/22/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_18		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3244	Mod-good	52	51	5	15	7	13	1	10	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	154	153.9	55.1	35.7	47.6	7.2	0.5	7.8	0.1	0	
Acacia implexa	0.3	5	SG			0.3							
Acacia irrorata	0.2	3	SG			0.2							
Acacia linearifolia	0.1	5	TG		0.1								
Allocasuarina torulosa	20	60	TG		20								
Arthropodium milleflorum	0.1	5	FG					0.1					
Billardiera scandens	0.1	5	OG							0.1			
Brachyscome spp.	2	50	FG					2					
Breynia oblongifolia	5	30	SG			5							
Cheilanthes sieberi	0.5	100	EG						0.5				
Conyza bonariensis	0.1	5	EX								0.1		
Corymbia maculata	20	10	TG		20								
Desmodium spp.	0.2	100	OG							0.2			
Dianella caerulea	4	100	FG					4					
Entolasia stricta	15	200	GG				15						
Eucalyptus punctata	10	9	TG		10								
Eucalyptus racemosa	5	2	TG		5								
Eustrephus latifolius	0.5	20	OG							0.5			
Galium propinquum	0.1	3	FG					0.1					
Geitonoplesium cymosum	0.1	3	OG							0.1			
Glycine clandestina	0.1	10	OG							0.1			
Goodenia heterophylla	0.1	5	FG					0.1					
Goodenia spp.	0.1	50	FG					0.1					
Hardenbergia violacea	0.5	10	OG							0.5			
Hypericum gramineum	0.2	100	FG					0.2					
Imperata cylindrica	2	20	GG				2						
Kennedia rubicunda	0.1	5	OG							0.1			
Lagenifera stipitata	0.1	10	FG					0.1					
Leucopogon juniperinus	1	5	SG			1							
Leucopogon lanceolatus	0.2	3	SG			0.2							
Lobelia purpurascens	0.1	100	FG					0.1					
Lomandra longifolia	10	30	GG				10						
Microlaena stipoides	0.1	5	GG				0.1						
Ozothamnus diosmifolius	0.4	5	SG			0.4							
Persoonia linearis	0.1	2	SG			0.1							
Pimelea linifolia	1	5	SG			1							
Poa labillardierei var. labillardierei	15	30	GG				15						
Podolobium ilicifolium	3	100	SG			3							
Polyscias sambucifolia	20	100	SG			20							
Pomaderris spp.	0.5	15	SG			0.5							
Prostanthera parviflora	3	100	SG			3							
Prostanthera spp.	0.1	3	SG			0.1							
Psychotria loniceroides	0.5	5	SG			0.5							
Rydidosperma spp	0.5	5	GG				0.5						
Smilax australis	1	29	OG							1			
Smilax glyciphylla	5	100	OG							5			
Solanum spp.	0.1	3	FG					0.1					
Themeda triandra	5	20	GG				5						
Tylophora barbata	0.2	20	OG							0.2			
Veronica spp.	0.1	20	FG					0.1					
Viola sieberiana	0.1	100	FG					0.1					
Wahlenbergia stricta	0.1	20	FG					0.1					
Unknown native shrub	0.4	5	SG			0.4							

Easting	331923
Northing	6369752
Orientation	1
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	0
30-49	0
20-29	Yes
10-19	No
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	32
BAM Attributes 1x1 plot (%)	90
Litter (%)	95
	90
	75
	95
	95

HTP-MS-53

Date	6/24/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-53		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3244	Mod-good	41	41	7	9	7	12	1	5	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	94.3	94.3	43.2	14.1	28.9	6.6	1	0.5	0	0	
Acacia implexa	0.4	1	SG			0.4							
Acacia maidenii	0.1	1	TG		0.1								
Acacia ulicifolia	0.1	1	SG			0.1							
Allocasuarina torulosa	5	10	TG		5								
Angophora costata	12	3	TG		12								
Billardiera scandens	0.1	5	OG							0.1			
Cheilanthes sieberi subsp. sieberi	1	50	EG						1				
Cissus hypoglauca	0.1	1	OG							0.1			
Coronidium elatum	0.1	5	SG			0.1							
Corymbia maculata	5	1	TG		5								
Cymbidium suave	0.1	1	OG							0.1			
Cymbopogon refractus	3	40	GG				3						
Denhamia silvestris	0.1	1	SG			0.1							
Dianella caerulea	0.4	10	FG					0.4					
Dianella revoluta	3	50	FG					3					
Dianella tasmanica	0.4	10	FG					0.4					
Entolasia stricta	4	50	GG				4						
Eucalyptus acmenoides	1	1	TG		1								
Eucalyptus punctata	20	5	TG		20								
Ficus rubiginosa	0.1	1	TG		0.1								
Gonocarpus teucrioides	0.4	5	FG					0.4					
Hardenbergia violacea	0.1	2	OG							0.1			
Hibbertia scandens	0.1	1	OG							0.1			
Hydrocotyle sibthorpioides	0.1	5	FG					0.1					
Imperata cylindrica	0.8	20	GG				0.8						
Jacksonia scoparia	1	5	SG			1							
Lagenophora stipitata	0.1	10	FG					0.1					
Leptomeria acida	5	80	SG			5							
Lobelia purpurascens	1	50	FG					1					
Lomandra filiformis subsp. filiformis	0.4	10	GG				0.4						
Microlaena stipoides var. stipoides	0.1	5	GG				0.1						
Opercularia varia	0.2	10	FG					0.2					
Oplismenus aemulus	0.6	10	GG				0.6						
Persoonia linearis	0.4	5	SG			0.4							
Platysace lanceolata	6	50	SG			6							
Podolobium ilicifolium	1	10	SG			1							
Pomax umbellata	0.4	10	FG					0.4					
Solanum prinophyllum	0.1	1	FG					0.1					
Themeda triandra	20	100	GG				20						
Vernonia cinerea	0.4	20	FG					0.4					
Viola betonicifolia	0.1	5	FG					0.1					

Easting	340711
Northing	6345247
Orientation	118
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	6
30-49	6
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	4
Length logs (m)	23
BAM Attributes 1x1 plot (%)	**53**
Litter (%)	80
	30
	60
	65
	30

TC-43

Date	8/13/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC43		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	53	51	5	9	9	12	1	15	1	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	111	109.5	90.4	4	4.8	5.6	0.2	4.5	1	0.5	
Acacia implexa	0.5	4	SG			0.5							
Acianthus spp.	0.1	3	FG					0.1					
Allocasuarina torulosa	5	9	TG		5								
Austrostipa pubescens	0.3	3	GG				0.3						
Billardiera scandens	0.3	5	OG							0.3			
Brachyscome multifida	2	200	FG					2					
Breynia oblongifolia	0.5	5	SG			0.5							
Cheilanthes sieberi	0.2	3	EG						0.2				
Choretrum sp. A	0.4	3	SG			0.4							
Cissus antarctica	0.3	2	OG							0.3			
Cissus hypoglauca	0.2	1	OG							0.2			
Clematis glycinoides	0.2	3	OG							0.2			
Clerodendrum tomentosum	0.4	3	TG		0.4								
Corymbia maculata	35	15	TG		35								
Cyanthillium cinereum	1	1	EX								1		
Cynodon dactylon	0.4	5	GG				0.4						
Denhamia silvestris	0.2	1	SG			0.2							
Desmodium rhytidophyllum	0.5	10	FG					0.5					
Dianella caerulea	0.5	3	FG					0.5					
Dichondra sp. Inglewood	0.5	40	FG					0.5					
Entolasia stricta	0.4	5	GG				0.4						
Eucalyptus acmenoides	15	10	TG		15								
Eucalyptus punctata	35	9	TG		35								
Galium leiocarpum	0.2	10	FG					0.2					
Geitonoplesium cymosum	0.5	10	OG							0.5			
Geranium gardneri	0.2	3	FG					0.2					
Glycine clandestina	0.2	5	OG							0.2			
Glycine tabacina	0.2	2	OG							0.2			
Goodenia rotundifolia	0.4	15	FG					0.4					
Hardenbergia violacea	0.4	5	OG							0.4			
Hibbertia dentata	0.5	10	OG							0.5			
Hibbertia scandens	0.3	3	OG							0.3			
Imperata cylindrica	1	30	GG				1						
Indigofera australis	0.3	2	SG			0.3							
Kennedia rubicunda	0.2	1	OG							0.2			
Lantana camara	0.5	1	HT									0.5	
Leucopogon juniperinus	0.2	2	SG			0.2							
Lobelia purpurascens	0.5	100	FG					0.5					
Lomandra longifolia	0.5	3	GG				0.5						
Lomandra multiflora subsp. Multiflora	0.5	5	GG				0.5						
Microlaena stipoides	1	100	GG				1						
oplismenus aemulus	0.2	3	GG				0.2						
Pandorea pandorana subsp. Pandorana	0.2	1	OG							0.2			
Persoonia linearis	0.5	4	SG			0.5							
Poa affinis	0.5	5	GG				0.5						
Podolobium ilicifolium	1	4	SG			1							
Sigesbeckia orientalis subsp. Orientalis	0.2	2	FG					0.2					
Smilax australis	0.2	2	OG							0.2			
Solanum prinophyllum	0.2	2	FG					0.2					
Solanum stelligerum	0.4	3	SG			0.4							
Stephania japonica	0.4	5	OG							0.4			
Viola betonicifolia	0.3	5	FG					0.3					
Xanthorrhoea arborea	0.4	1	OG							0.4			

Easting	334275
Northing	6362740
Orientation	261
Plot size	20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	9
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	34

BAM Attributes 1x1 plot litter (%)	65
Litter (%)	70
	65
	80
	45
	65

TC-44

Date	8/13/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC44		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3239	Mod-good	48	48	8	9	6	15	0	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	113.4	113.4	75.2	4.7	26.5	4.4	0	2.6	0	0	
Acacia prominens	12	5	TG		12								
Acianthus spp.	0.2	6	FG					0.2					
Allocasuarina torulosa	1	2	TG		1								
Angophora euryphylla	3	4	TG		3								
Arthropodium spp.	0.1	1	FG					0.1					
Austrostipa pubescens	25	60	GG				25						
Billardiera scandens	0.2	3	OG							0.2			
Brachyscome multifida	0.5	8	FG					0.5					
Breynia oblongifolia	0.5	4	SG			0.5							
Brunoniella australis	0.1	1	FG					0.1					
Choretrum sp. A	1	7	SG			1							
Cissus hypoglauca	0.3	2	OG							0.3			
Clerodendrum tomentosum	0.2	1	TG		0.2								
Corymbia maculata	35	27	TG		35								
Denhamia silvestris	0.5	6	SG			0.5							
Desmodium rhytidophyllum	0.5	10	FG					0.5					
Dianella caerulea	0.3	3	FG					0.3					
Dianella tasmanica	0.4	3	FG					0.4					
Dichondra sp. Inglewood	0.3	15	FG					0.3					
Eucalyptus acmenoides	17	8	TG		17								
Eucalyptus punctata	6	2	TG		6								
Eustrephus latifolius	0.3	3	OG							0.3			
Galium leiocarpum	0.3	15	FG					0.3					
Geitonoplesium cymosum	0.3	5	OG							0.3			
Glycine clandestina	0.2	2	OG							0.2			
Hardenbergia violacea	0.3	3	OG							0.3			
Hybanthus monopetalus	0.3	10	FG					0.3					
Hydrocotyle laxiflora	0.5	20	FG					0.5					
Imperata cylindrica	0.3	10	GG				0.3						
Leucopogon juniperinus	0.4	1	SG			0.4							
Lobelia purpurascens	0.5	60	FG					0.5					
Lomandra multiflora subsp. Multiflora	0.2	2	GG				0.2						
Marsdenia rostrata	0.2	1	OG							0.2			
Microlaena stipoides	0.3	5	GG				0.3						
Myrsine variabilis	0.5	7	SG			0.5							
Oplismenus aemulus	0.3	5	GG				0.3						
Passiflora herbertiana	0.3	2	OG							0.3			
Persoonia linearis	0.3	3	SG			0.3							
Plantago debilis	0.1	1	FG					0.1					
Platysace lanceolata	0.5	6	SG			0.5							
Poa affinis	0.4	2	GG				0.4						
Podolobium ilicifolium	0.5	4	SG			0.5							
Polyscias sambucifolia	0.5	3	SG			0.5							
Smilax australis	0.3	1	OG							0.3			
Solanum prinophyllum	0.2	1	FG					0.2					
Stephania japonica	0.2	2	OG							0.2			
Syncarpia glomulifera subsp. Glomulife	1	1	TG		1								
Veronica plebeia	0.1	2	FG					0.1					

Easting	334460
Northing	6362722
Orientation	123
Plot size	20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	4
30-49	2
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	39
BAM Attributes 1x1 plot litter (%	67
Litter (%)	75
	80
	60
	40
	80

D1.19 3250 – Northern Foothills Blackbutt Grassy Forest (Mod-good)

TC-14

Date	1/30/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-14		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3250	Mod-good	34	34	8	6	6	7	0	7	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	124.2	124.2	33.6	2.6	86.3	0.9	0	0.8	0	0	
Eucalyptus pilularis	20	12	TG		20								
Eucalyptus punctata	1	1	TG		1								
Angophora costata	3	4	TG		3								
Eucalyptus siderophloia	4	5	TG		4								
Eucalyptus microcorys	2	2	TG		2								
Allocasuarina torulosa	3	6	TG		3								
Angophora floribunda	0.5	1	TG		0.5								
Acacia ulicifolia	1	7	SG			1							
Acacia floribunda	1	5	SG			1							
Clerodendrum tomentosum	0.1	3	TG		0.1								
Pimelea linifolia	0.2	2	SG			0.2							
Podolobium ilicifolium	0.1	1	SG			0.1							
Lagenophora gracilis	0.1	6	FG					0.1					
Polyscias sambucifolia	0.1	2	SG			0.1							
Imperata cylindrica	80	500	GG				80						
Themeda triandra	5	40	GG				5						
Poa labillardierei var. labillardierei	1	5	GG				1						
Billardiera scandens	0.1	6	OG							0.1			
Pseuderanthemum variabile	0.1	10	FG					0.1					
Glycine clandestina	0.1	5	OG							0.1			
Grona varians	0.1	3	OG							0.1			
Hardenbergia violacea	0.1	2	OG							0.1			
Rubus parvifolius	0.2	5	SG			0.2							
Oplismenus aemulus	0.1	5	GG				0.1						
Lobelia purpurascens	0.1	10	FG					0.1					
Clematis glycinoides	0.1	1	OG							0.1			
Goodenia heterophylla	0.1	2	FG					0.1					
Smilax australis	0.1	5	OG							0.1			
Panicum simile	0.1	1	GG				0.1						
Dipodium spp.	0.1	2	FG					0.1					
Dianella caerulea	0.3	5	FG					0.3					
Eragrostis brownii	0.1	3	GG				0.1						
Parsonsia straminea	0.2	2	OG							0.2			
Viola betonicifolia	0.1	6	FG					0.1					

Easting	349047
Northing	6340076
Orientation	200
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	5
30-49	17
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	12
BAM Attributes 1x1 plot (%)	62
Litter (%)	40
	80
	70
	60
	60

TC-15

Date	1/30/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-15		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3250	Mod-good	47	48	9	9	7	6	2	15	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	97.6	132.4	82.2	8.2	39.1	0.7	0.4	1.8	0	3	
Acacia floribunda	0.2	3	SG		20	0.2							
Acacia ulicifolia	0.2	1	SG		15	0.2							
Allocasuarina torulosa	5	9	TG		5								
Alphitonia excelsa	0.2	10	TG		3								
Billardiera scandens	0.1	10	OG							0.1			
Breynia oblongifolia	0.1	5	SG			0.1							
Cheilanthes sieberi	0.1	2	EG						0.1				
Cissus hypoglauca	0.1	5	OG							0.1			
Citronella moorei	1	1	TG		1								
Clematis glycinoides	0.1	3	OG							0.1			
Clerodendrum tomentosum	0.2	10	TG		0.2								
Cordyline stricta	0.1	2	OG							0.1			
Corymbia gummifera	15	8	TG		15								
Cymbidium suave	0.1	2	OG							0.1			
Dianella caerulea	0.2	6	FG					0.2					
Dioscorea transversa	0.1	4	OG							0.1			
Entolasia stricta	1	20	GG				1						
Eucalyptus pilularis	20	8	TG		20								
Eustrephus latifolius	0.1	3	OG							0.1			
Gahnia aspera	1	5	GG				1						
Glycine clandestina	0.1	5	OG							0.1			
Goodenia heterophylla	0.1	3	FG					0.1					
Grona varians	0.1	6	OG							0.1			
Hibbertia dentata	0.2	13	OG							0.2			
Hibbertia scandens	0.1	1	OG							0.1			
Imperata cylindrica	30	200	GG				30						
Lantana camara	3	3	HT									3	
Lobelia purpurascens	0.1	5	FG					0.1					
Lomandra longifolia	2	16	GG				2						
Oplismenus aemulus	0.1	5	GG				0.1						
Oxalis perennans	0.1	8	FG					0.1					
Ozothamnus diosmifolius	0.2	2	SG			0.2							
Pandorea pandorana	0.1	5	OG							0.1			
Parsonsia straminea	0.2	2	OG							0.2			
Persoonia linearis	0.1	4	SG			0.1							
Pimelea linifolia	7	9	SG			7							
Polyscias sambucifolia	0.1	3	SG			0.1							
Pseuderanthemum variabile	0.1	10	FG					0.1					
Psychotria loniceroides	0.1	1	SG			0.1							
Pteridium esculentum	0.3	9	EG						0.3				
Rubus parvifolius	0.2	5	SG			0.2							
Smilax australis	0.2	10	OG							0.2			
Stephania japonica	0.1	4	OG							0.1			
Syncarpia glomulifera	3	1	TG		3								
Themeda triandra	2	15	GG				2						
Viola betonicifolia	0.1	6	FG					0.1					
Xanthorrhoea spp.	3	15	GG				3						

Easting	348338
Northing	6339473
Orientation	182
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	14
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	47
BAM Attributes 1x1 plot (%)	46
Litter (%)	50
	30
	40
	60
	50

D1.20 3250 – Northern Foothills Blackbutt Grassy Forest (Derived)

HTP-MS-100

Date	9/15/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	High Threat	56	Easting	350635
Plot Name	HTP-MS-100		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6338680
PCT	3250	Derived	33	27	3	6	10	4	1	3	2	4		Orientation	40
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20x20x50
Species	Cover	Abundance	92.3	89.1	1.6	6.2	53.1	2.6	20	5.6	0.6	2.6		BAM Attributes 20x50m plot	
Allocasuarina torulosa	0.1	1	TG		0.1									Stem classes	
Andropogon virginicus	1	30	HT									1		80+	0
Billardiera scandens	0.5	10	OG							0.5				50-79	0
Breynia oblongifolia	0.5	5	SG			0.5								30-49	0
Centella asiatica	1	50	FG					1						20-29	No
Conyza sumatrensis	0.1	5	EX								0.1			10-19	No
Cymbopogon refractus	5	100	GG				5							5-9	Yes
Daviesia ulicifolia	4	30	SG			4								<5	Yes
Digitaria sanguinalis	0.5	20	EX								0.5			Hollows	0
Entolasia stricta	2	50	GG				2							Length logs (m)	2
Eragrostis leptostachya	3	100	GG				3								
Eucalyptus pilularis	0.5	3	TG		0.5									BAM Attributes 1x1 plot (%)	5
Gahnia clarkei	0.1	1	GG				0.1							Litter (%)	5
Glochidion ferdinandi	1	5	TG		1										10
Gonocarpus teucrioides	1	50	FG					1							2
Hibbertia aspera	0.1	1	SG			0.1									3
Hibbertia scandens	5	50	OG							5					5
Hypericum gramineum	0.1	5	FG					0.1							
Imperata cylindrica	15	200	GG				15								
Kennedia rubicunda	0.1	1	OG							0.1					
Lantana camara	0.5	5	HT									0.5			
Lepidosperma cf. laterale	1	20	GG				1								
Leucopogon lanceolatus	0.1	1	SG			0.1									
Lobelia purpurascens	0.5	30	FG					0.5							
Lomandra longifolia	15	100	GG				15								
Panicum simile	2	50	GG				2								
Paspalum quadrafarium	1	1	HT									1			
Persoonia linearis	1	10	SG			1									
Polyscias sambucifolia	0.5	5	SG			0.5									
Pteridium esculentum	20	200	EG						20						
Schoenoplectus mucronatus	5	80	GG				5								
Senecio madagascarensis	0.1	5	HT									0.1			

D1.21 3263 – Watagan Range Turpentine-Mahogany Grassy Forest (Mod-good)

HTP-MS-12

Date	8/31/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS12		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Mod-good	54	54	6	15	10	12	0	11	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	85.1	85.1	45.1	16.5	15.6	4.9	0	3	0	0	
Acacia schinoides	3	10	SG			3							
Acacia parvipinnula	0.4	2	SG			0.4							
Allocasuarina torulosa	4	10	TG		4								
Austrostipa pubescens	0.2	4	GG				0.2						
Billardiera scandens	0.2	5	OG							0.2			
Brachyscome multifida	0.1	5	FG					0.1					
Breynia oblongifolia	0.2	2	SG			0.2							
Cassinia cunninghamii	3	40	SG			3							
Cissus hypoglauca	0.8	10	OG							0.8			
Corymbia maculata	15	20	TG		15								
Dianella caerulea var. producta	0.8	20	FG					0.8					
Dianella revoluta var. revoluta	0.1	5	FG					0.1					
Entolasia marginata	0.6	10	GG				0.6						
Entolasia stricta	10	80	GG				10						
Eucalyptus agglomerata	10	5	TG		10								
Eucalyptus punctata	6	3	TG		6								
Exocarpos strictus	0.4	3	SG			0.4							
Gahnia aspera	0.8	10	GG				0.8						
Geitonoplesium cymosum	0.2	5	OG							0.2			
Glycine clandestina	0.1	5	OG							0.1			
Gonocarpus teucrioides	2	80	FG					2					
Goodenia heterophylla	0.8	20	FG					0.8					
Hardenbergia violacea	0.6	3	OG							0.6			
Hibbertia dentata	0.1	1	OG							0.1			
Hibbertia scandens	0.1	1	OG							0.1			
Imperata cylindrica	0.4	10	GG				0.4						
Lagenifera stipitata	0.1	3	FG					0.1					
Lepidosperma laterale	1	10	GG				1						
Leucopogon lanceolatus	0.2	3	SG			0.2							
Lobelia purpurascens	0.1	10	FG					0.1					
Lomandra filiformis subsp. filiformis	0.6	10	GG				0.6						
Lomandra longifolia	1	20	GG				1						
Microlaena stipoides var. stipoides	0.8	20	GG				0.8						
Oxytes brachypoda	0.1	1	FG					0.1					
Ozothamnus diosmifolius	2	30	SG			2							
Pandorea pandorana	0.1	1	OG							0.1			
Panicum simile	0.2	10	GG				0.2						
Parsonsia straminea	0.6	5	OG							0.6			
Persoonia linearis	1	2	SG			1							
Phyllanthus hirtellus	1	50	SG			1							
Platysace lanceolata	1	20	SG			1							
Podolobium ilicifolium	3	20	SG			3							
Polyscias sambucifolia	0.1	1	SG			0.1							
Pomax umbellata	0.4	10	FG					0.4					
Pseuderanthemum variabile	0.1	5	FG					0.1					
Psychotria loniceroides	1	6	SG			1							
Ripogonum fawcettianum	0.1	1	OG							0.1			
Senecio diaschides	0.2	5	FG					0.2					
Smilax australis	0.1	2	OG							0.1			
Solanum prinophyllum	0.1	4	FG					0.1					
Solanum stelligerum	0.1	1	SG			0.1							
Syncarpia glomulifera subsp. glomulifera	10	15	TG		10								
Trochocarpa laurina	0.1	1	TG		0.1								
Zieria smithii	0.1	1	SG			0.1							

Easting	336158
Northing	6348814
Orientation	18
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	112
BAM Attributes 1x1 plot (%)	75
Litter (%)	70
	80
	75
	85
	65

HTP-MS-16

Date	9/26/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS16		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Mod-good	54	54	5	19	9	10	0	11	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	92.8	92.8	50	21.2	15.9	2.1	0	3.6	0	0	
Acacia irrorata subsp. irrorata	2	10	SG			2							
Acacia schinoides	1	3	SG			1							
Acacia spp.	1	6	SG			1							
Allocasuarina torulosa	6	15	TG		6								
Astrotricha latifolia	5	15	SG			5							
Billardiera scandens	0.4	5	OG							0.4			
Breynia oblongifolia	0.4	3	SG			0.4							
Cissus hypoglauca	0.8	10	OG							0.8			
Clematis glycinoides	0.4	4	OG							0.4			
Corymbia maculata	22	25	TG		22								
Dianella caerulea	0.8	10	FG					0.8					
Diospyros australis	0.6	2	SG			0.6							
Entolasia marginata	1	30	GG				1						
Entolasia stricta	8	100	GG				8						
Eucalyptus agglomerata	12	4	TG		12								
Eucalyptus punctata	8	3	TG		8								
Gahnia melanocarpa	0.1	1	GG				0.1						
Galium leiocarpum	0.1	5	FG					0.1					
Geitonoplesium cymosum	0.1	1	OG							0.1			
Gonocarpus teucrioides	0.2	6	FG					0.2					
Goodenia heterophylla	0.1	1	FG					0.1					
Goodenia ovata	1	8	SG			1							
Grona varians	0.1	3	OG							0.1			
Hardenbergia violacea	0.1	1	OG							0.1			
Hibbertia scandens	0.1	1	OG							0.1			
Hydrocotyle sibthorpioides	0.1	1	FG					0.1					
Imperata cylindrica	0.6	10	GG				0.6						
Indigofera australis	1	10	SG			1							
Kennedia rubicunda	0.1	2	OG							0.1			
Lagenifera stipitata	0.1	1	FG					0.1					
Lepidosperma laterale	0.2	5	GG				0.2						
Leucopogon juniperinus	0.1	1	SG			0.1							
Leucopogon lanceolatus	0.2	2	SG			0.2							
Lobelia purpurascens	0.2	5	FG					0.2					
Lomandra filiformis subsp. filiformis	0.4	6	GG				0.4						
Lomandra longifolia	5	80	GG				5						
Myrsine variabilis	0.8	5	SG			0.8							
Ozothamnus diosmifolius	0.1	2	SG			0.1							
Pandorea pandorana	0.4	2	OG							0.4			
Parsonsia straminea	0.1	2	OG							0.1			
Persoonia linearis	0.8	1	SG			0.8							
Pittosporum multiflorum	0.1	2	SG			0.1							
Pittosporum undulatum	0.1	1	SG			0.1							
Platysace lanceolata	4	40	SG			4							
Plectranthus parviflorus	0.2	3	FG					0.2					
Poa affinis	0.4	5	GG				0.4						
Podolobium ilicifolium	0.4	3	SG			0.4							
Polyscias sambucifolia	0.6	5	SG			0.6							
Pomax umbellata	0.2	10	FG					0.2					
Psychotria loniceroides	2	10	SG			2							
Smilax australis	1	10	OG							1			
Solanum prinophyllum	0.1	1	FG					0.1					
Syncarpia glomulifera	2	1	TG		2								
Themeda triandra	0.2	3	GG				0.2						

Easting	339214
Northing	6345462
Orientation	139
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	3
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	2
Length logs (m)	23
BAM Attributes 1x1 plot (%)	86
Litter (%)	95
	65
	85
	95
	90

LCSM-21

Date	9/25/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-21		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Mod-good	34	34	7	13	6	2	1	5	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	128.8	128.8	86.2	10.3	31.4	0.2	0.1	0.6	0	0	
Acacia parvipinnula	3	3	SG			3							
Allocasuarina torulosa	4	4	TG		4								
Angophora costata	20	6	TG		20								
Astrotricha latifolia	5	20	SG			5							
Austrostipa spp.	30	100	GG				30						
Brachyscome spp.	0.1	1	FG					0.1					
Cissus antarctica	0.1	1	OG							0.1			
Cissus hypoglauca	0.1	2	OG							0.1			
Clerodendrum tomentosum	0.1	2	TG		0.1								
Dianella caerulea	0.1	1	FG					0.1					
Entolasia stricta	0.1	10	GG				0.1						
Eucalyptus agglomerata	30	2	TG		30								
Eucalyptus punctata	30	4	TG		30								
Exocarpos strictus	0.5	5	SG			0.5							
Glochidion ferdinandi	0.1	1	TG		0.1								
Imperata cylindrica	0.1	50	GG				0.1						
Leucopogon juniperinus	0.2	2	SG			0.2							
Lomandra gracilis	0.1	10	GG				0.1						
Lomandra longifolia	1	10	GG				1						
Malvaceae indeterminate	0.3	3	SG			0.3							
Myrsine variabilis	0.1	1	SG			0.1							
Oplismenus spp.	0.1	1	GG				0.1						
Parsonsia straminea	0.1	1	OG							0.1			
Passiflora herbertiana	0.2	5	OG							0.2			
Pittosporum spinescens	0.5	5	SG			0.5							
Platysace lanceolata	0.1	1	SG			0.1							
Podolobium ilicifolium	0.1	1	SG			0.1							
Podolobium ilicifolium	0.1	1	SG			0.1							
Polyscias sambucifolia	0.1	1	SG			0.1							
Pteridium esculentum	0.1	1	EG						0.1				
Smilax australis	0.1	2	OG							0.1			
Syncarpia glomulifera subsp.	2	1	TG		2								
Zieria arborescens	0.2	1	SG			0.2							
Zieria smithii	0.1	1	SG			0.1							

Easting	341435
Northing	6344670
Orientation	260
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	31
BAM Attributes 1x1 plot (%)	88
Litter (%)	85
	90
	90
	85
	90

LCSM-24

Date	9/26/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-24		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Mod-good	26	26	8	8	3	2	1	4	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	130.6	130.6	83.4	38.3	1.2	0.4	0.1	7.2	0	0	
Acacia maidenii	0.2	4	TG		0.2								
Acacia schinoides	20	200	SG			20							
Allocasuarina torulosa	3	3	TG		3								
Angophora costata	10	5	TG		10								
Clematis aristata	0.1	1	OG							0.1			
Clerodendrum tomentosum	0.1	1	TG		0.1								
Corymbia maculata	30	6	TG		30								
Denhamia silvestris	0.1	1	SG			0.1							
Dianella caerulea	0.3	15	FG					0.3					
Entolasia stricta	1	1000	GG				1						
Eucalyptus agglomerata	30	6	TG		30								
Exocarpos strictus	0.1	1	SG			0.1							
Goodenia heterophylla	0.1	3	FG					0.1					
Hardenbergia violacea	5	500	OG							5			
Hibbertia aspera	1	20	SG			1							
Kennedia rubicunda	2	200	OG							2			
Lindsaea microphylla	0.1	1	EG						0.1				
Lomandra cylindrica	0.1	1	GG				0.1						
Lomandra longifolia	0.1	1	GG				0.1						
Notelaea longifolia	0.1	1	TG		0.1								
Persoonia linearis	2	10	SG			2							
Platysace lanceolata	10	100	SG			10							
Podolobium ilicifolium	5	50	SG			5							
Santalum obtusifolium	0.1	1	SG			0.1							
Smilax australis	0.1	1	OG							0.1			
Syncarpia glomulifera	10	6	TG		10								

Easting	337210
Northing	6347544
Orientation	23
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	48
BAM Attributes 1x1 plot (%)	86
Litter (%)	90
	90
	85
	80
	85

LCSM-25

Date	9/27/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-25		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Mod-good	49	47	5	21	5	6	1	9	2	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	231.9	231.7	91	67	70.9	0.8	0.1	1.9	0.2	0	
Acacia schinoides	1	10	SG			1							
Allocasuarina torulosa	1	10	TG		1								
Angophora costata	10	3	TG		10								
Asterolasia spp.	2	25	SG			2							
Astrotricha latifolia	60	2000	SG			60							
Billardiera scandens	1	100	OG							1			
Breynia oblongifolia	0.1	10	SG			0.1							
Cassinia spp.	0.1	1	SG			0.1							
Cissus hypoglauca	0.1	1	OG							0.1			
Clematis aristata	0.1	1	OG							0.1			
Dianella caerulea	0.2	20	FG					0.2					
Dichondra sp. Inglewood	0.1	20	FG					0.1					
Entolasia stricta	70	2000	GG				70						
Eucalyptus agglomerata	30	5	TG		30								
Eucalyptus punctata	20	5	TG		20								
Exocarpos strictus	1	10	SG			1							
Gahnia clarkei	0.1	1	GG				0.1						
Gahnia sieberiana	0.5	5	GG				0.5						
Gamochaeta spp.	0.1	20	EX								0.1		
Geitonoplesium cymosum	0.1	1	OG							0.1			
Glycine tabacina	0.1	10	OG							0.1			
Gonocarpus spp.	0.1	10	FG					0.1					
Grona varians	0.1	10	OG							0.1			
Hibbertia dentata	0.1	1	OG							0.1			
Hypochaeris radicata	0.1	10	EX								0.1		
Kennedia rubicunda	0.1	1	OG							0.1			
Lagenophora stipitata	0.1	10	FG					0.1					
Lepidosperma laterale	0.2	2	GG				0.2						
Leucopogon juniperinus	0.1	1	SG			0.1							
Lomandra gracilis	0.1	1	GG				0.1						
Lomatia myricoides	0.1	1	SG			0.1							
Olearia elliptica	0.2	2	SG			0.2							
Ozothamnus diosmifolius	0.5	10	SG			0.5							
Pellaea falcata	0.1	10	EG						0.1				
Persoonia linearis	0.1	1	SG			0.1							
Pittosporum spinescens	0.1	1	SG			0.1							
Platysace lanceolata	0.2	5	SG			0.2							
Podolobium ilicifolium	0.1	1	SG			0.1							
Polyscias sambucifolia	0.1	1	SG			0.1							
Pomaderris ligustrina	0.5	5	SG			0.5							
Prostanthera incisa	0.4	15	SG			0.4							
Pseuderanthemum variabile	0.1	1	FG					0.1					
Psychotria loniceroides	0.1	1	SG			0.1							
Rubus spp.	0.1	10	SG			0.1							
Santalum obtusifolium	0.1	1	SG			0.1							
Smilax australis	0.2	5	OG							0.2			
Syncarpia glomulifera	30	200	TG		30								
Veronica plebeia	0.2	20	FG					0.2					
Zieria smithii	0.1	1	SG			0.1							

Easting	336850
Northing	6347962
Orientation	216
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	36

BAM Attributes 1x1 plot (%)	64
Litter (%)	60
	55
	70
	70
	65

D1.22 3263 – Watagan Range Turpentine-Mahogany Grassy Forest (Derived)

LCEB-HTP9

Date	9/11/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCEB_HTP9		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Derived	33	32	2	10	7	7	2	4	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	108.4	88.4	1.1	7.2	73	1.6	5.1	0.4	0	20	
Allocasuarina torulosa	0.1	1	TG		0.1								
Andropogon virginicus	20	2000	HT									20	
Aristida vagans	2	1000	GG				2						
Astrotricha latifolia	0.5	5	SG			0.5							
Billardiera scandens	0.1	1	OG							0.1			
Calochilus robertsonii	0.1	1	FG					0.1					
Cheilanthes sieberi	0.1	15	EG						0.1				
Cissus antarctica	0.1	1	OG							0.1			
Commersonia fraseri	0.1	1	SG			0.1							
Cymbopogon refractus	30	2000	GG				30						
Daviesia ulicifolia	0.1	1	SG			0.1							
Dianella revoluta	0.1	10	FG					0.1					
Digitaria spp.	20	2000	GG				20						
Eucalyptus punctata	1	10	TG		1								
Gahnia clarkei	1	10	GG				1						
Geitonoplesium cymosum	0.1	1	OG							0.1			
Gonocarpus tetragynus	0.1	20	FG					0.1					
Hibbertia dentata	0.1	10	OG							0.1			
Imperata cylindrica	10	1000	GG				10						
Lepidosperma laterale	5	50	GG				5						
Leucopogon juniperinus	1	20	SG			1							
Lobelia purpurascens	0.1	20	FG					0.1					
Lomandra longifolia	5	500	GG				5						
Oxalis perennans	0.1	5	FG					0.1					
Persoonia linearis	0.1	1	SG			0.1							
Pimelea latifolia subsp. elliptifolia	0.1	1	SG			0.1							
Pomaderris eriocephala	0.1	1	SG			0.1							
Pomaderris intermedia	0.1	1	SG			0.1							
Pomax umbellata	1	1000	FG					1					
Pteridium esculentum	5	200	EG						5				
Pterostylis spp.	0.1	5	FG					0.1					
Pultenaea spinosa	0.1	1	SG			0.1							
Seringia arborescens	5	50	SG			5							

Easting	345870
Northing	6334662
Orientation	205
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	53
BAM Attributes 1x1 plot (%)	75
Litter (%)	80
	75
	85
	60
	75

LCEB-HTP11

Date	9/11/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCEB_HTP11		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Derived	28	27	2	9	5	3	2	6	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	69.6	49.6	0.3	10.4	16	1.3	20.1	1.5	20	0	
Acacia floribunda	0.5	3	SG			0.5							
Acacia schinoides	0.1	1	SG			0.1							
Acrotriche divaricata	0.2	2	SG			0.2							
Allocasuarina torulosa	0.2	1	TG		0.2								
Aristida vagans	1	100	GG				1						
Astrotricha latifolia	5	25	SG			5							
Billardiera scandens	0.1	1	OG							0.1			
Daviesia ulicifolia	2	20	SG			2							
Digitaria spp.	10	1000	GG				10						
Elaeocarpus reticulatus	0.3	3	SG			0.3							
Entolasia stricta	2	200	GG				2						
Eucalyptus pilularis	0.1	1	TG		0.1								
Glycine clandestina	0.1	2	OG							0.1			
Gonocarpus tetragynus	0.2	50	FG					0.2					
Hibbertia dentata	1	100	OG							1			
Hibbertia scandens	0.1	1	OG							0.1			
Kennedia rubicunda	0.1	1	OG							0.1			
Lepidosperma laterale	2	200	GG				2						
Leucopogon juniperinus	2	25	SG			2							
Leucopogon lanceolatus	0.1	1	SG			0.1							
Lindsaea linearis	0.1	1	EG						0.1				
Lobelia purpurascens	1	100	FG					1					
Lomandra longifolia	1	100	GG				1						
Persoonia linearis	0.2	1	SG			0.2							
Pomax umbellata	0.1	10	FG					0.1					
Pteridium esculentum	20	200	EG						20				
Setaria parviflora	20	200	EX								20		
Smilax australis	0.1	1	OG							0.1			

Easting	345511
Northing	6334336
Orientation	42
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	53
BAM Attributes 1x1 plot (%)	75
Litter (%)	80
	85
	80
	70
	60

SMSO-08

Date	9/18/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	SMSO_08		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Derived	40	35	5	10	6	4	2	8	4	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	112.6	110.6	8.5	9.9	60.5	0.4	30.1	1.2	0.5	1.5	
Acacia schinoides	2	10	SG			2							
Allocasuarina torulosa	0.3	3	TG		0.3								
Astrotricha latifolia	5	40	SG			5							
Axonopus compressus	0.2	50	EX								0.2		
Billardiera scandens	0.1	5	OG							0.1			
Breynia oblongifolia	0.1	10	SG			0.1							
Cassytha pubescens	0.1	5	OG							0.1			
Cheilanthes sieberi	0.1	20	EG						0.1				
Cissus hypoglauca	0.1	5	OG							0.1			
Clematis glycinoides	0.1	10	OG							0.1			
Clerodendrum tomentosum	0.2	15	TG		0.2								
Conyza bonariensis	0.1	10	EX								0.1		
Cymbopogon refractus	2	50	GG				2						
Cynodon dactylon	0.5	50	GG				0.5						
Dianella caerulea	0.1	5	FG					0.1					
Entolasia stricta	1	100	GG				1						
Eucalyptus deanei	2	1	TG		2								
Eucalyptus umbra	1	1	TG		1								
Geitonoplesium cymosum	0.1	5	OG							0.1			
Gonocarpus tetragynus	0.1	20	FG					0.1					
Hibbertia aspera	0.5	25	SG			0.5							
Hibbertia scandens	0.5	25	OG							0.5			
Hypochaeris radicata	0.1	25	EX								0.1		
Imperata cylindrica	25	500	GG				25						
Lantana camara	1.5	25	HT									1.5	
Lasiopetalum ferrugineum	0.4	10	SG			0.4							
Lepidosperma laterale	30	50	GG				30						
Leucopogon juniperinus	0.3	10	SG			0.3							
Lobelia purpurascens	0.1	10	FG					0.1					
Lomandra longifolia	2	25	GG				2						
Melicope micrococca	0.5	2	SG			0.5							
Ozothamnus diosmifolius	0.5	10	SG			0.5							
Persoonia linearis	0.5	5	SG			0.5							
Pomax umbellata	0.1	10	FG					0.1					
Pteridium esculentum	30	100	EG						30				
Richardia humistrata	0.1	25	EX								0.1		
Rubus parvifolius	0.1	2	SG			0.1							
Smilax australis	0.1	10	OG							0.1			
Stephania japonica	0.1	5	OG							0.1			
Syncarpia glomulifera	5	10	TG		5								

Easting	342773
Northing	6332887
Orientation	224
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	6.4
Litter (%)	5
	10
	2
	5
	10

SMSO-09

Date	9/18/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	SMSO-09		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3263	Derived	40	37	5	13	7	2	3	7	2	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	109.5	109.2	2.3	7.4	72.5	0.3	1.2	25.5	0.2	0.1	
Acacia longissima	0.6	1	SG			0.6							
Allocasuarina torulosa	0.2	5	TG		0.2								
Andropogon virginicus	0.1	10	HT									0.1	
Angophora floribunda	1	10	TG		1								
Astrotricha latifolia	0.5	10	SG			0.5							
Bursaria spinosa	0.5	5	SG			0.5							
Cassytha pubescens	5	200	OG							5			
Centaurium erythraea	0.1	5	EX								0.1		
Conyza bonariensis	0.1	10	EX								0.1		
Ehretia acuminata var. acuminat	0.1	2	TG		0.1								
Entolasia stricta	2	50	GG				2						
Epacris pulchella	0.1	2	SG			0.1							
Eucalyptus umbra	0.5	3	TG		0.5								
Gahnia aspera	0.5	10	GG				0.5						
Geitonoplesium cymosum	0.1	2	OG							0.1			
Gleichenia dicarpa	0.1	5	EG						0.1				
Glycine tabacina	0.1	10	OG							0.1			
Gonocarpus tetragynus	0.2	10	FG					0.2					
Hibbertia aspera	1	25	SG			1							
Hibbertia dentata	20	250	OG							20			
Histiopteris incisa	0.1	10	EG						0.1				
Imperata cylindrica	65	1000	GG				65						
Lasiopetalum ferrugineum	0.2	5	SG			0.2							
Lepidosperma laterale	2	20	GG				2						
Leucopogon juniperinus	0.5	5	SG			0.5							
Lomandra longifolia	1	25	GG				1						
Microlaena stipoides	1	50	GG				1						
Ozothamnus diosmifolius	0.2	10	SG			0.2							
Passiflora herbertiana	0.1	2	OG							0.1			
Persoonia linearis	0.1	5	SG			0.1							
Platysace lanceolata	0.1	20	SG			0.1							
Podolobium ilicifolium	0.5	10	SG			0.5							
Pomaderris ligustrina	3	10	SG			3							
Pomax umbellata	0.1	10	FG					0.1					
Pteridium esculentum	1	25	EG						1				
Schoenus melanostachys	1	10	GG				1						
Smilax australis	0.1	5	OG							0.1			
Stephania japonica	0.1	10	OG							0.1			
Syncarpia glomulifera	0.5	5	TG		0.5								
Trema tomentosa var. aspera	0.1	2	SG			0.1							

Easting	342312
Northing	6332528
Orientation	242
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	8
Litter (%)	10
	15
	5
	5
	5

D1.23 3314 – Central Hunter Slopes Grey Box Forest (Disturbed_Grassland)

HTP-MS-23

Date	10/9/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	307574
Plot Name	HTP-MS-23		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6402673
PCT	3314	Disturbed Grassland	37	21	0	2	12	5	0	2	14	2		Orientation	119
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	94	73.4	0	10.2	58.2	0.9	0	4.1	19	1.6		BAM Attributes 20x50m plot	
Aristida ramosa	1	20	GG				1							Stem classes	
Aristida vagans	1	30	GG				1							80+	0
Asperula conferta	0.4	20	FG					0.4						50-79	0
Aster subulatus	2	50	EX								2			30-49	0
Austrostipa verticillata	25	200	GG				25							20-29	No
Bidens pilosa	0.8	40	EX								0.8			10-19	No
Bothriochloa decipiens var. decipiens	10	100	GG				10							5-9	No
Carex inversa	0.4	20	GG				0.4							<5	No
Chloris gayana	1	20	HT									1		Hollows	0
Chloris ventricosa	0.4	5	GG				0.4							Length logs (m)	0
Cirsium vulgare	2	50	EX								2				
Convolvulus angustissimus	0.1	1	OG							0.1				BAM Attributes 1x1 plot (%)	3
Cynodon dactylon	15	200	GG				15							Leaf Litter (%)	2
Dichanthium sericeum	1	30	GG				1								5
Einadia nutans	0.1	5	FG					0.1							3
Eleusine indica	1	30	EX								1				2
Lobelia concolor	0.2	20	FG					0.2							3
Lolium perenne	5	200	EX								5				
Lomandra confertifolia	0.8	30	GG				0.8								
Lysimachia arvensis	0.8	20	EX								0.8				
Marrubium vulgare	0.1	5	EX								0.1				
Melinis repens	0.4	10	EX								0.4				
Panicum effusum	2	40	GG				2								
Plantago lanceolata	3	200	EX								3				
Rapistrum rugosum	4	100	OG							4					
Rytidosperma racemosum	1	30	GG				1								
Rytidosperma tenuius	0.6	10	GG				0.6								
Sclerolaena muricata	0.2	3	SG			0.2									
Scutellaria racemosa	0.6	30	EX								0.6				
Senecio madagascariensis	0.6	10	HT									0.6			
Senecio quadridentatus	0.1	3	FG					0.1							
Sida rhombifolia	3	100	EX								3				
Sonchus oleraceus	0.1	5	EX								0.1				
Sporobolus creber	10	100	SG			10									
Tragopogon porrifolius subsp. porrifolius	0.1	1	EX								0.1				
Tribulus terrestris	0.1	2	EX								0.1				
Vittadinia cuneata	0.1	2	FG					0.1							

NE-2

Date	12/6/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	305239
Plot Name	HVO_NE_2		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6405649
PCT	3314	Disturbed Grassland	16	13	1	0	7	4	0	1	2	1		Orientation	285
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	56.8	55.5	1	0	52.7	1.7	0	0.1	1.1	0.2		BAM Attributes 20x50m plot	
Acacia salicina	1	10	TG		1									Stem classes	
Aristida spp.	30	1000	GG				30							80+	0
Aristida spp.	5	1000	GG				5							50-79	0
Brachyscome spp.	0.1	1	FG					0.1						30-49	0
Brunoniella australis	0.1	20	FG					0.1						20-29	No
Calocephalus citreus	0.5	100	FG					0.5						10-19	No
Carex spp.	0.5	50	GG				0.5							5-9	No
Convolvulus graminetinus	0.1	2	OG							0.1				<5	No
Conyza spp.	0.1	1	EX								0.1			Hollows	0
Cymbopogon refractus	1	100	GG				1							Length logs (m)	0
Cynodon dactylon	1	200	GG				1								
Plantago lanceolata	1	200	EX								1			BAM Attributes 1x1 plot (%)	2.2
Senecio madagascarensis	0.2	50	HT									0.2		Litter (%)	3
Sporobolus creber	15	1000	GG				15								2
Unknown native grass	0.2	100	GG				0.2								5
Verbena spp.	1	50	FG					1							1
															0

TS-12

Date	10/8/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	307000
Plot Name	TS-12		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6403150
PCT	3314	Disturbed Grassland	19	7	0	0	1	5	0	1	10	2		Orientation	143
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	30.4	10.7	0	0	7	1.7	0	2	14.6	5.1		BAM Attributes 20x50m plot	
Acetosella vulgaris	0.1	1	HT									0.1		Stem classes	
Austrostipa verticillata	7	30	GG				7							80+	0
Brunoniella australis	0.4	10	FG					0.4						50-79	0
Cyclospermum leptophyllum	0.4	10	EX								0.4			30-49	0
Einadia nutans	0.5	10	FG					0.5						20-29	No
Fumaria muralis subsp. muralis	0.1	1	EX								0.1			10-19	No
Galenia pubescens	5	20	HT									5		5-9	No
Geranium solanderi	0.1	1	FG					0.1						<5	No
Grona varians	2	30	OG							2				Hollows	0
Lolium perenne	1	20	EX								1			Length logs (m)	0
Lysimachia arvensis	0.4	10	EX								0.4				
Pavonia hastata	0.2	5	EX								0.2			BAM Attributes 1x1 plot (%)	5.8
Plantago lanceolata	4	50	EX								4			Litter (%)	10
Senecio madagascariensis	1	20	EX								1				2
Sida corrugata	0.5	10	FG					0.5							4
Sida rhombifolia	3	10	EX								3				5
Sonchus oleraceus	0.5	10	EX								0.5				8
Verbena bonariensis	4	30	EX								4				
Veronica plebeia	0.2	5	FG					0.2							

TS-13

Date	10/9/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	307367
Plot Name	TS-13		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6402788
PCT	3314	Disturbed Grassland	25	10	0	2	5	3	0	0	13	2		Orientation	121
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	40.2	25.2	0	1.4	23.2	0.6	0	0	13.9	1.1		BAM Attributes 20x50m plot	
Austrostipa verticillata	10	40	GG				10							Stem classes	
Acetosella vulgaris	0.1	1	HT									0.1		80+	0
Aristida ramosa	4	30	GG				4							50-79	0
Asperula conferta	0.1	1	FG					0.1						30-49	0
Bothriochloa decipiens var. decipiens	0.2	5	GG				0.2							20-29	No
Brunoniella australis	0.1	5	FG					0.1						10-19	No
Chloris gayana	1	5	HT									1		5-9	No
Convolvulus arvensis	0.1	1	EX								0.1			<5	No
Crotalaria mitchellii	0.4	10	SG			0.4								Hollows	0
Dichanthium sericeum	4	30	GG				4							Length logs (m)	0
Dysphania carinata	0.4	10	FG					0.4							
Hypochaeris radicata	0.2	5	EX								0.2			BAM Attributes 1x1 plot (%)	12
Lobelia concolor	0.4	10	EX								0.4			Litter (%)	10
Lolium perenne	1	20	EX								1				15
Lysimachia arvensis	0.1	1	EX								0.1				20
Marrubium vulgare	0.1	1	EX								0.1				5
Medicago polymorpha	0.1	5	EX								0.1				10
Plantago lanceolata	8	50	EX								8				
Rapistrum rugosum	3	20	EX								3				
Sclerolaena muricata	1	10	SG			1									
Sida rhombifolia	0.2	2	EX								0.2				
Sonchus oleraceus	0.4	10	EX								0.4				
Sporobolus creber	5	50	GG				5								
Tragopogon porrifolius subsp. porrifolius	0.1	1	EX								0.1				
Tribulus terrestris	0.2	10	EX								0.2				

D1.24 3314 – Central Hunter Slopes Grey Box Forest (Poor)

HTP-DR-07

Date	6/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP_DR07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Poor	45	34	5	1	17	10	0	1	7	4	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	117.2	64.2	18	0.2	44.4	1.5	0	0.1	6.5	46.5	
Eucalyptus moluccana	10	3	TG		10								
Allocasuarina luehmannii	1	2	TG		1								
Brachychiton populneus	2	1	TG		2								
Notelaea microcarpa	2	10	TG		2								
Acacia salicina	3	10	TG		3								
Verbena bonariensis	2	20	EX								2		
Hyparrhenia hirta	30	1000	HT									30	
Chloris gayana	15	500	HT									15	
Plantago lanceolata	1	100	EX								1		
Senecio madagascarensis	0.5	50	HT									0.5	
Cirsium vulgare	2	30	EX								2		
Sida rhombifolia	1	20	EX								1		
Spergularia rubra	0.2	30	EX								0.2		
Asperula conferta	0.1	50	FG					0.1					
Dichanthium sericeum	1	100	GG				1						
Aristida ramosa	20	1000	GG				20						
Phyllanthus virgatus	0.1	5	FG					0.1					
Dichondra repens	0.2	300	FG					0.2					
Lomandra confertifolia subsp. pallida	0.4	5	GG				0.4						
Pimelea curviflora	0.2	20	SG			0.2							
Microlaena stipoides	5	500	GG				5						
Austrostipa scabra	5	300	GG				5						
Galenia pubescens	1	20	HT									1	
Sida hackettiana	0.3	10	FG					0.3					
Cymbopogon refractus	0.2	10	GG				0.2						
Bothriochloa decipiens	2	300	GG				2						
Sporobolus creber	1	100	GG				1						
Bidens pilosa	0.2	20	EX								0.2		
Chloris ventricosa	1	50	GG				1						
Digitaria divaricatissima	0.2	20	GG				0.2						
Lomandra filiformis subsp. filiformis	0.1	20	GG				0.1						
Glycine tabacina	0.1	10	OG							0.1			
Paspalidium distans	0.1	5	GG				0.1						
Lomandra multiflora subsp. multiflora	0.2	2	GG				0.2						
Chrysocephalum apiculatum	0.1	20	FG					0.1					
Panicum queenslandicum	1	50	GG				1						
Anthrosachne scabra	2	100	GG				2						
Geranium homeanum	0.1	10	FG					0.1					
Gomphocarpus fruticosus	0.1	5	EX								0.1		
Austrostipa aristiglumis	0.2	10	GG				0.2						
Dianella revoluta	0.1	5	FG					0.1					
Mentha satureioides	0.1	20	FG					0.1					
Pseuderanthemum variabile	0.2	20	FG					0.2					
Oxytes brachypodum	0.2	10	FG					0.2					
Cynodon dactylon	5	1000	GG				5						

Easting	306962
Northing	6412724
Orientation	40
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	No
10-19	No
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	5

BAM Attributes 1x1 plot (%)	29
Litter (%)	10
	5
	75
	30
	25

HTP-MS-90

Date	2/13/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-90		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Poor	36	17	1	1	8	6	0	1	12	7	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	112.7	18.7	0.1	0.1	17	1.3	0	0.2	65.2	28.8	
Acacia saligna	40	50	EX								40		
Allocasuarina luehmannii	0.1	1	TG		0.1								
Aristida ramosa	0.4	20	GG				0.4						
Asperula conferta	0.1	5	FG					0.1					
Austrostipa verticillata	0.2	5	GG				0.2						
Bidens pilosa	3	100	EX								3		
Bidens subalternans	0.4	10	EX								0.4		
Bromus catharticus	1	30	EX								1		
Brunoniella australis	0.4	20	FG					0.4					
Carex inversa	0.1	5	GG				0.1						
Carthamus lanatus	0.4	20	HT									0.4	
Chloris gayana	15	100	HT									15	
Chloris ventricosa	0.2	10	GG				0.2						
Cirsium vulgare	2	50	EX								2		
Commelina cyanea	0.1	5	FG					0.1					
Conyza sumatrensis	1	30	EX								1		
Dichelachne micrantha	0.4	10	GG				0.4						
Dichondra sp. Inglewood	0.2	20	FG					0.2					
Einadia trigonos	0.4	20	FG					0.4					
Eragrostis curvula	2	10	HT									2	
Eremophila debilis	0.1	3	SG			0.1							
Galenia pubescens	5	50	HT									5	
Glycine tabacina	0.2	10	OG							0.2			
Gomphocarpus fruticosus	5	100	EX								5		
Heliotropium amplexicaule	1	40	HT									1	
Hyparrhenia rufa subsp. altissima	5	100	HT									5	
Linum marginale	0.1	5	FG					0.1					
Lomandra confertifolia	0.6	10	GG				0.6						
Lomandra multiflora subsp. multiflora	0.1	1	GG				0.1						
Microlaena stipoides var. stipoides	15	200	GG				15						
Opuntia stricta	0.4	5	EX								0.4		
Oxalis corniculata	0.4	20	EX								0.4		
Paspalum dilatatum	0.4	5	HT									0.4	
Plantago lanceolata	1	40	EX								1		
Sida rhombifolia	10	200	EX								10		
Solanum nigrum	1	50	EX								1		

Easting	306784
Northing	6412310
Orientation	234
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	5.2
Litter (%)	5
	3
	5
	3
	10

TC-08

Date	9/19/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-08		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Poor	31	13	1	2	3	7	0	0	15	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	84.1	5.4	4	0.3	0.4	0.7	0	0	3.5	75.2	
Acacia salicina	4	27	TG		4								
Austrostipa ramosissima	0.2	5	GG				0.2						
Bidens pilosa	0.1	30	EX								0.1		
Briza minor	0.1	10	EX								0.1		
Bursaria spinosa	0.2	1	SG			0.2							
Cirsium vulgare	0.1	5	EX								0.1		
Conyza bonariensis	0.1	1	EX								0.1		
Conyza spp.	0.1	2	EX								0.1		
Cyperus gracilis	0.1	20	GG				0.1						
Daucus glochidiatus	0.1	20	FG					0.1					
Dichondra sp. Inglewood	0.1	20	FG					0.1					
Eremophila debilis	0.1	1	SG			0.1							
Galium aparine	0.1	2	EX								0.1		
Gomphocarpus physocarpus	2	100	EX								2		
Hydrocotyle laxiflora	0.1	3	FG					0.1					
Hyparrhenia hirta	75	300	HT									75	
Lomandra multiflora subsp. multiflora	0.1	10	GG				0.1						
Lysimachia arvensis	0.1	10	EX								0.1		
Opuntia stricta	0.1	1	EX								0.1		
Oxalis perennans	0.1	10	FG					0.1					
Plantago lanceolata	0.1	30	EX								0.1		
Pomax umbellata	0.1	2	FG					0.1					
Pseuderanthemum variabile	0.1	10	FG					0.1					
Romulea rosea	0.1	3	HT									0.1	
Senecio madagascariensis	0.1	20	HT									0.1	
Sida rhombifolia	0.2	20	EX								0.2		
Solanum nigrum	0.1	10	EX								0.1		
Sonchus oleraceus	0.1	15	EX								0.1		
Stachys arvensis	0.1	3	EX								0.1		
Verbena bonariensis	0.1	10	EX								0.1		
Wahlenbergia communis	0.1	3	FG					0.1					

Easting	306314
Northing	6412776
Orientation	308
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	9
BAM Attributes 1x1 plot (%)	21
Litter (%)	20
	25
	35
	15
	10

TC-47

Date	9/15/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-47		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Poor	51	29	3	5	5	14	0	2	16	6	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	86.1	33.3	21.2	3.1	4.2	4.2	0	0.6	30.9	21.9	
Acacia implexa	0.5	2	SG			0.5							
Acacia saligna	2	9	EX								2		
Allocasuarina luehmannii	1	1	TG		1								
Asperula conferta	0.2	30	FG					0.2					
Austrostipa scabra	1	10	GG				1						
Austrostipa verticillata	2	40	GG				2						
Bidens Pilosa	0.5	100	EX								0.5		
Brunoniella australis	0.2	5	FG					0.2					
Bursaria spinosa	2	14	SG			2							
Calotis lappulacea	0.4	20	FG					0.4					
Carex inversa	0.3	15	GG				0.3						
Carthamus lanatus	0.4	30	HT									0.4	
Chloris gayana	0.5	5	HT									0.5	
Chrysocephalum apiculatum	0.2	5	FG					0.2					
Cirsium vulgare	0.5	25	EX								0.5		
Clematis glycinoides var. glycinoides	0.3	1	OG							0.3			
Conyza bonariensis	0.2	5	EX								0.2		
Cymbonotus lawsonianus	0.3	5	FG					0.3					
Daucus carota	0.2	15	EX								0.2		
Dianella revoluta	0.2	2	FG					0.2					
Dichondra sp. Inglewood	1	150	FG					1					
Eremophila debilis	0.1	1	SG			0.1							
Eucalyptus moluccana	20	96	TG		20								
Euchiton sphaericus	0.2	3	FG					0.2					
Galenia pubescens	0.4	5	HT									0.4	
Galium aparine	0.2	5	EX								0.2		
Geijera salicifolia	0.2	1	TG		0.2								
Gomphocarpus fruticosus	0.3	10	EX								0.3		
Hardenbergia violacea	0.3	2	OG							0.3			
Hyparrhenia hirta	20	200	HT									20	
Hypericum gramineum	0.1	2	FG					0.1					
Hypochaeris radicata	0.5	50	EX								0.5		
Linum marginale	0.5	100	FG					0.5					
Lomandra multiflora subsp. Multiflora	0.4	5	GG				0.4						
Lysimachia arvensis	0.3	25	EX								0.3		
Medicago polymorpha	0.2	5	EX								0.2		
Myoporum montanum	0.3	1	SG			0.3							
Oxalis perennans	0.3	20	FG					0.3					
Passiflora caerulea	0.4	2	EX								0.4		
Pavonia hastata	15	250	EX								15		
Plantago lanceolata	10	1000	EX								10		
Romulea rosea var. australis	0.2	15	HT									0.2	
Schoenus apogon	0.5	50	GG				0.5						
Senecio madagascarensis	0.4	50	HT									0.4	
Senecio quadridentatus	0.2	5	FG					0.2					
Sida rhombifolia	0.1	1	EX								0.1		
Solanum cinereum	0.2	1	SG			0.2							
Sonchus oleraceus	0.3	20	EX								0.3		
Templetonia stenophylla	0.2	5	FG					0.2					
Verbena bonariensis	0.2	2	EX								0.2		
Wahlenbergia gracilis	0.2	5	FG					0.2					

Easting	306436
Northing	6413363
Orientation	110
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	2
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	1

BAM Attributes 1x1 plot (%)	25
Litter (%)	30
	20
	25
	30
	20

D1.25 3314 – Central Hunter Slopes Grey Box Forest (Thinned)

DL-37

Date	2/23/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_37		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Thinned	45	35	2	10	10	9	1	3	8	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	110.7	109.7	60	23.4	23.4	2.2	0.3	0.4	0.8	0.2	
Allocasuarina luehmannii	20	100	TG		20								
Amyema pendula	0.1	2	OG							0.1			
Aristida vagans	2	100	GG				2						
Arthropodium milleflorum	0.1	4	FG					0.1					
Asperula conferta	0.1	5	FG					0.1					
Bidens subalternans	0.1	1	EX								0.1		
Breynia oblongifolia	0.1	1	SG			0.1							
Cheilanthes sieberi	0.3	10	EG						0.3				
Chloris ventricosa	1	50	GG				1						
Cirsium vulgare	0.1	2	EX								0.1		
Commelina cyanea	0.5	5	FG					0.5					
Cymbopogon refractus	10	50	GG				10						
Cyperus gracilis	0.2	50	GG				0.2						
Desmodium varians	0.2	60	OG							0.2			
Digitaria ramularis	5	100	GG				5						
Dodonaea sinuolata	1	5	SG			1							
Dodonaea viscosa	10	100	SG			10							
Einadia polygonoides	0.1	2	FG					0.1					
Entolasia stricta	1	20	GG				1						
Eragrostis leptostachya	2	3	GG				2						
Eremophila debilis	0.3	10	SG			0.3							
Eucalyptus moluccana	40	15	TG		40								
Exocarpos strictus	0.5	3	SG			0.5							
Fimbristylis dichotoma	0.2	50	GG				0.2						
Glycine clandestina	0.1	2	OG							0.1			
Gomphocarpus fruticosus	0.1	2	EX								0.1		
Lantana camara	0.1	2	HT									0.1	
Lepidium africanum	0.1	2	EX								0.1		
Leptochloa asthenes	1	50	GG				1						
Lobelia purpurascens	0.2	50	FG					0.2					
Lomandra multiflora subsp. multiflora	1	5	GG				1						
Maireana microphylla	0.1	10	SG			0.1							
Melaleuca styphelioides	10	1	SG			10							
Myoporum montanum	1	5	SG			1							
Olearia elliptica	0.2	10	SG			0.2							
Opuntia aurantiaca	0.1	1	EX								0.1		
Opuntia stricta	0.1	1	EX								0.1		
Oxalis perennans	0.1	50	FG					0.1					
Phyllanthus gunnii	0.2	10	SG			0.2							
Pseuderanthemum variabile	0.8	100	FG					0.8					
Richardia stellaris	0.1	10	EX								0.1		
Senecio madagascariensis	0.1	5	HT									0.1	
Stylidium graminifolium	0.1	2	FG					0.1					
Verbena bonariensis	0.1	2	EX								0.1		
Vernonia cinerea	0.2	20	FG					0.2					

Easting	327171
Northing	6377212
Orientation	135
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	160
BAM Attributes 1x1 plot (%)	70
Litter (%)	85
	65
	70
	70
	60

HTP-MS-03

Date	1/6/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-03		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Thinned	51	44	4	7	17	12	0	4	6	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	104.1	102.5	37.1	10.8	49.8	3.9	0	0.9	1.1	0.5	
Acacia decora	0.1	1	SG			0.1							
Acacia falcata	2	20	SG			2							
Allocasuarina luehmannii	28	80	TG		28								
Aristida ramosa	15	200	GG				15						
Aristida vagans	20	200	GG				20						
Austrostipa scabra subsp. scabra	1	50	GG				1						
Breynia oblongifolia	0.1	1	SG			0.1							
Brunoniella australis	1	100	FG					1					
Bursaria spinosa subsp. spinosa	3	40	SG			3							
Calotis lappulacea	0.5	20	FG					0.5					
Carex inversa	0.1	5	GG				0.1						
Cassinia quinquefaria	5	60	SG			5							
Centaurea solstitialis	0.1	5	EX								0.1		
Chloris truncata	5	100	GG				5						
Chloris ventricosa	0.5	30	GG				0.5						
Cirsium vulgare	0.2	10	EX								0.2		
Clematis glycinoides	0.1	5	OG							0.1			
Convolvulus erubescens	0.1	1	OG							0.1			
Conyza sumatrensis	0.5	40	EX								0.5		
Cymbopogon refractus	2	40	GG				2						
Dianella revoluta var. revoluta	0.2	10	FG					0.2					
Dichanthium sericeum subsp. sericeum	0.2	30	GG				0.2						
Dichondra repens	1	80	FG					1					
Eragrostis brownii	0.5	40	GG				0.5						
Eragrostis leptostachya	0.5	40	GG				0.5						
Eremophila debilis	0.1	5	SG			0.1							
Eucalyptus moluccana	8	3	TG		8								
Eucalyptus tereticornis	1	1	TG		1								
Fimbristylis dichotoma	0.1	5	GG				0.1						
Glycine clandestina	0.2	40	OG							0.2			
Grona varians	0.1	5	FG					0.1					
Hyparrhenia hirta	0.5	30	HT									0.5	
Lomandra filiformis subsp. filiformis	0.2	20	GG				0.2						
Lomandra multiflora subsp. multiflora	0.5	20	GG				0.5						
Microlaena stipoides var. stipoides	1	50	GG				1						
Myoporum montanum	0.5	5	SG			0.5							
Notelaea microcarpa	0.1	1	TG		0.1								
Opuntia stricta	0.1	1	EX								0.1		
Oxytes brachypoda	0.1	10	FG					0.1					
Panicum queenslandicum	1	50	GG				1						
Paronychia brasiliana	0.1	10	EX								0.1		
Poranthera microphylla	0.1	10	FG					0.1					
Pterostylis spp.	0.1	1	FG					0.1					
Senecio madagascariensis	0.1	10	EX								0.1		
Sporobolus creber	2	100	GG				2						
Themeda triandra	0.2	10	GG				0.2						
Vernonia cinerea	0.5	50	FG					0.5					
Veronica plebeia	0.1	10	FG					0.1					
Vittadinia cuneata var. hirsuta	0.1	10	FG					0.1					
Wahlenbergia gracilis	0.1	10	FG					0.1					
Xanthorrhoea acaulis	0.5	20	OG							0.5			

Easting	306223
Northing	6413821
Orientation	233
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	8

BAM Attributes 1x1 plot (%)	50
Litter (%)	45
	60
	25
	70
	50

HTP-MS-05

Date	1/6/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-05		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Thinned	37	27	3	6	10	7	0	1	7	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	106.4	84.6	41.1	2.5	37	3.9	0	0.1	6.1	15.7	
Allocasuarina luehmannii	36	100	TG		36								
Aristida ramosa	2	40	GG				2						
Austrostipa verticillata	10	100	GG				10						
Bothriochloa decipiens var. decipiens	1	50	GG				1						
Brunoniella australis	1	100	FG					1					
Calotis lappulacea	1	50	FG					1					
Carex inversa	0.1	10	GG				0.1						
Chloris gayana	0.2	5	HT									0.2	
Chloris ventricosa	5	80	GG				5						
Cirsium vulgare	5	100	EX								5		
Conyza sumatrensis	0.5	50	EX								0.5		
Cymbopogon refractus	10	100	GG				10						
Dichondra repens	0.5	50	FG					0.5					
Digitaria sanguinalis	0.1	5	EX								0.1		
Einadia nutans subsp. nutans	1	50	FG					1					
Enchylaena tomentosa	0.1	3	SG			0.1							
Eragrostis brownii	0.5	30	GG				0.5						
Eremophila debilis	2	50	SG			2							
Eucalyptus moluccana	5	2	TG		5								
Fimbristylis dichotoma	0.2	20	GG				0.2						
Galenia pubescens	15	100	HT									15	
Glycine clandestina	0.1	5	OG							0.1			
Hyparrhenia hirta	0.5	10	HT									0.5	
Lomandra multiflora subsp. multiflora	0.2	20	GG				0.2						
Maireana microphylla	0.1	1	SG			0.1							
Myoporum montanum	0.1	1	SG			0.1							
Notelaea microcarpa	0.1	1	TG		0.1								
Olearia elliptica	0.1	1	SG			0.1							
Opuntia stricta	0.1	1	EX								0.1		
Oxytes brachypoda	0.2	20	FG					0.2					
Senecio madagascariensis	0.1	5	EX								0.1		
Solanum cinereum	0.1	5	SG			0.1							
Sporobolus creber	8	100	GG				8						
Verbena bonariensis	0.2	10	EX								0.2		
Verbena rigida var. rigida	0.1	10	EX								0.1		
Vittadinia dissecta	0.1	5	FG					0.1					
Wahlenbergia gracilis	0.1	5	FG					0.1					

Easting	307000
Northing	6412600
Orientation	182
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	34
BAM Attributes 1x1 plot (%)	62
Litter (%)	65
	50
	75
	70
	50

HTP-MS-88

Date	2/13/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-88		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Thinned	41	26	3	5	10	7	0	1	11	4	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	67.9	35.6	15.2	2	15.8	2.5	0	0.1	18.5	13.8	
Acacia salicina	0.1	1	TG		0.1								
Anthosachne scabra	1	30	GG				1						
Aristida ramosa	10	100	GG				10						
Austrostipa scabra	2	50	GG				2						
Austrostipa verticillata	0.1	2	GG				0.1						
Bidens pilosa	2	100	EX								2		
Bidens subalternans	2	50	EX								2		
Brunoniella australis	0.2	10	FG					0.2					
Calotis lappulacea	0.2	10	FG					0.2					
Chrysocephalum semipapposum	0.1	5	FG					0.1					
Conyza bonariensis	1	20	EX								1		
Cymbopogon refractus	0.4	5	GG				0.4						
Cynosurus echinatus	1	40	EX								1		
Dichondra repens	1	50	FG					1					
Einadia nutans subsp. linifolia	0.1	5	GG				0.1						
Enchylaena tomentosa	0.4	10	SG			0.4							
Eremophila debilis	0.4	10	SG			0.4							
Eucalyptus moluccana	15	5	TG		15								
Galenia pubescens	3	40	HT									3	
Glycine tabacina	0.1	5	OG							0.1			
Gomphocarpus fruticosus	0.4	10	EX								0.4		
Heliotropium amplexicaule	5	100	HT									5	
Hybanthus vernonii	0.4	20	SG			0.4							
Juncus usitatus	0.1	1	GG				0.1						
Lomandra confertifolia	1	50	GG				1						
Lomandra multiflora subsp. multiflora	0.1	1	GG				0.1						
Microlaena stipoides var. stipoides	1	40	GG				1						
Myoporum montanum	0.4	2	SG			0.4							
Notelaea microcarpa	0.1	1	TG		0.1								
Opuntia stricta	0.8	5	HT									0.8	
Passiflora caerulea	0.1	1	EX								0.1		
Plantago lanceolata	1	50	EX								1		
Richardia humistrata	0.4	10	EX								0.4		
Senecio madagascariensis	5	100	HT									5	
Sida corrugata	0.1	5	FG					0.1					
Sida rhombifolia	10	500	EX								10		
Sisymbrium orientale	0.4	10	EX								0.4		
Stackhousia viminea	0.1	5	FG					0.1					
Teucrium junceum	0.4	3	SG			0.4							
Verbena bonariensis	0.2	5	EX								0.2		
Vittadinia cuneata	0.8	50	FG					0.8					

Easting	306622
Northing	6413048
Orientation	265
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	4
BAM Attributes 1x1 plot (%)	47
Litter (%)	20
	60
	35
	60
	60

NE-1

Date	12/6/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HVO_NE_1		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3314	Thinned	27	20	3	4	5	8	0	0	6	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	71.9	36.7	13.1	3.2	17.1	3.3	0	0	30.2	5	
Acacia implexa	2	10	SG			2							
Acacia salicina	8	30	TG		8								
Acacia saligna	8	30	EX								8		
Ajuga australis	0.2	50	FG					0.2					
Aristida calycina	10	1000	GG				10						
Asperula conferta	0.2	50	FG					0.2					
Austrostipa rudis subsp. rudis	5	500	GG				5						
Centaurium tenuiflorum	0.1	10	EX								0.1		
Chloris gayana	5	500	HT									5	
Cirsium spp.	1	10	EX								1		
Conyza spp.	0.1	1	EX								0.1		
Geijera salicifolia	5	5	TG		5								
Goodenia hederacea	1	200	FG					1					
Haloragis spp.	0.1	1	FG					0.1					
Lomandra confertifolia	1	100	GG				1						
Lomandra multiflora subsp. multiflor	1	100	GG				1						
Notelaea microcarpa	0.1	1	TG		0.1								
Oxalis spp.	0.1	50	FG					0.1					
Pavonia hastata	20	1000	EX								20		
Phyllanthus spp.	0.1	20	SG			0.1							
Plantago lanceolata	1	200	EX								1		
Psydrax odorata	1	1	SG			1							
Scaevola aemula	0.1	30	GG				0.1						
Sida corrugata	0.2	300	FG					0.2					
Teucrium junceum	0.1	2	SG			0.1							
Verbena spp.	0.5	50	FG					0.5					
Verbena spp.	1	5	FG					1					

Easting	305619
Northing	6405115
Orientation	272
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	15
Litter (%)	10
	20
	35
	5
	5

D1.26 3315 – Central Hunter Ironbark-Spotted Gum Forest (Derived)

DL-75

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-75		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3315	Derived	21	13	0	0	11	1	1	0	7	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	123.1	104.5	0	0	99.3	0.2	5	0	13.6	5	
Bidens pilosa	1	3	EX								1		
Carex inversa	0.3	10	GG				0.3						
Cheilanthes sieberi	5	100	EG						5				
Chondrilla juncea	1	50	EX								1		
Chrysocephalum apiculatum	0.2	5	FG					0.2					
Cymbopogon refractus	70	200	GG				70						
Cynodon dactylon	10	100	GG				10						
Cynodon spp.	0.5	50	GG				0.5						
Cyperus sesquiflorus	0.3	50	EX								0.3		
Digitaria spp.	2	100	GG				2						
Eragrostis elongata	0.4	50	GG				0.4						
Eragrostis leptostachya	2	100	GG				2						
Hypochaeris glabra	10	500	EX								10		
Hypochaeris radicata	0.2	5	EX								0.2		
Lomandra cylindrica	0.1	4	GG				0.1						
Microlaena stipoides	10	500	GG				10						
Panicum effusum	1	50	GG				1						
Plantago lanceolata	0.1	4	EX								0.1		
Senecio madagascariensis	5	25	HT									5	
Sporobolus creber	3	20	GG				3						
Verbena rigida var. rigida	1	10	EX								1		

Easting	328429
Northing	6374132
Orientation	171
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	0
10-19	0
5-9	0
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	5
Litter (%)	5
	2
	3
	5
	10

DL-76

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-76		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3315	Derived	35	20	1	2	11	4	2	0	12	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	112.4	105	0.4	0.6	99.6	1.1	3.3	0	5.8	1.6	
Acacia implexa	0.5	1	SG			0.5							
Aristida ramosa	15	50	GG				15						
Bidens pilosa	1	50	EX								1		
Bidens subalternans	0.2	5	EX								0.2		
Cheilanthes distans	0.3	20	EG						0.3				
Cheilanthes sieberi	3	100	EG						3				
Chondrilla juncea	0.5	15	EX								0.5		
Chrysocephalum apiculatum	0.2	5	FG					0.2					
Cymbopogon refractus	20	50	GG				20						
Cyperus gracilis	1	100	GG				1						
Cyperus sesquiflorus	0.5	100	EX								0.5		
Digitaria spp.	4	50	GG				4						
Eragrostis brownii	0.5	20	GG				0.5						
Eragrostis curvula	1	10	HT									1	
Eragrostis elongata	0.2	5	GG				0.2						
Eragrostis leptostachya	5	30	GG				5						
Eucalyptus crebra	0.4	1	TG		0.4								
Geranium homeanum	0.1	5	FG					0.1					
Hypochaeris glabra	0.4	10	EX								0.4		
Hypochaeris radicata	0.1	2	EX								0.1		
Lomandra multiflora subsp. multiflora	1	10	GG				1						
Microlaena stipoides	2	50	GG				2						
Opuntia stricta var. stricta	0.1	1	HT									0.1	
Oxalis perennans	0.5	100	FG					0.5					
Panicum effusum	0.9	5	GG				0.9						
Plantago lanceolata	0.4	10	EX								0.4		
Senecio madagascariensis	0.5	50	HT									0.5	
Setaria parviflora	0.5	20	EX								0.5		
Sida rhombifolia	0.5	10	EX								0.5		
Sporobolus creber	50	100	GG				50						
Stellaria media	0.5	1000	EX								0.5		
Styphelia spp.	0.1	1	SG			0.1							
Verbena officinalis	0.2	10	EX								0.2		
Verbena rigida var. rigida	1	30	EX								1		
Veronica plebeia	0.3	5	FG					0.3					

Easting	327919
Northing	6374311
Orientation	150
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	0
10-19	0
5-9	0
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	5
Litter (%)	5
	5
	5
	5

DL-78

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-78		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3315	Derived	30	15	0	1	10	3	1	0	11	4	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	92	79.3	0	0.4	77.2	1.1	0.6	0	8	4.7	
Aristida ramosa	3	20	GG				3						
Bothriochloa macra	1	100	GG				1						
Carex inversa	0.3	60	GG				0.3						
Cenchrus clandestinus	0.4	20	EX								0.4		
Cheilanthes sieberi	0.6	50	EG						0.6				
Chondrilla juncea	0.1	5	EX								0.1		
Chrysocephalum apiculatum	0.8	20	FG					0.8					
Cymbopogon refractus	20	50	GG				20						
Cynodon dactylon	1	50	GG				1						
Cyperus gracilis	0.5	100	GG				0.5						
Cyperus sesquiflorus	0.3	10	EX								0.3		
Ehrharta erecta	0.2	5	HT									0.2	
Eragrostis curvula	1	5	HT									1	
Eragrostis elongata	0.5	10	GG				0.5						
Hypochaeris glabra	0.2	50	EX								0.2		
Juncus usitatus	0.5	6	GG				0.5						
Linum marginale	0.1	5	FG					0.1					
Opuntia stricta	0.5	6	EX								0.5		
Oxalis perennans	0.2	40	FG					0.2					
Panicum effusum	0.4	3	GG				0.4						
Paspalum dilatatum	0.5	6	HT									0.5	
Phyllanthus gunnii	0.4	20	SG			0.4							
Plantago lanceolata	4	500	EX								4		
Senecio madagascariensis	3	100	HT									3	
Setaria parviflora	0.3	20	EX								0.3		
Sida rhombifolia	0.5	10	EX								0.5		
Sporobolus creber	50	1000	GG				50						
Stellaria media	0.3	100	EX								0.3		
Verbena officinalis	0.4	10	EX								0.4		
Verbena rigida	1	50	EX								1		

Easting	326865
Northing	6375235
Orientation	264
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	no
10-19	no
5-9	no
<5	no
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	2.2
Litter (%)	1
	2
	2
	5
	1

D1.27 3315 – Central Hunter Ironbark-Spotted Gum Forest (Thinned)

DL-64

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	330185
Plot Name	DL-64		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6373714
PCT	3315	Thinned	64	54	6	9	19	12	1	7	9	0		Orientation	214
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	196.5	193.9	28.4	4.3	126.4	30.2	0.1	4.5	2.5	0		BAM Attributes 20x50m plot	
Acacia implexa	0.5	1	SG			0.5								Stem classes	
Acacia linearifolia	0.2	1	TG		0.2									80+	0
Acacia parramattensis	0.2	1	TG		0.2									50-79	1
Amyema pendula	0.4	3	OG							0.4				30-49	5
Aristida ramosa	5	10	GG				5							20-29	yes
Austrostipa scabra	1	5	GG				1							10-19	yes
Bidens pilosa	0.5	3	EX								0.5			5-9	yes
Bidens subalternans	0.1	5	EX								0.1			<5	no
Brachychiton populneus	2	1	TG		2									Hollows	0
Breynia oblongifolia	0.1	3	SG			0.1								Length logs (m)	0
Bursaria spinosa	0.2	2	SG			0.2									
Carex inversa	1	50	GG				1							BAM Attributes 1x1 plot (%)	75
Cheilanthes sieberi	0.1	30	EG						0.1					Litter (%)	80
Chloris ventricosa	0.3	2	GG				0.3								45
Chondrilla juncea	0.3	5	EX								0.3				65
Chrysocephalum semipapposum	0.5	10	FG					0.5							90
Conyza bonariensis	0.3	5	EX								0.3				95
Corymbia maculata	3	2	TG		3										
Cymbopogon refractus	40	100	GG				40								
Cynodon dactylon	3	100	GG				3								
Cyperus gracilis	1	500	GG				1								
Denhamia silvestris	0.3	2	SG			0.3									
Dianella caerulea var. assera	0.3	3	FG					0.3							
Dianella prunina	0.8	6	FG					0.8							
Dichelachne micrantha	5	50	GG				5								
Dichondra repens	15	1000	FG					15							
Digitaria diffusa	0.4	20	GG				0.4								
Digitaria parviflora	5	20	GG				5								
Einadia nutans	0.5	20	FG					0.5							
Entolasia stricta	20	100	GG				20								
Eragrostis brownii	10	100	GG				10								
Eucalyptus crebra	3	1	TG		3										
Eucalyptus moluccana	20	15	TG		20										
Fimbristylis dichotoma	0.5	20	GG				0.5								
Gahnia aspera	1	10	GG				1								
Glycine clandestina	0.5	30	OG							0.5					
Glycine microphylla	0.6	20	OG							0.6					
Glycine tabacina	1	60	OG							1					
Grona varians	0.5	16	OG							0.5					
Hardenbergia violacea	0.5	20	OG							0.5					
Hypochaeris glabra	0.5	10	EX								0.5				
Hypochaeris radicata	0.5	10	EX								0.5				
Lobelia purpurascens	10	200	FG					10							
Lomandra multiflora subsp. multiflora	0.2	5	GG				0.2								
Microlaena stipoides	1	50	GG				1								
Muellerina eucalyptoides	1	10	OG							1					
Olearia elliptica	0.2	1	SG			0.2									
Opercularia diphylla	0.1	30	FG					0.1							
Oplismenus aemulus	1	50	GG				1								
Opuntia stricta	0.1	1	EX								0.1				
Oxalis perennans	0.5	30	FG					0.5							
Paspalidium distans	1	5	GG				1								
Pittosporum revolutum	0.5	1	SG			0.5									
Plantago lanceolata	0.1	1	EX								0.1				
Pseuderanthemum variabile	0.4	100	FG					0.4							
Richardia stellaris	0.1	2	EX								0.1				
Senecio madagascariensis	0.1	2	HT												
Sigesbeckia australiensis	1	50	FG					1							
Solanum stelligerum	2	5	SG			2									
Solenogyne bellioides	1	100	FG					1							
Sporobolus creber	30	100	GG				30								
Trema tomentosa var. aspera	0.4	2	SG			0.4									
Unknown native shrub	0.1	2	SG			0.1									
Wahlenbergia gracilis	0.1	5	FG					0.1							

DL-74

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-74		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3315	Thinned	39	37	4	11	14	6	1	1	2	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	110	109.7	45	29.7	33.6	1	0.3	0.1	0.3	0	
Acacia amblygona	20	35	SG			20							
Acacia implexa	4	6	SG			4							
Acacia parramattensis	2	3	TG		2								
Acacia parvipinnula	0.5	3	SG			0.5							
Allocasuarina luehmannii	30	20	TG		30								
Aristida personata	1	10	GG				1						
Aristida ramosa	20	30	GG				20						
Breynia oblongifolia	0.2	3	SG			0.2							
Bursaria spinosa	2	14	SG			2							
Carex inversa	0.5	30	GG				0.5						
Cheilanthes sieberi	0.3	50	EG						0.3				
Chrysocephalum apiculatum	0.1	5	FG					0.1					
Conyza bonariensis	0.1	1	EX								0.1		
Corymbia maculata	10	8	TG		10								
Cymbopogon refractus	0.5	6	GG				0.5						
Dianella revoluta	0.2	3	FG					0.2					
Digitaria ramularis	2	20	GG				2						
Einadia hastata	0.2	30	FG					0.2					
Entolasia stricta	1	30	GG				1						
Eucalyptus crebra	3	10	TG		3								
Exocarpos strictus	1	3	SG			1							
Gahnia aspera	5	15	GG				5						
Glycine microphylla	0.1	10	OG							0.1			
Gonocarpus teucrioides	0.1	1	FG					0.1					
Grevillea montana	1	15	SG			1							
Hibbertia diffusa	0.3	4	SG			0.3							
Hibbertia empetrifolia subsp. empetrifolia	0.4	5	SG			0.4							
Lepidosperma laterale	1	10	GG				1						
Lomandra confertifolia subsp. pallida	0.5	3	GG				0.5						
Lomandra confertifolia subsp. rubiginosa	0.2	5	GG				0.2						
Lomandra multiflora subsp. multiflora	0.2	2	GG				0.2						
Microlaena stipoides	1	20	GG				1						
Olearia elliptica	0.1	3	SG			0.1							
Oplismenus aemulus	0.5	10	GG				0.5						
Persoonia linearis	0.2	3	SG			0.2							
Plantago debilis	0.1	2	FG					0.1					
Pomax umbellata	0.3	10	FG					0.3					
Schoenus apogon	0.2	5	GG				0.2						
Sida spinosa	0.2	20	EX								0.2		

Easting	328215
Northing	6373954
Orientation	268
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	Yes
20-29	Yes
10-19	Yes
5-9	Yes
<5	yes
Hollows	0
Length logs (m)	16
BAM Attributes 1x1 plot (%)	47
Litter (%)	55
	50
	15
	30
	85

DL-77

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-77		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3315	Thinned	55	42	5	9	14	9	2	3	11	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	111.8	104.1	29.5	10.3	58.7	3.7	0.5	1.4	2.7	5	
Acacia amblygona	0.3	1	SG			0.3							
Acacia cultriformis	1	1	SG			1							
Acacia parramattensis	0.5	1	TG		0.5								
Acacia salicina	10	5	TG		10								
Allocasuarina verticillata	3	2	TG		3								
Amyema pendula	1	5	OG							1			
Aristida ramosa	5	20	GG				5						
Aristida ramosa	2	10	GG				2						
Aristida vagans	1	40	GG				1						
Bidens subalternans	0.3	20	EX								0.3		
Bothriochloa macra	0.3	5	GG				0.3						
Brachychiton populneus	1	1	TG		1								
Breynia oblongifolia	0.2	2	SG			0.2							
Carex inversa	20	0.5	GG				20						
Cheilanthes distans	0.3	50	EG						0.3				
Cheilanthes sieberi	0.2	15	EG						0.2				
Chondrilla juncea	0.3	2	EX								0.3		
Chrysocephalum apiculatum	0.5	15	FG					0.5					
Conyza bonariensis	0.2	3	EX								0.2		
Cymbopogon refractus	0.5	3	GG				0.5						
Cynodon dactylon	0.4	20	GG				0.4						
Cyperus gracilis	0.4	20	GG				0.4						
Cyperus sesquiflorus	0.1	10	EX								0.1		
Dianella prunina	1	10	FG					1					
Dichondra repens	0.2	100	FG					0.2					
Digitaria diffusa	0.4	5	GG				0.4						
Digitaria spp.	3	20	GG				3						
Dodonaea viscosa	1	2	SG			1							
Einadia hastata	0.7	20	FG					0.7					
Einadia spp.	0.1	3	FG					0.1					
Einadia trigonos	0.2	10	FG					0.2					
Eremophila debilis	1	10	SG			1							
Eucalyptus paniculata	15	7	TG		15								
Fimbristylis dichotoma	0.2	4	GG				0.2						
Gahnia aspera	5	20	GG				5						
Galenia pubescens	2	20	HT									2	
Glycine microphylla	0.1	5	OG							0.1			
Glycine tabacina	0.3	4	OG							0.3			
Hypericum gramineum	0.1	3	FG					0.1					
Hypochaeris glabra	0.3	2	EX								0.3		
Hypochaeris radicata	0.2	50	EX								0.2		
Lobelia purpurascens	0.5	50	FG					0.5					
Lomandra filiformis subsp. filiformis	0.5	3	GG				0.5						
Maireana microphylla	0.6	1	SG			0.6							
Microlaena stipoides	20	100	GG				20						
Olearia elliptica	5	7	SG			5							
Opuntia stricta	0.1	2	EX								0.1		
Oxalis perennans	0.4	50	FG					0.4					
Persoonia linearis	0.2	2	SG			0.2							
Phalaris minor	0.3	10	EX								0.3		
Senecio madagascariensis	3	30	HT									3	
Sonchus oleraceus	0.2	3	EX								0.2		
Stellaria media	0.3	50	EX								0.3		
Verbena rigida	0.4	10	EX								0.4		
White flowered shrub	1	5	SG			1							

Easting	327788
Northing	6374494
Orientation	170
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	Yes
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	8
BAM Attributes 1x1 plot (%)	64
Litter (%)	75
	80
	50
	45
	70

D1.28 3328 – Lower Hunter Red Gum-Paperbark Riverflat Forest (Mod-good)

DL-32

Date	2/19/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	333450
Plot Name	DL_32		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6360223
PCT	3328	Mod-good	23	13	1	2	5	5	0	0	7	3		Orientation	342
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	132.7	127.7	70	5.1	31.1	21.5	0	0	3.7	1.3		BAM Attributes 20x50m plot	
Aster subulatus	0.3	15	EX								0.3			Stem classes	
Cirsium vulgare	0.1	4	EX								0.1			80+	0
Commelina cyanea	1	20	FG					1						50-79	1
Conyza bonariensis	0.5	10	EX								0.5			30-49	15
Cynodon dactylon	20	200	GG				20							20-29	No
Cyperus spp.	0.2	20	GG				0.2							10-19	Yes
Einadia hastata	0.1	1	FG					0.1						5-9	No
Juncus subsecundus	0.5	15	GG				0.5							<5	No
Juncus usitatus	0.4	5	GG				0.4							Hollows	0
Melaleuca linariifolia	5	3	SG			5								Length logs (m)	1
Melaleuca styphelioides	70	24	TG		70										
Myoporum montanum	0.1	1	SG			0.1								BAM Attributes 1x1 plot (%)	4.6
Oplismenus imbecillis	10	500	GG				10							Litter (%)	15
Paspalum dilatatum	0.5	15	HT									0.5			2
Persicaria hydropiper	5	10	FG					5							5
Persicaria praetermissa	15	3	FG					15							0
Rubus fruticosus agg.	0.5	1	HT									0.5			1
Senecio madagascariensis	0.3	15	HT									0.3			
Setaria parviflora	2	19	EX								2				
Sida rhombifolia	0.3	10	EX								0.3				
Sigesbeckia australiensis	0.4	10	FG					0.4							
Trifolium repens	0.1	5	EX								0.1				
Verbena bonariensis	0.4	20	EX								0.4				

D1.29 3431 – Central Hunter Ironbark Grassy Woodland (Disturbed_Grassland)

DL-40

Date	2/27/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_40		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Disturbed grassland	27	16	0	0	10	5	1	0	10	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	104.8	95.8	0	0	93.3	1.9	0.6	0	8.5	0.5	
Aristida ramosa	5	30	GG				5						
Bidens pilosa	0.1	3	EX								0.1		
Carex inversa	1	100	GG				1						
Cenchrus clandestinus	5	50	EX								5		
Cheilanthes sieberi	0.6	100	EG						0.6				
Chrysocephalum apiculatum	0.6	20	FG					0.6					
Chrysocephalum semipapposum	0.5	10	FG					0.5					
Conyza bonariensis	0.5	15	EX								0.5		
Cymbopogon refractus	10	50	GG				10						
Cynodon dactylon	20	100	GG				20						
Eragrostis elongata	0.6	10	GG				0.6						
Eragrostis elongata	1	50	GG				1						
Eragrostis leptostachya	0.5	10	GG				0.5						
Fimbristylis dichotoma	0.2	40	GG				0.2						
Hypochaeris radicata	0.5	20	EX								0.5		
Oxalis perennans	0.6	100	FG					0.6					
Oxalis radicosa	0.1	10	FG					0.1					
Panicum effusum	5	30	GG				5						
Plantago lanceolata	0.6	10	EX								0.6		
Schkuhria pinnata	0.1	2	EX								0.1		
Senecio madagascariensis	0.5	10	HT									0.5	
Setaria parviflora	0.3	10	EX								0.3		
Sida rhombifolia	0.2	20	EX								0.2		
Sporobolus creber	50	300	GG				50						
Tricoryne elatior	0.1	5	FG					0.1					
Verbena officinalis	0.2	3	EX								0.2		
Verbena rigida var. rigida	1	50	EX								1		

Easting	328074
Northing	6374693
Orientation	10
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	2
Litter (%)	5
	0
	0
	5
	0

HTP_DR-01

Date	5/31/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP_DR01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Disturbed Grassland	29	18	0	1	10	6	0	1	9	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	88.7	82.9	0	1	80.2	1.6	0	0.1	3.8	2	
Aristida ramosa	0.1	5	GG				0.1						
Asperula conferta	0.1	20	FG					0.1					
Austrostipa aristiglumis	1	10	GG				1						
Bothriochloa biloba	55	2000	GG				55						
Chloris ventricosa	1	50	GG				1						
Chrysocephalum apiculatum	0.1	10	FG					0.1					
Cirsium vulgare	0.1	2	EX								0.1		
Conyza sp.	0.1	5	EX								0.1		
Dichanthium sericeum	1	500	GG				1						
Dichondra repens	0.1	10	FG					0.1					
Digitaria divaricatissima	0.5	20	GG				0.5						
Einadia nutans	0.1	10	FG					0.1					
Enteropogon ramosus	1	50	GG				1						
Euchiton sphaericus	0.2	30	FG					0.2					
Galenia pubescens	1	5	HT									1	
Glycine clandestina	0.1	5	OG							0.1			
Gomphocarpus fruticosus	0.6	30	EX								0.6		
Maireana microphylla	1	1	SG			1							
Mentha satureioides	1	1000	FG					1					
Panicum queenslandicum	0.4	10	GG				0.4						
Plantago lanceolata	0.5	100	EX								0.5		
Rytidosperma erianthum	0.2	10	GG				0.2						
Salvia verbenaca	0.8	50	EX								0.8		
Schkuhria pinnata var. abrotanoides	0.3	30	EX								0.3		
Senecio madagascarensis	1	100	HT									1	
Sida rhombifolia	0.2	1	EX								0.2		
Sida spinosa	0.6	50	EX								0.6		
Sporobolus creber	20	1000	GG				20						
Verbena officinalis	0.6	30	EX								0.6		

Easting	305242
Northing	6408006
Orientation	63
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	1
Litter (%)	0
	5
	0
	0
	0

HTP_DR-04

Date	5/31/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP_DR04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Disturbed Grassland	24	14	0	2	10	2	0	0	7	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	91.7	84.6	0	3	80.4	1.2	0	0	4.7	2.4	
Sporobolus creber	30	1000	GG				30						
Aristida ramosa	3	200	GG				3						
Bidens pilosa	0.1	5	EX								0.1		
Bothriochloa biloba	10	1000	GG				10						
Bothriochloa decipiens	10	500	GG				10						
Carex inversa	0.2	30	GG				0.2						
Chloris ventricosa	20	1000	GG				20						
Chrysocephalum apiculatum	0.7	50	FG					0.7					
Cirsium vulgare	0.1	5	EX								0.1		
Conyza sp.	0.2	20	EX								0.2		
Dichanthium sericeum	2	200	GG				2						
Digitaria diffusa	0.1	10	GG				0.1						
Eremophila debilis	2	100	SG			2							
Fimbristylis dichotoma	0.1	20	GG				0.1						
Gomphocarpus fruticosus	0.8	20	EX								0.8		
Heliotropium amplexicaule	1	40	HT									1	
Maireana microphylla	1	1	SG			1							
Panicum queenslandicum	5	500	GG				5						
Paspalum dilatatum	0.4	5	HT									0.4	
Plantago turrifera	0.5	50	FG					0.5					
Senecio madagascarensis	1	20	HT									1	
Sida rhombifolia	3	20	EX								3		
Solanum rostratum	0.1	5	EX								0.1		
Verbena officinalis	0.4	20	EX								0.4		

Easting	305838
Northing	6409509
Orientation	193
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	0
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	1
Litter (%)	5
	0
	0
	0
	0

HTP_DR-05

Date	5/31/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP_DR05		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Disturbed Grassland	24	15	0	1	8	4	1	1	8	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	84.6	79	0	0.4	77.5	0.9	0.1	0.1	5.4	0.2	
Aristida ramosa	10	1000	GG				10						
Bidens pilosa	0.1	10	EX								0.1		
Bothriochloa decipiens	10	1000	GG				10						
Centaurium tenuiflorum	0.1	10	EX								0.1		
Cheilanthes sieberi	0.1	10	EG						0.1				
Chloris ventricosa	15	1000	GG				15						
Chrysocephalum apiculatum	0.2	20	FG					0.2					
Cirsium vulgare	0.1	5	EX								0.1		
Convolvulus erubescens	0.1	10	OG							0.1			
Dichanthium sericeum	1	100	GG				1						
Dichondra repens	0.1	5	FG					0.1					
Eremophila debilis	0.4	10	SG			0.4							
Eriochloa pseudoacrotricha	0.4	30	GG				0.4						
Fimbristylis dichotoma	0.1	20	GG				0.1						
Gomphocarpus fruticosus	0.1	10	EX								0.1		
Lomandra confertifolia subsp. pallida	1	5	GG				1						
Mentha satureioides	0.5	50	FG					0.5					
Panicum capillare	3	200	EX								3		
Plantago lanceolata	1	50	EX								1		
Senecio madagascarensis	0.2	20	HT									0.2	
Setaria parviflora	0.5	20	EX								0.5		
Sporobolus creber	40	2000	GG				40						
Verbena officinalis	0.5	30	EX								0.5		
Wahlenbergia communis	0.1	5	FG					0.1					

Easting	305961
Northing	6409872
Orientation	40
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	2
Litter (%)	10
	0
	0
	0
	0

TC-20

Date	3/25/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC20		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Disturbed Grassland	40	32	2	4	8	13	1	4	6	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	31.3	28.7	1.1	2.7	20.9	3.3	0.2	0.5	1	1.6	
Acacia saligna	0.1	1	EX								0.1		
Brachychiton populneus subsp. populneus	0.1	1	TG		0.1								
Brunoniella australis	1	50	FG					1					
Bursaria spinosa	0.5	7	SG			0.5							
Calotis lappulacea	0.1	10	FG					0.1					
Cassinia quinquefaria	2	27	SG			2							
Cheilanthes sieberi	0.2	15	EG						0.2				
Chrysocephalum apiculatum	0.3	120	FG					0.3					
Convolvulus erubescens	0.1	1	OG							0.1			
Cymbopogon refractus	1.5	30	GG				1.5						
Cynodon dactylon	0.1	5	GG				0.1						
Dianella revoluta	1	12	FG					1					
Dichelachne crinita	1	20	GG				1						
Dichondra sp. Inglewood	0.1	10	FG					0.1					
Enteropogon ramosus	0.1	3	GG				0.1						
Eragrostis brownii	0.1	4	GG				0.1						
Eremophila debilis	0.1	2	SG			0.1							
Eucalyptus moluccana	1	13	TG		1								
Euphorbia drummondii	0.1	8	FG					0.1					
Fimbristylis dichotoma	0.1	5	GG				0.1						
Glycine clandestina	0.1	3	OG							0.1			
Hardenbergia violacea	0.2	8	OG							0.2			
Hybanthus vernonii	0.1	2	FG					0.1					
Hyparrhenia hirta	1.5	25	HT									1.5	
Lomandra filiformis	8	30	GG				8						
Lomandra multiflora subsp. multiflora	10	50	GG				10						
Opuntia stricta	0.1	1	EX								0.1		
Oxalis perennans	0.1	1	FG					0.1					
Rhytidosporum spp.	0.1	3	SG			0.1							
Richardia humistrata	0.1	3	EX								0.1		
Senecio madagascariensis	0.1	5	HT									0.1	
Sida corrugata	0.1	2	FG					0.1					
Sida rhombifolia	0.1	1	EX								0.1		
Stackhousia viminea	0.1	10	FG					0.1					
Taraxacum officinale	0.1	1	EX								0.1		
Tricoryne elatior	0.1	1	FG					0.1					
Tylophora spp.	0.1	2	OG							0.1			
Verbena rigida var. rigida	0.5	17	EX								0.5		
Vernonia cinerea	0.1	3	FG					0.1					
Wahlenbergia communis	0.1	6	FG					0.1					

Easting	305543
Northing	6413182
Orientation	228
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	9
Litter (%)	10
	5
	10
	15
	5

D1.30 3431 – Central Hunter Ironbark Grassy Woodland (Plantation)

DR-02

Date	5/31/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	305322
Plot Name	HTP_DR02		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6408260
PCT	3431	Plantation	38	29	3	5	11	8	1	1	7	2		Orientation	230
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	72	65.3	25.5	10	27.2	2	0.5	0.1	4.9	1.8			
Acacia salicina	0.5	2	TG		0.5									BAM Attributes 20x50m plot	
Allocasuarina luehmannii	20	10	TG		20									Stem classes	
Aristida ramosa	0.1	10	GG				0.1							80+	0
Austrostipa scabra	1	20	GG				1							50-79	0
Austrostipa verticillata	5	50	GG				5							30-49	0
Bothriochloa biloba	10	1000	GG				10							20-29	yes
Calotis lappulacea	0.1	10	FG					0.1						10-19	yes
Carex inversa	0.1	5	GG				0.1							5-9	yes
Centaurium tenuiflorum	0.1	10	EX								0.1			<5	yes
Cheilanthes sieberi	0.5	100	EG						0.5					Hollows	0
Chloris ventricosa	5	100	GG				5							Length logs (m)	5
Chrysocephalum apiculatum	0.1	20	FG					0.1							
Cirsium vulgare	0.3	1	EX								0.3			BAM Attributes 1x1 plot (%)	19
Conyza sp.	0.2	20	EX								0.2			Litter (%)	0
Cymbopogon refractus	0.2	5	GG				0.2								5
Dichondra repens	0.4	100	FG					0.4							10
Einadia nutans	0.3	10	FG					0.3							55
Enchylaena tomentosa	1	30	SG			1									25
Eremophila debilis	3	100	SG			3									
Eriochloa pseudoacrotricha	0.1	10	GG				0.1								
Eucalyptus blakelyi / camaldulensis mix - plantec	5	8	TG		5										
Euphorbia drummondii	0.1	5	FG					0.1							
Fimbristylis dichotoma	0.1	20	GG				0.1								
Galenia pubescens	1	10	HT									1			
Glycine clandestina	0.1	10	OG							0.1					
Lomandra confertifolia subsp. pallida	0.6	10	GG				0.6								
Maireana microphylla	2	5	SG			2									
Panicum capillare	3	100	EX								3				
Plantago turrifera	0.1	10	FG					0.1							
Sclerolaena muricata var. semiglabra	1	1	SG			1									
Sclerolaena muricata var. villosa	3	10	SG			3									
Senecio madagascarensis	0.8	20	HT									0.8			
Sida corrugata	0.8	20	FG					0.8							
Sida rhombifolia	1	10	EX								1				
Solanum rostratum	0.1	5	EX								0.1				
Sporobolus creber	5	500	GG				5								
Verbena officinalis	0.2	10	EX								0.2				
Wahlenbergia communis	0.1	5	FG					0.1							

DR-03

Date	5/31/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	305490
Plot Name	HTP_DR03		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6408393
PCT	3431	Plantation	37	26	3	3	11	7	1	1	9	2		Orientation	322
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	68.9	60.6	27	3.4	26.7	3	0.4	0.1	3.1	5.2		BAM Attributes 20x50m plot	
Acacia salicina	2	10	TG		2									Stem classes	
Allocasuarina luehmannii	15	20	TG		15									80+	0
Aristida ramosa	0.5	30	GG				0.5							50-79	1
Austrostipa scabra subsp. falcata	0.4	20	GG				0.4							30-49	0
Austrostipa verticillata	5	50	GG				5							20-29	yes
Bidens pilosa	0.1	5	EX								0.1			10-19	yes
Bothriochloa biloba	10	500	GG				10							5-9	yes
Calotis lappulacea	0.2	20	FG					0.2						<5	yes
Carex inversa	0.1	20	GG				0.1							Hollows	0
Centaurium tenuiflorum	0.1	10	EX								0.1			Length logs (m)	6
Cheilanthes sieberi	0.4	50	EG						0.4						
Chloris ventricosa	5	200	GG				5							BAM Attributes 1x1 plot (%)	28
Chrysocephalum apiculatum	2	100	FG					2						Litter (%)	30
Cirsium vulgare	0.4	20	EX								0.4				20
Conyza sp.	0.1	10	EX								0.1				25
Dichondra repens	0.3	1000	FG					0.3							35
Enchylaena tomentosa	0.4	20	SG			0.4									30
Eremophila debilis	2	100	SG			2									
Eriochloa pseudoacrotricha	0.2	20	GG				0.2								
Eucalyptus blakelyi	10	8	TG		10										
Fimbristylis dichotoma	0.1	20	GG				0.1								
Galenia pubescens	5	40	HT									5			
Glycine clandestina	0.1	10	OG							0.1					
Lepidium africanum	0.2	20	EX								0.2				
Lomandra confertifolia subsp. pallida	0.3	5	GG				0.3								
Maireana microphylla	1	1	SG			1									
Panicum capillare	1	50	EX								1				
Pseuderanthemum variabile	0.1	5	FG					0.1							
Rytidosperma caespitosum	0.1	5	GG				0.1								
Senecio madagascarensis	0.2	20	HT									0.2			
Sida corrugata	0.2	30	FG					0.2							
Sida rhombifolia	1	20	EX								1				
Solanum rostratum	0.1	5	EX								0.1				
Sporobolus creber	5	200	GG				5								
Verbena officinalis	0.1	10	EX								0.1				
Vittadinia pustulata	0.1	5	FG					0.1							
Wahlenbergia communis	0.1	5	FG					0.1							

HTP-MS-01

Date	31/05/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Plantation	36	24	2	2	9	9	1	1	12	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	108.7	80.4	10	0.2	64.6	4.5	0.1	1	28.3	0	
Allocasuarina luehmannii	5	15	TG		5								
Aristida ramosa	5	100	GG				5						
Aristida vagans	1	50	GG				1						
Asperula conferta	1	100	FG					1					
Bidens subalternans	0.1	10	EX								0.1		
Bothriochloa macra	20	200	GG				20						
Brunoniella australis	0.5	100	FG					0.5					
Carex inversa	1	100	GG				1						
Cheilanthes sieberi subsp. sieberi	0.1	20	EG						0.1				
Chloris ventricosa	15	200	GG				15						
Cirsium vulgare	1	50	EX								1		
Conyza bonariensis	2	100	EX								2		
Dichanthium sericeum subsp. sericeum	2	80	GG				2						
Dichondra repens	2	100	FG					2					
Enchylaena tomentosa	0.1	2	SG			0.1							
Eremophila debilis	0.1	10	SG			0.1							
Eucalyptus blakelyi / camaldulensis mix - planted	5	8	TG		5								
Fimbristylis dichotoma	0.1	20	GG				0.1						
Gamochaeta purpurea	0.1	10	EX								0.1		
Glycine clandestina	1	100	OG							1			
Gomphocarpus fruticosus	0.1	5	EX								0.1		
Grona varians	0.2	40	FG					0.2					
Lomandra confertifolia subsp. pallida	0.5	20	GG				0.5						
Mentha diemenica	0.2	50	FG					0.2					
Oxalis perennans	0.2	50	FG					0.2					
Plantago lanceolata	15	200	EX								15		
Senecio madagascariensis	8	100	EX								8		
Setaria parviflora	0.5	50	EX								0.5		
Sida rhombifolia	1	40	EX								1		
Sida trichopoda	0.2	40	FG					0.2					
Sporobolus creber	20	200	GG				20						
Verbena bonariensis	0.2	20	EX								0.2		
Verbena officinalis	0.1	10	EX								0.1		
Verbena rigida var. rigida	0.2	30	EX								0.2		
Wahlenbergia communis	0.1	10	FG					0.1					
Wahlenbergia gracilis	0.1	10	FG					0.1					

Easting	305625
Northing	6408868
Orientation	229
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	18
Litter (%)	15
	30
	25
	15
	5

D1.31 3431 – Central Hunter Ironbark Grassy Woodland (Poor)

DL-26

Date	2/12/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_26		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Poor	41	35	3	5	11	10	1	5	4	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	160	88.5	65.4	1	18.1	2.2	0.1	1.7	1.4	70.1	
Acacia implexa	0.1	1	SG			0.1							
Allocasuarina luehmannii	15	30	TG		15								
Angophora floribunda	0.4	4	TG		0.4								
Aristida ramosa	10	50	GG				10						
Asperula conferta	0.1	100	FG					0.1					
Breynia oblongifolia	0.1	1	SG			0.1							
Cassinia sifton	0.1	1	SG			0.1							
Cheilanthes sieberi	0.1	100	EG						0.1				
Chloris ventricosa	1	20	GG				1						
Chrysocephalum apiculatum	0.1	5	FG					0.1					
Cirsium vulgare	0.2	3	EX								0.2		
Cymbopogon refractus	2	5	GG				2						
Dianella caerulea	0.1	1	FG					0.1					
Dianella longifolia	0.5	2	FG					0.5					
Dichanthium sericeum	0.1	20	GG				0.1						
Dichondra repens	0.3	1000	FG					0.3					
Digitaria ramularis	0.4	15	GG				0.4						
Eragrostis brownii	1	20	GG				1						
Eragrostis leptostachya	1	20	GG				1						
Eremophila debilis	0.6	10	SG			0.6							
Eucalyptus blakelyi	50	18	TG		50								
Fimbristylis dichotoma	0.5	15	GG				0.5						
Glossocardia bidens	0.2	50	FG					0.2					
Glycine clandestina	0.1	50	OG							0.1			
Glycine microphylla	0.8	30	OG							0.8			
Glycine tabacina	0.5	60	OG							0.5			
Hydrocotyle laxiflora	0.1	50	FG					0.1					
Hypericum gramineum	0.1	30	FG					0.1					
Juncus cognatus	0.1	1	EX								0.1		
Kennedia rubicunda	0.1	2	OG							0.1			
Lantana camara	70	100	HT									70	
Lomandra multiflora subsp. multiflora	1	20	GG				1						
Olea europaea	0.1	1	HT									0.1	
Opuntia stricta	0.1	1	EX								0.1		
Phyllanthus gunnii	0.1	100	SG			0.1							
Pseuderanthemum variabile	0.5	100	FG					0.5					
Rhyocarpia minima	0.2	100	OG							0.2			
Rytidosperma spp.	0.1	2	GG				0.1						
Sporobolus creber	1	10	GG				1						
Verbena bonariensis	1	20	EX								1		
Vernonia cinerea	0.2	40	FG					0.2					

Easting	324399
Northing	6387196
Orientation	198
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	8
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	27
Litter (%)	10
	15
	15
	40
	55

DL-52

Date	3/4/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_52		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Poor	30	21	2	0	11	7	1	0	8	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	123.7	80.2	20	0	44.3	15.7	0.2	0	43.2	0.3	
Acacia parramattensis	5	10	TG		5								
Aristida ramosa	2	12	GG				2						
Bidens pilosa	20	50	EX								20		
Bidens subalternans	0.2	10	EX								0.2		
Carex breviculmis	0.3	20	GG				0.3						
Cheilanthes sieberi	0.2	20	EG						0.2				
Chrysocephalum apiculatum	5	60	FG					5					
Conyza bonariensis	0.4	10	EX								0.4		
Cymbopogon refractus	1	10	GG				1						
Digitaria ramularis	1	10	GG				1						
Einadia polygonoides	0.3	10	FG					0.3					
Einadia trigonos	0.1	6	FG					0.1					
Entolasia stricta	2	50	GG				2						
Eragrostis elongata	0.5	6	GG				0.5						
Eragrostis leptostachya	1	20	GG				1						
Eucalyptus crebra	15	30	TG		15								
Euchiton sphaericus	0.1	1	FG					0.1					
Gahnia aspera	1	3	GG				1						
Lobelia concolor	10	500	FG					10					
Lomandra multiflora subsp. multiflora	0.5	2	GG				0.5						
Microlaena stipoides	30	400	GG				30						
Murdannia graminea	0.1	2	FG					0.1					
Richardia stellaris	1	50	EX								1		
Senecio madagascariensis	0.3	15	HT									0.3	
Setaria parviflora	1	10	EX								1		
Sida rhombifolia	20	25	EX								20		
Sisymbrium officinale	0.1	3	EX								0.1		
Sporobolus creber	5	20	GG				5						
Tricoryne elatior	0.1	5	FG					0.1					
Verbena officinalis	0.5	10	EX								0.5		

Easting	329254
Northing	6373571
Orientation	201
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	17

BAM Attributes 1x1 plot (%)	21
Litter (%)	40
	20
	5
	15
	25

HTP-MS-02

Date	31/05/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-02		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Poor	39	27	2	2	12	9	1	1	11	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	74	63.2	7	0.3	49.6	5.6	0.2	0.5	10.7	0.1	
Acacia salicina	2	10	TG		2								
Allocasuarina luehmannii	5	20	TG		5								
Aristida ramosa	5	100	GG				5						
Austrostipa scabra subsp. scabra	1	50	GG				1						
Bothriochloa decipiens var. decipiens	2	50	GG				2						
Calotis lappulacea	0.5	20	FG					0.5					
Carex inversa	0.1	5	GG				0.1						
Centaurea solstitialis	0.1	10	EX								0.1		
Cheilanthes sieberi subsp. sieberi	0.2	30	EG						0.2				
Chloris ventricosa	15	200	GG				15						
Chrysocephalum apiculatum	3	100	FG					3					
Conyza bonariensis	0.5	50	EX								0.5		
Dichanthium sericeum subsp. sericeum	5	100	GG				5						
Dichanthium sericeum subsp. sericeum	0.5	50	GG				0.5						
Dichondra repens	1	100	FG					1					
Eremophila debilis	0.2	20	SG			0.2							
Euchiton involucratus	0.1	5	FG					0.1					
Fimbristylis dichotoma	0.2	30	GG				0.2						
Galenia pubescens	0.1	1	HT									0.1	
Gamochaeta purpurea	0.1	5	EX								0.1		
Glycine clandestina	0.5	50	OG							0.5			
Gomphocarpus fruticosus	0.1	1	EX								0.1		
Lomandra confertifolia subsp. pallida	0.2	20	GG				0.2						
Maireana enchylaenoides	0.1	5	FG					0.1					
Maireana microphylla	0.1	2	SG			0.1							
Panicum queenslandicum var. queenslandicum	0.5	30	GG				0.5						
Plantago lanceolata	3	100	EX								3		
Rytidosperma bipartitum	0.1	5	GG				0.1						
Senecio madagascariensis	4	200	EX								4		
Setaria parviflora	2	50	EX								2		
Sida corrugata	0.5	40	FG					0.5					
Sida rhombifolia	0.5	30	EX								0.5		
Sida trichopoda	0.2	50	FG					0.2					
Sporobolus creber	20	200	GG				20						
Verbena bonariensis	0.2	10	EX								0.2		
Verbena officinalis	0.1	10	EX								0.1		
Verbena rigida var. rigida	0.1	10	EX								0.1		
Vittadinia cuneata var. cuneata f. cuneata	0.1	5	FG					0.1					
Wahlenbergia communis	0.1	10	FG					0.1					

Easting	305653
Northing	6409013
Orientation	144
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	No
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	9
Litter (%)	10
	5
	15
	10
	5

D1.32 3431 – Central Hunter Ironbark Grassy Woodland (Thinned)

DL-30

Date	2/14/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	325475
Plot Name	DL_30		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6382586
PCT	3431	Thinned	29	23	2	6	7	6	0	2	4	2		Orientation	340
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	138.7	130.9	55	2.1	70.7	2.5	0	0.6	1.8	6		BAM Attributes 20x50m plot	
Acacia implexa	0.2	1	SG			0.2								Stem classes	
Allocasuarina luehmannii	15	20	TG		15									80+	0
Aristida ramosa	30	100	GG				30							50-79	1
Austrostipa scabra	15	60	GG				15							30-49	1
Bidens subalternans	0.5	15	EX								0.5			20-29	Yes
Breynia oblongifolia	0.2	2	SG			0.2								10-19	Yes
Commelina cyanea	0.3	5	FG					0.3						5-9	Yes
Cymbopogon refractus	10	50	GG				10							<5	Yes
Dichondra sp. Inglewood	0.4	200	FG					0.4						Hollows	1
Eragrostis brownii	15	80	GG				15							Length logs (m)	10
Eremophila debilis	0.5	16	SG			0.5									
Eucalyptus moluccana	40	30	TG		40									BAM Attributes 1x1 plot (%)	36
Exocarpos strictus	1	1	SG			1								Litter (%)	65
Fimbristylis dichotoma	0.1	5	GG				0.1								45
Glossocardia bidens	0.1	2	FG					0.1							35
Glycine clandestina	0.5	20	OG							0.5					20
Glycine latifolia	0.1	5	OG							0.1					15
Gomphocarpus fruticosus	0.5	60	EX								0.5				
Lantana camara	1	6	HT									1			
Lomandra multiflora subsp. multiflora	0.1	3	GG				0.1								
Olea europaea	5	15	HT									5			
Phyllanthus gunnii	0.1	4	SG			0.1									
Platysace ericoides	0.1	10	SG			0.1									
Pseuderanthemum variabile	0.2	100	FG					0.2							
Sida rhombifolia	0.5	15	EX								0.5				
Teucrium junceum	0.9	5	FG					0.9							
Themeda triandra	0.5	4	GG				0.5								
Verbena officinalis	0.3	2	EX								0.3				
Vernonia cinerea	0.6	30	FG					0.6							

DL-45

Date	3/1/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	325017
Plot Name	DL_45		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6381490
PCT	3431	Thinned	43	36	1	3	12	14	1	5	5	2		Orientation	164
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	157	76	40	1.6	30.1	3	0.3	1	50.7	30.3		BAM Attributes 20x50m plot	
Amyema miquelii	0.1	1	OG							0.1				Stem classes	
Aristida ramosa	10	60	GG				10							80+	2
Aristida vagans	0.4	10	GG				0.4							50-79	1
Asperula conferta	0.1	2	FG					0.1						30-49	2
Austrostipa verticillata	5	4	GG				5							20-29	Yes
Bidens pilosa	0.2	5	EX								0.2			10-19	Yes
Bothriochloa macra	0.3	30	GG				0.3							5-9	Yes
Calotis lappulacea	0.2	7	FG					0.2						<5	Yes
Carex inversa	0.1	3	GG				0.1							Hollows	1
Cheilanthes sieberi	0.3	5	EG						0.3					Length logs (m)	36
Chloris ventricosa	0.5	20	GG				0.5								
Chrysocephalum semipapposum	0.2	10	FG					0.2						BAM Attributes 1x1 plot (%)	16
Cymbopogon refractus	2	5	GG				2							Litter (%)	15
Cyperus gracilis	0.3	60	GG				0.3								35
Desmodium varians	0.2	80	OG							0.2					15
Dichondra repens	0.2	50	FG					0.2							5
Einadia polygonoides	0.6	20	FG					0.6							10
Entolasia stricta	10	100	GG				10								
Eragrostis leptostachya	0.1	5	GG				0.1								
Eremophila debilis	0.5	20	SG			0.5									
Eucalyptus moluccana	40	21	TG		40										
Exocarpos strictus	0.6	2	SG			0.6									
Gahnia aspera	0.4	1	GG				0.4								
Glycine clandestina	0.2	50	OG							0.2					
Glycine microphylla	0.2	15	OG							0.2					
Glycine tabacina	0.3	100	OG							0.3					
Lantana camara	30	15	HT									30			
Lepidium bonariense	0.1	1	EX								0.1				
Lobelia purpurascens	0.3	50	FG					0.3							
Lythrum hyssopifolia	0.1	1	FG					0.1							
Maireana microphylla	0.5	1	SG			0.5									
Opercularia diphylla	0.2	20	FG					0.2							
Opuntia stricta	0.1	1	EX								0.1				
Oxalis chnoodes	0.1	5	FG					0.1							
Plantago debilis	0.1	2	FG					0.1							
Pseuderanthemum variabile	0.3	100	FG					0.3							
Richardia stellaris	0.3	20	EX								0.3				
Rostellularia adscendens	0.1	5	FG					0.1							
Senecio madagascariensis	0.3	5	HT									0.3			
Sida corrugata	0.1	3	FG					0.1							
Sporobolus creber	1	10	GG				1								
Verbena bonariensis	50	200	EX								50				
Vernonia cinerea	0.4	50	FG					0.4							

DL-46

Date	3/1/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_46		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Thinned	48	38	3	4	12	15	1	3	8	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	111.8	100.2	42	6	47.7	3.5	0.2	0.8	11.1	0.5	
Allocasuarina luehmannii	2	2	TG		2								
Amyema pendula subsp. pendula	0.2	1	OG							0.2			
Aristida ramosa	10	15	GG				10						
Aristida vagans	1	40	GG				1						
Arthropodium milleflorum	0.1	2	FG					0.1					
Asperula conferta	0.1	30	FG					0.1					
Bidens pilosa	0.1	3	EX								0.1		
Bidens subalternans	0.2	5	EX								0.2		
Bothriochloa macra	0.1	3	GG				0.1						
Cheilanthes sieberi	0.2	30	EG						0.2				
Chloris ventricosa	0.6	10	GG				0.6						
Chrysocephalum semipapposum	0.3	50	FG					0.3					
Conyza bonariensis	0.2	10	EX								0.2		
Cymbopogon refractus	5	15	GG				5						
Cyperus gracilis	15	0.5	GG				15						
Desmodium brachypodum	0.5	6	FG					0.5					
Dichondra repens	0.4	200	FG					0.4					
Entolasia stricta	10	50	GG				10						
Eragrostis leptostachya	1	30	GG				1						
Eremophila debilis	1	10	SG			1							
Eucalyptus crebra	10	7	TG		10								
Eucalyptus moluccana	30	19	TG		30								
Exocarpos strictus	4	3	SG			4							
Fimbristylis dichotoma	0.5	10	GG				0.5						
Glossocardia bidens	0.3	5	FG					0.3					
Glycine clandestina	0.3	20	OG							0.3			
Glycine tabacina	0.3	50	OG							0.3			
Goodenia rotundifolia	0.1	5	FG					0.1					
Lantana camara	0.4	3	HT									0.4	
Lobelia purpurascens	0.5	100	FG					0.5					
Lomandra filiformis	0.1	5	GG				0.1						
Melichrus urceolatus	0.5	1	FG					0.5					
Myoporum montanum	0.9	1	SG			0.9							
Panicum effusum	0.4	5	GG				0.4						
Phyllanthus gunnii	0.1	2	SG			0.1							
Plantago debilis	0.1	4	FG					0.1					
Pseuderanthemum variabile	0.2	50	FG					0.2					
Richardia stellaris	0.1	20	EX								0.1		
Senecio madagascariensis	0.1	3	HT									0.1	
Setaria parviflora	0.2	5	EX								0.2		
Sida rhombifolia	0.1	3	EX								0.1		
Sida spinosa	0.2	3	EX								0.2		
Sporobolus creber	4	10	GG				4						
Tricoryne elatior	0.1	4	FG					0.1					
Unknown native forb	0.1	5	FG					0.1					
Verbena bonariensis	10	50	EX								10		
Vernonia cinerea	0.1	5	FG					0.1					
Wahlenbergia communis	0.1	1	FG					0.1					

Easting	324891
Northing	6381398
Orientation	332
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	2
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	23
Litter %)	65
	15
	15
	10
	10

DL-47

Date	3/1/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_47		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Thinned	35	30	2	7	6	11	1	3	4	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	90.7	89.9	65	3.8	17.5	3.1	0.1	0.4	0.6	0.2	
Acacia implexa	0.3	3	SG			0.3							
Allocasuarina luehmannii	60	300	TG		60								
Aristida ramosa	10	30	GG				10						
Brachyscome spp.	0.1	3	FG					0.1					
Cheilanthes sieberi	0.1	3	EG						0.1				
Chrysocephalum semipapposum	0.2	2	FG					0.2					
Clematis aristata	0.1	1	OG							0.1			
Cymbopogon refractus	2	15	GG				2						
Daviesia genistifolia	0.2	3	SG			0.2							
Dianella revoluta	0.2	5	FG					0.2					
Dichondra repens	0.4	100	FG					0.4					
Digitaria ramularis	3	10	GG				3						
Einadia polygonoides	0.2	5	FG					0.2					
Enteropogon acicularis	1	4	GG				1						
Entolasia stricta	1	30	GG				1						
Epracics spp.	0.1	2	SG			0.1							
Eragrostis leptostachya	0.5	15	GG				0.5						
Eremophila debilis	2	5	SG			2							
Eucalyptus crebra	5	3	TG		5								
Exocarpos strictus	1	5	SG			1							
Glossocardia bidens	0.1	5	FG					0.1					
Glycine clandestina	0.1	5	OG							0.1			
Glycine tabacina	0.2	10	OG							0.2			
Olearia viscosa	0.1	1	SG			0.1							
Opuntia stricta	0.2	2	EX								0.2		
Phyllanthus gunnii	0.1	10	SG			0.1							
prostrate shrub	1	3	FG					1					
Pseuderanthemum variabile	0.3	50	FG					0.3					
Richardia stellaris	0.1	3	EX								0.1		
Rostellularia adscendens	0.1	3	FG					0.1					
Senecio madagascariensis	0.2	10	HT									0.2	
Sida corrugata	0.1	3	FG					0.1					
Sonchus oleraceus	0.1	1	EX								0.1		
Verbena bonariensis	0.2	3	EX								0.2		
Vernonia cinerea	0.4	50	FG					0.4					

Easting	324815
Northing	6381115
Orientation	154
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	14
BAM Attributes 1x1 plot (%)	20
Litter (%)	10
	20
	25
	5
	40

DR-06

Date	6/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP_DR06		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Thinned	57	47	6	10	17	12	0	2	9	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	128	106.5	29	8	62.3	6.9	0	0.3	1.5	20	
Acacia decora	1	10	SG			1							
Acacia falcata	1	5	SG			1							
Acacia implexa	0.2	1	SG			0.2							
Allocasuarina luehmannii	1	1	TG		1								
Anthrosachne scabra	5	100	GG				5						
Aristida ramosa	20	1000	GG				20						
Aristida vagans	5	100	GG				5						
Asperula conferta	0.1	10	FG					0.1					
Austrostipa scabra	6	100	GG				6						
Bidens pilosa	0.1	10	EX								0.1		
Brachychiton populneus	1	1	TG		1								
Breynia oblongifolia	0.3	10	SG			0.3							
Bursaria spinosa	1	10	SG			1							
Calotis lappulacea	0.1	20	FG					0.1					
Cassinia quinquefaria	2	20	SG			2							
Centaurium tenuiflorum	0.1	10	EX								0.1		
Chloris ventricosa	5	500	GG				5						
Cirsium vulgare	0.1	10	EX								0.1		
Clematis glycinoides	0.1	1	OG							0.1			
Conyza sp.	0.1	10	EX								0.1		
Cotoneaster pannosus	0.1	1	EX								0.1		
Dianella revoluta	1	20	FG					1					
Dichondra repens	1	200	FG					1					
Digitaria divaricatissima	0.1	10	GG				0.1						
Einadia nutans subsp. linifolia	0.1	10	FG					0.1					
Eragrostis leptostachya	5	100	GG				5						
Eremophila debilis	0.4	50	SG			0.4							
Eucalyptus crebra	1	1	TG		1								
Eucalyptus moluccana	1	1	TG		1								
Eucalyptus tereticornis	20	15	TG		20								
Fimbristylis dichotoma	0.1	10	GG				0.1						
Glycine tabacina	0.2	30	OG							0.2			
Gomphocarpus fruticosus	0.1	5	EX								0.1		
Hydrocotyle laxiflora	0.1	10	FG					0.1					
Hyparrhenia hirta	20	500	HT									20	
Lomandra confertifolia subsp. pallida	2	20	GG				2						
Lomandra filiformis subsp. filiformis	1	100	GG				1						
Lomandra multiflora subsp. multiflora	0.2	5	GG				0.2						
Mentha satureioides	0.2	30	FG					0.2					
Microlaena stipoides	10	1000	GG				10						
Notelaea microcarpa	5	4	TG		5								
Olearia elliptica	1	5	SG			1							
Opuntia stricta	0.5	10	EX								0.5		
Oxytes brachypodum	1	200	FG					1					
Panicum queenslandicum	0.8	20	GG				0.8						
Paspalidium distans	0.2	20	GG				0.2						
Pimelea linifolia	0.1	5	SG			0.1							
Scaevola ramosissima	1	50	FG					1					
Schoenus ericetorum	0.1	20	GG				0.1						
Sida rhombifolia	0.1	1	EX								0.1		
Sporobolus creber	0.8	20	GG				0.8						
Templetonia stenophylla	0.2	10	FG					0.2					
Teurcrium junceum	1	1	SG			1							
Themeda triandra	1	50	GG				1						
Verbena bonariensis	0.3	10	EX								0.3		
Vernonia cinerea	0.1	10	FG					0.1					
Veronica plebeia	2	100	FG					2					

Easting	306146
Northing	6413645
Orientation	330
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	10
BAM Attributes 1x1 plot (%)	53
Litter (%)	50
	65
	45
	50
	55

D1.33 3433 – Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest (Mod-good)

HTP-MS-99

Date	9/15/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-99		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3433	Mod-good	23	23	5	3	8	3	1	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	103.2	103.2	34.5	48	16.7	3.2	0.1	0.7	0	0	
Allocasuarina torulosa	0.5	2	TG		0.5								
Billardiera scandens	0.1	1	OG							0.1			
Corymbia maculata	25	15	TG		25								
Daviesia ulicifolia	45	500	SG			45							
Dianella caerulea	1	40	FG					1					
Dianella revoluta	0.2	10	FG					0.2					
Entolasia stricta	10	200	GG				10						
Eucalyptus fergusonii	1	1	TG		1								
Eucalyptus pilularis	5	1	TG		5								
Eucalyptus punctata	3	1	TG		3								
Glycine tabacina	0.5	10	OG							0.5			
Goodenia heterophylla	2	50	FG					2					
Hardenbergia violacea	0.1	1	OG							0.1			
Lepidosperma cf. laterale	2	50	GG				2						
Lindsaea microphylla	0.1	5	EG						0.1				
Lomandra filiformis subsp. filiformis	1	50	GG				1						
Lomandra longifolia	0.2	3	GG				0.2						
Lomandra multiflora subsp. multiflora	1	20	GG				1						
Microlaena stipoides var. stipoides	1	30	GG				1						
Panicum simile	0.5	10	GG				0.5						
Persoonia linearis	1	5	SG			1							
podolobium ilicifolium	2	20	SG			2							
Tetrarrhena juncea	1	20	GG				1						

Easting	351304
Northing	6339319
Orientation	215
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	4
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	5
BAM Attributes 1x1 plot (%)	73
Litter (%)	80
	75
	85
	65
	60

D1.34 3433 – Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest (Derived)

SMSO-06

Date	9/15/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	SMSO_06		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3433	Derived	25	24	3	5	8	7	1	0	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	100.2	100.1	0.4	0.5	96.4	2.7	0.1	0	0	0.1	
Allocasuarina littoralis	0.1	1	TG		0.1								
Andropogon virginicus	0.1	5	HT									0.1	
Aristida vagans	0.1	20	GG				0.1						
Corymbia maculata	0.2	1	TG		0.2								
Daviesia ulicifolia	0.1	15	SG			0.1							
Dianella caerulea	2	40	FG					2					
Drosera peltata	0.1	1	FG					0.1					
Entolasia stricta	0.5	100	GG				0.5						
Epacris pulchella	0.1	6	SG			0.1							
Eragrostis brownii	5	300	GG				5						
Eucalyptus punctata	0.1	2	TG		0.1								
Gonocarpus tetragynus	0.2	50	FG					0.2					
Hypericum gramineum	0.1	1	FG					0.1					
Juncus usitatus	0.1	15	GG				0.1						
Lepidosperma laterale	0.5	50	GG				0.5						
Leucopogon juniperinus	0.1	10	SG			0.1							
Leucopogon lanceolatus	0.1	2	SG			0.1							
Lomandra longifolia	30	200	GG				30						
Persoonia linearis	0.1	4	SG			0.1							
Pomax umbellata	0.1	5	FG					0.1					
Schizaea bifida	0.1	10	EG						0.1				
Schoenus apogon	0.2	50	GG				0.2						
Thelymitra ixioides var. ixioides	0.1	1	FG					0.1					
Themeda triandra	60	200	GG				60						
Wahlenbergia communis	0.1	25	FG					0.1					

Easting	351128
Northing	6339235
Orientation	219
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	3
Litter (%)	2
	3
	5
	2
	3

D1.35 3436 – Hunter Coast Sandy Creekflat Low Paperbark Scrub

Benchmark

D1.36 3438 – Hunter Escarpment Footslopes Ironbark Forest (Mod-good)

DL-63

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-63		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3438	Mod-good	35	33	5	8	11	5	0	4	2	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	170.3	170.1	71.1	13.7	65.9	18.4	0	1	0.2	0	
Acacia amblygona	3	15	SG			3							
Acacia cultriformis	0.1	2	SG			0.1							
Acacia falcata	5	30	SG			5							
Acacia parramattensis	0.1	3	TG		0.1								
Amyema spp.	0.1	3	OG							0.1			
Bidens subalternans	0.1	5	EX								0.1		
Breynia oblongifolia	1	5	SG			1							
Bursaria spinosa	1	8	SG			1							
Chloris ventricosa	3	10	GG				3						
Corymbia maculata	40	60	TG		40								
Cymbopogon refractus	2	40	GG				2						
Cyperus gracilis	0.4	100	GG				0.4						
Dianella caerulea	2	10	FG					2					
Dianella prunina	1	10	FG					1					
Dichondra repens	0.3	500	FG					0.3					
Digitaria parviflora	30	80	GG				30						
Entolasia stricta	5	50	GG				5						
Eragrostis brownii	1	50	GG				1						
Eucalyptus crebra	20	5	TG		20								
Eucalyptus moluccana	10	17	TG		10								
Gahnia aspera	10	3	GG				10						
Glycine clandestina	0.1	30	OG							0.1			
Grona varians	0.3	10	OG							0.3			
Hardenbergia violacea	0.5	2	OG							0.5			
Hypochaeris radicata	0.1	2	EX								0.1		
Lobelia pratioides	15	1000	FG					15					
Lomandra multiflora subsp. multiflora	1	10	GG				1						
Notelaea longifolia	1	5	TG		1								
Olearia elliptica	3	10	SG			3							
Oplismenus aemulus	3	50	GG				3						
Pimelea neo-anglica	0.5	2	SG			0.5							
Poa spp.	10	30	GG				10						
Pseuderanthemum variabile	0.1	50	FG					0.1					
Themeda triandra	0.5	3	GG				0.5						
Trema tomentosa var. aspera	0.1	2	SG			0.1							

Easting	330126
Northing	6373532
Orientation	183
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	2
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	1
Length logs (m)	0
BAM Attributes 1x1 plot (%)	61
Litter (%)	60
	65
	40
	80
	60

DL-66

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-66		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3438	Mod-good	37	36	5	9	10	5	2	5	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	136.1	135.9	54.9	15.4	60.4	2.1	0.6	2.5	0.2	0	
Acacia linearifolia	0.4	6	TG		0.4								
Acacia ulicifolia	1	10	SG			1							
Aristida ramosa	10	50	GG				10						
Bidens subalternans	0.2	5	EX								0.2		
Brachychiton populneus	0.5	1	TG		0.5								
Breynia oblongifolia	0.4	3	SG			0.4							
Bursaria spinosa	5	8	SG			5							
Cheilanthes distans	0.1	15	EG						0.1				
Cheilanthes sieberi	0.5	50	EG						0.5				
Choretrum sp. A	0.1	1	SG			0.1							
Corymbia maculata	40	19	TG		40								
Cymbopogon refractus	3	10	GG				3						
Cyperus gracilis	3	100	GG				3						
Desmodium rhytidophyllum	0.5	3	FG					0.5					
Dianella prunina	0.8	3	FG					0.8					
Dichelachne crinita	1	3	GG				1						
Entolasia stricta	1	4	GG				1						
Eragrostis brownii	1	50	GG				1						
Eucalyptus crebra	10	7	TG		10								
Eucalyptus punctata	4	1	TG		4								
Exocarpos cupressiformis	2	5	SG			2							
Glycine microphylla	0.5	50	OG							0.5			
Glycine tabacina	0.4	30	OG							0.4			
Grona varians	0.2	100	OG							0.2			
Hardenbergia violacea	0.4	3	OG							0.4			
Lagenophora stipitata	0.4	10	FG					0.4					
Lomandra filiformis	0.4	5	GG				0.4						
Lomandra multiflora subsp. multiflora	0.5	10	GG				0.5						
Macrozamia communis	1	2	OG							1			
Melichrus urceolatus	2	50	SG			2							
Olearia elliptica	4	20	SG			4							
Oplismenus aemulus	0.5	10	GG				0.5						
Oxytes brachypoda	0.3	5	FG					0.3					
Persoonia linearis	0.3	1	SG			0.3							
Pimelea neo-anglica	0.6	2	SG			0.6							
Pseuderanthemum variabile	0.1	50	FG					0.1					
Themeda triandra	40	60	GG				40						

Easting	330065
Northing	6373275
Orientation	82
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	2
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	1
Length logs (m)	25
BAM Attributes 1x1 plot (%)	75
Litter (%)	75
	65
	90
	75
	70

DL-73

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-73		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3438	Mod-good	62	58	5	18	17	10	2	6	3	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	135.7	135.3	40.1	70.7	18.7	2.9	0.3	2.6	0.3	0.1	
Acacia cultriformis	2	13	SG			2							
Acacia falcata	0.5	2	SG			0.5							
Acacia implexa	1	5	SG			1							
Acacia parramattensis	10	30	TG		10								
Aristida personata	0.2	20	GG				0.2						
Aristida ramosa	10	40	GG				10						
Austrostipa verticillata	0.5	2	GG				0.5						
Bidens pilosa	0.1	1	EX								0.1		
Bothriochloa decipiens var. decipiens	0.5	20	GG				0.5						
Brachychiton populneus	0.1	2	TG		0.1								
Breynia oblongifolia	0.3	2	SG			0.3							
Bursaria spinosa	10	30	SG			10							
Carex inversa	0.2	40	GG				0.2						
Cassinia spp.	1	15	SG			1							
Cheilanthes austrotenuifolia	0.2	5	EG						0.2				
Cheilanthes distans	0.1	100	EG						0.1				
Choretrum sp. A	0.4	6	SG			0.4							
Corymbia maculata	10	6	TG		10								
Cymbopogon refractus	2	15	GG				2						
Cyperus gracilis	0.5	50	GG				0.5						
Desmodium rhytidophyllum	0.4	30	FG					0.4					
Dianella prunina	0.2	3	FG					0.2					
Dianella revoluta	0.4	3	FG					0.4					
Dichondra repens	0.5	500	FG					0.5					
Digitaria ramularis	0.5	15	GG				0.5						
Dodonaea viscosa subsp. cuneata	5	20	SG			5							
Entolasia stricta	0.4	20	GG				0.4						
Eragrostis leptostachya	0.6	20	GG				0.6						
Eucalyptus crebra	15	10	TG		15								
Eucalyptus moluccana	5	3	TG		5								
Exocarpos strictus	3	14	SG			3							
Gahnia aspera	0.2	3	GG				0.2						
Galium binifolium	0.3	50	FG					0.3					
Glycine clandestina	0.5	20	OG							0.5			
Glycine tabacina	0.3	10	OG							0.3			
Grevillea montana	1	1	SG			1							
Grona varians	0.2	20	OG							0.2			
Hardenbergia violacea	0.3	7	OG							0.3			
Lantana camara	0.1	1	HT									0.1	
Lepidosperma laterale	1	4	GG				1						
Leucopogon lanceolatus	0.2	5	SG			0.2							
Lobelia purpurascens	0.4	20	FG					0.4					
Macrozamia communis	1	3	OG							1			
Olearia elliptica	40	100	SG			40							
Oplismenus aemulus	0.1	2	GG				0.1						
Opuntia stricta	0.1	1	EX								0.1		
Oxalis perennans	0.1	15	FG					0.1					
Oxytes brachypoda	0.3	3	FG					0.3					
Panicum effusum	0.4	5	GG				0.4						
Persoonia linearis	0.3	2	SG			0.3							
Phyllanthus gunnii	0.1	2	SG			0.1							
Pimelea neo-anglica	0.5	6	SG			0.5							
Plantago debilis	0.1	2	FG					0.1					
Polymeria calycina	0.3	10	OG							0.3			
Pullenia gunnii	0.2	20	FG					0.2					
Scleria mackaviensis	0.2	15	GG				0.2						
Sporobolus creber	1	15	GG				1						
Teucrium junceum	3	20	SG			3							
Themeda triandra	0.4	6	GG				0.4						
Trema tomentosa var. aspera	2	3	SG			2							
Unknown native shrub	0.4	2	SG			0.4							
Verbena bonariensis	0.1	1	EX								0.1		

Easting	328787
Northing	6373343
Orientation	145
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	1
30-49	6
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	1
Length logs (m)	50

BAM Attributes 1x1 plot (%)	59
Litter (%)	75
	65
	30
	80
	45

TC-35

Date	7/29/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-35		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3438	Mod-good	42	37	6	14	6	7	1	3	3	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	**Cover**	**Abundance**	139.9	138.9	46.2	83.1	7.2	1.4	0.2	0.8	0.5	0.5	
Acacia amblygona	0.3	4	SG			0.3							
Acacia binervia	0.2	1	TG		0.2								
Acacia elongata	0.3	2	SG			0.3							
Acacia parvipinnula	75	150	SG			75							
Allocasuarina littoralis	0.5	1	TG		0.5								
Alphitonia excelsa	0.3	3	TG		0.3								
Bothriochloa decipiens var. decipiens	0.5	25	GG				0.5						
Brachychiton populneus	0.1	1	TG		0.1								
Breynia oblongifolia	1	25	SG			1							
Bursaria spinosa	1	33	SG			1							
Cheilanthes sieberi	0.2	10	EG						0.2				
Choretrum sp. A	0.5	5	SG			0.5							
Denhamia silvestris	0.7	8	SG			0.7							
Dianella caerulea	0.2	2	FG					0.2					
Dianella revoluta	0.3	4	FG					0.3					
Einadia hastata	0.2	5	FG					0.2					
Entolasia stricta	5	30	GG				5						
Eragrostis brownii	0.2	5	GG				0.2						
Eucalyptus crebra	45	15	TG		45								
Gahnia aspera	1	10	GG				1						
Glycine clandestina	0.2	5	OG							0.2			
Glycine tabacina	0.3	5	OG							0.3			
Grevillea montana	0.2	2	SG			0.2							
Hardenbergia violacea	0.3	4	OG							0.3			
Hibbertia diffusa	1	10	SG			1							
Lomandra filiformis	0.2	2	GG				0.2						
Microlaena stipoides	0.3	10	GG				0.3						
Notelaea longifolia	0.1	1	TG		0.1								
Olearia elliptica	2	20	SG			2							
Oplismenus aemulus	0.3	7	HT									0.3	
Oxalis perennans	0.2	3	FG					0.2					
Ozothamnus diosmifolius	0.1	1	SG			0.1							
Persoonia linearis	0.2	2	SG			0.2							
Pomax umbellata	0.2	5	FG					0.2					
Rumex brownii	0.1	1	FG					0.1					
Senecio madagascariensis	0.2	3	HT									0.2	
Sida rhombifolia	0.3	10	EX								0.3		
Solanum nigrum	0.1	2	EX								0.1		
Solanum stelligerum	0.3	10	SG			0.3							
Stellaria media	0.1	1	EX								0.1		
Trema tomentosa var. aspera	0.5	5	SG			0.5							
Veronica plebeia	0.2	2	FG					0.2					

Easting	328341
Northing	6373813
Orientation	145
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	4

BAM Attributes 1x1 plot (%)	**38**
Litter (%)	40
	30
	50
	30
	40

D1.37 3444 – Lower Hunter Spotted Gum-Ironbark Forest (Derived)

TC-07

Date	10/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC-07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3444	Derived	27	23	2	7	7	6	1	0	3	1
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	90.1	89.6	0.3	48.2	40.4	0.6	0.1	0	0.4	0.1
Eucalyptus moluccana	0.2	2	TG		0.2							
Acacia elongata	35	60	SG			35						
Casuarina glauca	0.1	1	TG		0.1							
Grevillea montana	1	10	SG			1						
Dodonaea sinuolata	10	20	SG			10						
Lobelia purpurascens	0.1	30	FG					0.1				
Acacia falcata	1	10	SG			1						
Dichondra repens	0.1	15	FG					0.1				
Cheilanthes sieberi	0.1	30	EG						0.1			
Senecio madagascariensis	0.1	10	HT									0.1
Callistemon linearis	1	5	SG			1						
Lysimachia arvensis	0.2	30	EX								0.2	
Wahlenbergia communis	0.1	5	FG					0.1				
Lomandra multiflora subsp. multiflora	3	20	GG				3					
Melichrus urceolatus	0.1	1	SG			0.1						
Gahnia aspera	15	40	GG				15					
Eragrostis brownii	0.1	20	GG				0.1					
Lepidosperma gunnii	7	30	GG				7					
Cymbopogon refractus	0.3	30	GG				0.3					
Conyza bilbaoana	0.1	10	EX								0.1	
Cyperus gracilis	7	60	GG				7					
Digitaria diffusa	8	40	GG				8					
Cyclospermum leptophyllum	0.1	10	EX								0.1	
Oxalis perennans	0.1	5	FG					0.1				
Centella asiatica	0.1	10	FG					0.1				
Chorizema parviflorum	0.1	2	SG			0.1						
Laxmannia gracilis	0.1	5	FG					0.1				

Easting	326388
Northing	6378325
Orientation	120
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	19

D1.38 3444 – Lower Hunter Spotted Gum-Ironbark Forest (Mod-good)

DL-38

Date	2/26/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_38		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3444	Mod-good	41	40	3	9	14	7	1	6	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	119.9	119.8	51	33.9	31.5	1.6	0.2	1.6	0	0.1	
Acrotriche divaricata	0.1	3	SG			0.1							
Aristida vagans	5	20	GG				5						
Bursaria spinosa	2	10	SG			2							
Cheilanthes sieberi	0.2	30	EG						0.2				
Commelina cyanea	0.4	10	FG					0.4					
Correa reflexa	20	50	SG			20							
Corymbia maculata	40	28	TG		40								
Cymbopogon refractus	2	25	GG				2						
Daviesia ulicifolia	0.9	5	SG			0.9							
Desmodium varians	0.1	5	OG							0.1			
Dianella caerulea var. cinerascens	0.1	1	FG					0.1					
Dianella revoluta	0.2	2	FG					0.2					
Digitaria diffusa	1	10	GG				1						
Digitaria ramularis	0.1	10	GG				0.1						
Entolasia stricta	20	150	GG				20						
Eragrostis leptostachya	0.7	10	GG				0.7						
Eucalyptus crebra	1	2	TG		1								
Eucalyptus punctata	10	3	TG		10								
Eustrephus latifolius	0.5	10	OG							0.5			
Exocarpos strictus	5	10	SG			5							
Gahnia aspera	0.2	2	GG				0.2						
Glycine clandestina	0.2	5	OG							0.2			
Glycine microphylla	0.1	5	OG							0.1			
Gonocarpus tetragynus	0.1	30	FG					0.1					
Goodenia rotundifolia	0.1	3	FG					0.1					
Hardenbergia violacea	0.5	10	OG							0.5			
Imperata cylindrica	1	20	GG				1						
Kennedia rubicunda	0.2	5	OG							0.2			
Lantana camara	0.1	2	HT									0.1	
Lepidosperma laterale	0.5	2	GG				0.5						
Leucopogon juniperinus	0.3	3	SG			0.3							
Lobelia purpurascens	0.5	10	FG					0.5					
Lomandra filiformis subsp. coriac	0.2	3	GG				0.2						
Lomandra multiflora subsp. mult	0.2	3	GG				0.2						
Microlaena stipoides	0.1	3	GG				0.1						
Panicum effusum	0.2	15	GG				0.2						
Persoonia linearis	2	6	SG			2							
Podolobium ilicifolium	3	10	SG			3							
Rytidosperma spp.	0.3	5	GG				0.3						
Styphelia triflora	0.6	5	SG			0.6							
Vernonia cinerea	0.2	50	FG					0.2					

Easting	329687
Northing	6372611
Orientation	222
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	8
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	7
BAM Attributes 1x1 plot (%)	89
Litter (%)	100
	85
	90
	75
	95

DL-43

Date	2/29/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_43		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3444	Mod-good	36	36	7	9	8	7	1	4	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	142.4	142.4	63.3	28.9	46.5	2.1	0.1	1.5	0	0	
Acacia parramattensis	0.3	2	TG		0.3								
Allocasuarina luehmannii	10	15	TG		10								
Aristida vagans	1	30	GG				1						
Callitris endlicheri	1	2	TG		1								
Cassytha glabella	0.2	10	OG							0.2			
Cheilanthes sieberi	0.1	10	EG						0.1				
Corymbia maculata	30	20	TG		30								
Cymbopogon refractus	3	30	GG				3						
Denhamia silvestris	0.3	2	SG			0.3							
Dianella revoluta	0.6	5	FG					0.6					
Dianella tasmanica	0.4	10	FG					0.4					
Digitaria ramularis	1	30	GG				1						
Dodonaea viscosa subsp. angustifolia	20	50	SG			20							
Entolasia stricta	20	200	GG				20						
Eucalyptus fibrosa	2	5	TG		2								
Eucalyptus moluccana	15	5	TG		15								
Eucalyptus punctata	5	2	TG		5								
Exocarpos strictus	2	5	SG			2							
Fimbristylis dichotoma	0.2	50	GG				0.2						
Gahnia aspera	0.5	2	GG				0.5						
Glycine tabacina	0.1	20	OG							0.1			
Goodenia ovata	0.1	1	SG			0.1							
Grevillea montana	1	3	SG			1							
Laxmannia gracilis	0.3	5	FG					0.3					
Lepidosperma cf. laterale	20	80	GG				20						
Lobelia purpurascens	0.4	200	FG					0.4					
Lomandra filiformis subsp. filiformis	0.8	10	GG				0.8						
Melaleuca nodosa	4	5	SG			4							
Monotoca scoparia	0.3	2	SG			0.3							
Olearia elliptica	1	5	SG			1							
Oxalis perennans	0.1	50	FG					0.1					
Parsonsia straminea	0.2	5	OG							0.2			
Pseuderanthemum variabile	0.2	200	FG					0.2					
Stylidium graminifolium	0.1	40	FG					0.1					
Unknown native shrub	0.2	1	SG			0.2							
Xanthorrhoea spp.	1	2	OG							1			

Easting	326780
Northing	6377690
Orientation	305
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	11
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	11
BAM Attributes 1x1 plot (%)	39
Litter (%)	20
	30
	45
	45
	55

DL-44

Date	2/29/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_44		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3444	Mod-good	37	35	7	10	9	5	1	3	2	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	118.8	118.6	71.5	34.3	9.7	2.2	0.1	0.8	0.2	0	
Acacia amblygona	0.2	3	SG			0.2							
Acacia parramattensis	1	3	TG		1								
Aristida vagans	0.4	6	GG				0.4						
Brunoniella australis	1	100	FG					1					
Bursaria spinosa	1	3	SG			1							
Callitris glaucophylla	10	25	TG		10								
Cheilanthes sieberi	0.1	30	EG						0.1				
Conyza bonariensis	0.1	2	EX								0.1		
Corymbia maculata	20	14	TG		20								
Dodonaea sinuolata	25	80	SG			25							
Entolasia stricta	5	50	GG				5						
Eragrostis leptostachya	0.5	10	GG				0.5						
Eucalyptus fibrosa	10	3	TG		10								
Eucalyptus moluccana	5	4	TG		5								
Eucalyptus punctata	25	5	TG		25								
Exocarpos strictus	5	20	SG			5							
Gahnia aspera	0.6	4	GG				0.6						
Glycine microphylla	0.1	2	OG							0.1			
Glycine tabacina	0.1	5	OG							0.1			
Goodenia rotundifolia	0.1	4	FG					0.1					
Grevillea montana	0.2	2	SG			0.2							
Lepidosperma cf. laterale	1	20	GG				1						
Lobelia purpurascens	0.6	100	FG					0.6					
Lomandra filiformis subsp. filiformis	0.9	40	GG				0.9						
Lomandra multiflora subsp. multiflora	1	30	GG				1						
Macrozamia communis	0.6	1	OG							0.6			
Monotoca scoparia	1	6	SG			1							
Notelaea longifolia	0.5	2	TG		0.5								
Olearia elliptica	1	10	SG			1							
Persoonia linearis	0.1	2	SG			0.1							
Pseuderanthemum variabile	0.3	100	FG					0.3					
Richardia stellaris	0.1	10	EX								0.1		
Rytidosperma fulvum	0.2	5	GG				0.2						
Rytidosperma spp.	0.1	1	GG				0.1						
Solanum cinereum	0.3	3	SG			0.3							
Stylidium graminifolium	0.2	5	FG					0.2					
Styphelia triflora	0.5	3	SG			0.5							

Easting	326231
Northing	6378182
Orientation	312
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	21
BAM Attributes 1x1 plot (%)	61
Litter (%)	60
	50
	55
	60
	80

DL-62

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-62		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3444	Mod-good	52	51	6	16	14	9	1	5	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	166.2	166	66	60.3	33.9	3.9	0.3	1.6	0.2	0	
Acacia cultriformis	1	20	SG			1							
Acacia parramattensis	0.5	3	TG		0.5								
Allocasuarina torulosa	5	20	TG		5								
Aristida vagans	5	100	GG				5						
Breynia oblongifolia	0.9	20	SG			0.9							
Bursaria spinosa	50	200	SG			50							
Cassytha glabella	0.1	5	OG							0.1			
Cheilanthes sieberi	0.3	100	EG						0.3				
Correa reflexa	1	10	SG			1							
Corymbia maculata	40	15	TG		40								
Cymbopogon refractus	3	10	GG				3						
Daviesia ulicifolia	0.4	10	SG			0.4							
Denhamia silvestris	0.1	5	SG			0.1							
Dianella prunina	0.4	5	FG					0.4					
Dianella tasmanica	0.6	3	FG					0.6					
Dichelachne micrantha	1	20	GG				1						
Dichondra repens	0.5	500	FG					0.5					
Digitaria parviflora	15	100	GG				15						
Entolasia stricta	1	20	GG				1						
Eragrostis brownii	3	100	GG				3						
Eucalyptus crebra	5	3	TG		5								
Eucalyptus fibrosa	15	3	TG		15								
Gahnia aspera	0.5	3	GG				0.5						
Glycine clandestina	0.4	5	OG							0.4			
Goodenia ovata	0.3	10	SG			0.3							
Grevillea montana	0.5	20	SG			0.5							
Hardenbergia violacea	0.5	1	OG							0.5			
Hibbertia diffusa	1	4	SG			1							
Hypericum gramineum	0.1	2	FG					0.1					
Hypochaeris glabra	0.2	2	EX								0.2		
Lepidosperma gunnii	0.5	2	GG				0.5						
Lepidosperma laterale	1	10	GG				1						
Leucopogon lanceolatus	0.2	1	SG			0.2							
Lissanthe strigosa	0.5	5	SG			0.5							
Lobelia purpurascens	1	100	FG					1					
Lomandra filiformis subsp. coriacea	0.5	3	GG				0.5						
Lomandra multiflora subsp. multiflora	0.1	4	GG				0.1						
Melichrus urceolatus	2	5	SG			2							
Muellerina eucalyptoides	0.5	2	OG							0.5			
Notelaea longifolia	0.5	3	TG		0.5								
Oplismenus aemulus	0.3	20	GG				0.3						
Panicum effusum	1	20	GG				1						
Persoonia linearis	1	20	SG			1							
Phyllanthus hirtellus	0.6	30	SG			0.6							
Podolobium ilicifolium	0.2	3	SG			0.2							
Pseuderanthemum variabile	0.1	10	FG					0.1					
Pterostylis concinna	0.1	10	FG					0.1					
Solenogyne bellioides	1	100	FG					1					
Stephania japonica var. discolor	0.1	1	OG							0.1			
Themeda triandra	2	12	GG				2						
Trema tomentosa var. aspera	0.6	10	SG			0.6							
Vernonia cinerea	0.1	4	FG					0.1					

Easting	330251
Northing	6373930
Orientation	23
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	11
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	78
Litter (%)	75
	90
	70
	70
	85

DL-70

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-70		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3444	Mod-good	52	51	4	18	13	8	2	6	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	163.3	163.2	86	23.4	47.6	3.8	0.5	1.9	0.1	0	
Acacia amblygona	0.5	3	SG			0.5							
Acacia cultriformis	1	5	SG			1							
Acacia implexa	4	50	SG			4							
Acacia linifolia	1	8	SG			1							
Acacia parramattensis	30	100	TG		30								
Aristida vagans	1	30	GG				1						
Astrotricha latifolia	0.3	1	SG			0.3							
Bursaria spinosa	3	15	SG			3							
Cheilanthes distans	0.1	30	EG						0.1				
Cheilanthes sieberi	0.4	50	EG						0.4				
Correa reflexa	2	20	SG			2							
Corymbia maculata	40	17	TG		40								
Cymbopogon refractus	20	100	GG				20						
Daviesia ulicifolia	0.4	2	SG			0.4							
Denhamia silvestris	2	30	SG			2							
Desmodium rhytidophyllum	0.2	3	FG					0.2					
Dianella prunina	0.5	3	FG					0.5					
Dianella revoluta	0.3	5	FG					0.3					
Dichondra repens	0.3	100	FG					0.3					
Digitaria parviflora	5	50	GG				5						
Dodonaea viscosa	1	15	SG			1							
Entolasia stricta	10	100	GG				10						
Eragrostis brownii	3	15	GG				3						
Eucalyptus fibrosa	10	3	TG		10								
Eucalyptus punctata	6	1	TG		6								
Exocarpos strictus	0.5	3	SG			0.5							
Gahnia aspera	1	10	GG				1						
Glycine clandestina	0.4	5	OG							0.4			
Glycine microphylla	0.3	10	OG							0.3			
Glycine tabacina	0.3	10	OG							0.3			
Goodenia rotundifolia	0.3	10	FG					0.3					
Grevillea montana	0.4	2	SG			0.4							
Grey opposite shrub	1	5	SG			1							
Grona varians	0.2	20	OG							0.2			
Hardenbergia violacea	0.5	15	OG							0.5			
Lepidosperma gunnii	1	20	GG				1						
Lepidosperma laterale	1	10	GG				1						
Lomandra filiformis subsp. filiformis	1	15	GG				1						
Lomandra multiflora subsp. multiflora	1	10	GG				1						
Marsdenia viridiflora subsp. viridiflora	0.2	3	OG							0.2			
Myrsine variabilis	0.3	5	SG			0.3							
Olearia elliptica	5	30	SG			5							
Oplismenus aemulus	0.5	10	GG				0.5						
Opuntia stricta	0.1	1	EX								0.1		
Oxytes brachypoda	2	10	FG					2					
Panicum simile	0.1	2	GG				0.1						
Persoonia linearis	0.3	2	SG			0.3							
Phyllanthus hirtellus	0.5	30	SG			0.5							
Podolobium ilicifolium	0.2	1	SG			0.2							
Pomax umbellata	0.1	3	FG					0.1					
Pseuderanthemum variabile	0.1	10	FG					0.1					
Themeda triandra	3	50	GG				3						

Easting	328511
Northing	6373742
Orientation	95
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	8

BAM Attributes 1x1 plot (%)	52
Litter (%)	45
	55
	80
	50
	30

D1.39 3446 – Lower North Foothills Ironbark-Box-Gum Grassy Forest (Mod-good)

DL-39

Date	2/27/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_39		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3446	Mod-good	41	41	4	11	9	13	1	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	165.9	165.9	80	16.1	63.6	4.9	0.4	0.9	0	0	
Acacia implexa	1	19	SG			1							
Acrotriche divaricata	0.7	40	SG			0.7							
Allocasuarina littoralis	30	100	TG		30								
Aristida vagans	0.9	10	GG				0.9						
Breynia oblongifolia	0.8	5	SG			0.8							
Bursaria spinosa	0.5	5	SG			0.5							
Cheilanthes sieberi	0.4	100	EG						0.4				
Corymbia maculata	30	80	TG		30								
Cymbopogon refractus	5	20	GG				5						
Desmodium brachypodum	0.5	5	FG					0.5					
Desmodium rhytidophyllum	0.3	15	FG					0.3					
Dianella caerulea var. cinerascens	0.6	30	FG					0.6					
Dianella longifolia	0.4	5	FG					0.4					
Dichondra repens	0.3	100	FG					0.3					
Digitaria ramularis	0.8	20	GG				0.8						
Entolasia stricta	50	100	GG				50						
Eragrostis leptostachya	2	50	GG				2						
Eucalyptus crebra	5	3	TG		5								
Eucalyptus punctata	15	20	TG		15								
Exocarpos strictus	5	30	SG			5							
Glycine latifolia	0.3	100	OG							0.3			
Glycine tabacina	0.3	50	OG							0.3			
Goodenia rotundifolia	0.5	60	FG					0.5					
Hardenbergia violacea	0.3	5	OG							0.3			
Hibbertia diffusa	1	30	SG			1							
Leucopogon juniperinus	1	30	SG			1							
Lobelia purpurascens	0.2	100	FG					0.2					
Lomandra filiformis subsp. coriacea	1	20	GG				1						
Microlaena stipoides	2	80	GG				2						
Olearia elliptica	2	30	SG			2							
Panicum effusum	0.9	10	GG				0.9						
Persoonia linearis	1	6	SG			1							
Phyllanthus gunnii	0.1	20	SG			0.1							
Podolobium ilicifolium	3	20	SG			3							
Pomax umbellata	0.4	100	FG					0.4					
Pseuderanthemum variabile	0.4	100	FG					0.4					
Sida cunninghamii	0.2	80	FG					0.2					
Themeda triandra	1	10	GG				1						
Tricoryne elatior	0.3	5	FG					0.3					
Unknown native forb	0.2	50	FG					0.2					
Vernonia cinerea	0.6	50	FG					0.6					

Easting	329802
Northing	6372582
Orientation	110
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	5
BAM Attributes 1x1 plot (%)	71
Litter (%)	80
	60
	90
	75
	50

D1.40 3489 – Hunter Escarpment Grey Box Forest (Mod-good)

DL-31

Date	2/19/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_31		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3489	Mod-good	64	56	7	15	12	15	1	6	8	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	172.9	171.7	62.3	14.2	90.1	2.4	0.1	2.6	1.2	0	
Acacia implexa	0.5	2	SG			0.5							
Acacia linearifolia	2	10	TG		2								
Allocasuarina torulosa	15	20	TG		15								
Alphitonia excelsa	0.3	2	TG		0.3								
Amyema cambagei	0.2	3	OG							0.2			
Arthropodium milleflorum	0.1	5	FG					0.1					
Asperula conferta	0.3	1000	FG					0.3					
Bidens subalternans	0.1	5	EX								0.1		
Brachychiton populneus	1	3	TG		1								
Breynia oblongifolia	1	30	SG			1							
Bursaria spinosa	5	10	SG			5							
Cheilanthes sieberi	0.1	2	EG						0.1				
Chloris ventricosa	1	5	GG				1						
Chrysocephalum apiculatum	0.1	5	FG					0.1					
Cirsium vulgare	0.2	3	EX								0.2		
Commelina cyanea	0.2	20	FG					0.2					
Conyza bonariensis	0.1	4	EX								0.1		
Cymbopogon refractus	10	100	GG				10						
Cyperus gracilis	0.2	500	GG				0.2						
Daviesia genistifolia	0.2	1	SG			0.2							
Desmodium spp.	1	50	OG							1			
Dianella prunina	0.1	3	FG					0.1					
Dichondra repens	0.2	1000	FG					0.2					
Dodonaea triquetra	0.6	8	SG			0.6							
Einadia hastata	0.2	20	FG					0.2					
Eragrostis brownii	0.5	50	GG				0.5						
Eragrostis leptostachya	0.5	3	GG				0.5						
Eremophila debilis	0.2	3	SG			0.2							
Eucalyptus acmenoides	1	2	TG		1								
Eucalyptus crebra	3	3	TG		3								
Eucalyptus moluccana	40	11	TG		40								
Fimbristylis dichotoma	0.1	3	GG				0.1						
Geitonoplesium cymosum	0.2	3	OG							0.2			
Geranium homeanum	0.1	5	FG					0.1					
Glycine clandestina	0.5	20	OG							0.5			
Glycine latifolia	0.5	100	OG							0.5			
Glycine microphylla	0.2	20	OG							0.2			
Hibbertia linearis	0.1	2	SG			0.1							
Hibbertia spp.	0.5	3	SG			0.5							
Hypericum gramineum	0.1	3	FG					0.1					
Lobelia purpurascens	0.1	200	FG					0.1					
Lomandra longifolia	0.3	5	GG				0.3						
Melichrus urceolatus	0.6	50	SG			0.6							
Microlaena stipoides	1	10	GG				1						
Myrsine howittiana	0.2	4	SG			0.2							
Oplismenus imbecillis	0.5	15	GG				0.5						
Opuntia stricta	0.1	1	EX								0.1		
Oxalis perennans	0.1	10	FG					0.1					
Panicum simile	1	10	GG				1						
Persoonia linearis	1	3	SG			1							
Phyllanthus gunnii	0.3	50	SG			0.3							
Plantago lanceolata	0.1	2	EX								0.1		
Pseuderanthemum variabile	0.3	100	FG					0.3					
Richardia brasiliensis	0.4	30	EX								0.4		
Rubus moluccanus	0.5	20	SG			0.5							
Sida rhombifolia	0.1	5	EX								0.1		
Sigesbeckia australiensis	0.3	50	FG					0.3					
Solanum prinophyllum	0.1	5	FG					0.1					
Solanum stelligerum	3	15	SG			3							
Sporobolus creber	5	15	GG				5						
Themeda triandra	70	200	GG				70						
Trema tomentosa var. aspera	0.5	4	SG			0.5							
Verbena bonariensis	0.1	2	EX								0.1		
Veronica plebeia	0.1	5	FG					0.1					

Easting	333428
Northing	6360076
Orientation	0
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	6
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	17
BAM Attributes 1x1 plot (%)	90
Litter (%)	85
	95
	95
	85
	90

TC-42

Date	8/7/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC42		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3489	Mod-good	53	51	8	12	11	13	1	6	1	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	128.8	128.2	43.2	71	7.3	3.7	0.2	2.8	0.2	0.4	
Acacia Implexa	1	6	SG			1							
Allocasuarina torulosa	1	3	TG		1								
Alphitonia excelsa	0.1	1	TG		0.1								
Amyema spp.	0.4	1	OG							0.4			
Angophora floribunda	0.4	2	TG		0.4								
Austrostipa pubescens	1	10	GG				1						
Bursaria spinosa	10	64	SG			10							
Cheilanthes sieberi	0.2	5	EG						0.2				
Choretrum sp. A	40	100	SG			40							
Conyza bonariensis	0.2	2	EX								0.2		
Crassula sieberiana	0.3	10	FG					0.3					
Cyperus gracilis	0.3	10	GG				0.3						
Daviesia ulicifolia subsp. ulicifolia	2	5	SG			2							
Dianella revoluta	0.3	3	FG					0.3					
Dichondra repens	0.3	10	FG					0.3					
Dodonaea triquetra	10	93	SG			10							
Entolasia marginata	0.3	5	GG				0.3						
Eremophila debilis	0.5	10	SG			0.5							
Eucalyptus beyeriana	35	13	TG		35								
Eucalyptus moluccana	4	5	TG		4								
Eucalyptus punctata	2	1	TG		2								
Euchiton sphaericus	0.2	5	FG					0.2					
Ficus rubiginosa	0.2	1	TG		0.2								
Galium leiocarpum	0.3	30	FG					0.3					
Geitonoplesium cymosum	0.3	10	OG							0.3			
Glycine clandestina	0.2	10	OG							0.2			
Goodenia rotundifolia	0.3	10	FG					0.3					
Hardenbergia violacea	0.5	10	OG							0.5			
Hibbertia obtusifolia	0.4	4	SG			0.4							
Hibiscus heterophyllus subsp. heterophyllus	0.3	4	SG			0.3							
Imperata cylindrica	0.3	10	GG				0.3						
Lepidosperma cf. laterale	0.4	2	GG				0.4						
Leucopogon juniperinus	5	100	SG			5							
Lobelia purpurascens	0.3	15	FG					0.3					
Lomandra longifolia	0.3	2	GG				0.3						
Macrozamia reducta	0.4	1	OG							0.4			
Microlaena stipoides	0.5	20	GG				0.5						
Myrsine variabilis	0.5	5	SG			0.5							
Notelaea longifolia	0.5	1	TG		0.5								
Oplismenus aemulus	0.5	15	GG				0.5						
Paspalidium distans	0.2	1	GG				0.2						
Persoonia linearis	1	14	SG			1							
Plectranthus parviflorus	0.4	10	FG					0.4					
Poa affinis	0.5	3	GG				0.5						
Pterostylis spp.	0.3	15	FG					0.3					
Senecio hispidulus	0.3	5	FG					0.3					
Senecio madagascarensis	0.4	20	HT									0.4	
Sigesbeckia orientalis subsp. Orientalis	0.3	15	FG					0.3					
Solanum brownii	0.3	5	SG			0.3							
Themeda Triandra	3	50	GG				3						
Veronica plebeia	0.2	3	FG					0.2					
Vittadinia cuneata var. cuneata	0.2	3	FG					0.2					
Xanthorrhoea arborea	1	1	OG							1			

Easting	333356
Northing	6360003
Orientation	346
Plot size	20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	6
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	16

BAM Attributes 1x1 plot litter (%)	52
Litter (%)	50
	55
	45
	65
	45

D1.41 3581 – Hunter Coast Foothills Apple Forest (Mod-good)

TC-16

Date	1/30/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-16		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3581	Mod-good	42	42	7	6	6	8	2	13	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	81.1	81.1	34.5	28.6	14.3	0.9	1.1	1.7	0	0	
Acacia floribunda	0.1	2	SG			0.1							
Acacia ulicifolia	8	24	SG			8							
Acrotriche divaricata	5	2	SG			5							
Allocasuarina torulosa	5	13	TG		5								
Angophora costata	15	14	TG		15								
Billardiera scandens	0.1	4	OG							0.1			
Cordyline stricta	0.1	1	OG							0.1			
Corymbia gummifera	0.5	1	TG		0.5								
Dianella caerulea	0.1	3	FG					0.1					
Entolasia stricta	3	10	GG				3						
Eucalyptus agglomerata	1	1	TG		1								
Eucalyptus pilularis	10	4	TG		10								
Eucalyptus punctata	2	3	TG		2								
Exocarpos cupressiformis	0.5	3	SG			0.5							
Geitonoplesium cymosum	0.1	1	OG							0.1			
Glycine clandestina	0.1	8	OG							0.1			
Goodenia heterophylla	0.2	20	FG					0.2					
Grona varians	0.1	3	OG							0.1			
Hardenbergia violacea	0.1	1	OG							0.1			
Hibbertia scandens	0.2	3	OG							0.2			
Hybanthus monopetalus	0.1	10	FG					0.1					
Hypericum gramineum	0.1	2	FG					0.1					
Imperata cylindrica	5	40	GG				5						
Lagenophora gracilis	0.1	3	FG					0.1					
Lepidosperma laterale	0.1	2	GG				0.1						
Lindsaea microphylla	0.1	2	EG						0.1				
Lomandra longifolia	5	15	GG				5						
Oplismenus aemulus	0.2	15	GG				0.2						
Pandorea pandorana	0.1	1	OG							0.1			
Parsonsia straminea	0.1	2	OG							0.1			
Persoonia linearis	10	19	SG			10							
Pimelea linifolia	5	0.2	SG			5							
Pomax umbellata	0.1	10	FG					0.1					
Pseuderanthemum variabile	0.1	10	FG					0.1					
Pteridium esculentum	1	12	EG						1				
Sarcopetalum harveyanum	0.1	1	OG							0.1			
Smilax australis	0.1	1	OG							0.1			
Stephania japonica	0.1	1	OG							0.1			
Syncarpia glomulifera	1	1	TG		1								
Themeda triandra	1	20	GG				1						
Viola betonicifolia	0.1	3	FG					0.1					
Xanthorrhoea spp.	0.4	4	OG							0.4			

Easting	348557
Northing	6339848
Orientation	219
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	17
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	20
BAM Attributes 1x1 plot (%)	54
Litter (%)	60
	60
	50
	60
	40

D1.42 3582 – Hunter Coast Lowland Apple-Bloodwood Forest (Mod-good)

SMSO-04

Date	9/11/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	SMSO_04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3582	Mod-good	49	48	5	16	11	10	0	6	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	107.8	107.7	76	6.3	14.7	7.2	0	3.5	0.1	0	
Acacia obtusifolia	0.2	10	SG			0.2							
Allocasuarina littoralis	5	12	TG		5								
Angophora costata	3	2	TG		3								
Aristida vagans	2	50	GG				2						
Banksia spinulosa	0.5	5	SG			0.5							
Bossiaea obcordata	0.1	10	SG			0.1							
Brunoniella australis	0.1	10	FG					0.1					
Convolvulus erubescens	0.1	25	OG							0.1			
Corymbia gummifera	15	8	TG		15								
Cryptostylis subulata	0.1	1	FG					0.1					
Dampiera purpurea	1	100	FG					1					
Daviesia squarrosa	0.1	1	SG			0.1							
Dianella caerulea var. producta	0.5	20	FG					0.5					
Dillwynia retorta	0.1	5	SG			0.1							
Entolasia stricta	10	250	GG				10						
Epacris pulchella	0.1	5	SG			0.1							
Eucalyptus globoidea	50	30	TG		50								
Eucalyptus umbra	3	2	TG		3								
Glycine clandestina	0.1	10	OG							0.1			
Gonocarpus tetragynus	0.1	25	FG					0.1					
Goodenia hederacea	0.1	15	FG					0.1					
Goodenia heterophylla	0.1	25	FG					0.1					
Hakea sericea	0.2	5	SG			0.2							
Hardenbergia violacea	0.1	5	OG							0.1			
Hibbertia scandens	0.1	1	OG							0.1			
Hovea linearis	0.1	3	FG					0.1					
Hypochaeris radicata	0.1	2	EX								0.1		
Imperata cylindrica	0.2	25	GG				0.2						
Lambertia formosa	1	10	SG			1							
Lepidosperma laterale	0.5	25	GG				0.5						
Leptospermum polygalifolium	0.3	3	SG			0.3							
Leptospermum trinervium	3	15	SG			3							
Lomandra multiflora subsp. Multiflora	0.5	50	GG				0.5						
Lomandra obliqua	0.1	50	GG				0.1						
Melaleuca sieberi	0.1	1	SG			0.1							
Melichrus procumbens	0.1	50	SG			0.1							
Microlaena stipoides	0.5	25	GG				0.5						
Mirbelia rubiifolia	0.1	40	SG			0.1							
Panicum simile	0.2	20	GG				0.2						
Parsonsia straminea	0.1	2	OG							0.1			
Paspalidium distans	0.1	5	GG				0.1						
Patersonia glabrata	5	50	FG					5					
Persoonia linearis	0.2	5	SG			0.2							
Pimelea linifolia	0.1	10	SG			0.1							
Poa labillardierei var. labillardierei	0.1	10	GG				0.1						
Ptilothrix deusta	0.5	25	GG				0.5						
Schelhammera undulata	0.1	25	FG					0.1					
Tetratheca juncea	0.1	2	SG			0.1							
Xanthorrhoea media	3	30	OG							3			

Easting	356433
Northing	6344011
Orientation	218
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	2
50-79	1
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	3
Length logs (m)	121
BAM Attributes 1x1 plot (%)	47
Litter (%)	50
	60
	40
	45
	40

DL-09

Date	5/30/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-09		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3582	Mod-good	25	25	5	10	5	2	1	2	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	143.9	143.9	51	82.7	7.8	0.3	1	1.1	0	0	
Acacia ulicifolia	0.8	2	SG			0.8							
Angophora costata	5	3	TG		5								
Banksia serrata	1	5	TG		1								
Banksia spinulosa var. collina	3	10	SG			3							
Billardiera scandens	0.1	10	OG							0.1			
Bossiaea buxifolia	0.1	5	SG			0.1							
Corymbia gummifera	10	6	TG		10								
Dianella caerulea var. producta	0.2	10	FG					0.2					
Drosera auriculata	0.1	2	FG					0.1					
Empodisma minus	5	100	GG				5						
Entolasia stricta	0.1	100	GG				0.1						
Epacris pulchella	0.1	5	SG			0.1							
Eucalyptus capitellata	30	8	TG		30								
Eucalyptus haemastoma	5	3	TG		5								
Hakea sericea	0.1	3	SG			0.1							
Lepidosperma laterale	2	10	GG				2						
Leptospermum trinervium	75	100	SG			75							
Lomandra filiformis subsp. coriacea	0.2	5	GG				0.2						
Lomandra obliqua	0.5	20	GG				0.5						
Mirbelia rubiifolia	0.4	20	SG			0.4							
Myrsine variabilis	0.1	5	SG			0.1							
Persoonia levis	3	5	SG			3							
Pteridium esculentum	1	6	EG						1				
Pultenaea rosmarinifolia	0.1	15	SG			0.1							
Xanthorrhoea latifolia	1	5	OG							1			

Easting	357945
Northing	6342508
Orientation	265
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	4
Length logs (m)	13
BAM Attributes 1x1 plot (%)	78
Litter (%)	60
	80
	80
	90
	80

D1.43 3582 – Hunter Coast Lowland Apple-Bloodwood Forest (Derived)

HTP-MS-91

Date	9/9/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-91		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3582	Derived	43	42	2	12	15	10	1	2	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	82.6	77.6	4	34.8	32.7	4	1	1.1	0	5	
Acacia longifolia subsp. longifolia	5	40	SG			5							
Allocasuarina littoralis	1	5	TG		1								
Andropogon virginicus	5	20	HT									5	
Aristida vagans	2	50	GG				2						
Billardiera scandens	0.1	1	OG							0.1			
Brunoniella australis	0.1	5	FG					0.1					
Caladenia catenata	0.1	5	FG					0.1					
Cassytha glabella	1	10	OG							1			
Centella asiatica	0.5	20	FG					0.5					
Cyathochaeta diandra	0.5	10	GG				0.5						
Dampiera stricta	0.5	30	FG					0.5					
Dianella caerulea	0.1	2	FG					0.1					
Dodonaea triquetra	2	20	SG			2							
Entolasia stricta	10	100	GG				10						
Epacris microphylla	0.2	10	SG			0.2							
Eragrostis brownii	0.5	10	GG				0.5						
Eucalyptus haemastoma	3	10	TG		3								
Gahnia clarkei	3	10	GG				3						
Gompholobium latifolium	1	10	SG			1							
Gonocarpus teucrioides	1	20	FG					1					
Grevillea parviflora subsp. parviflora	2	60	SG			2							
Lagenophora stipitata	0.5	10	FG					0.5					
Lepidosperma cf. laterale	2	50	GG				2						
Lepidosperma urophorum	1	30	GG				1						
Leptospermum polygalifolium	20	100	SG			20							
Leptospermum trinervium	0.5	5	SG			0.5							
Lobelia purpurascens	1	50	FG					1					
Lomandra cylindrica	0.1	5	GG				0.1						
Lomandra filiformis subsp. filiformis	1	50	GG				1						
Lomandra multiflora subsp. multiflora	0.1	5	GG				0.1						
Lomandra obliqua	1	40	GG				1						
Microlaena stipoides var. stipoides	1	50	GG				1						
Mirbelia rubiifolia	1	10	SG			1							
Panicum simile	0.5	10	GG				0.5						
Persoonia linearis	0.5	5	SG			0.5							
Polyscias sambucifolia	0.1	1	SG			0.1							
Pteridium esculentum	1	30	EG						1				
Ptilothrix deusta	5	100	GG				5						
Pultenaea paleacea	2	20	SG			2							
Pultenaea villosa	0.5	5	SG			0.5							
Themeda triandra	5	50	GG				5						
Tricoryne elatior	0.1	1	FG					0.1					
Xanthosia tridentata	0.1	5	FG					0.1					

Easting	360878
Northing	6341183
Orientation	18
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	No
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	3
BAM Attributes 1x1 plot (%)	13
Litter (%)	10
	5
	15
	20
	15

HTP-MS-96

Date	9/11/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-96		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3582	Derived	40	36	3	11	13	6	2	1	1	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	106.3	98.1	0.7	9.2	84.5	3.3	0.3	0.1	0.1	8.1	
Acacia longifolia subsp. longifolia	2	30	SG			2							
Andropogon virginicus	3	40	HT									3	
Angophora costata	0.1	1	TG		0.1								
Aristida vagans	2	50	GG				2						
Axonopus fissifolius	5	50	HT									5	
Bidens pilosa	0.1	5	EX								0.1		
Caladenia catenata	0.1	10	FG					0.1					
Cassytha glabella	0.1	2	OG							0.1			
Dampiera stricta	0.5	10	FG					0.5					
Daviesia corymbosa	0.1	1	SG			0.1							
Digitaria ramularis	0.5	10	GG				0.5						
Dodonaea triquetra	0.1	3	SG			0.1							
Drosera auriculata	0.1	5	FG					0.1					
Entolasia stricta	5	80	GG				5						
Epacris microphylla	0.5	10	SG			0.5							
Epacris pulchella	1	20	SG			1							
Eragrostis brownii	1	30	GG				1						
Eucalyptus capitellata	0.5	10	TG		0.5								
Gahnia clarkei	10	50	GG				10						
Glochidion ferdinandi var. ferdinandi	0.1	1	TG		0.1								
Gonocarpus teucrioides	2	50	FG					2					
Goodenia paniculata	0.5	20	FG					0.5					
Grevillea parviflora subsp. parviflora	0.1	3	SG			0.1							
Lepidosperma cf. laterale	2	40	GG				2						
Leptospermum polygalifolium	3	30	SG			3							
Lepyrodia scariosa	3	50	GG				3						
Leucopogon microphyllus	0.1	2	SG			0.1							
Lindsaea linearis	0.1	10	EG						0.1				
Lomandra filiformis subsp. filiformis	1	30	GG				1						
Lomandra obliqua	2	50	GG				2						
Mirbelia rubiifolia	0.2	10	SG			0.2							
Panicum simile	3	50	GG				3						
Pteridium esculentum	0.2	10	EG						0.2				
Ptilothrix deusta	10	100	GG				10						
Pultenaea paleacea	2	40	SG			2							
Schoenus melanostachys	40	200	GG				40						
Senecio madagascarensis	0.1	5	HT									0.1	
Tetratheca thymifolia	0.1	1	SG			0.1							
Thelymitra ixioides var. ixioides	0.1	5	FG					0.1					
Themeda triandra	5	80	GG				5						

Easting	355558
Northing	6343506
Orientation	15
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	3.4
Litter (%)	5
	3
	5
	2
	2

HTP-MS-97

Date	9/11/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-97		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3582	Derived	60	54	2	21	14	12	3	2	3	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	94.9	92.6	0.4	27.1	56.7	6.5	1.2	0.7	0.3	2	
Acacia longifolia subsp. longifolia	0.1	2	SG			0.1							
Acacia myrtifolia	0.5	1	SG			0.5							
Acacia suaveolens	0.1	2	SG			0.1							
Allocasuarina littoralis	0.2	1	TG		0.2								
Andropogon virginicus	0.5	20	HT									0.5	
Aristida vagans	10	100	GG				10						
Aristida warburgii	0.5	10	GG				0.5						
Axonopus fissifolius	0.5	10	HT									0.5	
Bossiaea obcordata	2	30	SG			2							
Cassytha glabella	0.5	10	OG							0.5			
Centella asiatica	0.5	20	FG					0.5					
Cheilanthes sieberi	1	50	EG						1				
Conyza sumatrensis	0.1	5	EX								0.1		
Cyathochaeta diandra	3	40	GG				3						
Dampiera stricta	3	50	FG					3					
Daviesia ulicifolia	0.1	1	SG			0.1							
Dianella caerulea	0.1	2	FG					0.1					
Dianella longifolia	0.5	20	FG					0.5					
Entolasia stricta	15	100	GG				15						
Epacris pulchella	2	50	SG			2							
Eragrostis brownii	0.5	20	GG				0.5						
Eragrostis leptostachya	1	30	GG				1						
Eucalyptus capitellata	0.2	10	TG		0.2								
Glycine clandestina	0.2	20	OG							0.2			
Gompholobium latifolium	0.1	2	SG			0.1							
Gompholobium pinnatum	0.2	10	SG			0.2							
Gonocarpus teucrioides	0.5	20	FG					0.5					
Grevillea parviflora subsp. parviflora	0.1	1	SG			0.1							
Grevillea sericea	0.1	1	SG			0.1							
Hypericum gramineum	0.1	5	FG					0.1					
Hypochaeris radicata	0.1	10	EX								0.1		
Imperata cylindrica	20	200	GG				20						
Lagenifera stipitata	0.1	10	FG					0.1					
Lepidosperma cf. laterale	2	40	GG				2						
Leptospermum polygalifolium	15	80	SG			15							
leptospermum trinervium	2	10	SG			2							
Leucopogon microphyllus	1	50	SG			1							
Lissanthe strigosa	0.1	3	SG			0.1							
Lobelia purpurascens	0.5	40	FG					0.5					
Lomandra filiformis subsp. filiformis	0.5	40	GG				0.5						
Lomandra glauca	0.1	5	GG				0.1						
Lomandra multiflora subsp. multiflora	0.1	5	GG				0.1						
Melichrus procumbens	0.5	10	SG			0.5							
Micrantheum ericoides	0.5	30	SG			0.5							
Microlaena stipoides	1	50	GG				1						
Panicum simile	1	20	GG				1						
Patersonia glabrata	0.5	10	FG					0.5					
Persoonia levis	0.1	1	SG			0.1							
Persoonia linearis	0.1	1	SG			0.1							
Pimelea linifolia	1	20	SG			1							
Pteridium esculentum	0.1	3	EG						0.1				
pultenaea paleacea	1	30	SG			1							
Pultenaea villosa	0.5	5	SG			0.5							
Richardia brasiliensis	0.1	10	EX								0.1		
Schizaea bifida	0.1	5	EG						0.1				
Senecio madagascarensis	1	50	HT									1	
Themeda triandra	2	30	GG				2						
Tricoryne elatior	0.1	5	FG					0.1					
Veronica plebeia	0.1	5	FG					0.1					
Xanthosia tridentata	0.5	20	FG					0.5					

Easting	355526
Northing	6343458
Orientation	250
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	3.4
Litter (%)	3
	2
	5
	5
	2

D1.44 3583 – Hunter Coast Lowland Scribbly Gum Forest (Mod-good)

HTP-MS-93

Date	9/9/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	359489
Plot Name	HTP-MS-93		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6342121
PCT	3583	Mod-good	49	48	4	14	13	10	3	4	0	1		Orientation	122
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20x20x50
Species	Cover	Abundance	132.8	132.7	53	26.1	42.7	3.9	0.7	6.3	0	0.1		BAM Attributes 20x50m plot	
Angophora costata	20	12	TG		20									Stem classes	
Anisopogon avenaceus	0.5	10	GG				0.5							80+	0
Austrostipa pubescens	0.5	5	GG				0.5							50-79	1
Banksia spinulosa	10	50	SG			10								30-49	8
Billardiera scandens	0.2	5	OG							0.2				20-29	Yes
Bossiaea obcordata	1	10	SG			1								10-19	Yes
Brunoniella australis	0.1	5	FG					0.1						5-9	Yes
Cassytha glabella	1	20	OG							1				<5	Yes
Cinnamomum camphora	0.1	2	HT									0.1		Hollows	2
Corymbia gummifera	8	6	TG		8									Length logs (m)	21
Cyathochaeta diandra	5	80	GG				5								
Dampiera stricta	0.1	1	FG					0.1						BAM Attributes 1x1 plot (%)	67
Dianella revoluta	1	30	FG					1						Litter (%)	55
Dodonaea triquetra	0.1	1	SG			0.1									60
Entolasia stricta	20	200	GG				20								85
Eragrostis brownii	0.1	5	GG				0.1								65
Eucalyptus capitellata	10	6	TG		10										70
Eucalyptus haemastoma	15	10	TG		15										
Gompholobium latifolium	5	60	SG			5									
Goodenia bellidifolia	0.1	5	FG					0.1							
Goodenia heterophylla	0.2	10	FG					0.2							
Hibbertia aspera	0.2	5	SG			0.2									
Hybanthus monopetalus	0.1	5	FG					0.1							
Isopogon anemonifolius	0.1	1	SG			0.1									
Lagenifera stipitata	0.2	20	FG					0.2							
Lambertia formosa	0.2	1	SG			0.2									
Lepidosperma cf. laterale	1	20	GG				1								
Leptospermum trinervium	2	10	SG			2									
Leucopogon microphyllus	1	20	SG			1									
Lindsaea linearis	0.5	30	EG						0.5						
Lindsaea microphylla	0.1	5	EG						0.1						
Lomandra filiformis subsp. filiformis	2	100	GG				2								
Lomandra glauca	0.1	5	GG				0.1								
Lomandra multiflora subsp. multiflora	0.5	10	GG				0.5								
Lomandra obliqua	2	100	GG				2								
Mirbelia rubiifolia	1	10	SG			1									
Notelaea ovata	3	40	SG			3									
Opercularia varia	0.1	10	FG					0.1							
Panicum simile	0.5	20	GG				0.5								
Patersonia glabrata	1	10	FG					1							
Patersonia sericea	1	20	FG					1							
Persoonia linearis	1	1	SG			1									
Pimelea linifolia	1	20	SG			1									
Podolobium ilicifolium	0.5	5	SG			0.5									
Ptilothrix deusta	10	100	GG				10								
Rytidosperma pallidum	0.5	10	GG				0.5								
Schizaea bifida	0.1	5	EG						0.1						
Xanthorrhoea latifolia	5	50	OG							5					
Xanthorrhoea resinosa	0.1	1	OG							0.1					

HTP-MS-95

Date	9/9/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-95		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3583	Mod-good	44	43	5	16	10	8	2	2	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	115.4	115.3	43	32.3	32.5	5.3	0.2	2	0	0.1	
Acacia ulicifolia	0.5	10	SG			0.5							
Allocasuarina littoralis	8	10	TG		8								
Andropogon virginicus	0.1	1	HT									0.1	
Angophora costata	5	3	TG		5								
Anisopogon avenaceus	3	40	GG				3						
Bossiaea obcordata	5	50	SG			5							
Cassytha glabella	1	50	OG							1			
Corymbia gummifera	15	8	TG		15								
Cryptostylis spp.	0.1	3	FG					0.1					
Dampiera stricta	0.1	5	FG					0.1					
Daviesia corymbosa	1	1	SG			1							
Drosera auriculata	0.1	5	FG					0.1					
Entolasia stricta	15	500	GG				15						
Epacris pulchella	1	20	SG			1							
Eragrostis brownii	1	30	GG				1						
Eucalyptus capitellata	3	1	TG		3								
Eucalyptus haemastoma	12	4	TG		12								
Gompholobium latifolium	5	50	SG			5							
Gonocarpus teucrioides	2	50	FG					2					
Goodenia heterophylla	0.5	40	FG					0.5					
Hakea dactyloides	0.2	2	SG			0.2							
Isopogon anemonifolius	2	30	SG			2							
Lambertia formosa	5	20	SG			5							
Lepidosperma cf. laterale	1	20	GG				1						
Leptospermum trinervium	5	15	SG			5							
Leucopogon microphyllus	2	50	SG			2							
Lindsaea linearis	0.1	10	EG						0.1				
Lobelia purpurascens	0.5	30	FG					0.5					
Lomandra filiformis subsp. filiformis	2	80	GG				2						
Lomandra obliqua	2	100	GG				2						
Melichrus procumbens	0.1	5	SG			0.1							
Panicum simile	0.5	10	GG				0.5						
Patersonia glabrata	1	20	FG					1					
Patersonia sericea	1	30	FG					1					
Philotheca buxifolia subsp. obovata	1	8	SG			1							
Phyllanthus hirtellus	0.5	50	SG			0.5							
Podolobium ilicifolium	1	10	SG			1							
Ptilothrix deusta	5	100	GG				5						
Pultenaea tuberculata	1	20	SG			1							
Schizaea bifida	0.1	5	EG						0.1				
Tetrarrhena juncea	2	50	GG				2						
Tetratheca juncea	2	20	SG			2							
Themeda triandra	1	30	GG				1						
Xanthorrhoea latifolia	1	5	OG							1			

Easting	359523
Northing	6241974
Orientation	120
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	4
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	11

BAM Attributes 1x1 plot (%)	59
Litter (%)	65
	50
	75
	60
	45

HTP-MS-102

Date	9/16/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-102		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3583	Mod-good	45	45	5	20	10	5	2	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	164.1	164.1	32.5	75.6	47.1	5.2	0.6	3.1	0	0	
Acacia suaveolens	2	20	SG			2							
Allocasuarina littoralis	0.5	5	TG		0.5								
Angophora costata	10	5	TG		10								
Anisopogon avenaceus	1	20	GG				1						
Banksia oblongifolia	2	10	SG			2							
Banksia spinulosa	20	50	SG			20							
Billardiera scandens	0.1	2	OG							0.1			
Bossiaea heterophylla	0.1	1	SG			0.1							
Bossiaea obcordata	1	10	SG			1							
Brunoniella pumilio	0.1	5	FG					0.1					
Cassytha glabella	2	40	OG							2			
Corymbia gummifera	5	3	TG		5								
Dampiera stricta	3	80	FG					3					
Dianella caerulea	1	30	FG					1					
Drosera auriculata	0.1	5	FG					0.1					
Entolasia stricta	20	100	GG				20						
Epacris microphylla	1	20	SG			1							
Eucalyptus capitellata	5	4	TG		5								
Eucalyptus haemastoma	12	4	TG		12								
Gompholobium latifolium	1	10	SG			1							
Gonocarpus teucrioides	1	50	FG					1					
Grevillea sericea	0.5	5	SG			0.5							
Hakea bakeriana	1	5	SG			1							
Hakea dactyloides	0.5	5	SG			0.5							
Isopogon anemonifolius	1	10	SG			1							
Lambertia formosa	1	10	SG			1							
Lepidosperma cf. laterale	2	40	GG				2						
Lepidosperma urophorum	1	20	GG				1						
Leptospermum polygalifolium	15	50	SG			15							
Leptospermum trinervium	20	80	SG			20							
Lepyrodia scariosa	0.5	10	GG				0.5						
Lindsaea linearis	0.5	20	EG						0.5				
Lomandra filiformis subsp. filiformis	0.5	20	GG				0.5						
Lomandra multiflora subsp. multiflora	0.1	5	GG				0.1						
Mirbelia rubiifolia	5	50	SG			5							
Panicum simile	1	30	GG				1						
Persoonia levis	1	5	SG			1							
Phyllanthus hirtellus	0.5	20	SG			0.5							
Pimelea linifolia	1	30	SG			1							
Platysace linearifolia	1	10	SG			1							
Pteridium esculentum	0.1	5	EG						0.1				
Ptilothrix deusta	20	100	GG				20						
Pultenaea paleacea	1	30	SG			1							
Themeda triandra	1	20	GG				1						
Xanthorrhoea latifolia	1	10	OG							1			

Easting	360174
Northing	6341627
Orientation	10
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	11
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	3
Length logs (m)	8

BAM Attributes 1x1 plot (%)	74
Litter (%)	75
	80
	60
	85
	70

D1.45 3583 – Hunter Coast Lowland Scribbly Gum Forest (Derived)

HTP-MS-92

Date	9/9/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-92		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3583	Derived	50	47	3	18	16	8	1	1	1	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	105.7	81.5	2.1	35.3	41.5	1.9	0.2	0.5	4	20.2	
Acacia longifolia subsp. longifolia	2	15	SG			2							
Acacia terminalis subsp. angustifolia	0.1	1	SG			0.1							
Allocasuarina littoralis	1	5	TG		1								
Andropogon virginicus	20	200	HT									20	
Astridia vagans	2	50	GG				2						
Banksia oblongifolia	0.2	1	SG			0.2							
Cassytha glabella	0.5	20	OG							0.5			
Centella asiatica	0.1	10	FG					0.1					
Comesperma ericinum	0.5	10	SG			0.5							
Cyathochaeta diandra	5	100	GG				5						
Dillwynia retorta	1	20	SG			1							
Drosera auriculata	0.1	10	FG					0.1					
Entolasia stricta	3	50	GG				3						
Epacris pulchella	1	20	SG			1							
Eragrostis brownii	3	50	GG				3						
Eragrostis leptostachya	0.1	10	GG				0.1						
Eucalyptus capitellata	0.1	4	TG		0.1								
Eucalyptus haemastoma	1	3	TG		1								
Gahnia clarkei	3	20	GG				3						
Gonocarpus teucrioides	1	50	FG					1					
Grevillea parviflora subsp. parviflora	0.1	3	SG			0.1							
Hakea teretifolia	0.1	1	SG			0.1							
Hypericum japonicum	0.1	5	FG					0.1					
Imperata cylindrica	2	50	GG				2						
Lagenifera stipitata	0.1	10	FG					0.1					
Lepidosperma cf. laterale	1	30	GG				1						
Leptospermum arachnoides	15	200	SG			15							
Leptospermum polygalifolium	10	50	SG			10							
Lepyrodia scariosa	0.1	1	GG				0.1						
Leucopogon microphyllus	1	20	SG			1							
Lindsaea linearis	0.2	20	EG						0.2				
Lobelia purpurascens	0.2	30	FG					0.2					
Lomandra filiformis subsp. filiformis	0.5	30	GG				0.5						
Lomandra multiflora subsp. multiflora	0.2	5	GG				0.2						
Lomandra obliqua	0.5	40	GG				0.5						
Micrantheum ericoides	0.1	5	SG			0.1							
Microlaena stipoides var. stipoides	0.5	20	GG				0.5						
Mirbelia rubiifolia	0.5	10	SG			0.5							
Opercularia varia	0.1	5	FG					0.1					
Panicum simile	0.1	5	GG				0.1						
Patersonia glabrata	0.2	10	FG					0.2					
Persoonia levis	0.1	1	SG			0.1							
Pimelea linifolia	1	20	SG			1							
Ptilothrix deusta	20	100	GG				20						
Pultenaea paleacea	2	30	SG			2							
Pultenaea tuberculata	0.5	10	SG			0.5							
Pultenaea villosa	0.1	1	SG			0.1							
Schoenus apogon	0.5	50	GG				0.5						
Senecio madagascarensis	0.2	10	HT									0.2	
Setaria pumila	4	50	EX								4		

Easting	359472
Northing	6341863
Orientation	115
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	7
Litter (%)	5
	5
	10
	10
	5

HTP-MS-94

Date	9/9/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-94		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3583	Derived	42	39	3	10	13	10	1	2	1	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	90.8	59.3	0.4	24.8	31.6	2.1	0.1	0.3	0.5	31	
Allocasuarina littoralis	0.2	5	TG		0.2								
Andropogon virginicus	1	30	HT									1	
Aristida vagans	1	50	GG				1						
Aristida warburgii	0.5	10	GG				0.5						
Axonopus fissifolius	30	500	HT									30	
Brunoniella australis	0.1	5	FG					0.1					
Centella asiatica	0.1	5	FG					0.1					
Cheilanthes sieberi	0.1	5	EG						0.1				
Daviesia ulicifolia	0.1	1	SG			0.1							
Dianella longifolia	0.2	10	FG					0.2					
Entolasia stricta	5	100	GG				5						
Epacris microphylla	0.5	20	SG			0.5							
Epacris pulchella	0.1	5	SG			0.1							
Eragrostis brownii	5	100	GG				5						
Eucalyptus capitellata	0.1	1	TG		0.1								
Eucalyptus haemastoma	0.1	2	TG		0.1								
Glycine clandestina	0.1	5	OG							0.1			
Gonocarpus teucrioides	1	50	FG					1					
Goodenia paniculata	0.1	5	FG					0.1					
Lagenifera stipitata	0.2	20	FG					0.2					
Lepidosperma cf. laterale	5	100	GG				5						
Leptospermum arachnoides	1	10	SG			1							
Leptospermum polygalifolium	0.1	2	SG			0.1							
Lobelia purpurascens	0.1	10	FG					0.1					
Lomandra filiformis subsp. filiformis	1	50	GG				1						
Lomandra longifolia	0.1	1	GG				0.1						
Lomandra multiflora subsp. multiflora	1	50	GG				1						
Lomandra obliqua	2	100	GG				2						
Micrantheum ericoides	0.5	20	SG			0.5							
Microlaena stipoides var. stipoides	1	50	GG				1						
Opercularia diphylla	0.1	5	FG					0.1					
Oxalis perennans	0.1	5	FG					0.1					
Phyllanthus hirtellus	1	40	SG			1							
Pimelea linifolia	1	40	SG			1							
Ptilothrix deusta	5	80	GG				5						
Pultenaea paleacea	20	500	SG			20							
Pultenaea villosa	0.5	10	SG			0.5							
Richardia brasiliensis	0.5	20	EX								0.5		
Rytidosperma pallidum	3	50	GG				3						
Themeda triandra	2	50	GG				2						
Wahlenbergia gracilis	0.1	10	FG					0.1					
Xanthorrhoea latifolia	0.2	5	OG							0.2			

Easting	358975
Northing	6342212
Orientation	125
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	3.4
Litter (%)	5
	3
	5
	2
	2

HTP-MS-101

Date	9/16/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	High Threat	56
Plot Name	HTP-MS-101		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3583	Derived	42	42	1	19	13	7	1	1	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	104.4	104.4	0.1	32.9	65.6	3.8	1	1	0	0	
Acacia longifolia subsp. longifolia	0.5	1	SG			0.5							
Acacia suaveolens	0.1	1	SG			0.1							
Allocasuarina littoralis	0.1	1	TG		0.1								
Anisopogon avenaceus	1	30	GG				1						
Aristida warburgii	1	40	GG				1						
Banksia oblongifolia	1	5	SG			1							
Cassytha glabella	1	20	OG							1			
Cyathochaeta diandra	2	50	GG				2						
Dampiera stricta	1	50	FG					1					
Dillwynia retorta	5	80	SG			5							
Dodonaea triquetra	2	80	SG			2							
Drosera auriculata	0.1	10	FG					0.1					
Drosera peltata	0.1	5	FG					0.1					
Entolasia stricta	20	200	GG				20						
Epacris microphylla	1	40	SG			1							
Eragrostis brownii	1	50	GG				1						
Gahnia clarkei	1	10	GG				1						
Gonocarpus teucrioides	1	50	FG					1					
Isopogon anemonifolius	0.1	1	SG			0.1							
Lambertia formosa	0.1	1	SG			0.1							
Lepidosperma cf. laterale	5	100	GG				5						
Leptospermum polygalifolium	3	40	SG			3							
Leptospermum trinervium	2	10	SG			2							
Lepyrodia scariosa	2	50	GG				2						
Leucopogon microphyllus	1	40	SG			1							
Lindsaea linearis	1	80	EG						1				
Lissanthe strigosa	0.5	10	SG			0.5							
Lomandra cylindrica	0.1	5	GG				0.1						
Lomandra filiformis subsp. filiformis	0.5	10	GG				0.5						
Lomandra obliqua	5	100	GG				5						
Micrantheum ericoides	1	50	SG			1							
Mirbelia rubiifolia	2	50	SG			2							
Panicum simile	2	50	GG				2						
Patersonia glabrata	0.5	10	FG					0.5					
Persoonia levis	0.1	1	SG			0.1							
Pimelea linifolia	3	80	SG			3							
Platysace linearifolia	5	100	SG			5							
Ptilothrix deusta	25	500	GG				25						
Pultenaea paleacea	5	100	SG			5							
Pultenaea tuberculata	0.5	5	SG			0.5							
Tricoryne elatior	0.1	5	FG					0.1					
Xanthosia tridentata	1	40	FG					1					

Easting	360286
Northing	6341539
Orientation	285
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	2
BAM Attributes 1x1 plot (%)	3.6
Litter (%)	5
	3
	2
	5
	3

D1.46 3599 – Blue Mountains Peppermint Shrub Forest (Mod-good)

TC-05

Date	4/17/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-05		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3599	Mod-good	28	28	5	12	2	3	1	5	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	163.5	163.5	58	53.9	3.5	0.4	0.5	47.2	0	0	
Angophora costata	25	5	TG		25								
Eucalyptus piperita	7	1	TG		7								
Syncarpia glomulifera	10	8	TG		10								
Allocasuarina torulosa	1	8	TG		1								
Xanthorrhoea arborea	6	7	OG							6			
Lambertia formosa	2	5	SG			2							
Acacia terminalis subsp. angustifolia	40	50	SG			40							
Acacia difformis	15	20	TG		15								
Diospyros australis	2	7	SG			2							
Banksia spinulosa	6	7	SG			6							
Pimelea ligustrina	1	15	SG			1							
Podolobium ilicifolium	0.5	3	SG			0.5							
Exocarpos strictus	0.1	1	SG			0.1							
Telopea speciosissima	0.1	1	SG			0.1							
Phyllanthus gunnii	1	4	SG			1							
Amyema spp.	0.1	1	OG							0.1			
Persoonia linearis	0.1	1	SG			0.1							
Xanthosia pilosa	0.1	1	FG					0.1					
Hardenbergia violacea	1	5	OG							1			
Lomandra obliqua	0.5	3	GG				0.5						
Cassytha pubescens	40	1	OG							40			
Billardiera scandens	0.1	1	OG							0.1			
Pteridium esculentum	0.5	3	EG						0.5				
Chloanthes stoechadis	1	4	SG			1							
Entolasia stricta	3	5	GG				3						
Pomax umbellata	0.1	1	FG					0.1					
Actinotus helianthi	0.2	5	FG					0.2					
Hibbertia empetrifolia subsp. empetrifolic	0.1	1	SG			0.1							

Easting	333980
Northing	6354902
Orientation	111
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	3
Length logs (m)	20
BAM Attributes 1x1 plot (%)	74
Litter (%)	30
	100
	80
	90
	70

TC-12

Date	1/29/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-12		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3599	Mod-good	20	20	4	9	2	2	0	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	98.7	98.7	78	16.2	3	0.2	0	1.3	0	0	
Acacia obtusifolia	2	20	SG			2							
Acacia parvipinnula	2	20	SG			2							
Allocasuarina torulosa	60	100	TG		60								
Angophora costata	5	17	TG		5								
Billardiera scandens	0.1	5	OG							0.1			
Chloanthes stoechadis	0.1	1	SG			0.1							
Dianella caerulea	0.1	1	FG					0.1					
Entolasia stricta	2	20	GG				2						
Eucalyptus piperita	10	8	TG		10								
Gompholobium latifolium	0.1	2	SG			0.1							
Goodenia heterophylla	0.1	2	FG					0.1					
Hardenbergia violacea	0.2	20	OG							0.2			
Lomandra obliqua	1	50	GG				1						
Lomatia silaifolia	2	10	SG			2							
Ozothamnus diosmifolius	5	0.5	SG			5							
Platysace linearifolia	2	15	SG			2							
Podolobium ilicifolium	2	25	SG			2							
Syncarpia glomulifera	3	13	TG		3								
Xanthorrhoea spp.	1	2	OG							1			
Xylomelum pyriforme	1	3	SG			1							

Easting	333753
Northing	6351171
Orientation	18
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	10
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	48
BAM Attributes 1x1 plot (%)	80
Litter (%)	90
	85
	90
	75
	60

TC-17

Date	1/31/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3599	Mod-good	26	26	5	15	2	1	1	2	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	38.5	38.5	13.3	21.7	0.7	0.1	0.2	2.5	0	0	
Acacia parvipinnula	10	25	SG			10							
Acacia terminalis	3	20	SG			3							
Acacia ulicifolia	0.2	4	SG			0.2							
Allocasuarina torulosa	1	20	TG		1								
Angophora costata	8	8	TG		8								
Banksia serrata	0.1	2	TG		0.1								
Banksia spinulosa	1	2	SG			1							
Entolasia stricta	0.5	20	GG				0.5						
Eucalyptus scias	4	2	TG		4								
Exocarpos cupressiformis	0.1	2	SG			0.1							
Goodenia heterophylla	0.1	5	FG					0.1					
Hardenbergia violacea	0.5	25	OG							0.5			
Hibbertia obtusifolia	0.5	20	SG			0.5							
Lambertia formosa	0.5	2	SG			0.5							
Leptospermum trinervium	1	7	SG			1							
Lomandra obliqua	0.2	10	GG				0.2						
Lomatia silaifolia	0.5	6	SG			0.5							
Persoonia linearis	0.5	5	SG			0.5							
Pimelea linifolia	2	10	SG			2							
Platysace linearifolia	0.2	5	SG			0.2							
Podolobium ilicifolium	2	15	SG			2							
Pteridium esculentum	0.2	10	EG						0.2				
Rubus parvifolius	0.1	3	SG			0.1							
Syncarpia glomulifera	0.2	1	TG		0.2								
Tetratheca thymifolia	0.1	1	SG			0.1							
Xanthorrhoea spp.	2	8	OG							2			

Easting	333872
Northing	6354529
Orientation	100
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	2
50-79	0
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	47
BAM Attributes 1x1 plot (%)	44
Litter (%)	40
	50
	50
	30
	50

D1.47 3605 – Hunter Range Ironbark Forest (Mod-good)

DL-04

Date	8/24/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3605	Mod-good	24	24	5	8	7	2	1	1	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	115.6	115.6	32	75.9	6.4	0.2	0.1	1	0	0	
Acacia parvipinnula	0.5	5	SG			0.5							
Angophora costata	4	6	TG		4								
Aristida vagans	0.1	10	GG				0.1						
Austrostipa pubescens	5	15	GG				5						
Daviesia ulicifolia	20	100	SG			20							
Dianella longifolia	0.1	5	FG					0.1					
Entolasia stricta	0.5	20	GG				0.5						
Eucalyptus fergusonii	3	3	TG		3								
Eucalyptus globoidea	5	4	TG		5								
Eucalyptus punctata	5	1	TG		5								
Eucalyptus racemosa	15	5	TG		15								
Exocarpos strictus	0.1	2	SG			0.1							
Grevillea spp.	5	25	SG			5							
Hardenbergia violacea	1	50	OG							1			
Lepidosperma laterale	0.1	2	GG				0.1						
Leucopogon lanceolatus	0.1	5	SG			0.1							
Lindsaea microphylla	0.1	5	EG						0.1				
Lomandra longifolia	0.2	2	GG				0.2						
Lomandra multiflora subsp. multiflora	0.1	3	GG				0.1						
Lomandra obliqua	0.4	100	GG				0.4						
Persoonia spp.	0.1	10	SG			0.1							
Phyllanthus hirtellus	0.1	10	SG			0.1							
Podolobium ilicifolium	50	150	SG			50							
Pomax umbellata	0.1	50	FG					0.1					

Easting	333606
Northing	6357647
Orientation	63
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	19
BAM Attributes 1x1 plot (%)	57
Litter (%)	15
	60
	90
	50
	70

DL-21

Date	1/23/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_21		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3605	Mod-good	30	30	8	9	5	5	0	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	66	66	44.4	13.9	6.3	1.1	0	0.3	0	0	
Acacia implexa	1	4	SG			1							
Acacia linearifolia	0.1	3	TG		0.1								
Acacia parramattensis	2	10	TG		2								
Allocasuarina torulosa	5	7	TG		5								
Angophora euryphylla	1	1	TG		1								
Brachychiton populneus	0.3	1	TG		0.3								
Bursaria spinosa	5	16	SG			5							
Daviesia ulicifolia	0.5	1	SG			0.5							
Dianella caerulea var. caerulea	0.3	15	FG					0.3					
Entolasia stricta	5	100	GG				5						
Eucalyptus punctata	5	3	TG		5								
Eucalyptus racemosa	1	2	TG		1								
Eucalyptus sparsifolia	30	15	TG		30								
Euphorbia spp.	0.2	10	FG					0.2					
Geitonoplesium cymosum	0.1	3	OG							0.1			
Goodenia heterophylla	0.3	30	FG					0.3					
Hibbertia empetrifolia subsp. empetrifolia	0.3	15	SG			0.3							
Jacksonia scoparia	0.3	3	SG			0.3							
Lepidosperma laterale	0.5	5	GG				0.5						
Lomandra longifolia	0.5	2	GG				0.5						
Lomandra obliqua	0.2	30	GG				0.2						
Pandorea pandorana	0.1	5	OG							0.1			
Panicum simile	0.1	5	GG				0.1						
Persoonia linearis	5	30	SG			5							
Plectranthus parviflorus	0.2	4	FG					0.2					
Podolobium ilicifolium	1	10	SG			1							
Polyscias sambucifolia	0.3	4	SG			0.3							
Pomax umbellata	0.1	30	FG					0.1					
Smilax australis	0.1	4	OG							0.1			
Trema tomentosa var. aspera	0.5	6	SG			0.5							

Easting	332059
Northing	6369194
Orientation	144
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	7
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	2
Length logs (m)	28
BAM Attributes 1x1 plot (%)	65
Litter (%)	60
	45
	65
	75
	85

DL-22

Date	1/24/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_22		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3605	Mod-good	28	28	6	7	7	5	0	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	151.3	151.3	34.4	57.5	57	1	0	1.4	0	0	
Acacia buxifolia	0.4	2	SG			0.4							
Acacia linearifolia	0.1	5	TG		0.1								
Acacia parramattensis	3	20	TG		3								
Allocasuarina torulosa	0.3	1	TG		0.3								
Angophora euryphylla	1	3	TG		1								
Austrostipa pubescens	5	20	GG				5						
Billardiera scandens	0.1	5	OG							0.1			
Breynia oblongifolia	0.3	2	SG			0.3							
Corymbia maculata	5	6	TG		5								
Dianella longifolia	0.1	2	FG					0.1					
Dianella revoluta	0.5	10	FG					0.5					
Entolasia stricta	50	1000	GG				50						
Eucalyptus sparsifolia	25	12	TG		25								
Gonocarpus teucrioides	0.1	3	FG					0.1					
Goodenia rotundifolia	0.1	5	FG					0.1					
Hardenbergia violacea	1	30	OG							1			
Hibbertia spp.	0.5	30	SG			0.5							
Jacksonia scoparia	0.3	5	SG			0.3							
Kennedia rubicunda	0.3	5	OG							0.3			
Lepidosperma laterale	0.1	5	GG				0.1						
Lomandra confertifolia	0.1	3	GG				0.1						
Lomandra longifolia	1	15	GG				1						
Persoonia linearis	1	6	SG			1							
Platysace lanceolata	5	50	SG			5							
Plectranthus parviflorus	0.2	15	FG					0.2					
Podolobium ilicifolium	50	50	SG			50							
Rytidosperma spp.	0.3	5	GG				0.3						
Themeda triandra	0.5	6	GG				0.5						

Easting	329106
Northing	6370742
Orientation	340
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	14
BAM Attributes 1x1 plot (%)	66
Litter (%)	60
	50
	75
	75
	70

HTP-MS-15

Date	9/13/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS15		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3605	Mod-good	47	47	8	17	13	6	0	3	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	103.8	103.8	41	25.4	25.7	10.2	0	1.5	0	0	
Acacia parvipinnula	2	10	SG			2							
Allocasuarina torulosa	1	8	TG		1								
Angophora costata	6	4	TG		6								
Aristida calycina var. calycina	0.2	5	GG				0.2						
Austrostipa pubescens	4	50	GG				4						
Billardiera scandens	0.1	2	OG							0.1			
Bursaria spinosa subsp. spinosa	0.1	1	SG			0.1							
Cleistochloa rigida	6	50	GG				6						
Conospermum longifolium	0.1	1	SG			0.1							
Corymbia maculata	4	6	TG		4								
Cymbopogon refractus	0.8	10	GG				0.8						
Daviesia genistifolia	1	10	SG			1							
Denhamia silvestris	0.8	5	SG			0.8							
Dianella caerulea var. producta	2	30	FG					2					
Dianella revoluta	0.8	10	FG					0.8					
Digitaria breviglumis	0.4	10	GG				0.4						
Entolasia stricta	3	40	GG				3						
Eucalyptus beyeriana	1	1	TG		1								
Eucalyptus fracta	4	7	TG		4								
Eucalyptus punctata	10	7	TG		10								
Eucalyptus sparsifolia	14	10	TG		14								
Goodenia heterophylla	1	20	FG					1					
Goodenia ovata	0.1	2	SG			0.1							
Goodenia rotundifolia	0.4	10	FG					0.4					
Hardenbergia violacea	0.4	5	OG							0.4			
Hibbertia diffusa	0.1	3	SG			0.1							
Hibbertia empetrifolia subsp. empetrifolia	0.8	15	SG			0.8							
Hibbertia spp.	1	15	SG			1							
Indigofera australis	0.6	5	SG			0.6							
Lepidosperma gunnii	4	50	GG				4						
Lepidosperma laterale	0.4	5	GG				0.4						
Leptospermum sphaerocarpum	2	10	SG			2							
Leucopogon lanceolatus	0.2	2	SG			0.2							
Leucopogon muticus	3	15	SG			3							
Lomandra confertifolia subsp. rubiginosa	4	40	GG				4						
Lomandra filiformis subsp. filiformis	0.1	3	GG				0.1						
Macrozamia communis	1	5	OG							1			
Panicum simile	0.8	15	GG				0.8						
Patersonia sericea	4	10	FG					4					
Persoonia linearis	5	30	SG			5							
Phyllanthus hirtellus	0.6	10	SG			0.6							
Poa affinis	1	15	GG				1						
Podolobium ilicifolium	3	20	SG			3							
Pomax umbellata	2	40	FG					2					
Pultenaea spinosa	5	30	SG			5							
Rytidosperma pilosum	1	30	GG				1						
Syncarpia glomulifera	1	2	TG		1								

Easting	330617
Northing	6371576
Orientation	199
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	15
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	7
Length logs (m)	24
BAM Attributes 1x1 plot (%)	93
Litter (%)	85
	90
	95
	100
	95

HTP-MS-26

Date	10/10/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-26		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3605	Mod-good	40	40	8	10	10	8	0	4	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	113.6	113.6	37.4	45.5	23.5	2.6	0	4.6	0	0	
Eucalyptus punctata	12	5	TG		12								
Eucalyptus agglomerata	15	10	TG		15								
Angophora costata	3	2	TG		3								
Eucalyptus crebra	0.5	1	TG		0.5								
Syncarpia glomulifera	1	1	TG		1								
Allocasuarina torulosa	0.8	3	TG		0.8								
Acacia parvipinnula	35	200	SG			35							
Hardenbergia violacea	4	80	OG							4			
Podolobium ilicifolium	5	100	SG			5							
Exocarpos strictus	1	10	SG			1							
Entolasia stricta	15	100	GG				15						
Goodenia heterophylla	1	30	FG					1					
Denhamia silvestris	0.8	10	SG			0.8							
Panicum simile	5	80	GG				5						
Persoonia linearis	1	10	SG			1							
Ozothamnus diosmifolius	0.6	8	SG			0.6							
Billardiera scandens	0.4	5	OG							0.4			
Dianella caerulea	0.8	10	FG					0.8					
Phyllanthus hirtellus	0.8	10	SG			0.8							
Dianella tasmanica	0.1	1	FG					0.1					
Lomandra confertifolia subsp. rubiginosa	0.4	10	GG				0.4						
Brachyscome multifida	0.2	5	FG					0.2					
Entolasia marginata	2	30	GG				2						
Schoenus melanostachys	0.1	2	GG				0.1						
Pseuderanthemum variabile	0.1	5	FG					0.1					
Cassinia cunninghamii	0.4	5	SG			0.4							
Pomax umbellata	0.2	8	FG					0.2					
Carex spp.	0.1	3	GG				0.1						
Oxytes brachypoda	0.1	1	FG					0.1					
Olearia spp.	0.8	5	SG			0.8							
Lepidosperma laterale	0.2	5	GG				0.2						
Austrostipa pubescens	0.4	5	GG				0.4						
Poa affinis	0.1	3	GG				0.1						
Hibbertia aspera	0.1	1	SG			0.1							
Glycine clandestina	0.1	2	OG							0.1			
Lomandra filiformis subsp. filiformis	0.2	5	GG				0.2						
Notelaea longifolia	0.1	1	TG		0.1								
Dianella revoluta	0.1	1	FG					0.1					
Eucalyptus sparsifolia	5	4	TG		5								
Geitonoplesium cymosum	0.1	1	OG							0.1			

Easting	334676
Northing	6352968
Orientation	330
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	2
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	3
BAM Attributes 1x1 plot (%)	56
Leaf Litter (%)	55
	50
	60
	70
	45

TC-45

Date	8/13/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC45		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3605	Mod-good	25	25	5	10	6	3	0	1	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	107.9	107.9	57	11.1	38.5	1	0	0.3	0	0	
Allocasuarina torulosa	1	5	TG		1								
Angophora euryphylla	20	7	TG		20								
Austrostipa pubescens	17	70	GG				17						
Billardiera scandens	0.3	5	OG							0.3			
Breynia oblongifolia	0.1	1	SG			0.1							
Choretrum sp. A	1	6	SG			1							
Daviesia ulicifolia	1	8	SG			1							
Denhamia silvestris	0.5	8	SG			0.5							
Dianella revoluta	0.5	5	FG					0.5					
Entolasia stricta	10	40	GG				10						
Eucalyptus fergusonii	1	2	TG		1								
Eucalyptus punctata	5	1	TG		5								
Eucalyptus sparsifolia	30	25	TG		30								
Goodenia rotundifolia	0.2	1	FG					0.2					
Hibbertia aspera	2	30	SG			2							
Lepidosperma cf. laterale	0.5	6	GG				0.5						
Leucopogon juniperinus	0.2	2	SG			0.2							
Lomandra confertifolia	2	20	GG				2						
Lomandra filiformis	4	20	GG				4						
Persoonia linearis	2	15	SG			2							
Pimelea linifolia	0.3	3	SG			0.3							
Platysace lanceolata	1	1	SG			1							
Poa affinis	5	25	GG				5						
Podolobium ilicifolium	3	18	SG			3							
Pomax umbellata	0.3	10	FG					0.3					

Easting	334670
Northing	6363093
Orientation	188
Plot size	20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	4
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	17
BAM Attributes 1x1 plot litter (%)	59
Litter (%)	50
	70
	70
	60
	45

D1.48 3617 – Sydney Hinterland Peppermint-Apple Forest (Mod-good)

HTP-MS-65

Date	6/27/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-65		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3617	Mod-good	38	38	5	18	4	4	2	5	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	126.3	126.3	57	34.3	22	4.3	0.2	8.5	0	0	
Acacia suaveolens	0.8	10	SG			0.8							
Acacia terminalis	0.1	1	SG			0.1							
Acrotriche divaricata	5	20	SG			5							
Amperea xiphoclada	0.8	20	SG			0.8							
Banksia serrata	15	30	TG		15								
Banksia spinulosa	10	40	SG			10							
Bossiaea heterophylla	0.4	5	SG			0.4							
Cassytha glabella	1	50	OG							1			
Caustis flexuosa	2	40	GG				2						
Corymbia gummifera	3	8	TG		3								
Cyathochaeta diandra	2	80	GG				2						
Cymbidium suave	0.1	1	OG							0.1			
Dampiera stricta	2	40	FG					2					
Dianella caerulea	0.2	10	FG					0.2					
Dillwynia retorta	1	5	SG			1							
Drosera peltata	0.1	1	FG					0.1					
Elaeocarpus reticulatus	1	5	SG			1							
Entolasia stricta	15	100	GG				15						
Epacris longiflora	1	10	SG			1							
Epacris pulchella	1	20	SG			1							
Eucalyptus piperita	12	5	TG		12								
Eucalyptus sieberi	22	12	TG		22								
Gompholobium latifolium	1	15	SG			1							
Hakea dactyloides	3	20	SG			3							
Hakea salicifolia	1	10	SG			1							
Lindsaea linearis	0.1	5	EG						0.1				
Lomatia silaifolia	0.4	10	SG			0.4							
Mirbelia rubiifolia	0.8	20	SG			0.8							
Panicum simile	3	100	GG				3						
Patersonia glabrata	2	50	FG					2					
Persoonia levis	5	30	SG			5							
Petrophile pulchella	1	5	SG			1							
Platysace linearifolia	1	10	SG			1							
Schizaea bifida	0.1	5	EG						0.1				
Smilax glyciphylla	0.4	5	OG							0.4			
Syncarpia glomulifera subsp. glomulifera	5	20	TG		5								
Xanthorrhoea latifolia	2	5	OG							2			
Xanthorrhoea resinosa	5	30	OG							5			

Easting	345225
Northing	6338807
Orientation	93
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	6
30-49	7
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	28
BAM Attributes 1x1 plot (%)	62
Litter (%)	55
	60
	60
	70
	65

LCSM-05

Date	9/20/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-05		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3617	Mod-good	27	26	6	11	3	3	1	2	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	63.3	62.3	52.3	5.5	2.3	1.3	0.5	0.4	0	1	
Acacia maidenii	0.2	1	TG		0.2								
Acacia stricta	0.1	1	SG			0.1							
Acacia ulicifolia	1	20	SG			1							
Acrotriche divaricata	0.5	20	SG			0.5							
Allocasuarina torulosa	0.1	1	TG		0.1								
Amperea xiphoclada	0.1	20	SG			0.1							
Banksia serrata	2	2	TG		2								
Caustis flexuosa	0.2	20	GG				0.2						
Corymbia gummifera	10	5	TG		10								
Dampiera purpurea	1	1000	FG					1					
Dianella caerulea	0.2	20	FG					0.2					
Dillwynia spp.	0.2	20	SG			0.2							
Epacris pulchella	0.1	10	SG			0.1							
Eucalyptus piperita	30	4	TG		30								
Gahnia spp.	2	20	GG				2						
Gompholobium grandiflorum	0.2	1	SG			0.2							
Hibbertia dentata	0.1	2	OG							0.1			
Leucopogon lanceolatus	0.1	1	SG			0.1							
Lomandra cylindrica	0.1	20	GG				0.1						
Mitrasacme polymorpha	0.1	10	FG					0.1					
Persoonia levis	1	2	SG			1							
Persoonia linearis	2	2	SG			2							
Pinus spp.	1	1	HT									1	
Platysace linearifolia	0.2	20	SG			0.2							
Pteridium esculentum	0.5	50	EG						0.5				
Syncarpia glomulifera	10	10	TG		10								
Xanthorrhoea spp.	0.3	2	OG							0.3			

Easting	344218
Northing	6339460
Orientation	1
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	1
30-49	1
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	2
Length logs (m)	36

BAM Attributes 1x1 plot (%)	77.6
Litter (%)	85
	73
	85
	75
	70

LCSM-06

Date	9/20/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-06		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3617	Mod-good	37	36	4	17	3	5	2	5	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	112.6	107.6	62	13	25	5.6	0.4	1.6	0	5	
Acacia stricta	0.1	1	SG			0.1							
Acrotriche divaricata	5	50	SG			5							
Amperea xiphoclada	0.3	50	SG			0.3							
Banksia marginata	2	20	SG			2							
Banksia serrata	2	2	TG		2								
Billardiera scandens	0.2	20	OG							0.2			
Cassytha glabella	0.1	10	OG							0.1			
Caustis flexuosa	10	2000	GG				10						
Conospermum tenuifolium	0.2	50	SG			0.2							
Corymbia gummifera	10	10	TG		10								
Dampiera purpurea	5	1000	FG					5					
Dianella caerulea	0.2	20	FG					0.2					
Drosera spp.	0.1	1	FG					0.1					
Elaeocarpus reticulatus	0.1	1	SG			0.1							
Entolasia stricta	10	2000	GG				10						
Epacris pulchella	0.1	10	SG			0.1							
Eucalyptus sieberi	30	3	TG		30								
Gompholobium grandiflorum	0.2	2	SG			0.2							
Hakea dactyloides	0.5	5	SG			0.5							
Hibbertia dentata	0.1	10	OG							0.1			
Lepyrodia scariosa	5	500	GG				5						
Leucopogon lanceolatus	0.3	5	SG			0.3							
Lindsaea linearis	0.2	50	EG						0.2				
Lissanthe sapida	0.2	5	SG			0.2							
Lomatia silaifolia	0.2	2	SG			0.2							
Mitrasacme polymorpha	0.1	10	FG					0.1					
Patersonia spp.	0.2	20	FG					0.2					
Persoonia levis	1	4	SG			1							
Persoonia linearis	2	10	SG			2							
Pinus spp.	5	2	HT									5	
Platysace linearifolia	0.2	20	SG			0.2							
Pteridium esculentum	0.2	5	EG						0.2				
Pultenaea spp.	0.1	2	SG			0.1							
Smilax glyciphylla	0.2	20	OG							0.2			
Syncarpia glomulifera	20	50	TG		20								
Telopea speciosissima	0.5	10	SG			0.5							
Xanthorrhoea spp.	1	10	OG							1			

Easting	344442
Northing	6339518
Orientation	140
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	1
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	19

BAM Attributes 1x1 plot (%)	85
Litter (%)	90
	80
	85
	90
	80

TC-18

Date	1/31/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-18		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3617	Mod-good	42	42	4	18	6	3	1	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	76.6	76.6	39.2	23.4	9.4	0.7	0.2	3.7	0	0	
Acacia longifolia	5	30	SG			5							
Allocasuarina torulosa	0.2	6	TG		0.2								
Angophora costata	16	5	TG		16								
Banksia spinulosa	0.2	2	SG			0.2							
Billardiera scandens	0.1	4	OG							0.1			
Breynia oblongifolia	0.1	2	SG			0.1							
Chiloglottis reflexa	0.1	10	FG					0.1					
Cissus hypoglauca	0.2	6	OG							0.2			
Clematis glycinoides	0.1	1	OG							0.1			
Correa reflexa	3	10	SG			3							
Dianella caerulea	0.5	10	FG					0.5					
Elaeocarpus reticulatus	0.1	1	SG			0.1							
Entolasia stricta	5	20	GG				5						
Eucalyptus piperita	15	3	TG		15								
Eustrephus latifolius	0.1	1	OG							0.1			
Gahnia aspera	0.2	3	GG				0.2						
Goodenia heterophylla	0.1	3	FG					0.1					
Goodenia ovata	0.5	6	SG			0.5							
Hardenbergia violacea	0.2	6	OG							0.2			
Hibbertia dentata	2	40	OG							2			
Hibbertia scandens	0.3	3	OG							0.3			
Hymenosporum flavum	0.2	1	SG			0.2							
Kennedia rubicunda	0.1	2	OG							0.1			
Lambertia formosa	0.2	2	SG			0.2							
Leucopogon lanceolatus	0.2	4	SG			0.2							
Lomandra confertifolia	0.1	2	GG				0.1						
Lomandra longifolia	3	8	GG				3						
Lomandra obliqua	0.1	5	GG				0.1						
Lomatia silaifolia	5	12	SG			5							
Oplismenus aemulus	1	20	GG				1						
Persoonia linearis	3	6	SG			3							
Pittosporum revolutum	0.1	1	SG			0.1							
Platysace linearifolia	0.2	10	SG			0.2							
Podolobium ilicifolium	2	10	SG			2							
Polyscias sambucifolia	0.1	2	SG			0.1							
Pteridium esculentum	0.2	4	EG						0.2				
Smilax australis	0.1	1	OG							0.1			
Syncarpia glomulifera	8	4	TG		8								
Tetratheca thymifolia	0.5	12	SG			0.5							
Xanthorrhoea spp.	0.5	3	OG							0.5			
Xylomelum pyriforme	1	5	SG			1							
Zieria smithii	2	25	SG			2							

Easting	333076
Northing	6353638
Orientation	280
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	12
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	58

BAM Attributes 1x1 plot (%)	61
Litter (%)	40
	70
	85
	40
	70

TS-04

Date	9/19/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TS-04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3617	Mod-good	30	30	5	10	4	5	0	6	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	104.5	104.5	66	13.7	7	12.2	0	5.6	0	0	
Acrotriche divaricata	1	10	SG			1							
Asperula spp.	0.1	10	FG					0.1					
Banksia serrata	25	30	TG		25								
Banksia spinulosa	1	5	SG			1							
Billardiera scandens	0.1	1	OG							0.1			
Cassytha pubescens	0.2	1	OG							0.2			
Caustis flexuosa	5	50	GG				5						
Ceratopetalum gummiferum	3	5	TG		3								
Corymbia gummifera	3	2	TG		3								
Cyathochaeta diandra	1	30	GG				1						
Dampiera spp.Thinner	0.1	5	FG					0.1					
Dampiera stricta	3	50	FG					3					
Elaeocarpus reticulatus	0.1	1	SG			0.1							
Entolasia stricta	0.5	20	GG				0.5						
Epacris pulchella	1	10	SG			1							
Eucalyptus sieberi	15	5	TG		15								
Gompholobium latifolium	1	3	SG			1							
Gompholobium latifolium	4	10	SG			4							
Hakea dactyloides	0.5	2	SG			0.5							
Hibbertia dentata	0.1	1	OG							0.1			
Leucopogon spp.	0.1	10	SG			0.1							
Lomandra obliqua	0.5	20	GG				0.5						
Parsonsia straminea	0.1	5	OG							0.1			
Patersonia glabrata	5	50	FG					5					
Persoonia levis	2	5	SG			2							
Petrophile pulchella	3	5	SG			3							
Smilax australis	0.1	1	OG							0.1			
Stackhousia viminea	4	100	FG					4					
Syncarpia glomulifera	20	50	TG		20								
Xanthorrhoea spp.	5	30	OG							5			

Easting	345095
Northing	6339131
Orientation	0
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	3
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	13

BAM Attributes 1x1 plot (%)	96
Litter (%)	100
	95
	90
	100
	95

D1.49 3621 – Sydney Hinterland Turpentine-Apple Gully Forest (Mod-good)

LCSM-04

Date	9/19/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3621	Mod-good	35	35	7	12	4	4	1	7	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	163.9	163.9	107.3	36.4	5.4	1.3	0.1	13.4	0	0	
Acacia ulicifolia	0.5	2	SG			0.5							
Acrotriche divaricata	20	100	SG			20							
Allocasuarina torulosa	2	2	TG		2								
Amperea xiphoclada	0.1	10	SG			0.1							
Banksia marginata	5	10	SG			5							
Billardiera scandens	0.1	10	OG							0.1			
Bossiaea heterophylla	0.1	2	SG			0.1							
Cassytha glabella	1	100	OG							1			
Corymbia gummifera	10	5	TG		10								
Dampiera purpurea	0.1	10	FG					0.1					
Dianella caerulea	1	100	FG					1					
Elaeocarpus reticulatus	5	50	SG			5							
Entolasia marginata	0.1	10	GG				0.1						
Entolasia stricta	5	500	GG				5						
Eucalyptus piperita	20	3	TG		20								
Eucalyptus scias	15	3	TG		15								
Hakea salicifolia	2	5	SG			2							
Hibbertia dentata	10	200	OG							10			
Lepidosperma laterale	0.1	1	GG				0.1						
Leptospermum polygalifolium	0.5	2	SG			0.5							
Leucopogon lanceolatus	0.1	2	SG			0.1							
Lomandra longifolia	0.2	5	GG				0.2						
Lomatia silaifolia	0.1	1	SG			0.1							
Notelaea longifolia	0.1	2	TG		0.1								
Pandorea pandorana	0.1	1	OG							0.1			
Parsonsia straminea	1	20	OG							1			
Persoonia linearis	2	10	SG			2							
Pseuderanthemum variabile	0.1	10	FG					0.1					
Pteridium esculentum	0.1	10	EG						0.1				
Pultenaea spp.	1	10	SG			1							
Smilax australis	1	100	OG							1			
Smilax glyciphylla	0.2	10	OG							0.2			
Syncarpia glomulifera	60	50	TG		60								
Trochocarpa laurina	0.2	1	TG		0.2								
Xerochrysum bracteatum	0.1	1	FG					0.1					

Easting	344507
Northing	6339200
Orientation	1
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	87
BAM Attributes 1x1 plot (%)	83
Litter (%)	80
	90
	65
	95
	85

LCSM-07

Date	9/20/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3621	Mod-good	36	36	5	14	4	5	2	6	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	167.1	167.1	50	8.1	6.3	1.6	100.1	1	0	0	
Acacia ulicifolia	0.1	1	SG			0.1							
Acrotriche divaricata	1	10	SG			1							
Allocasuarina torulosa	5	5	TG		5								
Amperea xiphoclada	0.1	10	SG			0.1							
Banksia marginata	5	5	SG			5							
Banksia serrata	5	5	TG		5								
Cassytha glabella	0.1	10	OG							0.1			
Caustis flexuosa	0.2	25	GG				0.2						
Corymbia gummifera	5	5	TG		5								
Cryptocarya rigida	0.3	1	SG			0.3							
Dampiera purpurea	0.1	10	FG					0.1					
Dianella caerulea	0.3	30	FG					0.3					
Elaeocarpus reticulatus	0.1	5	SG			0.1							
Entolasia stricta	5	1000	GG				5						
Epacris pulchella	0.1	1	SG			0.1							
Eucalyptus piperita	30	20	TG		30								
Hibbertia dentata	0.1	5	OG							0.1			
Hibbertia scandens	0.1	5	OG							0.1			
Leptospermum polygalifolium	0.1	2	SG			0.1							
Leucopogon lanceolatus	0.2	2	SG			0.2							
Lindsaea linearis	0.1	50	EG						0.1				
Lissanthe spp.	0.1	1	SG			0.1							
Logania pusilla	0.1	10	FG					0.1					
Lomandra cylindrica	0.1	10	GG				0.1						
Lomandra longifolia	1	50	GG				1						
Lomatia silaifolia	0.2	2	SG			0.2							
Parsonsia straminea	0.5	10	OG							0.5			
Patersonia spp.	1	100	FG					1					
Persoonia levis	0.2	1	SG			0.2							
Persoonia linearis	0.5	1	SG			0.5							
Polygalaceae indeterminate	0.1	10	FG					0.1					
Pteridium esculentum	100	100	EG						100				
Smilax australis	0.1	1	OG							0.1			
Smilax glyciphylla	0.1	10	OG							0.1			
Syncarpia glomulifera	5	6	TG		5								
Synoum glandulosum subsp. glandulosum	0.1	1	SG			0.1							

Easting	344139
Northing	6339804
Orientation	150
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	26
BAM Attributes 1x1 plot (%)	85
Litter (%)	95
	75
	85
	90
	80

LCSM-10

Date	9/21/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	LCSM-10		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3621	Mod-good	39	38	5	17	2	4	2	8	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	113.4	112.4	50.2	23.4	35	0.9	0.3	2.6	0	1	
Acacia ulicifolia	0.2	5	SG			0.2							
Acrotriche divaricata	12	50	SG			12							
Amperea xiphoclada	0.1	1	SG			0.1							
Banksia marginata	7	20	SG			7							
Caladenia alata	0.1	1	FG					0.1					
Cassytha glabella	0.1	10	OG							0.1			
Comesperma volubile	0.1	4	OG							0.1			
Corymbia gummifera	10	4	TG		10								
Dampiera purpurea	0.5	100	FG					0.5					
Dianella caerulea	0.2	50	FG					0.2					
Elaeocarpus reticulatus	0.1	2	SG			0.1							
Entolasia stricta	25	100	GG				25						
Epacris pulchella	0.1	1	SG			0.1							
Eucalyptus piperita	20	3	TG		20								
Gompholobium grandiflorum	0.1	1	SG			0.1							
Hakea dactyloides	0.1	1	SG			0.1							
Hibbertia dentata	1	100	OG							1			
Hibbertia scandens	0.1	1	OG							0.1			
Leptospermum polygalifolium	0.2	3	SG			0.2							
Lepyrodia scariosa	10	100	GG				10						
Leucopogon lanceolatus	0.1	1	SG			0.1							
Lindsaea linearis	0.1	1	EG						0.1				
Lomatia silaifolia	0.1	1	SG			0.1							
Notelaea longifolia	0.1	1	TG		0.1								
Parsonsia straminea	0.1	1	OG							0.1			
Persoonia levis	0.5	3	SG			0.5							
Persoonia linearis	1.5	3	SG			1.5							
Pinus spp.	1	2	HT									1	
Podolobium ilicifolium	0.1	2	SG			0.1							
Pteridium esculentum	0.2	20	EG						0.2				
Pultenaea flexilis	1	2	SG			1							
Pultenaea spp.	0.1	1	SG			0.1							
Smilax australis	0.1	2	OG							0.1			
Smilax glyciphylla	0.1	1	OG							0.1			
Syncarpia glomulifera	20	20	TG		20								
Synoum glandulosum subsp. glandulosum	0.1	1	SG			0.1							
Trochocarpa laurina	0.1	1	TG		0.1								
Viola silicestris	0.1	10	FG					0.1					
Xanthorrhoea glauca	1	10	OG							1			

Easting	344713
Northing	6339241
Orientation	154
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	167
BAM Attributes 1x1 plot (%)	89
Litter (%)	90
	95
	85
	90
	85

D1.50 4015 – Central Hunter Riparian Forest (Derived)

DL-50

Date	3/4/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_50		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4015	Derived	26	12	0	0	6	6	0	0	14	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	101.4	73.1	0	0	52.2	20.9	0	0	28.3	0	
Austrostipa verticillata	0.3	2	GG				0.3						
Bidens pilosa	2	20	EX								2		
Bidens subalternans	0.9	20	EX								0.9		
Carex inversa	0.5	50	GG				0.5						
Cirsium vulgare	0.3	10	EX								0.3		
Conyza bonariensis	5	100	EX								5		
Cynodon dactylon	1	50	GG				1						
Cyperus brevifolius	0.4	10	EX								0.4		
Cyperus gracilis	0.4	100	GG				0.4						
Einadia trigonos	0.3	20	FG					0.3					
Geranium homeanum	5	100	FG					5					
Juncus usitatus	10	20	GG				10						
Lobelia purpurascens	0.1	50	FG					0.1					
Microlaena stipoides	40	300	GG				40						
Modiola caroliniana	1	60	EX								1		
Oxalis chnoodes	0.4	100	FG					0.4					
Rapistrum rugosum	0.3	3	EX								0.3		
Portulaca oleracea	0.5	20	EX								0.5		
Rumex brownii	0.1	3	FG					0.1					
Senecio bipinnatisectus	15	100	FG					15					
Sida rhombifolia	0.7	5	EX								0.7		
Solanum nigrum	0.7	1	EX								0.7		
Stachys arvensis	0.1	15	EX								0.1		
Verbascum virgatum	1	50	EX								1		
Verbena officinalis	15	40	EX								15		
Verbena rigida var. rigida	0.4	15	EX								0.4		

Easting	329520
Northing	6373067
Orientation	231
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	No
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	1
Litter (%)	1
[illegible]	0
	2
	0
	2

TC-49

Date	9/18/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-49		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4015	Derived	26	13	1	0	4	8	0	0	11	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	51.4	36	2	0	31.4	2.6	0	0	13.2	2.2	
Austrostipa verticillata	1	30	GG				1						
Carex inversa	0.4	15	GG				0.4						
Casuarina cunninghamiana subsp. Cunninghamiana	2	6	TG		2								
Cirsium vulgare	0.5	25	EX								0.5		
Cotula australis	0.4	25	FG					0.4					
Cynodon dactylon	25	1000	GG				25						
Cynoglossum australe	0.2	5	FG					0.2					
Cyperus eragrostis	0.2	1	HT									0.2	
Daucus glochidiatus	0.3	25	FG					0.3					
Einadia nutans subsp. Nutans	0.2	2	FG					0.2					
Galium aparine	0.2	5	EX								0.2		
Geranium solanderi	0.3	15	FG					0.3					
Juncus spp.	5	25	GG				5						
Lolium perenne	10	2000	EX								10		
Lysimachia arvensis	0.2	5	EX								0.2		
Mentha satureioides	0.5	50	FG					0.5					
Modiola caroliniana	0.5	50	EX								0.5		
Nothoscordum gracile	0.3	50	EX								0.3		
Oxalis perennans	0.3	20	FG					0.3					
Paspalum dilatatum	2	50	HT									2	
Plantago lanceolata	0.5	50	EX								0.5		
Rumex brownii	0.4	20	FG					0.4					
Sonchus oleraceus	0.2	10	EX								0.2		
Stellaria media	0.2	10	EX								0.2		
Verbena bonariensis	0.4	15	EX								0.4		
Verbena rigida var. rigida	0.2	1	EX								0.2		

Easting	303667
Northing	6406493
Orientation	41
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	15.6
Litter (%)	20
	8
	15
	15
	20

D1.51 4015 – Central Hunter Riparian Forest (Thinned)

DL-29

Date	2/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-29		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4015	Thinned	29	16	2	1	9	3	1	0	9	4	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	135.9	78	35	0.2	42.1	0.6	0.1	0	54.6	3.3	
Alternanthera denticulata	0.2	50	FG					0.2					
Angophora floribunda	5	2	TG		5								
Aristida ramosa	5	30	GG				5						
Austrostipa verticillata	1	10	GG				1						
Bidens subalternans	0.1	2	EX								0.1		
Carex inversa	0.5	50	GG				0.5						
Casuarina glauca	30	50	TG		30								
Cheilanthes sieberi	0.1	5	EG						0.1				
Chloris ventricosa	5	30	GG				5						
Cirsium vulgare	0.5	10	EX								0.5		
Commelina cyanea	0.1	5	FG					0.1					
Conyza bonariensis	0.1	3	EX								0.1		
Cynodon dactylon	20	100	GG				20						
Dichondra repens	0.3	100	FG					0.3					
Eragrostis leptostachya	0.1	3	GG				0.1						
Eremophila debilis	0.2	15	SG			0.2							
Gomphocarpus fruticosus	0.4	3	EX								0.4		
Heliotropium amplexicaule	0.2	10	HT									0.2	
Juncus acutus subsp. acutus	0.4	2	GG				0.4						
Juncus usitatus	0.1	3	GG				0.1						
Lantana camara	1	3	HT									1	
Microlaena stipoides	10	100	GG				10						
Oxalis corniculata	0.1	2	EX								0.1		
Paspalum dilatatum	2	30	HT									2	
Senecio madagascariensis	0.1	5	HT									0.1	
Setaria parviflora	50	200	EX								50		
Sida rhombifolia	0.2	5	EX								0.2		
Verbena officinalis	0.2	10	EX								0.2		
Verbena rigida var. rigida	3	5	EX								3		

Easting	325679
Northing	6385928
Orientation	346
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	7
BAM Attributes 1x1 plot (%)	35
Litter (%)	55
	45
	15
	25
	35

DL-72

Date	5/13/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-72		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4015	Thinned	32	19	2	1	7	7	0	2	10	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	129.7	123.9	61	0.5	59.2	2.9	0	0.3	4.8	1	
Austrostipa verticillata	5	25	GG				5						
Bidens subalternans	0.2	10	EX								0.2		
Carex appressa	30	100	GG				30						
Casuarina glauca	60	100	TG		60								
Cirsium vulgare	0.1	4	EX								0.1		
Conyza bonariensis	0.2	7	EX								0.2		
Dianella revoluta	0.1	3	FG					0.1					
Dichondra repens	0.4	1000	FG					0.4					
Einadia nutans subsp. nutans	0.8	30	FG					0.8					
Eragrostis elongata	0.3	5	GG				0.3						
Eremophila debilis	0.5	15	SG			0.5							
Gahnia aspera	0.5	3	GG				0.5						
Glycine microphylla	0.2	10	OG							0.2			
Glycine tabacina	0.1	5	OG							0.1			
Hypochaeris glabra	0.1	4	EX								0.1		
Hypochaeris radicata	0.1	2	EX								0.1		
Lantana camara	0.3	1	HT									0.3	
Lobelia purpurascens	0.4	50	FG					0.4					
Lythrum hyssopifolia	1	8	FG					1					
Melia azedarach	1	1	TG		1								
Microlaena stipoides	20	1000	GG				20						
Oplismenus aemulus	3	100	GG				3						
Oxalis perennans	0.1	10	FG					0.1					
Paspalum dilatatum	0.2	5	HT									0.2	
Rumex spp.	0.1	1	FG					0.1					
Senecio madagascariensis	0.5	30	HT									0.5	
Setaria parviflora	3	15	EX								3		
Sida rhombifolia	0.5	10	EX								0.5		
Solanum nigrum	0.2	15	EX								0.2		
Sonchus oleraceus	0.1	2	EX								0.1		
Sporobolus creber	0.4	4	GG				0.4						
Verbena bonariensis	0.3	10	EX								0.3		

Easting	327969
Northing	6376405
Orientation	33
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	2
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	14
BAM Attributes 1x1 plot (%)	47
Litter (%)	50
	70
	55
	45
	15

MS-39

Date	6/12/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-39		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4015	Thinned	33	26	4	1	10	8	2	1	5	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	69.3	62.7	25	0.2	34.6	1.9	0.8	0.2	4.2	2.4	
Eucalyptus dawsonii	8	3	TG		8								
Angophora floribunda	6	3	TG		6								
Casuarina glauca	8	10	TG		8								
Acacia salicina	3	8	TG		3								
Heliotropium europaeum	0.1	5	EX								0.1		
Lomandra confertifolia	3	50	GG				3						
Verbena rigida var. rigida	2	50	EX							EG	2		
Sporobolus creber	15	200	GG				15						
Aristida ramosa	5	100	GG				5						
Senecio madagascariensis	0.4	30	HT									0.4	
Calotis lappulacea	0.4	20	FG					0.4					
Cheilanthes sieberi	0.6	40	EG						0.6				
Eremophila debilis	0.2	10	SG			0.2							
Cheilanthes distans	0.2	10	EG						0.2				
Conyza sumatrensis	1	50	EX								1		
Plantago lanceolata	1	50	EX								1		
Chrysocephalum semipapposum	0.4	50	FG					0.4					
Austrostipa scabra	1	40	GG				1						
Sida corrugata	0.6	30	FG					0.6					
Glycine clandestina	0.2	5	OG							0.2			
Microlaena stipoides var. stipoides	3	80	GG				3						
Panicum queenslandicum	1	30	GG				1						
Austrostipa verticillata	0.2	5	GG				0.2						
Lomandra longifolia	0.4	5	GG				0.4						
Verbena bonariensis	0.1	1	EX								0.1		
Sida spp.	0.1	2	FG					0.1					
Cymbopogon refractus	5	80	GG				5						
Chloris gayana	2	30	HT									2	
Cynodon dactylon	1	30	GG				1						
Solanum prinophyllum	0.1	1	FG					0.1					
Einadia nutans	0.1	5	FG					0.1					
Vittadinia cuneata var. cuneata	0.1	2	FG					0.1					
Dichondra sp. Inglewood	0.1	5	FG					0.1					

Easting	305104
Northing	6407322
Orientation	248
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	2
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	12
BAM Attributes 1x1 plot (%)	58
Leaf Litter (%)	60
	55
	60
	70
	45

D1.52 4039 – Hunter Range Creekflat Apple-Red Gum Forest (Mod-good)

DL-41

Date	2/28/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_41		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4039	Mod-good	44	36	3	8	10	11	0	4	7	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	117.1	113.8	31	8	70.7	2.6	0	1.5	2.3	1	
Acacia implexa	2	6	SG			2							
Aristida ramosa	2	20	GG				2						
Arthropodium milleflorum	0.1	2	FG					0.1					
Bidens pilosa	0.1	3	EX								0.1		
Bidens subalternans	0.1	3	EX								0.1		
Breynia oblongifolia	1	15	SG			1							
Carex inversa	0.9	100	GG				0.9						
Cayratia clematidea	0.1	5	OG							0.1			
Commelina cyanea	0.2	50	FG					0.2					
Conyza bonariensis	0.1	2	EX								0.1		
Cymbopogon refractus	2	20	GG				2						
Cynodon dactylon	10	100	GG				10						
Cyperus gracilis	1	1000	GG				1						
Desmodium varians	0.6	100	OG							0.6			
Dianella caerulea var. cinerascens	0.1	2	FG					0.1					
Dianella tasmanica	0.3	5	FG					0.3					
Dichondra repens	0.3	1000	FG					0.3					
Eragrostis leptostachya	0.8	50	GG				0.8						
Eucalyptus punctata	10	15	TG		10								
Eucalyptus tereticornis	20	19	TG		20								
Exocarpos strictus	0.4	3	SG			0.4							
Gahnia aspera	30	35	GG				30						
Geranium homeanum	0.2	50	FG					0.2					
Glycine tabacina	0.2	50	OG							0.2			
Gomphocarpus fruticosus	0.5	10	EX								0.5		
Lantana camara	1	5	HT									1	
Lobelia purpurascens	0.5	500	FG					0.5					
Melia azedarach	1	3	TG		1								
Microlaena stipoides	2	200	GG				2						
Muehlenbeckia gracillima	0.6	20	OG							0.6			
Opercularia diphylla	0.1	3	FG					0.1					
Oplismenus aemulus	20	500	GG				20						
Phyllanthus gunnii	0.4	100	SG			0.4							
Pimelea spp.	0.4	8	SG			0.4							
Pseuderanthemum variabile	0.3	100	FG					0.3					
Richardia stellaris	0.4	100	EX								0.4		
Setaria parviflora	0.5	10	EX								0.5		
Sigesbeckia australiensis	0.1	5	FG					0.1					
Solanum campanulatum	0.4	10	SG			0.4							
Solanum cinereum	0.4	10	SG			0.4							
Solanum prinophyllum	0.4	10	FG					0.4					
Sporobolus creber	2	15	GG				2						
Trema tomentosa var. aspera	3	5	SG			3							
Verbena rigida var. rigida	0.6	40	EX								0.6		

Easting	329838
Northing	6372686
Orientation	355
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	7
BAM Attributes 1x1 plot (%)	23
Litter (%)	20
	15
	40
	20
	20

D1.53 4042 – Lower North Riverflat Eucalypt-Paperbark Forest (Mod-good)

DL-11

Date	8/30/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-11		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4042	Mod-good	27	26	5	6	3	7	1	4	0	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	114.2	114.1	21	26	65	1.1	0.1	0.9	0	0.1	
Acacia irrorata	4	2	SG			4							
Blechnum cartilagineum	0.1	1	EG						0.1				
Breynia oblongifolia	0.5	5	SG			0.5							
Caladenia carnea	0.1	2	FG					0.1					
Caladenia catenata	0.1	20	FG					0.1					
Centella asiatica	0.4	500	FG					0.4					
Corymbia maculata	3	1	TG		3								
Dichondra repens	0.1	100	FG					0.1					
Entolasia marginata	45	1000	GG				45						
Eucalyptus amplifolia subsp. amplifolia	10	7	TG		10								
Eucalyptus robusta	1	2	TG		1								
Gahnia sieberiana	10	30	GG				10						
Glochidion ferdinandi	2	4	TG		2								
Gonocarpus teucrioides	0.2	20	FG					0.2					
Hibbertia scandens	0.2	5	OG							0.2			
Hydrocotyle laxiflora	0.1	500	FG					0.1					
Lantana camara	0.1	1	HT									0.1	
Leptospermum polygalifolium	1	5	SG			1							
Lomandra longifolia	10	20	GG				10						
Melaleuca linariifolia	15	20	SG			15							
Melaleuca nodosa	5	3	SG			5							
Gynochthodes jasminoides	0.5	20	OG							0.5			
Notelaea longifolia	5	6	TG		5								
Parsonsia straminea	0.1	4	OG							0.1			
Pratia purpurascens	0.1	50	FG					0.1					
Stephania japonica	0.1	5	OG							0.1			
UnknownLong leaved shrub	0.5	1	SG			0.5							

Easting	358366
Northing	6342540
Orientation	57
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	10
BAM Attributes 1x1 plot (%)	36
Litter (%)	80
	60
	5
	20
	15

DL-17

Date	9/6/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL-17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4042	Mod-good	23	22	1	6	3	8	1	3	1	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	178.3	178.2	20	67.2	83	2.7	5	0.3	0.1	0	
Brunoniella australis	0.1	50	FG					0.1					
Bursaria spinosa	0.1	1	SG			0.1							
Caladenia catenata	0.1	10	FG					0.1					
Callistemon salignus	3	1	SG			3							
Dianella caerulea var. producta	0.5	15	FG					0.5					
Dichondra repens	0.5	1000	FG					0.5					
Eucalyptus amplifolia subsp. amplifolia	20	3	TG		20								
Gahnia sieberiana	40	60	GG				40						
Hibbertia scandens	0.1	1	OG							0.1			
Hydrocotyle laxiflora	0.3	100	FG					0.3					
Lagenifera stipitata	1	100	FG					1					
Lomandra longifolia	3	15	GG				3						
Melaleuca linariifolia	50	100	SG			50							
Melaleuca nodosa	10	30	SG			10							
Melaleuca sieberi	4	2	SG			4							
Gynochthodes jasminoides	0.1	4	OG							0.1			
Oplismenus aemulus	40	1000	GG				40						
Oxalis purpurea	0.1	5	EX								0.1		
Parsonsia straminea	0.1	5	OG							0.1			
Phyllanthus gunnii	0.1	2	SG			0.1							
Pratia purpurascens	0.1	100	FG					0.1					
Pteridium esculentum	5	30	EG						5				
Viola hederacea	0.1	50	FG					0.1					

Easting	358468
Northing	6342041
Orientation	230
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	4
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	30
BAM Attributes 1x1 plot (%)	56
Litter (%)	80
	30
	70
	50
	50

SMSO-01

Date	9/9/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	SMSO_01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4042	Mod-good	43	43	4	9	7	13	3	7	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	166.4	166.4	17	51	77.9	11.2	1.4	7.9	0	0	
Acacia irrorata	0.5	2	SG			0.5							
Adiantum aethiopicum	1	300	EG						1				
Angophora floribunda	5	1	TG		5								
Breynia oblongifolia	0.1	10	SG			0.1							
Callistemon salignus	3	2	SG			3							
Carex appressa	0.5	20	GG				0.5						
Centella asiatica	0.1	25	FG					0.1					
Commelina cyanea	0.1	10	FG					0.1					
Convolvulus erubescens	0.5	200	OG							0.5			
Denhamia silvestris	0.1	6	SG			0.1							
Dianella caerulea var. producta	1	30	FG					1					
Dichondra repens	5	100	FG					5					
Echinopogon spp.	0.1	10	GG				0.1						
Entolasia stricta	2	250	GG				2						
Eucalyptus robusta	3	1	TG		3								
Eucalyptus tereticornis	7	4	TG		7								
Eustrephus latifolius	2	50	OG							2			
Gahnia clarkei	0.3	5	GG				0.3						
Galium leiocarpum	0.1	15	FG					0.1					
Geranium homeanum	0.2	200	FG					0.2					
Glochidion ferdinandi var. ferdinandi	2	40	TG		2								
Glycine clandestina	0.1	25	OG							0.1			
Gymnostachys anceps	0.1	1	FG					0.1					
Hibbertia scandens	0.1	2	OG							0.1			
Hydrocotyle sibthorpioides	1	500	FG					1					
Leptospermum polygalifolium	0.2	1	SG			0.2							
Lobelia purpurascens	0.3	150	FG					0.3					
Lomandra longifolia	25	80	GG				25						
Melaleuca linariifolia	45	120	SG			45							
Microlaena stipoides	35	2000	GG				35						
Notelaea ovata	1	20	SG			1							
Oplismenus aemulus	15	1000	GG				15						
Oxalis perennans	0.1	20	FG					0.1					
Pandorea pandorana	0.1	10	OG							0.1			
Parsonsia straminea	5	50	OG							5			
Pittosporum undulatum	0.1	5	SG			0.1							
Platycerium bifurcatum	0.2	2	EG						0.2				
Pteridium esculentum	0.2	25	EG						0.2				
Schelhammera undulata	0.1	10	FG					0.1					
Stephania japonica	0.1	1	OG							0.1			
Syzygium australe	1	15	SG			1							
Veronica plebeia	0.1	10	FG					0.1					
Viola hederacea	3	1000	FG					3					

Easting	358934
Northing	6343026
Orientation	0
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	134

BAM Attributes 1x1 plot (%)	24
Litter (%)	30
	20
	25
	35
	10

D1.54 4042 – Lower North Riverflat Eucalypt-Paperbark Forest (Derived)

SMSO-03

Date	9/9/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	SMSO_03		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4042	Derived	34	30	1	10	9	3	3	4	4	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	164.9	164.5	0.5	53.1	83.8	0.5	26.1	0.5	0.4	0	
Acacia irrorata	10	15	SG			10							
Adiantum aethiopicum	1	250	EG						1				
Allocasuarina littoralis	0.5	10	TG		0.5								
Breynia oblongifolia	0.2	20	SG			0.2							
Callistemon salignus	2	15	SG			2							
Chorizandra cymbaria	3	500	GG				3						
Conyza bonariensis	0.1	40	EX								0.1		
Dianella caerulea var. producta	0.3	20	FG					0.3					
Dioscorea transversa	0.1	25	OG							0.1			
Dodonaea triquetra	0.1	5	SG			0.1							
Doodia australis	0.1	10	EG						0.1				
Elaeocarpus reticulatus	0.5	1	SG			0.5							
Entolasia stricta	15	750	GG				15						
Erigeron karvinskianus	0.1	5	EX								0.1		
Eustrephus latifolius	0.1	10	OG							0.1			
Gahnia clarkei	20	50	GG				20						
Gamochaeta calviceps	0.1	20	EX								0.1		
Hibbertia scandens	0.2	10	OG							0.2			
Imperata cylindrica	0.5	50	GG				0.5						
Lepidosperma laterale	0.2	10	GG				0.2						
Leptospermum laevigatum	25	200	SG			25							
Lobelia purpurascens	0.1	15	FG					0.1					
Lomandra longifolia	20	400	GG				20						
Microlaena stipoides	20	1000	GG				20						
Notelaea ovata	0.1	10	SG			0.1							
oplismenus aemulus	5	300	GG				5						
Persicaria spp.	0.1	10	FG					0.1					
Pittosporum undulatum	0.1	10	SG			0.1							
Pteridium esculentum	25	300	EG						25				
Ptilothrix deusta	0.1	10	GG				0.1						
Smilax glyciphylla	0.1	5	OG							0.1			
Synoum glandulosum subsp. glandulosum	0.1	2	SG			0.1							
Syzygium australe	15	50	SG			15							
Verbena bonariensis	0.1	10	EX								0.1		

Easting	358701
Northing	6342431
Orientation	200
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0

BAM Attributes 1x1 plot (%)	2
Litter (%)	2
	3
	0
	3
	2

D1.55 4044 – Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest (Mod-good)

HTP-MS-98

Date	9/12/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-98		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4044	Mod-good	44	44	6	7	10	9	2	10	0	0	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	164	164	47.6	27.7	55.3	25.7	0.3	7.4	0	0	
Acacia irrorata subsp. Irrorata	0.1	1	SG			0.1							
Acmena smithii	0.5	3	TG		0.5								
Adiantum aethiopicum	0.2	20	EG						0.2				
Alphitonia excelsa	3	5	TG		3								
Angophora costata	4	2	TG		4								
Caladenia carnea	0.1	15	FG					0.1					
Callistemon salignus	20	50	SG			20							
Carex longebrachiata	5	100	GG				5						
Clematis aristata	0.1	1	OG							0.1			
Clerodendrum tomentosum	0.1	1	TG		0.1								
Denhamia silvestris	0.1	1	SG			0.1							
Dianella caerulea	0.1	3	FG					0.1					
Dichondra repens	10	500	FG					10					
Dioscorea transversa	0.1	2	OG							0.1			
Entolasia marginata	2	50	GG				2						
Eucalyptus amplifolia subsp. amplifolia	20	8	TG		20								
Eucalyptus pilularis	20	4	TG		20								
Eustrephus latifolius	0.1	1	OG							0.1			
Gahnia clarkei	15	80	GG				15						
Galium leiocarpum	3	100	FG					3					
Glycine clandestina	0.5	20	OG							0.5			
Grona varians	0.5	40	OG							0.5			
Gynochthodes jasminoides	0.5	5	OG							0.5			
Hibbertia scandens	0.5	10	OG							0.5			
Hydrocotyle laxiflora	10	500	FG					10					
Imperata cylindrica	1	40	GG				1						
Leptospermum polygalifolium	0.5	3	SG			0.5							
Lobelia purpurascens	1	50	FG					1					
Lomandra filiformis subsp. filiformis	0.1	5	GG				0.1						
Lomandra longifolia	0.2	5	GG				0.2						
Melaleuca linariifolia	5	10	SG			5							
Melaleuca styphelioides	1	1	SG			1							
Microlaena stipoides var. stipoides	5	100	GG				5						
Notelaea ovata	1	10	SG			1							
oplismenus aemulus	5	100	GG				5						
Oplismenus imbecillis	20	500	GG				20						
Ottochloa gracillima	2	50	GG				2						
Oxalis exilis	0.5	20	FG					0.5					
Pandorea pandorana	2	50	OG							2			
Parsonsia straminea	3	30	OG							3			
Pseuderanthemum variabile	0.5	30	FG					0.5					
Pteridium esculentum	0.1	5	EG						0.1				
Sigesbeckia orientalis subsp. orientalis	0.5	10	FG					0.5					
Tylophora barbata	0.1	2	OG							0.1			

Easting	354037
Northing	6341494
Orientation	215
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	5
30-49	13
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	30
BAM Attributes 1x1 plot (%)	65
Litter (%)	60
	70
	45
	80
	70

D1.56 4044 – Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest (Derived)

SMSO-05

Date	9/12/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	SMSO-05		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4044	Derived	38	32	1	4	8	12	2	5	4	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	102.2	94.8	4	9.5	58.6	3.4	15.2	4.1	5.3	2.1	
Acacia longifolia	0.5	5	SG			0.5							
Acmena smithii	4	10	TG		4								
Adiantum aethiopicum	0.2	50	EG						0.2				
Callistemon salignus	6	15	SG			6							
Carex appressa	0.5	10	GG				0.5						
Clematis glycinoides	1	10	OG							1			
Commelina cyanea	0.1	25	FG					0.1					
Convolvulus erubescens	0.5	50	OG							0.5			
Conyza bonariensis	0.1	30	EX								0.1		
Cotula australis	0.1	5	FG					0.1					
Entolasia stricta	1	50	GG				1						
Gahnia clarkei	40	100	GG				40						
Galium leiocarpum	0.1	20	FG					0.1					
Geranium solanderi	1	250	FG					1					
Glycine clandestina	0.1	10	OG							0.1			
Gonocarpus tetragynus	0.1	10	FG					0.1					
Hibbertia scandens	2	50	OG							2			
Hydrocotyle sibthorpioides	0.5	100	FG					0.5					
Imperata cylindrica	10	75	GG				10						
Juncus subsecundus	0.1	20	GG				0.1						
Lantana camara	2	5	HT									2	
Ligustrum sinense	0.1	20	HT									0.1	
Lomandra longifolia	1	10	GG				1						
Melaleuca linariifolia	1	2	SG			1							
Microlaena stipoides	3	500	GG				3						
Notelaea ovata	2	10	SG			2							
Oplismenus aemulus	3	300	GG				3						
Pandorea pandorana	0.5	2	OG							0.5			
Pteridium esculentum	15	250	EG						15				
Scutellaria humilis	0.1	30	FG					0.1					
Senecio minimus	1	25	FG					1					
Sigesbeckia orientalis subsp. orientalis	0.1	5	FG					0.1					
Solanum americanum	0.1	2	FG					0.1					
Solanum mauritianum	5	50	EX								5		
Trifolium dubium	0.1	10	EX								0.1		
Veronica plebeia	0.1	25	FG					0.1					
Vicia sativa	0.1	10	EX								0.1		
Viola silicestris	0.1	10	FG					0.1					

Easting	354063
Northing	6341450
Orientation	310
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	3.8
Litter (%)	3
	1
	5
	5
	5

D1.57 4072 – Hunter River Oak Mesic Forest (Mod-good)

TC-37

Date	7/30/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC37		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4072	Mod-good	72	61	10	17	8	11	3	12	7	4	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	139.1	135.3	70.6	16	34.9	3.8	1.1	8.9	2	1.8	
Acacia filicifolia	0.5	4	SG			0.5							
Adiantum aethiopicum	0.3	5	EG						0.3				
Adiantum hispidulum	0.5	8	EG						0.5				
Ageratina adenophora	0.5	20	HT									0.5	
Alphitonia excelsa	5	2	TG		5								
Angophora floribunda	2	2	TG		2								
Araujia sericifera	0.5	10	HT									0.5	
Astrotricha latifolia	0.2	1	SG			0.2							
Austrostipa verticillata	1	8	GG				1						
Backhousia myrtifolia	0.4	2	TG		0.4								
Bidens pilosa	0.3	10	EX								0.3		
Brachychiton populneus	0.3	1	TG		0.3								
Breynia oblongifolia	0.5	3	SG			0.5							
Bursaria spinosa	3	3	SG			3							
Calystegia marginata	0.1	1	OG							0.1			
Casuarina cunninghamiana subsp. cunninghamiana	60	13	TG		60								
Cayratia clematidea	0.3	10	OG							0.3			
Cissus antarctica	2	2	OG							2			
Cissus hypoglauca	3	5	OG							3			
Claoxylon australe	0.3	1	SG			0.3							
Clematis glycinoides	0.4	4	OG							0.4			
Clerodendrum tomentosum	0.3	1	TG		0.3								
Commelina cyanea	0.2	3	FG					0.2					
Conyza sumatrensis	0.3	7	EX								0.3		
Corymbia maculata	0.4	1	TG		0.4								
Cyperus imbecillis	0.3	2	GG				0.3						
Digitaria parviflora	1	20	GG				1						
Doodia aspera	0.3	3	EG						0.3				
Echinopogon ovatus	0.1	1	GG				0.1						
Entolasia marginata	0.5	15	GG				0.5						
Eucalyptus moluccana	1	1	TG		1								
Ficus coronata	2	1	SG			2							
Gahnia aspera	1	1	GG				1						
Geitonoplesium cymosum	0.5	8	OG							0.5			
Geranium solanderi	0.3	20	FG					0.3					
Glochidion ferdinandi	0.2	1	TG		0.2								
Glycine tabacina	0.3	15	OG							0.3			
Hibiscus heterophyllus subsp. heterophyllus	4	28	SG			4							
Homalanthus populifolius	0.2	1	SG			0.2							
Hydrocotyle laxiflora	0.3	5	FG					0.3					
Hymenosporum flavum	1	2	SG			1							
Hypochaeris radicata	0.3	3	EX								0.3		
Lantana camara	0.5	9	HT									0.5	
Lobelia purpurascens	0.5	40	FG					0.5					
Melaleuca styphelioides	0.4	1	SG			0.4							
Melia azedarach	1	3	TG		1								
Melicope micrococca	1	1	SG			1							
Microlaena stipoides	30	500	GG				30						
Myrsine variabilis	1	7	SG			1							
Notelaea longifolia	0.5	1	SG			0.5							
Opercularia aspera	0.2	3	FG					0.2					
Oplismenus aemulus	1	20	GG				1						
Oxalis perennans	0.3	7	FG					0.3					
Pandorea pandorana	0.3	15	OG							0.3			
Parsonsia purpurascens	0.3	4	OG							0.3			
Parsonsia straminea	0.5	1	OG							0.5			
Passiflora herbertiana	0.2	2	OG							0.2			
Phyllanthus gunnii	0.5	16	SG			0.5							
Plectranthus parviflorus	0.3	20	FG					0.3					
Pseuderanthemum variabile	0.4	15	FG					0.4					
Rubus moluccanus var. trilobus	0.5	3	SG			0.5							
Rubus parvifolius	0.2	1	SG			0.2							
Senecio madagascariensis	0.3	5	HT									0.3	
Sida rhombifolia	0.3	6	EX								0.3		
Sigesbeckia orientalis subsp. orientalis	0.5	15	FG					0.5					
Solanum nigrum	0.4	4	EX								0.4		
Solanum prinophyllum	0.2	1	FG					0.2					
Sonchus oleraceus	0.2	3	EX								0.2		
Stellaria media	0.6	20	FG					0.6					
Stephania japonica	1	5	OG							1			
Trema tomentosa var. aspera	0.2	2	SG			0.2							
Verbena rigida var. rigida	0.2	2	EX								0.2		

Easting	329655
Northing	6372996
Orientation	169
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	2
50-79	5
30-49	16
20-29	Yes
10-19	No
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	33
BAM Attributes 1x1 plot (%)	14
Litter (%)	10
	25
	15
	10
	10

D1.58 4089 – Namoi-Upper Hunter River Red Gum Forest (Derived)

HTP-MS-69

Date	23/07/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-69		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4089	Derived	27	7	0	0	4	3	0	0	17	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	117	62.5	0	0	61	1.5	0	0	53	1.5	
Austrostipa verticillata	45	500	GG				45						
Aristida ramosa	10	200	GG				10						
Galenia pubescens	0.4	5	HT									0.4	
Vicia spp.	5	100	EX								5		
Lolium perenne	30	500	EX								30		
Silybum marianum	5	80	EX								5		
Sonchus oleraceus	2	40	EX								2		
Bidens pilosa	0.4	20	EX								0.4		
Hypochaeris radicata	2	100	EX								2		
Oxalis corniculata	3	100	EX								3		
Fumaria muralis subsp. muralis	1	50	EX								1		
Echium plantagineum	1	50	EX								1		
Rumex brownii	0.4	20	FG					0.4					
Commelina cyanea	0.1	5	FG					0.1					
Opuntia aurantiaca	0.1	1	EX								0.1		
Cirsium vulgare	0.1	5	EX								0.1		
Verbena bonariensis	0.4	20	EX								0.4		
Sisymbrium officinale	0.1	10	EX								0.1		
Trifolium glomeratum	0.8	30	EX								0.8		
Solanum nigrum	1	30	EX								1		
Taraxacum officinale	0.1	5	EX								0.1		
Paspalum dilatatum	1	20	HT									1	
Cynodon dactylon	5	100	GG				5						
Daucus spp.	1	50	FG					1					
Sporobolus creber	1	40	GG				1						
Sida rhombifolia	1	30	EX								1		
Senecio madagascariensis	0.1	5	HT									0.1	

Easting	312878
Northing	6401440
Orientation	229
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	1.4
Litter (%)	1
	0
	2
	1
	3

HTP-MS-70

Date	24/07/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-70		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4089	Derived	33	6	1	1	1	3	0	0	22	5	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	125.3	56.3	1	20	35	0.3	0	0	16.2	52.8	
Acacia salicina	20	30	SG			20							
Alternanthera sp. A	0.1	5	FG					0.1					
Aster subulatus	0.1	5	EX								0.1		
Bidens pilosa	0.4	20	EX								0.4		
Brassica napus	1	50	EX								1		
Cardiospermum grandiflorum	0.4	10	HT									0.4	
Casuarina cunninghamiana subsp. cunninghamiana	1	1	TG		1								
Cynodon dactylon	35	500	GG				35						
Echium plantagineum	1	50	EX								1		
Einadia nutans subsp. linifolia	0.1	3	FG					0.1					
Eragrostis cilianensis	0.8	40	EX								0.8		
Fumaria muralis subsp. muralis	0.4	50	EX								0.4		
Galenia pubescens	5	50	HT									5	
Galium aparine	1	30	EX								1		
Hypochaeris radicata	1	50	EX								1		
Lysimachia arvensis	2	100	EX								2		
Medicago polymorpha	3	100	EX								3		
Megathyrus maximus	45	500	HT									45	
Oenothera stricta subsp. stricta	0.1	5	EX								0.1		
Petunia axillaris	0.2	10	EX								0.2		
Plantago lanceolata	0.2	10	EX								0.2		
Ricinus communis	2	10	HT									2	
Rumex crispus	1	20	EX								1		
Senecio madagascariensis	0.4	20	HT									0.4	
Sida rhombifolia	0.4	10	EX								0.4		
Sisymbrium officinale	0.6	20	EX								0.6		
Solanum nigrum	0.4	10	EX								0.4		
Stellaria media	0.1	10	EX								0.1		
Tagetes minuta	1	40	EX								1		
Verbascum thapsus subsp. thapsus	0.1	5	EX								0.1		
Verbena officinalis	0.4	20	EX								0.4		
Vicia sativa	1	30	EX								1		
Wahlenbergia gracilis	0.1	5	FG					0.1					

Easting	308043
Northing	6400874
Orientation	292
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	32
BAM Attributes 1x1 plot (%)	7
Litter (%)	5
	10
	5
	10
	5

TC-48

Date	9/16/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	TC-48		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4089	Derived	36	10	0	0	3	7	0	0	23	3	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	83.4	57.1	0	0	55.5	1.6	0	0	23.8	2.5	
Aristida ramosa	0.3	10	GG				0.3						
Aster subulatus	0.4	15	EX								0.4		
Austrostipa verticillata	55	100	GG				55						
Brassica rapa	0.5	15	EX								0.5		
Bromus catharticus	0.5	10	EX								0.5		
Bromus hordeaceus	0.5	40	EX								0.5		
Calotis lappulacea	0.1	1	FG					0.1					
Cardiospermum grandiflorum	0.2	1	HT									0.2	
Carduus pycnocephalus	0.1	1	EX								0.1		
Cirsium vulgare	0.3	5	EX								0.3		
Conyza bonariensis	0.1	1	EX								0.1		
Cynodon dactylon	0.2	5	GG				0.2						
Daucus glochidiatus	0.3	20	FG					0.3					
Fumaria muralis subsp. muralis	0.2	5	EX								0.2		
Galenia pubescens	2	70	HT									2	
Galium aparine	0.5	10	EX								0.5		
Geranium solanderi	0.3	20	FG					0.3					
Lepidium africanum	0.2	5	EX								0.2		
Lolium perenne	15	1000	EX								15		
Lysimachia arvensis	0.3	15	EX								0.3		
Medicago arabica	0.5	30	EX								0.5		
Medicago polymorpha	2	40	EX								2		
Opuntia aurantiaca	0.2	2	EX								0.2		
Oxalis perennans	0.4	40	FG					0.4					
Plantago debilis	0.2	5	FG					0.2					
Plantago lanceolata	0.5	20	EX								0.5		
Rumex brownii	0.2	5	FG					0.2					
Senecio madagascarensis	0.3	6	HT									0.3	
Sida rhombifolia	0.2	1	EX								0.2		
Solanum nigrum	0.2	5	EX								0.2		
Sonchus oleraceus	0.2	20	EX								0.2		
Stachys arvensis	0.2	10	EX								0.2		
Trifolium campestre	0.5	10	EX								0.5		
Verbena bonariensis	0.5	20	EX								0.5		
Veronica plebeia	0.1	1	FG					0.1					
Vicia sativa	0.2	10	EX								0.2		

Easting	312495
Northing	6401159
Orientation	32
Plot size	20x20x50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	3
Litter (%)	2
	3
	5
	0
	5

D1.59 4089 – Namoi-Upper Hunter River Red Gum Forest (Poor)

HTP-MS-68

Date	7/23/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-68		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4089	Poor	22	3	1	0	0	2	0	0	11	8	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	129.1	25.8	25	0	0	0.8	0	0	11.3	92	
Casuarina cunninghamiana subsp. cunninghamiana	25	20	TG		25								
Cardiospermum grandiflorum	25	50	HT									25	
Megathyrus maximus	40	200	HT									40	
Verbena bonariensis	2	50	EX								2		
Ricinus communis	20	50	HT									20	
Cestrum parqui	1	10	HT									1	
Sida rhombifolia	2	100	EX								2		
Ehrharta erecta	1	50	HT									1	
Bidens pilosa	1	50	EX								1		
Galenia pubescens	1	20	HT									1	
Galium aparine	1	50	EX								1		
Salix spp.	2	6	HT									2	
Solanum nigrum	0.4	5	EX								0.4		
Einadia nutans subsp. linifolia	0.4	5	FG					0.4					
Cyperus eragrostis	2	80	HT									2	
Brassica napus	1	40	EX								1		
Morus alba	2	5	EX								2		
Urtica incisa	0.4	10	FG					0.4					
Modiola caroliniana	1	50	EX								1		
Euphorbia peplus	0.4	20	EX								0.4		
Sonchus oleraceus	0.1	5	EX								0.1		
Tagetes minuta	0.4	20	EX								0.4		

Easting	310051
Northing	6400976
Orientation	304
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	2
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	125
BAM Attributes 1x1 plot (%)	51
Litter (%)	65
	50
	60
	35
	45

HTP-MS-73

Date	8/30/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-73		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	4089	Poor	14	3	1	0	1	1	0	0	10	1	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	100.5	25.1	20	0	5	0.1	0	0	74.4	1	
Eucalyptus melliodora	20	5	TG		20								
Avena fatua	20	500	EX								20		
Malva parviflora	10	100	EX								10		
Cynodon dactylon	5	100	GG				5						
Rapistrum rugosum	20	500	EX								20		
Lycium ferocissimum	1	1	HT									1	
Trifolium glomeratum	5	100	EX								5		
Cyclospermum leptophyllum	1	50	EX								1		
Urtica incisa	0.1	10	FG					0.1					
Lactuca serriola	1	50	EX								1		
Silybum marianum	10	100	EX								10		
Lolium perenne	5	100	EX								5		
Sida rhombifolia	2	80	EX								2		
Plantago lanceolata	0.4	20	EX								0.4		

Easting	316774
Northing	6396761
Orientation	246
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	2
50-79	7
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	7
Length logs (m)	0
BAM Attributes 1x1 plot (%)	5
Litter (%)	5
	10
	5
	0
	5

D1.60 Additional plot analyses for Central Hunter Grey Box – Ironbark Woodland and Warkworth Sands Woodland comparison

HTP-MS-31

Date	11/22/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	318430
Plot Name	HTP-MS-31		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6396036
PCT	3431	Thinned	34	25	3	5	12	2	1	2	6	3		Orientation	101
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	87.2	82.3	21.4	15.7	43.9	0.6	0.2	0.5	2.5	2.4		BAM Attributes 20x50m plot	
Eucalyptus crebra	20	20	TG		20									Stem classes	
Acacia amblygona	15	40	SG			15								80+	0
Acacia salicina	1	1	TG		1									50-79	1
Allocasuarina luehmannii	0.4	1	TG		0.4									30-49	0
Cymbopogon refractus	15	200	GG				15							20-29	No
Aristida ramosa	10	100	GG				10							10-19	No
Senecio madagascariensis	0.8	40	HT									0.8		5-9	No
Paspalidium distans	3	50	GG				3							<5	Yes
Einadia nutans subsp. linifolia	0.4	20	FG					0.4						Hollows	0
Enchylaena tomentosa	0.1	3	SG			0.1								Length logs (m)	17
Galenia pubescens	0.6	10	HT									0.6			
Cynodon dactylon	2	50	GG				2							BAM Attributes 1x1 plot (%)	18
Lomandra confertifolia	1	40	GG				1							Leaf Litter (%)	25
Sida rhombifolia	1	50	EX								1				20
Conyza bonariensis	0.2	10	EX								0.2				15
Gomphocarpus fruticosus	0.1	5	EX								0.1				25
Acacia falcata	0.4	5	SG			0.4									5
Verbena bonariensis	1	20	EX								1				
Lomandra glauca	0.1	5	GG				0.1								
Cheilanthes sieberi	0.2	30	EG						0.2						
Chloris truncata	3	50	GG				3								
Lycium ferocissimum	1	5	HT									1			
Glycine tabacina	0.4	20	OG							0.4					
Opuntia aurantiaca	0.1	1	EX								0.1				
Pomaderris spp.	0.1	5	SG			0.1									
Grona varians	0.1	5	OG							0.1					
Panicum queenslandicum	2	50	GG				2								
Lomandra multiflora subsp. multiflora	0.4	20	GG				0.4								
Sporobolus creber	5	80	GG				5								
Pavonia hastata	0.1	1	EX								0.1				
Eremophila debilis	0.1	5	SG			0.1									
Aristida calycina	0.4	10	GG				0.4								
Rytidosperma spp.	2	50	GG				2								
Wahlenbergia gracilis	0.2	5	FG					0.2							

HTP-MS-33

Date	11/22/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	318188
Plot Name	HTP-MS-33		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6395970
PCT	3431	Disturbed Grassland	19	6	0	0	5	1	0	0	10	3		Orientation	92
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	63.9	55.2	0	0	55	0.2	0	0	5.3	3.4		BAM Attributes 20x50m plot	
Aristida calycina	15	100	GG				15							Stem classes	
Cymbopogon refractus	10	100	GG				10							80+	0
Cynodon dactylon	20	100	GG				20							50-79	0
Eragrostis curvula	2	20	HT									2		30-49	0
Lysimachia arvensis	0.4	20	EX								0.4			20-29	No
Verbena bonariensis	0.8	10	EX								0.8			10-19	No
Senecio madagascariensis	1	40	HT									1		5-9	No
Aristida ramosa	5	60	GG				5							<5	No
Bromus catharticus	1	30	EX								1			Hollows	0
Modiola caroliniana	0.8	20	EX								0.8			Length logs (m)	0
Cyclospermum leptophyllum	0.4	20	EX								0.4				
Verbena officinalis	0.4	10	EX								0.4			BAM Attributes 1x1 plot (%)	0.4
Conyza bonariensis	0.6	20	EX								0.6			Leaf Litter (%)	1
Galenia pubescens	0.4	5	HT									0.4			0
Sida rhombifolia	0.4	10	EX								0.4				1
Sporobolus creber	5	100	GG				5								0
Pavonia hastata	0.1	5	EX								0.1				0
Wahlenbergia communis	0.2	10	FG					0.2							
Petrorhagia nanteuilii	0.4	40	EX								0.4				

HTP-MS-36

Date	11/23/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-36		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Disturbed Grassland	31	19	0	1	9	8	0	1	8	4	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	52.7	49.2	0	0.1	47.7	1.2	0	0.2	2.4	1.1	
Sporobolus creber	10	100	GG				10						
Cynodon dactylon	20	200	GG				20						
Chrysocephalum semipapposum	0.4	50	FG					0.4					
Murdannia graminea	0.1	10	FG					0.1					
Plantago lanceolata	1	80	EX								1		
Lysimachia arvensis	0.2	30	EX								0.2		
Verbena bonariensis	0.1	5	EX								0.1		
Senecio madagascariensis	0.8	40	HT									0.8	
Opuntia aurantiaca	0.1	2	EX								0.1		
Gomphrena celosioides	0.4	20	EX								0.4		
Chloris ventricosa	10	100	GG				10						
Galenia pubescens	0.1	5	HT									0.1	
Maireana enchylaenoides	0.1	5	FG					0.1					
Wahlenbergia gracilis	0.1	10	FG					0.1					
Gamochaeta purpurea	0.4	20	EX								0.4		
Aristida ramosa	5	50	GG				5						
Enteropogon acicularis	0.8	20	GG				0.8						
Goodenia heterophylla	0.1	5	FG					0.1					
Glycine clandestina	0.2	20	OG							0.2			
Centaurea solstitialis	0.1	5	EX								0.1		
Lomandra confertifolia	0.1	10	GG				0.1						
Phyllanthus virgatus	0.1	5	FG					0.1					
Romulea rosea var. australis	0.1	10	HT									0.1	
Panicum queenslandicum	1	40	GG				1						
Eragrostis leptostachya	0.4	10	GG				0.4						
Carex inversa	0.4	30	GG				0.4						
Stackhousia viminea	0.1	1	FG					0.1					
Hypochaeris albiflora	0.1	5	EX								0.1		
Carthamus lanatus	0.1	2	HT									0.1	
Plantago varia	0.2	30	FG					0.2					
Maireana microphylla	0.1	1	SG			0.1							

Easting	319845
Northing	6394924
Orientation	320
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	0.6
Leaf Litter (%)	0
	1
	2
	0
	0

HTP-MS-37

Date	11/23/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	319471
Plot Name	HTP-MS-37		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6395631
PCT	3431	Disturbed Grassland	12	4	0	0	4	0	0	0	5	3		Orientation	338
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	65.7	48.8	0	0	48.8	0	0	0	16.6	0.3		BAM Attributes 20x50m plot	
Sporobolus creber	25	300	GG				25							Stem classes	
Plantago lanceolata	15	100	EX								15			80+	0
Cynodon dactylon	20	200	GG				20							50-79	0
Lolium perenne	0.1	50	EX								0.1			30-49	0
Verbena bonariensis	1	20	EX								1			20-29	No
Senecio madagascariensis	0.1	40	HT									0.1		10-19	No
Lysimachia arvensis	0.4	20	EX								0.4			5-9	No
Carthamus lanatus	0.1	1	HT									0.1		<5	No
Lachnagrostis filiformis	3	80	GG				3							Hollows	0
Enteropogon acicularis	0.8	20	GG				0.8							Length logs (m)	0
Gamochaeta purpurea	0.1	1	EX								0.1				
Romulea rosea var. australis	0.1	1	HT									0.1		BAM Attributes 1x1 plot (%)	0.1
														Leaf Litter (%)	0
															0.5
															0
															0
															0

HTP-MS-38

Date	11/23/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	319145
Plot Name	HTP-MS-38		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6395977
PCT	3431	Disturbed Grassland	24	10	0	1	5	3	0	1	11	3		Orientation	292
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	46.8	39.8	0	1	38.1	0.6	0	0.1	4.8	2.2		BAM Attributes 20x50m plot	
Sporobolus creber	10	100	GG				10							Stem classes	
Cynodon dactylon	20	100	GG				20							80+	0
Enteropogon acicularis	5	80	GG				5							50-79	0
Chrysocephalum semipapposum	0.4	50	FG					0.4						30-49	0
Oxalis radicosa	0.1	3	FG					0.1						20-29	N
Senecio madagascariensis	1	50	HT									1		10-19	N
Maireana microphylla	1	5	SG			1								5-9	N
Paronychia brasiliana	0.4	30	EX								0.4			<5	N
Phyllanthus virgatus	0.1	5	FG					0.1						Hollows	0
Hypochaeris albiflora	0.4	10	EX								0.4			Length logs (m)	0
Axonopus fissifolius	0.8	10	HT									0.8			
Centaurea solstitialis	0.1	5	EX								0.1			BAM Attributes 1x1 plot (%)	1
Bromus catharticus	2	30	EX								2			Leaf Litter (%)	0
Romulea rosea var. australis	0.4	50	HT									0.4			2
Verbena bonariensis	0.6	10	EX								0.6				2
Lomandra glauca	0.1	5	GG				0.1								0
Petrorhagia nanteuilii	0.1	5	EX								0.1				1
Convolvulus erubescens	0.1	1	OG							0.1					
Conyza bonariensis	0.1	5	EX								0.1				
Cyclospermum leptophyllum	0.1	10	EX								0.1				
Sporobolus africanus	0.4	5	EX								0.4				
Eragrostis brownii	3	100	GG				3								
Gamochaeta purpurea	0.2	10	EX								0.2				
Verbena officinalis	0.4	10	EX								0.4				

HTP-TB-01

Date	11/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-TB-01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Thinned	35	27	4	2	12	5	2	2	4	4	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	73.4	72.2	24.2	0.2	46.5	0.5	0.6	0.2	0.4	0.8	
Eucalyptus crebra	20	40	TG		20								
Angophora floribunda	4	8	TG		4								
Allocasuarina luehmannii	0.1	1	TG		0.1								
Cassinia sifton	0.1	1	SG			0.1							
Brachychiton populneus subsp. populneus	0.1	1	TG		0.1								
Lantana camara	0.1	1	HT									0.1	
Cymbopogon refractus	20	500	GG				20						
Eragrostis leptostachya	3	100	GG				3						
Glycine clandestina	0.1	3	OG							0.1			
Aristida ramosa	4	100	GG				4						
Calotis lappulacea	0.1	1	FG					0.1					
Sporobolus creber	5	100	GG				5						
Laxmannia gracilis	0.1	3	FG					0.1					
Cheilanthes sieberi	0.5	100	EG						0.5				
Plantago lanceolata	0.1	1	EX								0.1		
Olea europaea subsp. cuspidata	0.2	10	HT									0.2	
Paspalidium spp.	0.2	30	GG				0.2						
Eragrostis brownii	0.2	30	GG				0.2						
Leiocarpa panaetioides	0.1	1	FG					0.1					
Aristida vagans	3	50	GG				3						
Sida rhombifolia	0.1	1	EX								0.1		
Cynodon dactylon	2	50	GG				2						
Microlaena stipoides var. stipoides	6	200	GG				6						
Cheilanthes distans	0.1	30	EG						0.1				
Richardia humistrata	0.1	5	EX								0.1		
Rytidosperma spp.	1	30	GG				1						
Austrostipa verticillata	2	20	GG				2						
Commelina cyanea	0.1	1	FG					0.1					
Opuntia aurantiaca	0.1	2	EX								0.1		
Galenia pubescens	0.3	20	HT									0.3	
Einadia hastata	0.1	2	FG					0.1					
Glycine tabacina	0.1	3	OG							0.1			
Breynia oblongifolia	0.1	1	SG			0.1							
Lomandra confertifolia	0.1	1	GG				0.1						
Senecio madagascariensis	0.2	30	HT									0.2	

Easting	318739
Northing	6395768
Orientation	337
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	2
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	3
Length logs (m)	37

BAM Attributes 1x1 plot (%)	28
Litter (%)	60
	20
	30
	15
	15

HTP-TB-02

Date	11/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-TB-02		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3431	Thinned	48	40	4	6	13	14	1	2	6	2	
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	72.5	71.7	31.1	5.7	32.9	1.5	0.3	0.2	0.6	0.2	
Eucalyptus crebra	22	20	TG		22								
Angophora floribunda	3	4	TG		3								
Allocasuarina luehmannii	6	30	TG		6								
Acacia falcata	2	20	SG			2							
Acacia amblygona	0.5	4	SG			0.5							
Breynia oblongifolia	2	8	SG			2							
Cymbopogon refractus	10	300	GG				10						
Hibbertia linearis	0.1	5	SG			0.1							
Brunoniella australis	0.1	5	FG					0.1					
Aristida ramosa	4	100	GG				4						
Senecio madagascariensis	0.1	20	HT									0.1	
Dianella longifolia	0.1	1	FG					0.1					
Aristida calycina var. calycina	1	40	GG				1						
Opuntia aurantiaca	0.1	10	EX								0.1		
Vernonia cinerea var. cinerea	0.1	2	FG					0.1					
Lomandra confertifolia	0.1	5	GG				0.1						
Lomandra multiflora subsp. multiflora	0.2	10	GG				0.2						
Glycine tabacina	0.1	10	OG							0.1			
Goodenia rotundifolia	0.1	8	FG					0.1					
Cheilanthes sieberi subsp. sieberi	0.3	100	EG						0.3				
Olea europaea subsp. cuspidata	0.1	2	HT									0.1	
Plantago lanceolata	0.1	4	EX								0.1		
Eragrostis brownii	1	50	GG				1						
Rytidosperma spp.	4	100	GG				4						
Veronica plebeia	0.2	30	FG					0.2					
Euchiton sphaericus	0.1	2	FG					0.1					
Calotis lappulacea	0.1	10	FG					0.1					
Richardia humistrata	0.1	5	EX								0.1		
Eragrostis leptostachya	4	100	GG				4						
Conyza bonariensis	0.1	1	EX								0.1		
Notelaea microcarpa	0.1	1	TG		0.1								
Opercularia diphylla	0.1	3	FG					0.1					
Verbascum virgatum	0.1	1	EX								0.1		
Austrostipa scabra	2	50	GG				2						
Dichondra sp. Inglewood	0.1	5	FG					0.1					
Lomandra glauca	0.1	4	GG				0.1						
Digitaria diffusa	0.5	30	GG				0.5						
Echinopogon caespitosus	5	100	GG				5						
Aristida vagans	1	40	GG				1						
Einadia nutans	0.1	6	FG					0.1					
Stackhousia muricata	0.1	2	FG					0.1					
Solanum cinereum	0.1	1	SG			0.1							
Goodenia heterophylla subsp. heterophylla	0.1	4	FG					0.1					
Glycine clandestina	0.1	2	OG							0.1			
Hibbertia diffusa	1	30	SG			1							
Dianella revoluta var. revoluta	0.1	1	FG					0.1					
Opuntia stricta var. stricta	0.1	2	EX								0.1		
Oxalis perennans	0.1	1	FG					0.1					

Easting	318924
Northing	6395241
Orientation	9
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	2
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	47
BAM Attributes 1x1 plot (%)	61
Litter (%)	55

D1.61 Additional plots in PCT 0

HTP-DR09

Date	6/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	306556
Plot Name	HTP_DR09		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6412693
PCT	0		17	7	0	0	4	3	0	0	7	3		Orientation	125
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	91.6	8.5	0	0	8	0.5	0	0	6.6	76.5		BAM Attributes 20x50m plot	
Verbena bonariensis	1	50	EX								1			Stem classes	
Hyparrhenia hirta	75	3000	HT									75		80+	0
Dichanthium sericeum	1	100	GG				1							50-79	0
Aristida ramosa	5	500	GG				5							30-49	0
Heliotropium amplexicaule	1	20	HT									1		20-29	no
Cirsium vulgare	2	20	EX								2			10-19	no
Gomphocarpus fruticosus	0.4	10	EX								0.4			5-9	no
Plantago lanceolata	1	50	EX								1			<5	no
Hydrocotyle laxiflora	0.2	20	FG					0.2						Hollows	0
Mentha satureioides	0.2	50	FG					0.2						Length logs (m)	0
Senecio madagascarensis	0.5	50	HT									0.5			
Asperula conferta	0.1	10	FG					0.1						BAM Attributes 1x1 plot (%)	0
Conyza sp.	0.1	5	EX								0.1			Litter (%)	0
Echinopogon caespitosus	1	20	GG				1								0
Sida rhombifolia	0.1	5	EX								0.1				0
Sporobolus creber	1	50	GG				1								0
Opuntia stricta	2	1	EX								2				0

HTP-MS-07

Date	1/6/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	306661
Plot Name	HTP-MS-07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6412613
PCT	0		18	6	1	0	3	2	0	0	10	2		Orientation	113
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	83.6	1.9	1	0	0.7	0.2	0	0	28.7	53		BAM Attributes 20x50m plot	
Hyparrhenia hirta	50	300	HT									50		Stem classes	
Verbena bonariensis	10	100	EX								10			80+	0
Cirsium vulgare	5	100	EX								5			50-79	0
Gomphocarpus fruticosus	5	200	EX								5			30-49	0
Bidens subalternans	1	100	EX								1			20-29	0
Plantago lanceolata	5	200	EX								5			10-19	0
Sida rhombifolia	1	50	EX								1			5-9	0
Acacia salicina	1	5	TG		1									<5	0
Romulea rosea var. australis	0.5	50	EX								0.5			Hollows	0
Sisymbrium officinale	0.1	5	EX								0.1			Length logs (m)	0
Dichondra repens	0.1	10	FG					0.1							
Galenia pubescens	3	50	HT									3		BAM Attributes 1x1 plot (%)	0
Mentha diemenica	0.1	10	FG					0.1						Litter (%)	0
Senecio madagascariensis	1	50	EX								1				0
Cymbopogon refractus	0.1	5	GG				0.1								0
Dichanthium sericeum subsp. sericeum	0.1	5	GG				0.1								0
Sporobolus creber	0.5	30	GG				0.5								0
Solanum nigrum	0.1	5	EX								0.1				

TC-50

Date	9/22/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56	Easting	306166
Plot Name	TC50		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6413057
PCT	0		17	3	1	0	2	0	0	0	11	3		Orientation	73
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	104.4	0.9	0.2	0	0.7	0	0	0	4.2	99.3		BAM Attributes 20x50m plot	
Acacia saligna	2	13	EX								2			Stem classes	
Carex inversa	0.2	5	HT									98		80+	0
Cirsium vulgare	0.3	5	EX								0.2			50-79	0
Conyza bonariensis	0.2	3	HT									0.3		30-49	0
Cynodon dactylon	0.5	20	HT									1		20-29	0
Eucalyptus tereticornis	0.2	1	EX								0.2			10-19	No
Galium aparine	0.2	5	EX								0.5			5-9	No
Gomphocarpus fruticosus	0.1	1	EX								0.2			<5	No
Hyparrhenia hirta	98	5000	EX								0.3			Hollows	0
Juncus acutus	1	6	EX								0.2			Length logs (m)	0
Lysimachia arvensis	0.2	15	EX								0.2				
Medicago polymorpha	0.5	25	GG				0.2							BAM Attributes 1x1 plot (%)	1
Medicago truncatula	0.2	5	GG				0.5							Litter (%)	0
Plantago lanceolata	0.2	5	EX								0.1				5
Senecio madagascariensis	0.3	10	EX								0.2				0
Verbena bonariensis	0.1	3	EX								0.1				0
Vicia sativa	0.2	5	TG		0.2										0

Appendix D-2
Justification for use of BAM vegetation integrity plots collected outside of the subject land

Table D-2.1 Vegetation integrity plot data collected from outside the subject land

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
Wyong				
HTP-MS-59	60	3029	Mod-good	HTP-MS-59 is located within the same gully adjoining the mapped patch of PCT 3029 (Mod-good) within the Wyong IBRA subregion. The canopy of this plot is composed of 35% *Ceratopetalum apetalum*, 15% *Acmena smithii* and 15% *Syncarpia glomulifera subsp. glomulifera*. The floristics and functions in this plot are similar to those found in other plots (HTP-MS-43, HTP-MS-52, HTP-MS-63) assigned to this vegetation zone within the Wyong IBRA subregion, with *Ceratopetalum apetalum* dominant in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.626 with PCT 3029 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
LCSM-15	219	3150	Plantation	LCSM-15 is located on a slope in a neighbouring patch of plantation near the patches of mapped PCT 3150 (Plantation) in the Wyong IBRA subregion. The canopy of the plot is composed of 40% *Eucalyptus saligna*. The floristics and functions in this plot are similar to those found in the other plot (HTP-MS-50) assigned to this vegetation zone within the Wyong IBRA subregion, with *Eucalyptus saligna* also dominant in this plot. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a weak second centroid match of 0.801 with PCT 3150 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3082, however this PCT doesn't occur within the Wyong IBRA subregion. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
LCSM-11	44	3230	Mod-good	LCSM-11 is located along the same contour that runs through a patch of mapped PCT 3230 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 40% *Syncarpia glomulifera* and 20% *Eucalyptus piperita*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-48, HTP-MS-60, HTP-MS-62, LCSM-03 and LCSM-08) assigned to this vegetation zone within the Wyong IBRA subregion, with either or both *Syncarpia glomulifera* and *Eucalyptus piperita* also dominant in these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a moderate second centroid match of 0.722 with PCT 3230 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 4115, however this PCT doesn't occur within the Wyong IBRA subregion. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
LCSM-12	246	3230	Plantation	LCSM-12 is located along the same patch of plantation that's mapped within the subject land as PCT 3230 (Plantation) in the Wyong IBRA subregion. The canopy of the plot is composed of 60% *Eucalyptus agglomerata*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-57, LCSM-14 and LCSM-17) assigned to this vegetation zone within the Wyong IBRA subregion, with *Eucalyptus agglomerata* also dominant in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a moderate fourth centroid match of 0.780 with PCT 3230 (see Appendix D (Vegetation survey data)). The greater centroid matches were PCTs 3263, 3164 and 3242, however due to the plantation condition that this plot can't be accurately assigned to a PCT through the Plot to PCT Assignment Tool. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
LCSM-14	8	3230	Plantation	LCSM-14 is located along the same patch of plantation that's mapped within the subject land as PCT 3230 (Plantation) in the Wyong IBRA subregion. The canopy of the plot is composed of 20% *Eucalyptus agglomerata*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-57, LCSM-12 and LCSM-17) assigned to this vegetation zone within the Wyong IBRA, with *Eucalyptus agglomerata* also dominant in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3230 (see Appendix D (Vegetation survey data)). Due to the plantation condition that this plot can't be accurately assigned to a PCT through the Plot to PCT Assignment Tool. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
LCSM-17	21	3230	Plantation	LCSM-17 is located along the same patch of plantation that's mapped within the subject land as PCT 3230 (Plantation) in the Wyong IBRA subregion. The canopy of the plot is composed of 30% *Eucalyptus saligna*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-57, LCSM-12 and LCSM-14) assigned to this vegetation zone within the Wyong IBRA subregion, however *Eucalyptus saligna* isn't dominant in these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3230 (see Appendix D (Vegetation survey data)). Due to the plantation condition that this plot can't be accurately assigned to a PCT through the Plot to PCT Assignment Tool. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
LCSM-26	127	3239	Mod-good	LCSM-26 is located along the top of same slope that is mapped within the subject land as PCT 3239 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 20% *Angophora costata* and 20% *Eucalyptus agglomerata*. The floristics and functions in this plot are similar to those found in the other plot (TS-17) assigned to this vegetation zone within the Wyong IBRA subregion, with *Eucalyptus agglomerata* also dominant in this plot, with *Angophora costata* also present. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.659 with PCT 3239 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-17	157	3242	Mod-good	HTP-MS-17 is located along the top of same slope that is mapped within the subject land as PCT 3242 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 32% *Syncarpia glomulifera* and 12% *Eucalyptus acmenoides*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-11, HTP-MS-46, HTP-MS-54 and HTP-MS-55) assigned to this vegetation zone within the Wyong IBRA subregion, with *Syncarpia glomulifera* and *Eucalyptus acmenoides* also present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.714 with PCT 3242 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
TC-14	81	3250	Mod-good	TC-14 is located along the top of same slope that is mapped within the subject land as PCT 3250 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 20% *Eucalyptus pilularis*. The floristics and functions in this plot are similar to those found in the other plot (TC-15) assigned to this vegetation zone within the Wyong IBRA, with *Eucalyptus pilularis* also dominant in this plot. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.670 with PCT 3250 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
TC-15	8	3250	Mod-good	TC-15 is located along the top of same slope that is mapped within the subject land as PCT 3250 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 20% *Eucalyptus pilularis*. The floristics and functions in this plot are similar to those found in the other plot (TC-14) assigned to this vegetation zone within the Wyong IBRA subregion, with *Eucalyptus pilularis* also dominant in this plot. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.606 with PCT 3250 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
SMSO_08	68	3263	Derived	SMSO_08 is located along the same terrain that is mapped within the subject land as PCT 3263 (Mod-good and Derived) in the Wyong IBRA subregion. In the absence of canopy, the plot groundcover is composed of 30% *Lepidosperma laterale* and 25% *Imparata cylindrica*, with regrowth of *Eucalyptus deanei, Eucalyptus umbra* and *Syncarpia glomulifera* also present. The floristics and functions in this plot are representative of local plots HTP-MS-12 and LCSM-21, which is in a patch of PCT 3263 (Mod-good). This plot was run through the Plot to PCT Assignment Tool where it was identified to have a first centroid match of 0.732 with PCT 3263 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-12	69	3263	Mod-good	HTP-MS-12 is located along the top of same slope that is mapped within the subject land as PCT 3263 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 15% *Corymbia maculata*, 10% *Eucalyptus agglomerata* and 10% *Syncarpia glomulifera subsp. glomulifera*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-16, LCSM-21, LCSM-24, LCSM-25) assigned to this vegetation zone within the Wyong IBRA subregion, with also *Corymbia maculata*, *Eucalyptus agglomerata* and *Syncarpia glomulifera subsp. glomulifera* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.654 with PCT 3263 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
LCSM-21	56	3263	Mod-good	LCSM-21 is located along the top of same slope that is mapped within the subject land as PCT 3263 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 30% *Eucalyptus agglomerata*, 30% *Eucalyptus punctata* and 20% *Angophora costata*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-12, HTP-MS-16, LCSM-24, LCSM-25) assigned to this vegetation zone within the Wyong IBRA subregion, with also *Eucalyptus agglomerata*, *Eucalyptus punctata* and *Angophora costata* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.697 with PCT 3263 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-99	166	3433	Mod-good	HTP-MS-99 is located along the same terrain that is mapped within the subject land as PCT 3433 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 25% *Corymbia maculata* and 5% *Eucalyptus pilularis*, with a sparse cover of 45% *Daviesia ulicfolia* in the midstory. This is consistent with the BioNet Vegetation Classification Database description of PCT 3433, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a first centroid match of 0.717 with PCT 3433 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
TC-16	23	3581	Mod-good	TC-16 is located along the same slope and patch of vegetation that's mapped within the subject land as PCT 3581 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 15% *Angophora costata* and 10% *Eucalyptus pilularis*. This is consistent with the BioNet Vegetation Classification Database description of PCT 3581, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.636 with PCT 3581 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-91	10	3582	Derived	HTP-MS-91 is located along the same terrain that is mapped within the subject land as PCT 3582 (Mod-good and Derived) in the Wyong IBRA subregion. In the absence of canopy, the plot groundcover is composed of 10% *Entolasia stricta, 5% Ptilothrix deusta* and 20% *Themeda triandra*, with regrowth of *Eucalyptus haemastoma* and *Leptospermum polygalifolium* also present. The floristics and functions in this plot are representative of the neighbouring plot SMSO-04, which is in a patch of PCT 3582 (Mod-good). This plot was run through the Plot to PCT Assignment Tool where it was identified to have a first centroid match of 0.729 with PCT 3582 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
SMSO-04	37	3582	Mod-good	SMSO-04 is located along the same terrain that is mapped within the subject land as PCT 3582 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 50% *Eucalyptus globoidea* and 15% *Corymbia gummifera*, with a sparse cover of shrubs in the midstory, including *Lambertia formosa* and *Leptospermum trinervium*. This is consistent with the BioNet Vegetation Classification Database description of PCT 3582, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a first centroid match of 0.696 with PCT 3582 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-101	111	3583	Derived	HTP-MS-101 is located along the same terrain that is mapped within the subject land as PCT 3583 (Mod-good and Derived) in the Wyong IBRA subregion. In the absence of canopy, the plot groundcover is composed of 25% *Ptilothrix deusta* and 20% *Entolasia stricta*, with regrowth of *Dillwynia retorta, Platysace linearifolia* and *Pultenaea paleacea* also present. The floristics and functions in this plot are representative of the local plots HTP-MS-93 and HTP-MS-95, which are in patches of PCT 3583 (Mod-good). This plot was run through the Plot to PCT Assignment Tool where it was identified to have a first centroid match of 0.718 with PCT 3583 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-93	216	3583	Mod-good	HTP-MS-93 is located along the same terrain that is mapped within the subject land as PCT 3583 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 20% *Angophora costata,* 15% *Eucalyptus haemastoma* and 10% *Eucalyptus capitellata*, with a cover of 10% *Banksia spinosa* in the midstory. This is consistent with the BioNet Vegetation Classification Database description of PCT 3583, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.656 with PCT 3583 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-95	108	3583	Mod-good	HTP-MS-95 is located along the same terrain that is mapped within the subject land as PCT 3583 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 15% *Corymbia gummifera* and 12% *Eucalyptus haemastoma*, with a low cover of shrubs in the midstory, including *Lambertia formosa* and *Leptospermum trinervium*. This is consistent with the BioNet Vegetation Classification Database description of PCT 3583, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.669 with PCT 3583 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-102	78	3583	Mod-good	HTP-MS-102 is located along the same terrain that is mapped within the subject land as PCT 3583 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 12% *Eucalyptus haemastoma* and 10% *Angophora costata*, with a high cover of *Banksia spinosa, Leptospermum polygalifolium* and *Leptospermum trinervium* in the midstory. This is consistent with the BioNet Vegetation Classification Database description of PCT 3583, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.621 with PCT 3583 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
LCSM-06	72	3617	Mod-good	LCSM-06 is located along the top of same slope that is mapped within the subject land as PCT 3617 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 30% *Eucalyptus sieberi* and 20% *Syncarpia glomulifera*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-65, LCSM-05 and TS-04) assigned to this vegetation zone within the Wyong IBRA subregion, with also *Eucalyptus sieberi* and *Syncarpia glomulifera* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.709 with PCT 3617 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3589, however this PCT doesn't occur within the Wyong IBRA subregion. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
TS-04	54	3617	Mod-good	TS-04 is located along the top of same slope that is mapped within the subject land as PCT 3617 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 25% *Banksia serrata*, 20% *Syncarpia glomulifera* and 15% *Eucalyptus sieberi*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-65, LCSM-05 and LCSM-06) assigned to this vegetation zone within the Wyong IBRA subregion, with also *Banksia serrata*, *Eucalyptus sieberi* and *Syncarpia glomulifera* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.740 with PCT 3617 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
LCSM-04	11	3621	Mod-good	LCSM-04 is located along the same slope that is mapped within the subject land as PCT 3621 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 60% *Syncarpia glomulifera* and 20% *Eucalyptus piperita*. The floristics and functions in this plot are similar to those found in the other plots (LCSM-07 and LCSM-10) assigned to this vegetation zone within the Wyong IBRA subregion, with also *Syncarpia glomulifera* and *Eucalyptus piperita* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.654 with PCT 3621 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
LCSM-07	6	3621	Mod-good	LCSM-07 is located along the same slope that is mapped within the subject land as PCT 3621 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 30% *Eucalyptus piperita*. The floristics and functions in this plot are similar to those found in the other plots (LCSM-04 and LCSM-10) assigned to this vegetation zone within the Wyong IBRA subregion, with also *Eucalyptus piperita* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.678 with PCT 3621 (see Appendix D). The first centroid match was PCT 3589, however this PCT doesn't occur within the Wyong IBRA subregion. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
LCSM-10	3	3621	Mod-good	LCSM-10 is located along the same slope that is mapped within the subject land as PCT 3621 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 20% *Syncarpia glomulifera* and 20% *Eucalyptus piperita*. The floristics and functions in this plot are similar to those found in the other plots (LCSM-04 and LCSM-07) assigned to this vegetation zone within the Wyong IBRA subregion, with also *Syncarpia glomulifera* and *Eucalyptus piperita* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.717 with PCT 3621 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
SMSO-03	145	4042	Derived	SMSO-03 is located along the same terrain that is mapped within the subject land as PCT 4042 (Mod-good and Derived) in the Wyong IBRA subregion. In the absence of canopy, the plot groundcover is composed of 20% *Gahnia clarkei, 20% Lomandra longifolia* and 20% *Microlaena stipoides*, with regrowth of *Acacia irrorata, Callistemon salignus* and *Leptospermum laevugatum* also present. The floristics and functions in this plot are representative of the neighbouring plot SMSO-01, which is in a patch of PCT 4042 (Mod-good). This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 4042 (see Appendix D). However, since this plot is located within the derived condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
SMSO-01	127	4042	Mod-good	SMSO-01 is located along the same terrain that is mapped within the subject land as PCT 4042 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 7% *Eucalyptus tereticornis* and 5% *Angophora floribunda*, with a cover of 45% *Melaleuca linariifolia* in the midstory. This is consistent with the BioNet Vegetation Classification Database description of PCT 4042, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a first centroid match of 0.755 with PCT 4042 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
SMSO-05	128	4044	Derived	SMSO-05 is located along the same terrain that is mapped within the subject land as PCT 4044 (Mod-good and Derived) in the Wyong IBRA subregion. In the absence of canopy, the plot groundcover is composed of 40% *Gahnia clarkei* and 10% *Imperata cylindrica*, with regrowth of *Acmena smithii* and *Callistemon salignus* also present. The floristics and functions in this plot are representative of the neighbouring plot HTP-MS-98, which is located in a patch of PCT 4044 (Mod-good). This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 4044 (see Appendix D). However, since this plot is located within the derived condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-98	154	4044	Mod-good	HTP-MS-98 is located along the same terrain that is mapped within the subject land as PCT 4044 (Mod-good) in the Wyong IBRA subregion. The canopy of the plot is composed of 20% *Eucalyptus amplifolia subsp. amplifolia* and 20% *Eucalyptus pilularis*, with a cover of 20% *Callistemon salignus* in the midstory. This is consistent with the BioNet Vegetation Classification Database description of PCT 4044, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.665 with PCT 4044 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
Yengo				
HTP-MS-75	20	3151	Mod-good	HTP-MS-75 is located in the same gully that is mapped within the subject land as PCT 3151 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 3% *Streblus brunonianus* and a subcanopy of 40% *Backhousia myrtifolia*. This is consistent with the BioNet Vegetation Classification Database description of PCT 3151, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.684 with PCT 3151 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-13	5	3230	Mod-good	HTP-MS-13 is located along the same slope that is mapped within the subject land as PCT 3230 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 22% *Eucalyptus piperita*, 5% *Angophora floribunda* and 5% *Eucalyptus punctata*. The floristics and functions in this plot are similar to those found in the other plots (LCSM-29 and TC-09) assigned to this vegetation zone within the Yengo IBRA, with also *Angophora floribunda* present in all of these plots This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.718 with PCT 3230 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
LCSM-29	2	3230	Mod-good	LCSM-29 is located along the same slope that is mapped within the subject land as PCT 3230 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 40% *Eucalyptus agglomerata*, 20% *Angophora floribunda* and 20% *Eucalyptus saligna*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-13 and TC-09) assigned to this vegetation zone within the Yengo IBRA, with also *Angophora floribunda* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong third centroid match of 0.668 with PCT 3230 (see Appendix D (Vegetation survey data)). The second centroid match was PCT 3277, however this PCT doesn't occur within the Wyong IBRA subregion. The first centroid match was PCT 3250, however the absence of Eucalyptus pilularis in the canopy of LCSM-29 indicates that it is more likely to be assigned to PCT 3230. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-78	17	3237	Mod-good	HTP-MS-78 is located at the start of the same gully that is mapped within the subject land as PCT 3237 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 15% *Eucalyptus sparsifolia* and 15% *Syncarpia glomulifera*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-79 and HTP-MS-80) assigned to this vegetation zone within the Yengo IBRA, with also *Eucalyptus sparsifolia* and *Syncarpia glomulifera* present in most plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.714 with PCT 3237 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3250, however MS-78 is located at the start of a gully near Pokolbin State Forest, which makes it less likely to be PCT 3242 (found on sheltered slopes of coastal hills and ranges) and more likely to be PCT 3237 (found in dry Narrabeen sandstone gullies). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-79	25	3237	Mod-good	HTP-MS-79 is located at the start of the same gully that is mapped within the subject land as PCT 3237 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 15% *Eucalyptus saligna* and 8% *Angophora euryphylla*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-78 and HTP-MS-80) assigned to this vegetation zone within the Yengo IBRA, with also *Eucalyptus saligna* present in most plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.716 with PCT 3258 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3258, however HTP-MS-78 is located at the start of a gully near Pokolbin State Forest, which makes it less likely to be PCT 3258 (found on sandy alluvial creek flats in dissected sandstone plateaus) and more likely to be PCT 3237 (found in dry Narrabeen sandstone gullies). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-19	197	3239	Mod-good	HTP-MS-19 is located along the same slope that is mapped within the subject land as PCT 3239 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 25% *Eucalyptus agglomerata* and 8% *Eucalyptus punctata*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-18, HTP-MS-25, DL-03 and TS-18) assigned to this vegetation zone within the Yengo IBRA, with *Eucalyptus agglomerata* and *Eucalyptus punctata* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.712 with PCT 3239 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-25	158	3239	Mod-good	HTP-MS-25 is located along the same slope that is mapped within the subject land as PCT 3239 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 12% *Eucalyptus crebra* and 8% *Eucalyptus punctata*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-18, HTP-MS-19, DL-03 and TS-18) assigned to this vegetation zone within the Yengo IBRA, with *Eucalyptus punctata* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.709 with PCT 3239 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-20	181	3241	Mod-good	HTP-MS-20 is located along similar topography and elevation that is mapped within the subject land as PCT 3241 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 25% *Angophora floribunda* and 20% *Eucalyptus acmenoides*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-82) assigned to this vegetation zone within the Yengo IBRA, however *Angophora floribunda* and *Eucalyptus acmenoides* are not present in the other plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.735 with PCT 3241 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-82	11	3241	Mod-good	HTP-MS-82 is located along the same slope that is mapped within the subject land as PCT 3241 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 18% *Corymbia maculata* and 10% *Eucalyptus sparsifolia*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-20) assigned to this vegetation zone within the Yengo IBRA, however *Corymbia maculata* and *Eucalyptus sparsifolia* are not present in the other plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3241 (see Appendix D (Vegetation survey data)). However, it did contain *Corymbia maculata* canopy that was co-dominant with *Angophora costata* and *Eucalyptus racemosa*. The spare midstory included *Denhamia silvestris*, *Indigofera australis* and *Persoonia linearis*. The low-density ground layer wasn't representative of PCT 3241, with *Lomandra obliqua* and *Rytidosperma pallidum* frequently occurring in this plot. While these groundcover species weren't characteristic of PCT 3241, recent fire activity may have influenced the presence and abundance of species more representative of PCT 3241. The closest reference plot to this plot is assigned to PCT 3241 and occurs on along a similar ridgeline. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
LCSM-28	293	3242	Mod-good	LCSM-28 is located along similar topography and elevation to what is mapped within the subject land as PCT 3241 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 40% *Syncarpia glomulifera* and 20% *Angophora floribunda*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-83 and TC-11) assigned to this vegetation zone within the Yengo IBRA, however *Syncarpia glomulifera* and *Angophora floribunda* are not present in the other plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.673 with PCT 3242 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-18	347	3244	Mod-good	DL-18 is located along similar topography and elevation to what is mapped within the subject land as PCT 3244 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 20% *Corymbia maculata* and 10% *Eucalyptus punctata*. This is consistent with the BioNet Vegetation Classification Database description of PCT 3244, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.638 with PCT 3244 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
TC-05	9	3599	Mod-good	TC-05 is located along the same slope that is mapped within the subject land as PCT 3599 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 25% *Angophora costata* and 10% *Syncarpia glomulifera*. The floristics and functions in this plot are similar to those found in the other plots (TC-12 and TC-17) assigned to this vegetation zone within the Yengo IBRA, with *Angophora costata* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.694 with PCT 3599 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
TC-12	13	3599	Mod-good	TC-12 is located along the same crest that is mapped within the subject land as PCT 3599 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 10% *Eucalyptus piperita* and 5% *Angophora costat*a. The floristics and functions in this plot are similar to those found in the other plots (TC-05 and TC-17) assigned to this vegetation zone within the Yengo IBRA, with *Angophora costata* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.703 with PCT 3599 (see Appendix D(Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
TC-17	8	3599	Mod-good	TC-17 is located along the same slope that is mapped within the subject land as PCT 3599 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 8% *Angophora costata* and 4% *Eucalyptus scias*. The floristics and functions in this plot are similar to those found in the other plots (TC-05 and TC-12) assigned to this vegetation zone within the Yengo IBRA, with *Angophora costata* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.714 with PCT 3599 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3617, however the exposed slope that TC-17 resides on is more characteristic of PCT 3599, than the more sheltered slopes of PCT 3617. Furthermore, reference plots for PCT 3599 are significantly closer to TC-17 than are reference plots for PCT 3617. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DL-04	6	3605	Mod-good	DL-04 is located along the same crest that is mapped within the subject land as PCT 3605 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 15% *Eucalyptus racemosa*, 5% *Eucalyptus globoidea* and 5% *Eucalyptus punctata*. The floristics and functions in this plot are similar to those found in the other plots (DL-21, DL-22, HTP-MS-15 and HTP-MS-26) assigned to this vegetation zone within the Yengo IBRA, with *Eucalyptus punctata* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.729 with PCT 3605 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3604, however the mid-story in DL-04 was more representative of PCT 3605 than it was of PCT 3604. This mid-story included Acacia parvipinnula, Exocarpus strictus and Podolobium ilicifolium, with the ground layer consisting of a mix of *Dianella longifolia*, *Entolasia stricta* and *Lepidosperma laterale*. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-21	289	3605	Mod-good	DL-21 is located along similar topography and elevation to what is mapped within the subject land as PCT 3605 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 30% *Eucalyptus sparsifolia* and 5% *Eucalyptus punctata*. The floristics and functions in this plot are similar to those found in the other plots (DL-04, DL-22, HTP-MS-15 and HTP-MS-26) assigned to this vegetation zone within the Yengo IBRA, with *Eucalyptus sparsifolia* and *Eucalyptus punctata* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.684 with PCT 3605 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3239, however DL-21 is located along an exposed slope in Pokolbin State Forest, with a canopy dominated by *Eucalyptus sparsifolia*, which is more representative of PCT 3605 than PCT 3239, which is found on more sheltered slopes with either *Eucalyptus punctata* or *Syncarpia glomulifera* dominant in the canopy. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DL-22	1453	3605	Mod-good	DL-22 is located along similar topography and elevation to what is mapped within the subject land as PCT 3605 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 25% *Eucalyptus sparsifolia* and 5% *Corymbia maculata*. The floristics and functions in this plot are similar to those found in the other plots (DL-04, DL-21, HTP-MS-15 and HTP-MS-26) assigned to this vegetation zone within the Yengo IBRA, with *Eucalyptus sparsifolia* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.686 with PCT 3605 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-26	27	3605	Mod-good	HTP-MS-26 is located along similar topography and elevation to what is mapped within the subject land as PCT 3605 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 15% *Eucalyptus agglomerata* and 12% *Eucalyptus punctata*. The floristics and functions in this plot are similar to those found in the other plots (DL-04, DL-21, DL-22 and HTP-MS-15) assigned to this vegetation zone within the Yengo IBRA, with *Eucalyptus punctata* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.666 with PCT 3605 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3239, however HTP-MS-26 is located along an exposed slope in Corrabare State Forest and is dominated by a stringybark (*Eucalyptus agglomerata*), its likely that this plot is more representative of PCT 3605 than it is of PCT 3239, which is found on more sheltered slopes with either *Eucalyptus punctata* or *Syncarpia glomulifera* dominant in the canopy. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
TC-18	21	3617	Mod-good	TC-17 is located along the same slope that is mapped within the subject land as PCT 3617 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 16% *Angophora costata*, 15% *Eucalyptus piperita* and 8% *Syncarpia glomulifera*. This is consistent with the BioNet Vegetation Classification Database description of PCT 3617, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3617 (see Appendix D (Vegetation survey data)). However, this plot occurs on sandy soils near a crest in Corrabare State Forest. Its canopy is consistent with PCT 3617, with a high canopy cover of *Angophora costata* and *Eucalyptus piperita*, with *Syncarpia glomulifera* also present. The mid-story consisted of characteristic species that included *Banksia spinulosa*, *Platysace linearifolia* and *Lomatia silaifolia*, with the ground layer consisting of *Entolasia stricta*, *Pteridium esculentum* and *Lomandra obliqua*. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
TC-37	10	4072	Mod-good	TC-37 is located along similar topography to what is mapped within the subject land as PCT 4072 (Mod-good) in the Yengo IBRA subregion. The canopy of the plot is composed of 60% *Casuarina cunninghamiana subsp. cunninghamia,* with *Alphitonia excelsa* and *Melia azedarach* present as small trees. This is consistent with BioNet Vegetation Classification Database description of PCT 4072, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.619 with PCT 4072 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
Hunter				
TC-40	19	3086	Mod-good	TC-40 is located along similar topography to what is mapped within the subject land as PCT 3086 (Mod-good) in the Hunter IBRA subregion. The canopy of the plot is composed of 15% *Eucalyptus acmenoides* and 15% *Melaleuca styphelioides,* with 18% cover of *Melicope micrococca* also present as a small tree. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong forth centroid match of 0.732 with PCT 3086 (see Appendix D (Vegetation survey data)). The first centroid match was PCT 3076, however this PCT is described as occurring in gullies or slopes between Muswellbrook and Singleton, and hills in the Manning Valley north of Gloucester. While part of the project resides within this distribution, TC-40 is located to the south of this range. The second centroid match was PCT 3082, however this PCT occurs mainly on Wianamatta Group shales in the Kurrajong area, with more restricted and isolated occurrences in the Sackville and Ryde areas. The third centroid match was PCT 3073, however this PCT is restricted to the Macleay Hastings IBRA subregion. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-67	596	3241	Mod-good	DL-67 is located along similar topography to what is mapped within the subject land as PCT 3241 (Mod-good) in the Hunter IBRA subregion, and is located near a past confirmed plot for PCT 3241. The canopy of the plot is composed of 50% *Acmena smithii*, 15% *Eucalyptus acmenoides* and 15% *Glochidion ferdinandi*. This is consistent with BioNet Vegetation Classification Database description of PCT 3241, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong third centroid match of 0.716 with PCT 3241 (see Appendix D (Vegetation survey data)). The second centroid match was PCT 3318 however this PCT doesn't occur within the Hunter IBRA subregion. The first centroid match was PCT 3236, which grades into tall moist grassy forest PCT 3241 on less sheltered aspects. DL-67 has a more exposed aspect and lacks the high vine cover and abundance that would be present in PCT 3236. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
TC-39	7	3241	Mod-good	TC-39 is located along similar topography to what is mapped within the subject land as PCT 3241 (Mod-good) in the Hunter IBRA subregion. The canopy of the plot is composed of 40% *Eucalyptus acmenoides* and 35% *Eucalyptus fergusonii,* with a sparse cover of *Allocasuarina torulosa* also present. This is consistent with BioNet Vegetation Classification Database description of PCT 3241, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.684 with PCT 3241 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
TC-44	14	3244	Mod-good	TC-44 is located along similar topography to what is mapped within the subject land as PCT 3244 (Mod-good) in the Hunter IBRA subregion. The canopy of the plot is composed of 35% *Corymbia maculata,* 17% *Eucalyptus acmenoides* and 6% *Eucalyptus punctata*. This is consistent with BioNet Vegetation Classification Database description of PCT 3244, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.667 with PCT 3244 (see Appendix D (Vegetation survey data)). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-23	123	3314	Disturbed Grassland	HTP-MS-23 is located along the same slope that is mapped within the subject land as PCT 3314 (Disturbed Grassland) in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 25% *Austrostipa verticillata*, 15% *Cynodon dactylon*, 10% *Bothriochloa decipiens var. decipiens* and 10% *Sporobolus creber*. The floristics and functions in this plot are similar to those found in the other plots (NE-2, TS-12 and TS-13) assigned to this vegetation zone within the Hunter IBRA, with *Austrostipa verticillata* and *Sporobolus creber* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3314 (see Appendix D (Vegetation survey data)). However, since this plot is located within the disturbed grassland condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
NE-2	9	3314	Disturbed Grassland	NE-2 is located along the same slope that is mapped within the subject land as PCT 3314 (Disturbed Grassland and Thinned) in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 30% *Aristida spp*. and 15% *Sporobolus creber*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-23, TS-12 and TS-13) assigned to this vegetation zone within the Hunter IBRA, with and *Aristida spp*. and *Sporobolus creber* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3314 (see Appendix D (Vegetation survey data)). However, since this plot is located within the disturbed grassland condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
TS-13	21	3314	Disturbed Grassland	TS-13 is located along the same slope that is mapped within the subject land as PCT 3314 (Disturbed Grassland) in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 10% *Austrostipa verticillata* and 5% *Sporobolus creber*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-23, TS-12 and NE-2) assigned to this vegetation zone within the Hunter IBRA, with and *Austrostipa verticillata* and *Sporobolus creber* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3314 (see Appendix D (Vegetation survey data)). However, since this plot is located within the disturbed grassland condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DR-07	70	3314	Poor	DR-07 is located along the same hill that is mapped within the subject land as PCT 3314 (Poor) in the Hunter IBRA subregion. The canopy of the plot is composed of 10% *Eucalyptus moluccana* with an exotic cover of 30% *Hyparrhenia hirta*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-88 and TC-08) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus moluccana* and *Hyparrhenia hirta* recorded in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.729 with PCT 3314 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DL-37	100	3314	Thinned	DL-37 is located along the same terrain that is mapped within the subject land as PCT 3314 (Thinned) in the Hunter IBRA subregion. The canopy of the plot is composed of 40% *Eucalyptus moluccana* and 20% *Allocasuarina luehmannii*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-03, HTP-MS-05 and NE-1) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus moluccana* and *Allocasuarina luehmannii* recorded in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3314 (see Appendix D). However, it consists of a canopy dominated by *Eucalyptus moluccana* with a heavy regrowth of *Allocasuarina luehmannii* in the midstory. Other potential communities for this plot include PCT 3431 and 3485, which share similar features with PCT 3314. However, the canopy recorded in DL-37 only consists of *Eucalyptus moluccana*, with other diagnostic canopy species for PCT 3431 (*E. crebra*) and PCT 3485 (*E. dawsonii*) absent from the plot and its respective patch. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-03	317	3314	Thinned	HTP-MS-03 is located along the same terrain that is mapped within the subject land as PCT 3314 (Thinned) in the Hunter IBRA subregion. The canopy of the plot is composed of 8% *Eucalyptus moluccana* and 28% *Allocasuarina luehmannii*. The floristics and functions in this plot are similar to those found in the other plots (DL-37, HTP-MS-05 and NE-1) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus moluccana* and *Allocasuarina luehmannii* recorded in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.749 with PCT 3314 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-05	147	3314	Thinned	HTP-MS-03 is located along the same terrain that is mapped within the subject land as PCT 3314 (Thinned) in the Hunter IBRA subregion. The canopy of the plot is composed of 5% *Eucalyptus moluccana* and 36% *Allocasuarina luehmannii*. The floristics and functions in this plot are similar to those found in the other plots (DL-37, HTP-MS-03 and NE-1) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus moluccana* and *Allocasuarina luehmannii* recorded in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a moderate firth centroid match of 0.768 with PCT 3314 (see Appendix D). HTP-MS-05 had a higher centroid match with PCT 3404, 3431, 3485 and 4015, than it did with PCT 3314. HTP-MS-05 had a canopy that consisted of *Eucalyptus moluccana* with heavy regrowth of *Allocasuarina luehmannii* in the midstory. The mid-dense ground layer was mainly comprised of *Austrostipa verticillata, Cymbopogon refractus* and *Sporobolus creber*. It doesn't represent PCT 3404, which commonly includes a high cover of *Eucalyptus conica*, occasionally with *Eucalyptus melliodora*. It doesn't represent PCT 4015, which commonly consists of a high cover of *Casuarina glauca* either exclusively or in combination with a sparse cover of red gums. PCT 3485 isn't easy to distinguish from PCT 3314 and 3431 because it shares many of the ground cover species in a similar topographic position, however it differs in that *Eucalyptus dawsonii* is very frequently recorded with a high foliage cover and is almost absent from PCT 3314 and 3431. Similar to PCT 3431, PCT 3314 is also widespread on the Permian sediments but is associated with rises and areas of greater relief and is generally shrubbier and only rarely includes *Eucalyptus crebra*, which is similar to what was recorded in HTP-MS-05. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-75	190	3315	Derived	DL-75 is located along the same terrain that is mapped within the subject land as PCT 3315 (Derived and Thinned) in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 70% *Cymbopogon refractus*. The floristics and functions in this plot are similar to those found in the other plots (DL-76 and DL-78) assigned to this vegetation zone within the Hunter IBRA, with *Cymbopogon refractus* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3315 (see Appendix D). However, since this plot is located within the disturbed grassland condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DL-64	529	3315	Thinned	DL-64 is located along similar terrain that is mapped within the subject land as PCT 3315 (Derived and Thinned) in the Hunter IBRA subregion. The canopy of the plot is composed of 20% *Eucalyptus moluccana*, 3% *Eucalyptus crebra* and 3% *Corymbia maculata*. The floristics and functions in this plot are similar to those found in the other plots (DL-74 and DL-77) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus crebra* and *Corymbia maculata* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong firth centroid match of 0.726 with PCT 3315 (see Appendix D). DL-64 had a higher centroid match with PCT 3319, 3329, 3431 and 3446, than it did for 3315. PCT 3319 and 3329 don't occur within the Hunter IBRA subregion. DL-64 consisted of a canopy dominated by *Eucalyptus moluccana*, with *E. crebra* and *Corymbia maculata* also present. The sparse midstory included 3 species of Acacia (*A. implexa, A. linearifolia* and *A. parramattensis*) with *Solanum stelligerum* being the most abundant. The dense ground layer had a diverse mix of grasses and forbs, with *Cymbopogon refractus* and *Sporobulus creber* having the greatest cover. PCT 3446 differs from PCT 3315, in that PCT 3446 very frequently has *Breynia oblongifolia, Leucopogon juniperinus, Persoonia linearis* and *Notelaea longifolia* its mid-stratum, which isn't the case in DL-64, with only *Breynia oblongfolia* present at a very low abundance. While DL-64 has a canopy that's difficult to distinguish between PCT 3315 and 3431, the absence of *Allocasuarina luehmannii* in the plot likely reduces the potential of it belonging to PCT 3431. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-77	19	3315	Thinned	DL-77 is located along the same terrain that is mapped within the subject land as PCT 3315 (Derived and Thinned) in the Hunter IBRA subregion. The canopy of the plot is composed of 15% *Eucalyptus paniculata*, with some plantings within the existing vegetation. The floristics and functions in this plot are similar to those found in the other plots (DL-64 and DL-74) assigned to this vegetation zone within the Hunter IBRA, however *Eucalyptus paniculata* is absent from these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a moderate third centroid match of 0.755 with PCT 3315 (see Appendix D). DL-77 had a higher centroid match with PCT 3431 and 4015 than it did with PCT 3315. The output from this plot was likely affected due to the plot also consisting of planted *Eucalyptus paniculata*, with *Corymbia maculata* absent from the plot. This plot was assigned to PCT 3315 due to neighbouring vegetation being assigned to PCT 3315 (thinned) and PCT 3315 (derived). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DL-40	361	3431	Disturbed Grassland	DL-40 is located along similar terrain that is mapped within the subject land as PCT 3431 (Disturbed Grassland) in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 50% *Sporobolus creber*, 20% *Cynodon dactylon* and 10% *Cymbopogon refractus*. The floristics and functions in this plot are similar to those found in the other plots (DR-01, DR-04 and DR-05) assigned to this vegetation zone within the Hunter IBRA, with *Sporobolus creber* present in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a moderate second centroid match of 0.797 with PCT 3431 (see Appendix D). The second centroid match was PCT 3723, however this PCT doesn't occur within the Hunter IBRA subregion. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DR-01	46	3431	Disturbed Grassland	DR-01 is located along the same terrain that is mapped within the subject land as PCT 3431 (Disturbed Grassland) in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 55% *Bothriochloa biloba* and 20% *Sporobolus creber*. The floristics and functions in this plot are similar to those found in the other plots (DL-40, DR-04 and DR-05) assigned to this vegetation zone within the Hunter IBRA, with *Sporobolus creber* present in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 3431 (see Appendix D). However, since this plot is located within the disturbed grassland condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DR-04	137	3431	Disturbed Grassland	DR-04 is located along the same terrain that is mapped within the subject land as PCT 3431 (Disturbed Grassland) in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 30% *Sporobolus creber* and 20% *Chloris ventricosa*. The floristics and functions in this plot are similar to those found in the other plots (DL-40, DR-01 and DR-05) assigned to this vegetation zone within the Hunter IBRA, with *Sporobolus creber* present in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a weak firth centroid match of 0.899 with PCT 3431 (see Appendix D). However, since this plot is located within the disturbed grassland condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DR-05	99	3431	Disturbed Grassland	DR-05 is located along the same terrain that is mapped within the subject land as PCT 3431 (Disturbed Grassland) in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 40% *Sporobolus creber* and 15% *Chloris ventricosa*. The floristics and functions in this plot are similar to those found in the other plots (DL-40, DR-01 and DR-04) assigned to this vegetation zone within the Hunter IBRA, with *Sporobolus creber* present in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a weak third centroid match of 0.832 with PCT 3431 (see Appendix D). However, since this plot is located within the disturbed grassland condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DR-02	151	3431	Plantation	DR-02 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 5% *Eucalyptus blakelyi x camaldulensis* and 20% *Allocasuarina luehmannii*. The floristics and functions in this plot are similar to those found in the other plots (DR-03 and HTP-MS-01) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus blakelyi* and *Allocasuarina luehmannii* present in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a moderate third centroid match of 0.787 with PCT 3431 (see Appendix D). However, since this plot is located within the plantation condition class and has a modified canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DR-03	44	3431	Plantation	DR-03 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 10% *Eucalyptus blakelyi* and 15% *Allocasuarina luehmannii*. The floristics and functions in this plot are similar to those found in the other plots (DR-02 and HTP-MS-01) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus blakelyi* and *Allocasuarina luehmannii* present in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a weak third centroid match of 0.803 with PCT 3431 (see Appendix D). However, since this plot is located within the plantation condition class and has a modified canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-01	119	3431	Plantation	HTP-MS-01 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 5% *Eucalyptus blakelyi x camaldulensis* and 5% *Allocasuarina luehmannii*. The floristics and functions in this plot are similar to those found in the other plots (DR-02 and DR-03) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus blakelyi* and *Allocasuarina luehmannii* present in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a weak second centroid match of 0.806 with PCT 3431 (see Appendix D). However, since this plot is located within the plantation condition class and has a modified canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-52	44	3431	Poor	DL-52 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 15% *Eucalyptus crebra*. The floristics and functions in this plot are similar to those found in the other plots (DL-26 and HTP-MS-02) assigned to this vegetation zone within the Hunter IBRA, however *Eucalyptus crebra* is absent in these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a weak second centroid match of 0.803 with PCT 3431 (see Appendix D). The first centroid match was PCT 3462, however this PCT doesn't occur within the Hunter IBRA subregion. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
HTP-MS-02	145	3431	Poor	HTP-MS-02 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 5% *Allocasuarina luehmannii*. The floristics and functions in this plot are similar to those found in the other plots (DL-26 and HTP-MS-02) assigned to this vegetation zone within the Hunter IBRA, with *Allocasuarina luehmannii* present in some of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a moderate third centroid match of 0.775 with PCT 3431 (see Appendix D). HTP-MS-02 had a higher centroid match with PCT 3404 and 3485, than it did with 3431. This plot consists of mid-story regrowth of *Allocasuarina luehmannii* and *Acacia salicina*, with no other tree species present. The grassy ground layer is mainly dominated by *Aristida ramosa, Chloris ventricosa* and *Sporobolus creber*, with *Chielanthes sieberi*. The absence of a canopy made it difficult to distinguish these 3 PCTs, with neighbouring vegetation used to determine what the dominant canopy species may have been. Since there was a dominance of *Eucalyptus crebra* nearby and a complete absence of *Eucalyptus conica* (3404) and *Eucalyptus dawsonii* (3485), HTP-MS-02 was assigned to PCT 3431. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-45	259	3431	Thinned	DL-45 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 40% *Eucalyptus moluccana*. The floristics and functions in this plot are similar to those found in the other plots (DL-30, DL-46, DL-47 and DR-06) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus moluccana* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.699 with PCT 3431 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DL-46	296	3431	Thinned	DL-46 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 30% *Eucalyptus moluccana* and 10% *Eucalyptus crebra*. The floristics and functions in this plot are similar to those found in the other plots (DL-30, DL-45, DL-47 and DR-06) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus moluccana* and *Eucalyptus crebra* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.665 with PCT 3431 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-47	365	3431	Thinned	DL-47 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 5% *Eucalyptus crebra* and 60% *Allocasuarina luehmannii*. The floristics and functions in this plot are similar to those found in the other plots (DL-30, DL-45, DL-46 and DR-06) assigned to this vegetation zone within the Hunter IBRA, with *Eucalyptus crebra* and *Allocasuarina luehmannii* present in most of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.746 with PCT 3431 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DR-06	182	3431	Thinned	DR-06 is located along the same terrain that is mapped within the subject land as PCT 3431 in the Hunter IBRA subregion. The canopy of the plot is composed of 20% *Eucalyptus tereticornis* and 5% *Notelaea microcarpa*. The floristics and functions in this plot are similar to those found in the other plots (DL-30, DL-45, DL-46 and DL-47) assigned to this vegetation zone within the Hunter IBRA, however *Eucalyptus tereticornis* and *Notelaea microcarpa* wasn't recorded in any of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.727 with PCT 3431 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
TC-45	3	3605	Mod-good	TC-45 is located along the same terrain that is mapped within the subject land as PCT 3605 in the Hunter IBRA subregion. The canopy of the plot is composed of 30% *Eucalyptus sparsifolia,* 20% *Angophora euryphylla* and 5% *Eucalyptus punctata*. The floristics and functions in this plot are similar to those found in the other plots (DL-04, DL-21, DL-22, HTP-MS-15 and HTP-MS-26) assigned to this vegetation zone within the neighbouring Yengo IBRA subregion, however species of ironbarks and stringybarks tend to differ across these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong second centroid match of 0.705 with PCT 3605 (see Appendix D). TC had a higher centroid match for PCT 3604, than it did for PCT 3605, which have a moderate floristic overlap with each other. While the canopies of these PCTs are difficult to differentiate, the mid-story in TC-45 was more representative of PCT 3605 than it was of PCT 3604. This mid-story included *Allocasuarina torulosa, Persoonia linearis* and *Podolobium ilicifolium*, with the ground layer consisting of a mix of *Dianella revoluta, Entolasia stricta, Lepidosperma laterale* and *Lomandra filiformis*. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-50	135	4015	Derived	DL-50 is located along similar terrain that is mapped within the subject land as PCT 4015 in the Hunter IBRA subregion. In the absence of canopy, the plot groundcover is composed of 40% *Microlaena stipoides* and 10% *Juncus usitatus*. The floristics and functions in this plot are similar to those found in the other plots (TC-49) assigned to this vegetation zone within the Hunter IBRA, with *Juncus usitatus* present in all these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 4015 (see Appendix D). However, since this plot is located within the derived condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
TC-49	19	4015	Derived	TC-49 is located along similar terrain that is mapped within the subject land as PCT 4015 in the Hunter IBRA subregion. In the poor presence of canopy species (*Casuarina cunninghamiana subsp. cunninghamiana*), the plot groundcover is composed of 25% *Cynodon dactylon* and 5% *Juncus usitatus*. The floristics and functions in this plot are similar to those found in the other plots (DL-50) assigned to this vegetation zone within the Hunter IBRA, with *Juncus usitatus* present in this plot. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no significant centroid matches with PCT 4015 (see Appendix D). However, since this plot is located within the derived condition class and lacked a canopy, it wasn't processed further with this tool and instead were assigned a PCT based on nearby areas of intact vegetation. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-72	632	4015	Thinned	DL-72 is located along similar terrain that is mapped within the subject land as PCT 4015 in the Hunter IBRA subregion. The canopy of the plot is composed of 60% *Casuarina glauca*. The floristics and functions in this plot are similar to those found in the other plots (HTP-MS-39 and DL-29) assigned to this vegetation zone within the Hunter IBRA, with *Casuarina glauca* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.714 with PCT 4015 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
HTP-MS-39	45	4015	Thinned	HTP-MS-39 is located along same terrain that is mapped within the subject land as PCT 4015 in the Hunter IBRA subregion. The canopy of the plot is composed of 8% *Casuarina glauca* and 8% *Eucalyptus dawsonii*. The floristics and functions in this plot are similar to those found in the other plots (DL-29 and DL-72) assigned to this vegetation zone within the Hunter IBRA, with *Casuarina glauca* present in all of these plots. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a strong first centroid match of 0.651 with PCT 4015 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Vegetation integrity plot name	Distance from subject land (approx.) (m)	PCT No.	Condition Class	Justification for the use of the data
DL-41	56	4039	Mod-good	DL-41 is located along the same stream that is mapped within the subject land as PCT 4039 (Mod-good) in the Hunter IBRA subregion. The canopy of the plot is composed of 20% *Eucalyptus tereticornis* and 10% *Eucalyptus punctata*. This is consistent with the BioNet Vegetation Classification Database description of PCT 4039, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have no centroid matches with PCT 4039 (see Appendix D). However, it was located on the sandy alluvial soils along the flats that drain the sandstone slopes of Pokolbin State Forest. The canopy of this plot was mainly dominated by *Eucalyptus tereticornis*, with *Eucalyptus punctata* also present. The mid-story consisted of a mix of *Acacia implexa, Breynia oblongifolia* and *Trema tomentosa var. aspera*, with the grassy ground layer including *Cynodon dactylon, Gahnia aspera, Microlaena stipoides* and *Oplismenus aemulus*. The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.
DL-68	773	4072	Mod-good	DL-68 is located along same stream that is mapped within the subject land as PCT 4072 in the Hunter IBRA subregion, and is located near a past confirmed plot for PCT 4072. The canopy of the plot is composed of 40% *Casuarina cunninghamiana subsp. cunninghamiana*. This is consistent with the BioNet Vegetation Classification Database description of PCT 4072, and with what's present within the areas mapped within the subject land. This plot was run through the Plot to PCT Assignment Tool where it was identified to have a moderate first centroid match of 0.759 with PCT 4072 (see Appendix D). The location of this plot is shown in Figure 14.7 demonstrating how this plot relates to the vegetation zones mapped in this BDAR.

Appendix D-3
Plot to PCT assignment tool results

IBRA	PCT	Condition	Plot	PCT_ Match 1	Distance_to _Centroid1	PCT_ Match 2	Distance_to _Centroid2	PCT_ Match 3	Distance_to _Centroid3	PCT_ Match 4	Distance_to _Centroid4	PCT_ Match 5	Distance_to _Centroid5
Wyong	3029 – Lower North Wet Gully Palm Rainforest	Mod-good	HTP-MS-43	3028	0.674	3029	0.68	3036	0.7	3037	0.72	3025	0.739
Wyong	3029 – Lower North Wet Gully Palm Rainforest	Mod-good	HTP-MS-52	3029	0.645	3028	0.648	3025	0.691	3036	0.719	3037	0.724
Wyong	3029 – Lower North Wet Gully Palm Rainforest	Mod-good	HTP-MS-59	3029	0.626	3036	0.693	3028	0.695	3165	0.737	3037	0.742
Wyong	3029 – Lower North Wet Gully Palm Rainforest	Mod-good	HTP-MS-63	3028	0.654	3037	0.664	3029	0.677	3043	0.71	3041	0.721
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Derived	LCEB_ HTP4	3150	0.738	3167	0.74	3174	0.75	3270	0.758	3158	0.759
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Derived	LCEB_ HTP7	3242	0.722	3263	0.74	3230	0.741	3248	0.75	3155	0.76
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Mod-good	HTP-MS-42	3150	0.684	3158	0.697	3174	0.718	3166	0.722	3206	0.73
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Mod-good	HTP-MS-44	3270	0.722	3150	0.728	3167	0.745	3242	0.745	3155	0.754
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Mod-good	HTP-MS-56	3028	0.665	3029	0.672	3166	0.682	3206	0.689	3150	0.69
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Mod-good	HTP-MS-58	3150	0.69	3029	0.693	3174	0.697	3158	0.698	3166	0.712
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Mod-good	LCSM-19	3167	0.696	3169	0.711	3150	0.714	3242	0.716	3205	0.721
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Plantation	HTP-MS-50	3025	0.755	3150	0.757	3153	0.79	3029	0.794	3158	0.795
Wyong	3150 – Hunter Coast Ranges Turpentine Wet Forest	Plantation	LCSM-15	3082	0.782	3150	0.801	3242	0.801	3158	0.805	3160	0.807
Wyong	3230 – Central Coast Escarpment Moist Forest	Derived	HTP-MS-61	3230	0.709	3250	0.741	3248	0.745	3592	0.755	3176	0.756
Wyong	3230 – Central Coast Escarpment Moist Forest	Derived	LCEB_ HTP1	3250	0.647	3230	0.695	3581	0.695	3634	0.699	4161	0.701
Wyong	3230 – Central Coast Escarpment Moist Forest	Derived	LCEB_ HTP5	3230	0.753	4003	0.761	3250	0.765	3435	0.765	4021	0.767

IBRA	PCT	Condition	Plot	PCT_ Match 1	Distance_to _Centroid1	PCT_ Match 2	Distance_to _Centroid2	PCT_ Match 3	Distance_to _Centroid3	PCT_ Match 4	Distance_to _Centroid4	PCT_ Match 5	Distance_to _Centroid5
Wyong	3230 – Central Coast Escarpment Moist Forest	Mod-good	HTP-MS-48	3230	0.739	3263	0.743	3242	0.748	3176	0.765	3140	0.771
Wyong	3230 – Central Coast Escarpment Moist Forest	Mod-good	HTP-MS-60	3230	0.639	3202	0.649	3248	0.676	3263	0.685	4161	0.689
Wyong	3230 – Central Coast Escarpment Moist Forest	Mod-good	HTP-MS-62	3248	0.644	3230	0.645	3202	0.676	3250	0.681	3154	0.688
Wyong	3230 – Central Coast Escarpment Moist Forest	Mod-good	LCSM-03	3140	0.722	3208	0.742	3230	0.747	3202	0.751	3154	0.754
Wyong	3230 – Central Coast Escarpment Moist Forest	Mod-good	LCSM-08	3202	0.648	3621	0.654	3230	0.676	3176	0.68	3140	0.688
Wyong	3230 – Central Coast Escarpment Moist Forest	Mod-good	LCSM-11	4115	0.714	3230	0.722	3167	0.735	3248	0.745	3202	0.752
Wyong	3230 – Central Coast Escarpment Moist Forest	Plantation	HTP-MS-57	3230	0.697	3242	0.703	3154	0.704	3263	0.708	3250	0.725
Wyong	3230 – Central Coast Escarpment Moist Forest	Plantation	LCSM-12	3263	0.756	3164	0.774	3242	0.774	3230	0.78	3154	0.782
Wyong	3230 – Central Coast Escarpment Moist Forest	Plantation	LCSM-14	3082	0.76	3111	0.794	3242	0.796	3074	0.799	3150	0.804
Wyong	3230 – Central Coast Escarpment Moist Forest	Plantation	LCSM-17	3152	0.764	3242	0.784	3164	0.802	3268	0.803	3160	0.804
Wyong	3239 – Hunter Range Sheltered Grey Gum Forest	Mod-good	LCSM-26	3239	0.659	4161	0.673	3263	0.677	3230	0.69	3606	0.69
Wyong	3239 – Hunter Range Sheltered Grey Gum Forest	Mod-good	TS-17	3597	0.697	3239	0.729	3606	0.741	4161	0.745	3604	0.75
Wyong	3242 – Lower North Ranges Turpentine Moist Forest	Mod-good	HTP-MS-11	3170	0.693	3241	0.718	3242	0.719	3144	0.727	3201	0.732
Wyong	3242 – Lower North Ranges Turpentine Moist Forest	Mod-good	HTP-MS-17	3242	0.714	3074	0.74	3164	0.74	3152	0.742	3236	0.743
Wyong	3242 – Lower North Ranges Turpentine Moist Forest	Mod-good	HTP-MS-46	3242	0.695	3230	0.723	3155	0.728	3152	0.733	3154	0.735
Wyong	3242 – Lower North Ranges Turpentine Moist Forest	Mod-good	HTP-MS-54	3170	0.711	3201	0.719	3216	0.728	3242	0.745	3169	0.757

IBRA	PCT	Condition	Plot	PCT_ Match 1	Distance_to _Centroid1	PCT_ Match 2	Distance_to _Centroid2	PCT_ Match 3	Distance_to _Centroid3	PCT_ Match 4	Distance_to _Centroid4	PCT_ Match 5	Distance_to _Centroid5
Wyong	3242 – Lower North Ranges Turpentine Moist Forest	Mod-good	HTP-MS-55	3170	0.69	3242	0.721	3169	0.739	3236	0.741	3144	0.742
Wyong	3244 – Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Mod-good	HTP-MS-53	3244	0.694	3239	0.709	3468	0.724	3263	0.725	3605	0.727
Wyong	3250 – Northern Foothills Blackbutt Grassy Forest	Derived	HTP-MS-100	3250	0.706	3581	0.741	3277	0.747	3574	0.75	3435	0.753
Wyong	3250 – Northern Foothills Blackbutt Grassy Forest	Mod-good	TC-14	3250	0.67	3581	0.712	3244	0.717	3252	0.731	3574	0.735
Wyong	3250 – Northern Foothills Blackbutt Grassy Forest	Mod-good	TC-15	3250	0.606	3248	0.649	3230	0.656	3154	0.67	3581	0.67
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Derived	LCEB_ HTP11	3263	0.762	3154	0.774	3273	0.774	3230	0.775	3250	0.775
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Derived	LCEB_ HTP9	3634	0.77	3260	0.773	3244	0.805	3263	0.808	3321	0.81
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Derived	SMSO_ 08	3263	0.732	3250	0.746	3230	0.76	3262	0.76	3242	0.767
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Derived	SMSO_ 09	3263	0.749	3230	0.761	3634	0.784	3618	0.786	3581	0.79
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Mod-good	HTP-MS-12	3263	0.654	3244	0.676	3230	0.68	3239	0.682	3262	0.698
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Mod-good	HTP-MS-16	3263	0.667	3239	0.686	3230	0.69	3234	0.693	3237	0.695
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Mod-good	LCSM-21	3263	0.697	3239	0.703	4161	0.728	3606	0.729	3230	0.732
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Mod-good	LCSM-24	3606	0.706	3263	0.711	3239	0.714	3276	0.725	3597	0.733
Wyong	3263 – Watagan Range Turpentine-Mahogany Grassy Forest	Mod-good	LCSM-25	3263	0.689	3152	0.692	3606	0.704	3230	0.709	3239	0.714
Wyong	3433 – Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Derived	SMSO_ 06	3435	0.759	3597	0.766	3433	0.776	3432	0.779	3447	0.779
Wyong	3433 – Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Mod-good	HTP-MS-99	3433	0.717	3444	0.719	3437	0.73	3447	0.73	3263	0.737

IBRA	PCT	Condition	Plot	PCT_Match 1	Distance_to_Centroid1	PCT_Match 2	Distance_to_Centroid2	PCT_Match 3	Distance_to_Centroid3	PCT_Match 4	Distance_to_Centroid4	PCT_Match 5	Distance_to_Centroid5
Wyong	3436 – Hunter Coast Sandy Creekflat Low Paperbark Scrub	Mod-good	Benchmark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Wyong	3581 – Hunter Coast Foothills Apple Forest	Mod-good	TC-16	3581	0.636	3250	0.637	3620	0.645	4161	0.664	3230	0.671
Wyong	3582 – Hunter Coast Lowland Apple-Bloodwood Forest	Derived	HTP-MS-91	3582	0.729	4122	0.74	3432	0.753	3581	0.756	3583	0.764
Wyong	3582 – Hunter Coast Lowland Apple-Bloodwood Forest	Derived	HTP-MS-96	3582	0.769	3583	0.781	3794	0.789	3432	0.795	3998	0.808
Wyong	3582 – Hunter Coast Lowland Apple-Bloodwood Forest	Derived	HTP-MS-97	3583	0.732	3582	0.737	3259	0.77	3794	0.771	3432	0.778
Wyong	3582 – Hunter Coast Lowland Apple-Bloodwood Forest	Mod-good	DL-09	3582	0.66	4122	0.668	3583	0.674	3259	0.708	3615	0.715
Wyong	3582 – Hunter Coast Lowland Apple-Bloodwood Forest	Mod-good	SMSO_04	3582	0.696	4122	0.718	3432	0.734	3654	0.738	3583	0.74
Wyong	3583 – Hunter Coast Lowland Scribbly Gum Forest	Derived	HTP-MS-101	3583	0.718	3794	0.755	3814	0.764	3813	0.772	3593	0.776
Wyong	3583 – Hunter Coast Lowland Scribbly Gum Forest	Derived	HTP-MS-92	3583	0.722	3794	0.763	3582	0.769	3813	0.805	3259	0.808
Wyong	3583 – Hunter Coast Lowland Scribbly Gum Forest	Derived	HTP-MS-94	3432	0.71	3582	0.751	3433	0.771	3448	0.793	3616	0.795
Wyong	3583 – Hunter Coast Lowland Scribbly Gum Forest	Mod-good	HTP-MS-102	3583	0.621	3582	0.685	3794	0.696	3593	0.719	3578	0.741
Wyong	3583 – Hunter Coast Lowland Scribbly Gum Forest	Mod-good	HTP-MS-93	3583	0.656	3582	0.692	3601	0.722	3619	0.728	3593	0.741
Wyong	3583 – Hunter Coast Lowland Scribbly Gum Forest	Mod-good	HTP-MS-95	3583	0.669	3582	0.723	4122	0.728	3794	0.736	3593	0.754
Wyong	3617 – Sydney Hinterland Peppermint-Apple Forest	Mod-good	HTP-MS-65	3598	0.733	3617	0.733	3578	0.74	3694	0.741	3593	0.743
Wyong	3617 – Sydney Hinterland Peppermint-Apple Forest	Mod-good	LCSM-05	3617	0.743	3615	0.773	3611	0.779	3589	0.78	3603	0.78
Wyong	3617 – Sydney Hinterland Peppermint-Apple Forest	Mod-good	LCSM-06	3589	0.685	3617	0.709	3653	0.71	3612	0.716	3689	0.718

IBRA	PCT	Condition	Plot	PCT_ Match 1	Distance_to _Centroid1	PCT_ Match 2	Distance_to _Centroid2	PCT_ Match 3	Distance_to _Centroid3	PCT_ Match 4	Distance_to _Centroid4	PCT_ Match 5	Distance_to _Centroid5
Wyong	3617 – Sydney Hinterland Peppermint-Apple Forest	Mod-good	TS-04	3617	0.74	3694	0.763	3578	0.765	3593	0.768	3685	0.768
Wyong	3621 – Sydney Hinterland Turpentine-Apple Gully Forest	Mod-good	LCSM-04	3621	0.654	3589	0.668	4161	0.674	3176	0.679	3202	0.679
Wyong	3621 – Sydney Hinterland Turpentine-Apple Gully Forest	Mod-good	LCSM-07	3589	0.671	3621	0.678	3202	0.688	3591	0.689	3617	0.707
Wyong	3621 – Sydney Hinterland Turpentine-Apple Gully Forest	Mod-good	LCSM-10	3621	0.717	3591	0.719	3570	0.723	3587	0.723	3612	0.728
Wyong	4042 – Lower North Riverflat Eucalypt-Paperbark Forest	Derived	SMSO_03	4059	0.771	3594	0.772	3260	0.775	3273	0.777	3234	0.781
Wyong	4042 – Lower North Riverflat Eucalypt-Paperbark Forest	Mod-good	DL-11	4042	0.689	4044	0.712	4020	0.718	4057	0.719	3224	0.751
Wyong	4042 – Lower North Riverflat Eucalypt-Paperbark Forest	Mod-good	DL-17	4042	0.707	4010	0.724	4044	0.744	4020	0.745	3224	0.746
Wyong	4042 – Lower North Riverflat Eucalypt-Paperbark Forest	Mod-good	SMSO_01	4042	0.755	4020	0.764	4044	0.766	4049	0.774	4036	0.779
Wyong	4044 – Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	Derived	SMSO_05	4155	0.807	4059	0.808	3125	0.816	4039	0.817	3258	0.819
Wyong	4044 – Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	Mod-good	HTP-MS-98	4044	0.665	4042	0.692	4049	0.743	3258	0.745	4020	0.751
Yengo	3086 – Lower North Hinterland Riparian Dry Rainforest	Mod-good	HTP-MS-74	3087	0.718	3086	0.722	3013	0.729	3036	0.738	3100	0.748
Yengo	3087 – Lower North Ranges Riparian Turpentine Forest	Mod-good	Bench-mark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yengo	3087 – Lower North Ranges Riparian Turpentine Forest	Mod-good	TC-19	3152	0.701	3151	0.719	3111	0.738	3087	0.753	3082	0.764
Yengo	3151 – Northwest Sydney Sandstone Grey Myrtle Dry Rainforest	Mod-good	HTP-MS-75	3151	0.684	3110	0.689	3098	0.694	3074	0.705	3236	0.706
Yengo	3152 – Hunter Range Turpentine-Grey Myrtle Gully Forest	Mod-good	TL02	3152	0.696	3151	0.714	3110	0.751	3164	0.762	3074	0.763
Yengo	3230 – Central Coast Escarpment Moist Forest	Mod-good	HTP-MS-13	3230	0.718	3234	0.725	3237	0.727	3263	0.728	3244	0.738

IBRA	PCT	Condition	Plot	PCT_ Match 1	Distance_to _Centroid1	PCT_ Match 2	Distance_to _Centroid2	PCT_ Match 3	Distance_to _Centroid3	PCT_ Match 4	Distance_to _Centroid4	PCT_ Match 5	Distance_to _Centroid5
Yengo	3230 – Central Coast Escarpment Moist Forest	Mod-good	LCSM-29	3250	0.645	3277	0.661	3230	0.668	4161	0.668	3254	0.672
Yengo	3230 – Central Coast Escarpment Moist Forest	Mod-good	TC-09	3237	0.706	3258	0.708	3260	0.71	3137	0.713	4036	0.714
Yengo	3237 – Hunter Range Blue Gum Gully Forest	Mod-good	HTP-MS-78	3242	0.705	3237	0.714	3241	0.716	3170	0.72	3179	0.735
Yengo	3237 – Hunter Range Blue Gum Gully Forest	Mod-good	HTP-MS-79	3258	0.709	3237	0.716	3170	0.725	3241	0.728	3242	0.729
Yengo	3237 – Hunter Range Blue Gum Gully Forest	Mod-good	HTP-MS-80	3241	0.707	3237	0.71	3170	0.723	3137	0.738	3242	0.739
Yengo	3238 – Hunter Range Colluvial Apple-Gum Forest	Mod-good	Bench-mark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yengo	3239 – Hunter Range Sheltered Grey Gum Forest	Mod-good	DL-20	3239	0.652	3605	0.697	3620	0.698	3581	0.709	3263	0.71
Yengo	3239 – Hunter Range Sheltered Grey Gum Forest	Mod-good	HTP-MS-18	3263	0.702	3239	0.72	3242	0.725	3262	0.726	3230	0.731
Yengo	3239 – Hunter Range Sheltered Grey Gum Forest	Mod-good	HTP-MS-19	3239	0.712	3263	0.731	3606	0.735	3262	0.751	3234	0.753
Yengo	3239 – Hunter Range Sheltered Grey Gum Forest	Mod-good	HTP-MS-25	3239	0.709	3605	0.742	3597	0.757	3263	0.759	3620	0.761
Yengo	3239 – Hunter Range Sheltered Grey Gum Forest	Mod-good	TC46	3237	0.699	3242	0.7	3137	0.718	3152	0.719	3164	0.723
Yengo	3239 – Hunter Range Sheltered Grey Gum Forest	Mod-good	TS-18	3239	0.766	3276	0.766	3605	0.775	3606	0.775	3597	0.785
Yengo	3239 – Hunter Range Sheltered Grey Gum Forest	Plantation	HTP-MS-76	3239	0.764	3238	0.796	3237	0.805	3262	0.814	3634	0.814
Yengo	3239 – Hunter Range Sheltered Grey Gum Forest	Plantation	HTP-MS-77	3239	0.78	3238	0.784	3605	0.796	3634	0.805	3597	0.83
Yengo	3241 – Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	HTP-MS-20	3241	0.735	3260	0.738	3237	0.753	3263	0.756	3244	0.759
Yengo	3241 – Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	HTP-MS-82	3239	0.747	3605	0.752	3634	0.79	3321	0.791	3444	0.792

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Yengo	3241 – Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	TC36	3241	0.653	3235	0.689	3318	0.699	3445	0.708	3244	0.71
Yengo	3242 – Lower North Ranges Turpentine Moist Forest	Mod-good	HTP-MS-83	3151	0.742	3152	0.752	3214	0.8	3496	0.805	3111	0.808
Yengo	3242 – Lower North Ranges Turpentine Moist Forest	Mod-good	LCSM-28	3242	0.673	3154	0.675	3170	0.68	3169	0.689	3268	0.69
Yengo	3242 – Lower North Ranges Turpentine Moist Forest	Mod-good	TC-11	3164	0.712	3242	0.722	3170	0.723	3191	0.725	3169	0.746
Yengo	3244 – Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Mod-good	DL-18	3244	0.638	3234	0.663	3263	0.664	3239	0.67	3468	0.671
Yengo	3328 – Lower Hunter Red Gum-Paperbark Riverflat Forest	Mod-good	DL-32	3973	0.714	4073	0.801	3958	0.827	3972	0.829	3975	0.835
Yengo	3438 – Hunter Escarpment Footslopes Ironbark Forest	Mod-good	DL-63	3446	0.716	4157	0.734	3438	0.755	3244	0.763	3319	0.764
Yengo	3438 – Hunter Escarpment Footslopes Ironbark Forest	Mod-good	DL-66	3438	0.733	4120	0.737	3444	0.741	3446	0.746	3315	0.759
Yengo	3444 – Lower Hunter Spotted Gum-Ironbark Forest	Derived	Bench-mark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yengo	3444 – Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	DL-38	3605	0.647	3433	0.651	3444	0.662	3321	0.675	3634	0.675
Yengo	3446 – Lower North Foothills Ironbark-Box-Gum Grassy Forest	Mod-good	DL-39	3446	0.649	3468	0.657	3605	0.657	3244	0.677	3321	0.679
Yengo	3489 – Hunter Escarpment Grey Box Forest	Mod-good	Bench-mark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yengo	3489 – Hunter Escarpment Grey Box Forest	Mod-good	DL-31	3319	0.704	3264	0.712	3446	0.724	3484	0.73	3320	0.733
Yengo	3489 – Hunter Escarpment Grey Box Forest	Mod-good	TC42	3264	0.727	3496	0.742	3238	0.744	3241	0.744	3262	0.756
Yengo	3599 – Blue Mountains Peppermint Shrub Forest	Mod-good	TC-05	3599	0.694	3617	0.711	3615	0.713	3620	0.719	3621	0.73
Yengo	3599 – Blue Mountains Peppermint Shrub Forest	Mod-good	TC-12	3599	0.703	3620	0.712	3621	0.735	3617	0.741	3606	0.765

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Yengo	3599 – Blue Mountains Peppermint Shrub Forest	Mod-good	TC-17	3617	0.704	3599	0.714	3615	0.731	3620	0.737	4122	0.737
Yengo	3605 – Hunter Range Ironbark Forest	Mod-good	DL-04	3604	0.729	3605	0.729	3597	0.748	3602	0.757	3475	0.772
Yengo	3605 – Hunter Range Ironbark Forest	Mod-good	DL-21	3239	0.683	3605	0.684	3597	0.689	3604	0.718	3263	0.722
Yengo	3605 – Hunter Range Ironbark Forest	Mod-good	DL-22	3605	0.686	3239	0.696	3597	0.712	3607	0.714	3276	0.737
Yengo	3605 – Hunter Range Ironbark Forest	Mod-good	HTP-MS-15	4158	0.684	3605	0.696	3604	0.707	3778	0.712	3239	0.715
Yengo	3605 – Hunter Range Ironbark Forest	Mod-good	HTP-MS-26	3239	0.662	3605	0.666	3604	0.702	3620	0.72	3597	0.723
Yengo	3617 – Sydney Hinterland Peppermint-Apple Forest	Mod-good	Bench-mark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yengo	3617 – Sydney Hinterland Peppermint-Apple Forest	Mod-good	TC-18	4161	0.703	3230	0.704	3599	0.707	3202	0.714	3176	0.723
Yengo	4039 – Hunter Range Creekflat Apple-Red Gum Forest	Mod-good	Bench-mark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Yengo	4072 – Hunter River Oak Mesic Forest	Mod-good	TC37	4072	0.619	4058	0.685	3236	0.7	3258	0.718	3318	0.722
Hunter	3086 – Lower North Hinterland Riparian Dry Rainforest	Mod-good	Benchm ark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hunter	3086 – Lower North Hinterland Riparian Dry Rainforest	Mod-good	TC40	3076	0.706	3082	0.726	3073	0.728	3086	0.732	3078	0.736
Hunter	3241 – Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	DL-67	3236	0.704	3318	0.711	3241	0.716	4109	0.729	3445	0.741
Hunter	3241 – Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	HTP-MS-81	3604	0.738	3599	0.744	3239	0.748	3605	0.75	3602	0.752
Hunter	3241 – Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	TC39	3241	0.684	3237	0.729	3244	0.748	3253	0.754	3242	0.757
Hunter	3244 – Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Mod-good	TC43	3244	0.644	3241	0.647	3263	0.677	3237	0.69	3234	0.694
Hunter	3244 – Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Mod-good	TC44	3244	0.667	3241	0.671	3237	0.7	3234	0.702	3263	0.704

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Hunter	3314 – Central Hunter Slopes Grey Box Forest	Disturbed_ Grassland	HTP-MS-23	4015	0.808	3397	0.81	3485	0.82	3396	0.828	3404	0.829
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Disturbed_ Grassland	NE-2	4089	0.847	3470	0.862	4088	0.862	3975	0.863	4081	0.881
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Disturbed_ Grassland	TS-12	3397	0.864	3404	0.879	3388	0.907	4089	0.907	3401	0.918
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Disturbed_ Grassland	TS-13	3415	0.896	3414	0.91	3395	0.911	3394	0.914	3328	0.916
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Poor	DR-07	3314	0.729	3431	0.745	3485	0.749	4015	0.774	3404	0.792
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Poor	HTP-MS-90	4015	0.729	3431	0.756	3404	0.77	3405	0.774	3397	0.782
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Poor	TC-08	3264	0.873	3375	0.874	4147	0.883	3388	0.887	3397	0.893
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Poor	TC47	3314	0.79	3319	0.821	4015	0.825	3431	0.827	4147	0.833
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Thinned	DL-37	4120	0.767	3328	0.778	3459	0.791	3446	0.796	3420	0.797
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Thinned	HTP-MS-03	3314	0.749	3431	0.754	3320	0.767	3404	0.77	3319	0.772
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Thinned	HTP-MS-05	3431	0.741	3404	0.754	3485	0.759	4015	0.767	3314	0.768
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Thinned	HTP-MS-88	3431	0.7	3404	0.71	3314	0.715	3405	0.72	3485	0.728
Hunter	3314 – Central Hunter Slopes Grey Box Forest	Thinned	NE-1	4121	0.882	3314	0.891	3508	0.9	3401	0.905	3068	0.911
Hunter	3315 – Central Hunter Ironbark-Spotted Gum Forest	Derived	DL-75	3723	0.813	4015	0.821	4162	0.832	4088	0.836	3431	0.837
Hunter	3315 – Central Hunter Ironbark-Spotted Gum Forest	Derived	DL-76	3431	0.721	3319	0.756	3470	0.763	3723	0.763	3459	0.766
Hunter	3315 – Central Hunter Ironbark-Spotted Gum Forest	Derived	DL-78	3470	0.756	3485	0.783	3723	0.784	3397	0.796	3431	0.8

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Hunter	3315 – Central Hunter Ironbark-Spotted Gum Forest	Thinned	DL-64	3319	0.684	3446	0.696	3431	0.705	3329	0.724	3315	0.726
Hunter	3315 – Central Hunter Ironbark-Spotted Gum Forest	Thinned	DL-74	3315	0.696	3438	0.698	3444	0.722	3605	0.738	4157	0.739
Hunter	3315 – Central Hunter Ironbark-Spotted Gum Forest	Thinned	DL-77	3431	0.722	4015	0.752	3315	0.755	3329	0.756	3319	0.757
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Disturbed Grassland	DL-40	3723	0.744	3431	0.797	3485	0.8	3515	0.801	3470	0.806
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Disturbed Grassland	DR-01	3394	0.808	3485	0.834	3395	0.846	4015	0.857	3404	0.862
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Disturbed Grassland	DR-04	3485	0.857	3394	0.874	4104	0.881	4015	0.885	3431	0.899
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Disturbed Grassland	DR-05	3485	0.796	4015	0.825	3431	0.832	3404	0.835	4104	0.849
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Disturbed Grassland	TC-20	3431	0.792	3314	0.795	3315	0.799	3320	0.8	4157	0.816
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Plantation	DR-02	4015	0.757	3485	0.773	3431	0.787	3404	0.795	4104	0.811
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Plantation	DR-03	4015	0.769	3485	0.792	3431	0.803	3404	0.804	3314	0.834
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Plantation	HTP-MS-01	3404	0.773	3431	0.806	3485	0.812	3396	0.819	3319	0.835
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Poor	DL-26	3431	0.733	3485	0.734	3471	0.752	3396	0.756	4015	0.757
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Poor	DL-52	3462	0.787	3431	0.803	3361	0.805	3315	0.808	3459	0.823
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Poor	HTP-MS-02	3404	0.751	3485	0.757	3431	0.775	3314	0.798	4147	0.808
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	DL-30	4120	0.77	3459	0.783	3431	0.795	3471	0.798	3315	0.799
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	DL-45	3431	0.699	3485	0.7	3314	0.712	3404	0.717	3319	0.726

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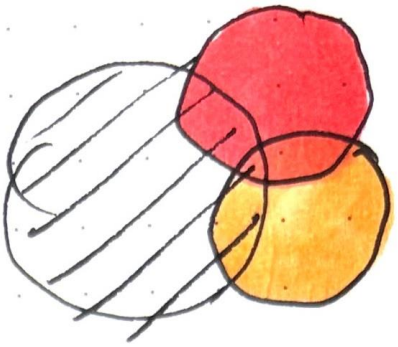
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	DL-46	3431	0.665	3485	0.683	3314	0.702	3319	0.717	3315	0.72
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	DL-47	3431	0.746	3315	0.755	3438	0.771	3482	0.772	3485	0.794
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	DR-06	3431	0.727	3314	0.728	3320	0.744	3319	0.75	3404	0.774
Hunter	3438 – Hunter Escarpment Footslopes Ironbark Forest	Mod-good	Bench-mark	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hunter	3438 – Hunter Escarpment Footslopes Ironbark Forest	Mod-good	DL-73	3446	0.683	3319	0.704	3489	0.71	3438	0.712	3439	0.717
Hunter	3438 – Hunter Escarpment Footslopes Ironbark Forest	Mod-good	TC35	3321	0.736	3238	0.754	3634	0.755	3315	0.758	3767	0.759
Hunter	3444 – Lower Hunter Spotted Gum-Ironbark Forest	Derived	TC-07	3329	0.834	4023	0.84	3316	0.842	4157	0.846	3489	0.847
Hunter	3444 – Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	DL-43	3315	0.733	3444	0.743	3438	0.758	3433	0.763	3442	0.765
Hunter	3444 – Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	DL-44	3444	0.719	4157	0.754	3433	0.761	3447	0.763	3442	0.764
Hunter	3444 – Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	DL-62	3444	0.657	3433	0.683	3446	0.703	3321	0.706	3315	0.712
Hunter	3444 – Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	DL-70	3444	0.63	4157	0.685	3433	0.688	3605	0.688	3447	0.711
Hunter	3605 – Hunter Range Ironbark Forest	Mod-good	TC45	3604	0.69	3605	0.705	3597	0.731	3239	0.734	3599	0.748
Hunter	4015 – Central Hunter Riparian Forest	Derived	DL-50	4081	0.751	3397	0.753	4138	0.779	4073	0.791	4078	0.799
Hunter	4015 – Central Hunter Riparian Forest	Derived	TC49	4089	0.805	4081	0.806	3397	0.807	4088	0.846	4015	0.852
Hunter	4015 – Central Hunter Riparian Forest	Thinned	DL-29	4015	0.619	4073	0.687	4081	0.725	3397	0.729	4023	0.748
Hunter	4015 – Central Hunter Riparian Forest	Thinned	DL-72	4015	0.714	4023	0.719	4025	0.778	3260	0.79	4073	0.793
Hunter	4015 – Central Hunter Riparian Forest	Thinned	HTP-MS-39	4015	0.651	3485	0.709	3431	0.71	3405	0.745	3404	0.748

IBRA	PCT	Condition	Plot	PCT_ Match 1	Distance_to _Centroid1	PCT_ Match 2	Distance_to _Centroid2	PCT_ Match 3	Distance_to _Centroid3	PCT_ Match 4	Distance_to _Centroid4	PCT_ Match 5	Distance_to _Centroid5
Hunter	4039 – Hunter Range Creekflat Apple-Red Gum Forest	Mod-good	DL-41	4162	0.683	3336	0.725	3329	0.728	3319	0.731	3328	0.735
Hunter	4072 – Hunter River Oak Mesic Forest	Mod-good	DL-68	4072	0.759	3318	0.823	3264	0.824	3508	0.837	4079	0.843
Hunter	4089 – Namoi-Upper Hunter River Red Gum Forest	Derived	HTP-MS-69	4081	0.738	4089	0.778	4015	0.806	3397	0.822	3404	0.855
Hunter	4089 – Namoi-Upper Hunter River Red Gum Forest	Derived	HTP-MS-70	4089	0.699	3975	0.845	4081	0.855	4088	0.857	3958	0.886
Hunter	4089 – Namoi-Upper Hunter River Red Gum Forest	Derived	TC48	3397	0.786	4015	0.789	3404	0.8	4081	0.804	3396	0.824
Hunter	4089 – Namoi-Upper Hunter River Red Gum Forest	Poor	HTP-MS-68	3042	0.871	3079	0.907	4089	0.925	4080	0.926	3397	0.928
Hunter	4089 – Namoi-Upper Hunter River Red Gum Forest	Poor	HTP-MS-73	4089	0.711	4081	0.823	3975	0.86	4088	0.871	3042	0.892
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	HTP-MS-31	3431	0.718	3438	0.75	4104	0.757	3485	0.758	4015	0.788
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	HTP-MS-32	3438	0.746	3431	0.797	3315	0.813	3459	0.824	3757	0.848
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	HTP-MS-34	3431	0.784	3438	0.793	3328	0.817	3315	0.822	3459	0.823
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	HTP-MS-35	3431	0.725	3485	0.756	3314	0.757	4015	0.757	4104	0.76
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	HTP-TB-01	3431	0.701	3636	0.717	3438	0.727	3315	0.736	4015	0.737
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	HTP-TB-02	3315	0.688	3431	0.706	3438	0.707	3636	0.719	4157	0.757
Hunter	3431 – Central Hunter Ironbark Grassy Woodland	Thinned	HTP-MS-84	3431	0.712	3485	0.765	3314	0.767	3438	0.78	3404	0.785

Note: Green highlight indicated PCT tool selection. Orange indicates no PCT tool allocation.



Appendix E

BAM-C credit reports

BAM Credit Summary Report

Proposal Details

Assessment Id
00048775/BAAS17046/24/00048776

Proposal Name
HTP BDAR - Wyong IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Report Created
12/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/02/2026

Assessment Revision
6

BOS entry trigger

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Central Coast Escarpment Moist Forest												
2	3230_Mod-good	Not a TEC	78.8	73.3	55.2	PCT Cleared - 25%	High Sensitivity to Gain			1.50		1518

9	3230_Plantation	Not a TEC	67.5	64.6	10.1	PCT Cleared - 25%	High Sensitivity to Gain			1.50		245
15	3230_Derived	Not a TEC	44.4	44.4	6.9	PCT Cleared - 25%	High Sensitivity to Gain			1.50		115
											Subtotal	**1878**
Hunter Coast Foothills Apple Forest												
12	3581_Mod-good	Not a TEC	65	65.0	0.67	PCT Cleared - 26%	High Sensitivity to Gain			1.50		16
											Subtotal	**16**
Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest												
18	3433_Mod-good	Not a TEC	60.7	60.7	0.87	PCT Cleared - 69%	High Sensitivity to Gain			1.75		23
19	3433_Derived	Not a TEC	33.8	33.8	1.1	PCT Cleared - 69%	High Sensitivity to Gain			1.75		17
											Subtotal	**40**
Hunter Coast Lowland Apple-Bloodwood Forest												
21	3582_Mod-good	Not a TEC	78.3	78.3	4.8	PCT Cleared - 25%	High Sensitivity to Gain			1.50		142

22	3582_Derived	Not a TEC	34.4	34.4	6.2	PCT Cleared - 25%	High Sensitivity to Gain			1.50		81
											Subtotal	**223**
Hunter Coast Lowland Scribbly Gum Forest												
23	3583_Mod-good	Not a TEC	86.9	86.9	1	PCT Cleared - 64%	High Sensitivity to Gain			1.75		40
24	3583_Derived	Not a TEC	35.8	35.8	7.4	PCT Cleared - 64%	High Sensitivity to Gain			1.75		116
											Subtotal	**156**
Hunter Coast Ranges Turpentine Wet Forest												
1	3150_Mod-good	Not a TEC	75.3	62.5	42.2	PCT Cleared - 10%	High Sensitivity to Gain			1.50		989
8	3150_Plantation	Not a TEC	69.9	59.0	3.5	PCT Cleared - 10%	High Sensitivity to Gain			1.50		77
14	3150_Derived	Not a TEC	71.7	71.7	2.2	PCT Cleared - 10%	High Sensitivity to Gain			1.50		59
											Subtotal	**1125**

Hunter Coast Sandy Creekflat Low Paperbark Scrub												
20	3436_Mod-good	Not a TEC	100	100.0	0.43	PCT Cleared - 52%	High Sensitivity to Gain			1.75		19
											Subtotal	**19**
Hunter Range Sheltered Grey Gum Forest												
3	3239_Mod-good	Not a TEC	60.3	55.3	5	PCT Cleared - 1%	High Sensitivity to Gain			1.50		103
											Subtotal	**103**
Lower North Ranges Turpentine Moist Forest												
4	3242_Mod-good	Not a TEC	87.3	72.7	28.7	PCT Cleared - 13%	High Sensitivity to Gain			1.50		784
											Subtotal	**784**
Lower North Riverflat Eucalypt-Paperbark Forest												
25	4042_Mod-good	Not a TEC	96.8	96.8	0.39	PCT Cleared - 73%	High Sensitivity to Gain			2.00		19
26	4042_Derived	Not a TEC	52.1	52.1	0.55	PCT Cleared - 73%	High Sensitivity to Gain			2.00		14

											Subtotal	**33**
Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest												
13	3244_Mod-good	Not a TEC	68.4	65.3	1.3	PCT Cleared - 39%	High Sensitivity to Gain			1.50		32
											Subtotal	**32**
Lower North Wet Gully Palm Rainforest												
11	3029_Mod-good	Not a TEC	93.4	73.3	3.3	PCT Cleared - 6%	High Sensitivity to Gain			1.50		92
											Subtotal	**92**
Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest												
27	4044_Mod-good	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	98.6	98.6	0.12	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		6

28	4044_Derived	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	51.9	51.9	0.27	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		7
											Subtotal	**13**
Northern Foothills Blackbutt Grassy Forest												
10	3250_Mod-good	Not a TEC	65.2	65.2	3.6	PCT Cleared - 30%	High Sensitivity to Gain			1.50		88
16	3250_Derived	Not a TEC	30.4	30.4	2.3	PCT Cleared - 30%	High Sensitivity to Gain			1.50		26
											Subtotal	**114**

Sydney Hinterland Peppermint-Apple Forest											
6	3617_Mod-good	Not a TEC	76.1	74.6	33.9	PCT Cleared - 2%	High Sensitivity to Gain			1.50		948
											Subtotal	**948**
Sydney Hinterland Turpentine-Apple Gully Forest											
7	3621_Mod-good	Not a TEC	79	73.6	4.7	PCT Cleared - 3%	High Sensitivity to Gain			1.50		129
											Subtotal	**129**
Watagan Range Turpentine-Mahogany Grassy Forest											
5	3263_Mod-good	Not a TEC	77.1	71.5	53.6	PCT Cleared - 10%	High Sensitivity to Gain			1.50		1436
17	3263_Derived	Not a TEC	44.6	44.6	5.8	PCT Cleared - 10%	High Sensitivity to Gain			1.50		98
											Subtotal	**1534**
											Total	**7239**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Acacia bynoeana / Bynoe's Wattle (Flora)									
3582_Mod-good	78.3	78.3	3.4	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Endangered	Vulnerable	False	131
3582_Derived	34.4	34.4	1.8	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Endangered	Vulnerable	False	30
3583_Mod-good	86.9	86.9	0.04	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Endangered	Vulnerable	False	2
3583_Derived	35.8	35.8	0.62	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Endangered	Vulnerable	False	11
								Subtotal	**174**
Angophora inopina / Charmhaven Apple (Flora)									
3250_Mod-good	65.2	65.2	0.34	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	11

3582_Mod-good	78.3	78.3	3.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	131
								Subtotal	**142**
Anthochaera phrygia / Regent Honeyeater (Fauna)									
3263_Mod-good	77.1	77.1	0.51	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	29
								Subtotal	**29**
Asperula asthenes / Trailing Woodruff (Flora)									
3242_Mod-good	72.7	72.7	2.6	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	94
3250_Mod-good	65.2	65.2	0.17	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	6
								Subtotal	**100**
Callocephalon fimbriatum / Gang-gang Cockatoo (Fauna)									
3150_Mod-good	75.3	75.3	1.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	47

3242_Mod-good	87.3	87.3	4.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	197
3263_Mod-good	77.1	77.1	1.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	56
3617_Mod-good	76.1	76.1	8.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	309
3244_Mod-good	68.4	68.4	0.03	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	1
								Subtotal	**610**
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo (Fauna)									
3150_Mod-good	75.3	75.3	4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	151
3230_Mod-good	78.8	78.8	0.77	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	30

3242_Mod-good	87.3	87.3	1.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	69
3263_Mod-good	77.1	77.1	2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	78
3617_Mod-good	76.1	76.1	0.01	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	1
3230_Plantation	67.5	67.5	0.09	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	3
3250_Mod-good	65.2	65.2	0.32	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	10
3029_Mod-good	93.4	93.4	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	47
3433_Mod-good	60.7	60.7	0.27	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	8
								Subtotal	**397**

Cercartetus nanus / Eastern Pygmy-possum (Fauna)									
3150_Mod-good	62.5	62.5	30.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	947
3230_Mod-good	78.8	78.8	40.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	1591
3239_Mod-good	60.3	60.3	4.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	130
3242_Mod-good	87.3	87.3	15.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	694
3263_Mod-good	77.1	77.1	37.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	1457

3617_Mod-good	76.1	76.1	7.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	293
3621_Mod-good	79.0	79.0	4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	158
3150_Plantation	69.9	69.9	3.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	121
3230_Plantation	67.5	67.5	7.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	261
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	117
3029_Mod-good	93.4	93.4	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	103

3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	22
3244_Mod-good	68.4	68.4	0.09	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	3
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	26
								Subtotal	**5923**
Chalinolobus dwyeri / Large-eared Pied Bat (Fauna)									
3150_Mod-good	62.5	62.5	40.9	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	1917
3230_Mod-good	73.3	73.3	55.2	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	3035

3239_Mod-good	55.3	55.3	5	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	206
3242_Mod-good	72.7	72.7	28.7	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	1568
3263_Mod-good	71.5	71.5	50.5	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	2707
3617_Mod-good	74.6	74.6	33.9	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	1895
3621_Mod-good	73.6	73.6	4.7	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	257

3150_Plantation	59.0	59.0	3.5	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	154
3230_Plantation	64.6	64.6	10.1	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	491
3250_Mod-good	65.2	65.2	3.4	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	166
3581_Mod-good	65.0	65.0	0.67	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	33
3244_Mod-good	65.3	65.3	1.3	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	64

3150_Derived	71.7	71.7	1.9	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	103
3230_Derived	44.4	44.4	6.9	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	230
3250_Derived	30.4	30.4	1.9	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	43
3263_Derived	44.6	44.6	1.7	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	56
3433_Mod-good	60.7	60.7	0.87	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	40

3433_Derived	33.8	33.8	1.1	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	29
								Subtotal	**12994**
Corunastylis sp. Charmhaven (NSW896673) / Corunastylis sp. Charmhaven (NSW896673) (Flora)									
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	40
3433_Derived	33.8	33.8	1.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	29
3582_Mod-good	78.3	78.3	0.89	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	52
3582_Derived	34.4	34.4	2.7	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	70

3583_Derived	35.8	35.8	0.53	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	14
								Subtotal	**205**
Corybas dowlingii / Red Helmet Orchid (Flora)									
3150_Mod-good	75.3	75.3	25.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	975
3150_Plantation	69.9	69.9	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	70
3250_Mod-good	65.2	65.2	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	42
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	26

3582_Mod-good	78.3	78.3	4.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	189
								Subtotal	**1302**
Cryptostylis hunteriana / Leafless Tongue Orchid (Flora)									
3250_Mod-good	65.2	65.2	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	27
3250_Derived	30.4	30.4	1.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	22
3582_Mod-good	78.3	78.3	0.89	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	26
3582_Derived	34.4	34.4	2.7	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	35
3583_Derived	35.8	35.8	0.53	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	7
								Subtotal	**117**

Cynanchum elegans / White-flowered Wax Plant (Flora)									
3250_Mod-good	65.2	65.2	0.17	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Endangered	Endangered	False	6
								Subtotal	**6**
Dendrobium melaleucaphilum / Spider orchid (Flora)									
3250_Mod-good	65.2	65.2	0.17	Biodiversity Conservation Act listing status	Seedbank Persistence	Endangered	Not Listed	False	6
								Subtotal	**6**
Epacris purpurascens var. purpurascens / Epacris purpurascens var. purpurascens (Flora)									
3150_Mod-good	N/A	N/A	12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	18
3250_Mod-good	N/A	N/A	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	3
								Subtotal	**21**

Genoplesium insigne / Variable Midge Orchid (Flora)									
3582_Mod-good	78.3	78.3	3.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	197
3582_Derived	34.4	34.4	3.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	84
3583_Derived	35.8	35.8	4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	108
								Subtotal	**389**
Grammitis stenophylla / Narrow-leaf Finger Fern (Flora)									
3150_Mod-good	62.5	62.5	3.3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	103
3250_Mod-good	65.2	65.2	2.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	84
								Subtotal	**187**

Grevillea parviflora subsp. parviflora / Small-flower Grevillea (Flora)									
3582_Mod-good	78.3	78.3	3.4	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	131
3582_Derived	34.4	34.4	4.3	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	73
3583_Derived	35.8	35.8	4.2	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	76
								Subtotal	**280**
Heleioporus australiacus / Giant Burrowing Frog (Fauna)									
3150_Mod-good	75.3	75.3	12.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	346
3230_Mod-good	78.8	78.8	25.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	746

3239_Mod-good	60.3	60.3	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	40
3242_Mod-good	87.3	87.3	6.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	226
3263_Mod-good	77.1	77.1	6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	175
3617_Mod-good	76.1	76.1	10.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	291
3621_Mod-good	79.0	79.0	4.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	135
3230_Plantation	67.5	67.5	3.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	79

3029_Mod-good	93.4	93.4	0.99	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	35
3150_Derived	71.7	71.7	0.79	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	21
3230_Derived	44.4	44.4	1.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	29
								Subtotal	**2123**
Hoplocephalus bitorquatus / Pale-headed Snake (Fauna)									
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	117
								Subtotal	**117**
Hoplocephalus stephensii / Stephens' Banded Snake (Fauna)									
3150_Mod-good	75.3	75.3	42.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1588

3230_Mod-good	78.8	78.8	55.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2174
3242_Mod-good	87.3	87.3	28.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1254
3263_Mod-good	77.1	77.1	53.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2064
3617_Mod-good	76.1	76.1	33.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1290
3621_Mod-good	79.0	79.0	4.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	184
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	117
3029_Mod-good	93.4	93.4	3.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	156

3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22
3244_Mod-good	68.4	68.4	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	26
3436_Mod-good	100.0	100.0	0.43	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22
3582_Mod-good	78.3	78.3	4.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	189
3583_Mod-good	86.9	86.9	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45
4042_Mod-good	96.8	96.8	0.39	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	19
								Subtotal	**9195**

Lathamus discolor / Swift Parrot (Fauna)									
3436_Mod-good	100.0	100.0	0.12	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	9
3582_Mod-good	78.3	78.3	2.3	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	133
3582_Derived	34.4	34.4	0.65	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	17
3583_Mod-good	86.9	86.9	0.04	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	3

3583_Derived	35.8	35.8	0.33	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	9
								Subtotal	**171**
Litoria littlejohni / Littlejohn's Tree Frog (Fauna)									
3150_Mod-good	75.3	75.3	9.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	359
3230_Mod-good	78.8	78.8	19.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	773
3617_Mod-good	76.1	76.1	33.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1281
3621_Mod-good	79.0	79.0	4.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	173

3230_Plantation	67.5	67.5	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	82
3029_Mod-good	93.4	93.4	0.72	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	34
								Subtotal	**2702**
Melaleuca biconvexa / Biconvex Paperbark (Flora)									
3150_Mod-good	62.5	62.5	3.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	103
3242_Mod-good	72.7	72.7	2.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	94
3250_Mod-good	65.2	65.2	0.17	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	6
								Subtotal	**203**

Melaleuca groveana / Grove's Paperbark (Flora)									
3250_Mod-good	N/A	N/A	2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	4
								Subtotal	**4**
Mixophyes balbus / Stuttering Frog (Fauna)									
3150_Mod-good	75.3	75.3	29	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	1635
3230_Mod-good	78.8	78.8	40.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	2407
3239_Mod-good	60.3	60.3	3.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	154
3242_Mod-good	87.3	87.3	25.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	1669

3263_Mod-good	77.1	77.1	34.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	2007
3617_Mod-good	76.1	76.1	33.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	1935
3621_Mod-good	79.0	79.0	4.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	276
3150_Plantation	69.9	69.9	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	108
3230_Plantation	67.5	67.5	9.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	491
3029_Mod-good	93.4	93.4	3.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	234

3581_Mod-good	65.0	65.0	0.03	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	1
3244_Mod-good	68.4	68.4	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	67
3150_Derived	71.7	71.7	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	68
3230_Derived	44.4	44.4	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	79
3263_Derived	44.6	44.6	0.05	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	True	2
								Subtotal	**11133**

Mixophyes iteratus / Giant Barred Frog (Fauna)									
3150_Mod-good	75.3	75.3	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	56
3230_Mod-good	78.8	78.8	2.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	77
3242_Mod-good	87.3	87.3	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	59
3263_Mod-good	77.1	77.1	0.05	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1
3617_Mod-good	76.1	76.1	0.88	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	25

3621_Mod-good	79.0	79.0	0.82	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	24
3230_Plantation	67.5	67.5	0.71	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	18
3029_Mod-good	93.4	93.4	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	39
3150_Derived	71.7	71.7	0.72	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	19
3230_Derived	44.4	44.4	0.08	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1
								Subtotal	**319**

Myotis macropus / Southern Myotis (Fauna)									
3582_Mod-good	78.3	78.3	1.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45
3583_Derived	35.8	35.8	0.67	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	12
4042_Mod-good	96.8	96.8	0.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	10
4042_Derived	52.1	52.1	0.33	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	9
								Subtotal	**76**
Ninox connivens / Barking Owl (Fauna)									
3150_Mod-good	75.3	75.3	3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	112
3239_Mod-good	60.3	60.3	0.46	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	14

3242_Mod-good	87.3	87.3	3.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	160
3263_Mod-good	77.1	77.1	9.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	363
								Subtotal	**649**
Ninox strenua / Powerful Owl (Fauna)									
3150_Mod-good	75.3	75.3	1.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	59
3239_Mod-good	60.3	60.3	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	150
3242_Mod-good	87.3	87.3	12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	521
3263_Mod-good	77.1	77.1	14.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	547
								Subtotal	**1277**

Notamacropus parma / Parma Wallaby (Fauna)									
3150_Mod-good	62.5	62.5	36.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1149
3230_Mod-good	73.3	73.3	48.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1778
3239_Mod-good	55.3	55.3	4.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	125
3242_Mod-good	72.7	72.7	27.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1003
3263_Mod-good	71.5	71.5	48.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1750

3617_Mod-good	74.6	74.6	16.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	625
3621_Mod-good	73.6	73.6	3.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	124
3150_Plantation	59.0	59.0	3.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	102
3230_Plantation	64.6	64.6	9.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	310
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	117
3029_Mod-good	73.3	73.3	3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	109

3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	22
3244_Mod-good	65.3	65.3	0.09	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	3
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	26
3582_Mod-good	78.3	78.3	4.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	189
4042_Mod-good	96.8	96.8	0.23	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	11
								Subtotal	**7443**

Petauroides volans / Southern Greater Glider (Fauna)									
3150_Mod-good	75.3	75.3	42.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	1587
3230_Mod-good	78.8	78.8	55.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	2174
3239_Mod-good	60.3	60.3	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	150
3242_Mod-good	87.3	87.3	28.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	1254
3263_Mod-good	77.1	77.1	53.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	2064
3617_Mod-good	76.1	76.1	33.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	1290
3621_Mod-good	79.0	79.0	4.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	184

3150_Plantation	69.9	69.9	3.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	121
3230_Plantation	67.5	67.5	10.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	342
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	117
3029_Mod-good	93.4	93.4	3.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	156
3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	22
3244_Mod-good	68.4	68.4	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	45
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	26
								Subtotal	**9532**

Petaurus norfolcensis / Squirrel Glider (Fauna)									
3150_Mod-good	75.3	75.3	42.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1588
3230_Mod-good	78.8	78.8	55.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2174
3239_Mod-good	60.3	60.3	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	150
3242_Mod-good	87.3	87.3	28.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1254
3263_Mod-good	77.1	77.1	53.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2064
3617_Mod-good	76.1	76.1	33.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1290
3621_Mod-good	79.0	79.0	4.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	184

3150_Plantation	69.9	69.9	3.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	121
3230_Plantation	67.5	67.5	10.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	342
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	117
3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22
3244_Mod-good	68.4	68.4	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	26
3436_Mod-good	100.0	100.0	0.43	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22

3582_Mod-good	78.3	78.3	4.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	189
3583_Mod-good	86.9	86.9	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45
4042_Mod-good	96.8	96.8	0.39	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	19
4044_Mod-good	98.6	98.6	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	6
								Subtotal	**9658**
Petrogale penicillata / Brush-tailed Rock-wallaby (Fauna)									
3150_Mod-good	62.5	62.5	4.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	197
3230_Mod-good	73.3	73.3	0.34	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	19

3239_Mod-good	55.3	55.3	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	206
3242_Mod-good	72.7	72.7	27.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	1478
3263_Mod-good	71.5	71.5	36.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	1967
3250_Mod-good	65.2	65.2	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	86
3029_Mod-good	73.3	73.3	0.49	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	27
3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	33
3244_Mod-good	65.3	65.3	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	64
								Subtotal	**4077**

Phascogale tapoatafa / Brush-tailed Phascogale (Fauna)									
3150_Mod-good	62.5	62.5	42.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1319
3230_Mod-good	78.8	78.8	55.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2174
3239_Mod-good	60.3	60.3	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	150
3242_Mod-good	87.3	87.3	28.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1254
3263_Mod-good	77.1	77.1	53.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2064
3617_Mod-good	76.1	76.1	33.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1290
3621_Mod-good	79.0	79.0	4.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	184

3150_Plantation	69.9	69.9	3.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	121
3230_Plantation	67.5	67.5	10.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	342
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	117
3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22
3244_Mod-good	68.4	68.4	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	26
3436_Mod-good	100.0	100.0	0.43	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22

3582_Mod-good	78.3	78.3	4.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	189
3583_Mod-good	86.9	86.9	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45
4042_Mod-good	96.8	96.8	0.39	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	19
4044_Mod-good	98.6	98.6	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	6
								Subtotal	**9389**
Phascolarctos cinereus / Koala (Fauna)									
3150_Mod-good	75.3	75.3	42.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1588
3230_Mod-good	78.8	78.8	55.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	2174

3239_Mod-good	60.3	60.3	5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	150
3242_Mod-good	87.3	87.3	28.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1254
3263_Mod-good	77.1	77.1	53.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	2064
3617_Mod-good	76.1	76.1	33.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1290
3621_Mod-good	79.0	79.0	4.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	184
3150_Plantation	69.9	69.9	3.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	121

3230_Plantation	67.5	67.5	10.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	342
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	117
3029_Mod-good	93.4	93.4	3.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	156
3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	22
3244_Mod-good	68.4	68.4	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	45
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	26

3436_Mod-good	100.0	100.0	0.43	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	22
3582_Mod-good	78.3	78.3	4.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	189
3583_Mod-good	86.9	86.9	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	45
4042_Mod-good	96.8	96.8	0.39	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	19
4044_Mod-good	98.6	98.6	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	6
								Subtotal	**9814**

Potorous tridactylus / Long-nosed Potoroo (Fauna)									
3150_Mod-good	62.5	62.5	37.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1166
3230_Mod-good	73.3	73.3	49.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1803
3242_Mod-good	72.7	72.7	21.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	791
3617_Mod-good	74.6	74.6	33.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1263
3621_Mod-good	73.6	73.6	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	47

3150_Plantation	59.0	59.0	3.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	102
3230_Plantation	64.6	64.6	9.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	310
3250_Mod-good	65.2	65.2	3.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	117
3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	22
3244_Mod-good	65.3	65.3	0.09	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	3
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	26

3436_Mod-good	100.0	100.0	0.43	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	22
3582_Mod-good	78.3	78.3	4.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	189
3583_Mod-good	86.9	86.9	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	45
4042_Mod-good	96.8	96.8	0.23	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	11
4044_Mod-good	98.6	98.6	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	6
								Subtotal	**5923**

Pseudophryne australis / Red-crowned Toadlet (Fauna)									
3150_Mod-good	75.3	75.3	9.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	258
3230_Mod-good	78.8	78.8	9.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	282
3239_Mod-good	60.3	60.3	0.01	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	1
3242_Mod-good	87.3	87.3	4.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	157
3263_Mod-good	77.1	77.1	1.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	49

3617_Mod-good	76.1	76.1	17.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	499
3621_Mod-good	79.0	79.0	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	68
3230_Plantation	67.5	67.5	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	59
3029_Mod-good	93.4	93.4	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	58
3150_Derived	71.7	71.7	0.61	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	16
3230_Derived	44.4	44.4	0.35	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	6

								Subtotal	**1453**
Rhizanthella slateri / Eastern Australian Underground Orchid (Flora)									
3150_Mod-good	62.5	62.5	42.2	Population size	Ecology or response to management is poorly known	Vulnerable	Endangered	True	1979
3242_Mod-good	72.7	72.7	28.7	Population size	Ecology or response to management is poorly known	Vulnerable	Endangered	True	1568
								Subtotal	**3547**
Rhodamnia rubescens / Scrub Turpentine (Flora)									
3150_Mod-good	N/A	N/A	176	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	528
3230_Mod-good	N/A	N/A	163	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	489
3239_Mod-good	N/A	N/A	19	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	57

3242_Mod-good	N/A	N/A	196	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	588
3263_Mod-good	N/A	N/A	175	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	525
3150_Plantation	N/A	N/A	24	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	72
3230_Plantation	N/A	N/A	145	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	435
3250_Mod-good	N/A	N/A	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	3
3029_Mod-good	N/A	N/A	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	6

3150_Derived	N/A	N/A	87	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	261
3230_Derived	N/A	N/A	10	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	30
3250_Derived	N/A	N/A	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	3
3263_Derived	N/A	N/A	26	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	78
								Subtotal	**3075**
Rhodomyrtus psidioides / Native Guava (Flora)									
3150_Mod-good	75.3	75.3	4.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	256

3242_Mod-good	87.3	87.3	7.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	496
3263_Mod-good	77.1	77.1	4.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	262
3250_Mod-good	65.2	65.2	0.34	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	17
3029_Mod-good	73.3	73.3	0.89	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	49
								Subtotal	**1080**
Rutidosis heterogama / Heath Wrinklewort (Flora)									
3250_Mod-good	65.2	65.2	0.17	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	6

3583_Derived	35.8	35.8	0.49	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	9
								Subtotal	**15**
Senna acclinis / Rainforest Cassia (Flora)									
3150_Mod-good	75.3	75.3	4.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	171
3242_Mod-good	87.3	87.3	8.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	367
3263_Mod-good	77.1	77.1	5.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	209
3029_Mod-good	93.4	93.4	0.89	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	42
								Subtotal	**789**

Syzygium paniculatum / Magenta Lilly Pilly (Flora)									
3150_Mod-good	N/A	N/A	33	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	66
3242_Mod-good	N/A	N/A	26	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	52
3250_Mod-good	N/A	N/A	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	4
								Subtotal	**122**
Tetratheca juncea / Black-eyed Susan (Flora)									
3242_Mod-good	72.7	72.7	3.7	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	136
3250_Mod-good	65.2	65.2	0.34	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	11

3250_Derived	30.4	30.4	0.02	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	1
3582_Mod-good	78.3	78.3	3.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	143
3582_Derived	34.4	34.4	3.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	64
3583_Mod-good	86.9	86.9	0.19	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	8
3583_Derived	35.8	35.8	3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	54
								Subtotal	**417**
Thelymitra adorata / Wyong Sun Orchid (Flora)									
3583_Derived	35.8	35.8	0.79	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Critically Endangered	True	21
								Subtotal	**21**

Tyto novaehollandiae / Masked Owl (Fauna)									
3150_Mod-good	75.3	75.3	2.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	102
3230_Mod-good	78.8	78.8	0.55	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22
3263_Mod-good	77.1	77.1	2.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	85
3230_Plantation	67.5	67.5	2.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	74
								Subtotal	**283**
Tyto tenebricosa / Sooty Owl (Fauna)									
3150_Mod-good	75.3	75.3	14.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	795
3230_Mod-good	78.8	78.8	12.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	753

3239_Mod-good	60.3	60.3	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	224
3242_Mod-good	87.3	87.3	18.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	1205
3263_Mod-good	77.1	77.1	34.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	1992
3230_Plantation	67.5	67.5	3.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	187
3029_Mod-good	93.4	93.4	1.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	118
3244_Mod-good	68.4	68.4	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	67
4042_Mod-good	96.8	96.8	0.39	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	28
								Subtotal	**5369**

Vespadelus troughtoni / Eastern Cave Bat (Fauna)									
3150_Mod-good	62.5	62.5	40.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	1917
3239_Mod-good	55.3	55.3	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	206
3242_Mod-good	72.7	72.7	28.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	1568
3617_Mod-good	74.6	74.6	33.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	1895
3621_Mod-good	73.6	73.6	4.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	257
3150_Plantation	59.0	59.0	3.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	154
3250_Mod-good	65.2	65.2	3.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	166

3581_Mod-good	65.0	65.0	0.67	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	33
3244_Mod-good	65.3	65.3	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	64
3150_Derived	71.7	71.7	1.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	103
3250_Derived	30.4	30.4	1.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	43
3433_Mod-good	60.7	60.7	0.87	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	40
3433_Derived	33.8	33.8	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	29
								Subtotal	**6475**

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00048775/BAAS17046/24/00048776

Assessment name
HTP BDAR - Wyong IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Report Created
12/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
6

BOS entry trigger

Date Finalised
12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3150_Mod-good	3150-Hunter Coast Ranges Turpentine Wet Forest	Mod-good	42.19	4	Area A (27.68 ha) Area B (14.33 ha) HZ (0.18 ha)

2	3230_Mod-good	3230-Central Coast Escarpment Moist Forest	Mod-good	55.21	5	Area A (45.17 ha) Area B (10.04 ha)
3	3239_Mod-good	3239-Hunter Range Sheltered Grey Gum Forest	Mod-good	4.97	2	Area A (4 ha) Area B (0.96 ha) HZ (0.01 ha)
4	3242_Mod-good	3242-Lower North Ranges Turpentine Moist Forest	Mod-good	28.74	4	Area A (15.52 ha) Area B (13.08 ha) HZ (0.14 ha)
5	3263_Mod-good	3263-Watagan Range Turpentine-Mahogany Grassy Forest	Mod-good	53.55	5	Area A (44.57 ha) Area B (8.79 ha) HZ (0.19 ha)
6	3617_Mod-good	3617-Sydney Hinterland Peppermint-Apple Forest	Mod-good	33.88	4	Area A (28.87 ha) Area B (4.88 ha) HZ (0.13 ha)
7	3621_Mod-good	3621-Sydney Hinterland Turpentine-Apple Gully Forest	Mod-good	4.66	2	Area A (2.36 ha) Area B (2.3 ha)
8	3150_Plantation	3150-Hunter Coast Ranges Turpentine Wet Forest	Plantation	3.47	2	Area A (2.34 ha) Area B (1.12 ha) HZ (0.01 ha)
9	3230_Plantation	3230-Central Coast Escarpment Moist Forest	Plantation	10.13	3	Area A (9.18 ha) Area B (0.95 ha)
10	3250_Mod-good	3250-Northern Foothills Blackbutt Grassy Forest	Mod-good	3.6	2	Area A (3.6 ha)
11	3029_Mod-good	3029-Lower North Wet Gully Palm Rainforest	Mod-good	3.34	2	Area A (1.17 ha) Area B (2.17 ha)

12	3581_Mod-good	3581-Hunter Coast Foothills Apple Forest	Mod-good	0.67	1	Area A (0.67 ha)
13	3244_Mod-good	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Mod-good	1.31	1	Area A (1.18 ha) Area B (0.13 ha)
14	3150_Derived	3150-Hunter Coast Ranges Turpentine Wet Forest	Derived	2.21	2	Area A (2.21 ha)
15	3230_Derived	3230-Central Coast Escarpment Moist Forest	Derived	6.89	3	Area A (6.89 ha)
16	3250_Derived	3250-Northern Foothills Blackbutt Grassy Forest	Derived	2.32	2	Area A (2.32 ha)
17	3263_Derived	3263-Watagan Range Turpentine-Mahogany Grassy Forest	Derived	5.83	3	Area A (5.83 ha)
18	3433_Mod-good	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Mod-good	0.87	1	Area A (0.87 ha)
19	3433_Derived	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Derived	1.13	1	Area A (1.13 ha)
20	3436_Mod-good	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub	Mod-good	0.43	1	Area A (0.43 ha)
21	3582_Mod-good	3582-Hunter Coast Lowland Apple-Bloodwood Forest	Mod-good	4.84	2	Area A (4.84 ha)
22	3582_Derived	3582-Hunter Coast Lowland Apple-Bloodwood Forest	Derived	6.25	3	Area A (6.25 ha)
23	3583_Mod-good	3583-Hunter Coast Lowland Scribbly Gum Forest	Mod-good	1.04	1	Area A (1.04 ha)

24	3583_Derived	3583-Hunter Coast Lowland Scribbly Gum Forest	Derived	7.39	3	Area A (7.39 ha)
25	4042_Mod-good	4042-Lower North Riverflat Eucalypt-Paperbark Forest	Mod-good	0.39	1	Area A (0.39 ha)
26	4042_Derived	4042-Lower North Riverflat Eucalypt-Paperbark Forest	Derived	0.55	1	Area A (0.55 ha)
27	4044_Mod-good	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	Mod-good	0.12	1	Area A (0.12 ha)
28	4044_Derived	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	Derived	0.27	1	Area A (0.27 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048775/BAAS17046/24/00048776	HTP BDAR - Wyong IBRA subregion	05/08/2025
Assessor Name	**Report Created**	**BAM Data version ***
	12/02/2026	Current classification (live - default) (82)
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS17020	Major Projects	Finalised
Assessment Revision	**BOS entry trigger**	**Date Finalised**
6		12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	Botaurus poiciloptilus	4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Australian Painted Snipe	Rostratula australis	4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Bar-tailed Godwit (baueri)	Limosa lapponica baueri	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Black Bittern	Ixobrychus flavicollis	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Black Bittern	Ixobrychus flavicollis	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
Black Falcon	Falco subniger	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Black-necked Stork	Ephippiorhynchus asiaticus	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest

Black-necked Stork	Ephippiorhynchus asiaticus	3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Black-tailed Godwit	Limosa limosa	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Broad-billed Sandpiper	Limicola falcinellus	3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
Broad-headed Snake	Hoplocephalus bungaroides	3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest

Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Comb-crested Jacana	Irediparra gallinacea	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Curlew Sandpiper	Calidris ferruginea	4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Diamond Firetail	Stagonopleura guttata	3239-Hunter Range Sheltered Grey Gum Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest

Eastern Chestnut Mouse	Pseudomys gracilicaudatus	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Eastern Curlew	Numenius madagascariensis	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Eastern False Pipistrelle	Falsistrellus tasmaniensis	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest

Eastern False Pipistrelle	Falsistrellus tasmaniensis	3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Eastern Osprey	Pandion cristatus	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Flame Robin	Petroica phoenicea	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest

Flame Robin	Petroica phoenicea	3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
Gang-gang Cockatoo	Callocephalon fimbriatum	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
Golden-tipped Bat	Phoniscus papuensis	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest

Golden-tipped Bat	Phoniscus papuensis	3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Great Knot	Calidris tenuirostris	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Greater Broad-nosed Bat	Scoteanax rueppellii	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest

Greater Sand-plover	Charadrius leschenaultii	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Grey-headed Flying-fox	Pteropus poliocephalus	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest

Grey-headed Flying-fox	Pteropus poliocephalus	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Large Bent-winged Bat	Miniopterus orianae oceanensis	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Lesser Sand-plover	Charadrius mongolus	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Little Bent-winged Bat	Miniopterus australis	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest

Little Bent-winged Bat	Miniopterus australis	3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Little Eagle	Hieraaetus morphnoides	3150-Hunter Coast Ranges Turpentine Wet Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Little Lorikeet	Glossopsitta pusilla	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Little Lorikeet	Glossopsitta pusilla	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
New Holland Mouse	Pseudomys novaehollandiae	3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
Pilotbird	Pycnoptilus floccosus	3239-Hunter Range Sheltered Grey Gum Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
Red Knot	Calidris canutus	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Red-legged Pademelon	Thylogale stigmatica	3242-Lower North Ranges Turpentine Moist Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Regent Honeyeater	Anthochaera phrygia	3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Regent Honeyeater	Anthochaera phrygia	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Rose-crowned Fruit-Dove	Ptilinopus regina	3150-Hunter Coast Ranges Turpentine Wet Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Rosenberg's Goanna	Varanus rosenbergi	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Sanderling	Calidris alba	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Scarlet Robin	Petroica boodang	3150-Hunter Coast Ranges Turpentine Wet Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Scarlet Robin	Petroica boodang	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Speckled Warbler	Chthonicola sagittata	3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Speckled Warbler	Chthonicola sagittata	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
Spotted Harrier	Circus assimilis	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Spotted-tailed Quoll	Dasyurus maculatus	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Square-tailed Kite	Lophoictinia isura	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest

Square-tailed Kite	Lophoictinia isura	3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Superb Fruit-Dove	Ptilinopus superbus	3150-Hunter Coast Ranges Turpentine Wet Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Swift Parrot	Lathamus discolor	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Swift Parrot	Lathamus discolor	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Terek Sandpiper	Xenus cinereus	4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Turquoise Parrot	Neophema pulchella	3239-Hunter Range Sheltered Grey Gum Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3581-Hunter Coast Foothills Apple Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
Varied Sittella	Daphoenositta chrysoptera	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest

Varied Sittella	Daphoenositta chrysoptera	3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
White-bellied Sea-Eagle	Haliaeetus leucogaster	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
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		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
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		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
White-throated Needletail	Hirundapus caudacutus	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

White-throated Needletail	Hirundapus caudacutus	3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Wompoo Fruit-Dove	Ptilinopus magnificus	3242-Lower North Ranges Turpentine Moist Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3029-Lower North Wet Gully Palm Rainforest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
Yellow-bellied Glider	Petaurus australis	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3263-Watagan Range Turpentine-Mahogany Grassy Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3621-Sydney Hinterland Turpentine-Apple Gully Forest
		3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
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		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		4042-Lower North Riverflat Eucalypt-Paperbark Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	3150-Hunter Coast Ranges Turpentine Wet Forest
		3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3617-Sydney Hinterland Peppermint-Apple Forest

Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	3250-Northern Foothills Blackbutt Grassy Forest
		3581-Hunter Coast Foothills Apple Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
		3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub
		3582-Hunter Coast Lowland Apple-Bloodwood Forest
		3583-Hunter Coast Lowland Scribbly Gum Forest
		4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00048775/BAAS17046/24/00048776	Proposal Name HTP BDAR - Wyong IBRA subregion	BAM data last updated * 05/08/2025
Assessor Name	Report Created 12/02/2026	BAM Data version * Current classification (live - default) (82)
Assessor Number BAAS17020	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 6	BOS entry trigger	Date Finalised 12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Acacia bynoeana Bynoe's Wattle	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Angophora inopina Charmhaven Apple	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Anthochaera phrygia Regent Honeyeater	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Asperula asthenes Trailing Woodruff	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Burhinus grallarius Bush Stone-curlew	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Callistemon linearifolius Netted Bottle Brush	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Callocephalon fimbriatum Gang-gang Cockatoo	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Cercartetus nanus Eastern Pygmy-possum	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☑ Survey month outside the specified months?

Chalinolobus dwyeri Large-eared Pied Bat	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☑ Nov ☑ Dec ☑ Survey month outside the specified months?
Corunastylis sp. Charmhaven (NSW896673) Corunastylis sp. Charmhaven (NSW896673)	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Corybas dowlingii Red Helmet Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cryptostylis hunteriana Leafless Tongue Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cynanchum elegans White-flowered Wax Plant	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Dendrobium melaleucaphilum Spider orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Epacris purpurascens var. purpurascens Epacris purpurascens var. purpurascens	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus camfieldii Camfield's Stringybark	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus glaucina Slaty Red Gum	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus parramattensis subsp. decadens Eucalyptus parramattensis subsp. decadens	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus parramattensis subsp. parramattensis - endangered population Eucalyptus parramattensis C. Hall. subsp. parramattensis in Wyong and Lake Macquarie local government areas	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Genoplesium insigne Variable Midge Orchid	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?

Grammitis stenophylla Narrow-leaf Finger Fern	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Grevillea parviflora subsp. parviflora Small-flower Grevillea	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Heleioporus australiacus Giant Burrowing Frog	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Hoplocephalus bitorquatus Pale-headed Snake	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Hoplocephalus bungaroides Broad-headed Snake	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Hoplocephalus stephensii Stephens' Banded Snake	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lathamus discolor Swift Parrot	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Litoria aurea Green and Golden Bell Frog	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Litoria brevipalmata Green-thighed Frog	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Litoria littlejohni Littlejohn's Tree Frog	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?

Lophoictinia isura Square-tailed Kite	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Melaleuca biconvexa Biconvex Paperbark	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Melaleuca groveana Grove's Paperbark	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Miniopterus australis Little Bent-winged Bat	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Miniopterus orianae oceanensis Large Bent-winged Bat	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Mixophyes balbus Stuttering Frog	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Mixophyes iteratus Giant Barred Frog	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Myotis macropus Southern Myotis	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?
Nettapus coromandelianus Cotton Pygmy-Goose	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox connivens Barking Owl	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox strenua Powerful Owl	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Notamacropus parma Parma Wallaby	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?

Pandion cristatus Eastern Osprey	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Petauroides volans Southern Greater Glider	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?
Petaurus norfolcensis Squirrel Glider	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?
Petrogale penicillata Brush-tailed Rock-wallaby	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?
Phascogale tapoatafa Brush-tailed Phascogale	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?

Planigale maculata Common Planigale	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Potorous tridactylus Long-nosed Potoroo	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?
Pseudophryne australis Red-crowned Toadlet	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rhizanthella slateri Eastern Australian Underground Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rhodamnia rubescens Scrub Turpentine	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☑ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Rhodomyrtus psidioides Native Guava	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?

Rutidosis heterogama Heath Wrinklewort	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Senna acclinis Rainforest Cassia	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Syzygium paniculatum Magenta Lilly Pilly	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tetratheca glandulosa Tetratheca glandulosa	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tetratheca juncea Black-eyed Susan	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Thelymitra adorata Wyong Sun Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Tyto novaehollandiae Masked Owl	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto tenebricosa Sooty Owl	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Vespadelus troughtoni Eastern Cave Bat	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☑ Nov ☑ Dec ☑ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Bar-tailed Godwit (baueri)	Limosa lapponica baueri	Habitat constraints
Black-tailed Godwit	Limosa limosa	Habitat constraints
Broad-billed Sandpiper	Limicola falcinellus	Habitat constraints
Coast Groundsel	Senecio spathulatus	Habitat constraints
Curlew Sandpiper	Calidris ferruginea	Habitat constraints
Cymbidium canaliculatum population in the Hunter Catchment	Cymbidium canaliculatum - endangered population	Refer to BAR
Darwinia glaucophylla	Darwinia glaucophylla	Habitat constraints
Eastern Curlew	Numenius madagascariensis	Habitat constraints

Eucalyptus oblonga population at Bateau Bay, Forresters Beach and Tumbi Umbi in the Wyong local government area	Eucalyptus oblonga - endangered population	Refer to BAR
Giant Dragonfly	Petalura gigantea	Habitat constraints
Great Knot	Calidris tenuirostris	Habitat constraints
Greater Sand-plover	Charadrius leschenaultii	Habitat constraints
Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
Hunter Valley Delma	Delma vescolineata	Refer to BAR
Lesser Sand-plover	Charadrius mongolus	Habitat constraints
Mahony's Toadlet	Uperoleia mahonyi	Refer to BAR
Maundia triglochinoides	Maundia triglochinoides	Habitat constraints
Red Knot	Calidris canutus	Habitat constraints
Red-backed Button-quail	Turnix maculosus	Refer to BAR
Rough Doubletail	Diuris praecox	Refer to BAR
Sanderling	Calidris alba	Habitat constraints
Somersby Mintbush	Prostanthera junonis	Refer to BAR
Spreading Guinea Flower	Hibbertia procumbens	Refer to BAR
Terek Sandpiper	Xenus cinereus	Habitat constraints
Thick-leaf Star-hair	Astrotricha crassifolia	Refer to BAR
Tranquility Mintbush	Prostanthera askania	Refer to BAR
Wallum Froglet	Crinia tinnula	Refer to BAR

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00048775/BAAS17046/24/00048776

Proposal Name
HTP BDAR - Wyong IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Assessor Number
BAAS17020

BAM Data version *
Current classification (live - default) (82)

Proponent Names
Stevie Kay, Phil Wood3333, Phil Wood3333

Report Created
12/02/2026

BAM Case Status
Finalised

Assessment Revision
6

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		

Species
Chalinolobus dwyeri / Large-eared Pied Bat
Lathamus discolor / Swift Parrot

Mixophyes balbus / Stuttering Frog
Petrogale penicillata / Brush-tailed Rock-wallaby
Tyto tenebricosa / Sooty Owl
Vespadelus troughtoni / Eastern Cave Bat
Anthochaera phrygia / Regent Honeyeater
Rhodamnia rubescens / Scrub Turpentine
Rhodomyrtus psidioides / Native Guava
Rhizanthella slateri / Eastern Australian Underground Orchid
Genoplesium insigne / Variable Midge Orchid
Corunastylis sp. Charmhaven (NSW896673) / Corunastylis sp. Charmhaven (NSW896673)
Thelymitra adorata / Wyong Sun Orchid

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

BAM Biodiversity Credit Report (Like for like)

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3150-Hunter Coast Ranges Turpentine Wet Forest	Not a TEC	47.9	989	136	1125
3230-Central Coast Escarpment Moist Forest	Not a TEC	72.2	1518	360	1878
3239-Hunter Range Sheltered Grey Gum Forest	Not a TEC	5.0	103	0	103
3242-Lower North Ranges Turpentine Moist Forest	Not a TEC	28.7	784	0	784
3263-Watagan Range Turpentine-Mahogany Grassy Forest	Not a TEC	59.4	1436	98	1534
3617-Sydney Hinterland Peppermint-Apple Forest	Not a TEC	33.9	948	0	948
3621-Sydney Hinterland Turpentine-Apple Gully Forest	Not a TEC	4.7	0	129	129
3250-Northern Foothills Blackbutt Grassy Forest	Not a TEC	5.9	0	114	114
3029-Lower North Wet Gully Palm Rainforest	Not a TEC	3.3	92	0	92
3581-Hunter Coast Foothills Apple Forest	Not a TEC	0.7	0	16	16
3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Not a TEC	1.3	32	0	32
3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	Not a TEC	2.0	23	17	40
3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub	Not a TEC	0.4	19	0	19

3582-Hunter Coast Lowland Apple-Bloodwood Forest	Not a TEC	11.1	142	81	223
3583-Hunter Coast Lowland Scribbly Gum Forest	Not a TEC	8.4	40	116	156
4042-Lower North Riverflat Eucalypt-Paperbark Forest	Not a TEC	0.9	0	33	33
4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	0.4	0	13	13

3029-Lower North Wet Gully Palm Rainforest

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Northern Warm Temperate Rainforests This includes PCT's: 615, 1523, 1529, 1531, 1532, 2101, 3024, 3025, 3026, 3027, 3028, 3029, 3030, 3031, 3032, 3033, 3034, 3035, 3037, 3038, 3039, 3040, 3041, 3042, 3043, 3044, 4107	Northern Warm Temperate Rainforests <50%	3029_Mod-good	Yes	92	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3150-Hunter Coast Ranges Turpentine Wet Forest

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
North Coast Wet Sclerophyll Forests This includes PCT's: 487, 613, 1563, 1575, 3058, 3060, 3067, 3073, 3078, 3084, 3087, 3088, 3102, 3125, 3136, 3137, 3138, 3139, 3140, 3141, 3142, 3145, 3147, 3148, 3149, 3150, 3153, 3154, 3156, 3157, 3158, 3160, 3161, 3162, 3163, 3164, 3165, 3166, 3168, 3169, 3171, 3172, 3173, 3174, 3176, 3177, 3178, 3180, 4043, 4115	North Coast Wet Sclerophyll Forests <50%	3150_Mod-good	Yes	989	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	North Coast Wet Sclerophyll Forests This includes PCT's: 487, 613, 1563, 1575, 3058, 3060, 3067, 3073, 3078, 3084, 3087, 3088, 3102, 3125, 3136, 3137, 3138, 3139, 3140, 3141, 3142, 3145, 3147, 3148, 3149, 3150, 3153, 3154, 3156, 3157, 3158, 3160, 3161, 3162, 3163, 3164, 3165, 3166, 3168, 3169, 3171, 3172, 3173, 3174, 3176, 3177, 3178, 3180, 4043, 4115	North Coast Wet Sclerophyll Forests <50%	3150_Plantation	No	77	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	North Coast Wet Sclerophyll Forests This includes PCT's: 487, 613, 1563, 1575, 3058, 3060, 3067, 3073, 3078, 3084, 3087, 3088, 3102, 3125, 3136, 3137, 3138, 3139, 3140, 3141, 3142, 3145, 3147, 3148, 3149, 3150, 3153, 3154, 3156, 3157, 3158, 3160, 3161, 3162, 3163, 3164, 3165, 3166, 3168, 3169, 3171, 3172, 3173, 3174, 3176, 3177, 3178, 3180, 4043, 4115	North Coast Wet Sclerophyll Forests <50%	3150_Derived	No	59	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3230-Central Coast Escarpment Moist Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3230_Mod-good	Yes	1518	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3230_Plantation	No	245	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3230_Derived	No	115	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3239-Hunter Range Sheltered Grey Gum Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3239_Mod-good	Yes	103	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3242-Lower North Ranges Turpentine Moist Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3242_Mod-good	Yes	784	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3244_Mod-good	Yes	32	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3250-Northern Foothills Blackbutt Grassy Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3250_Mod-good	No	88	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3250_Derived	No	26	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3263-Watagan Range Turpentine-Mahogany Grassy Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3263_Mod-good	Yes	1436	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3263_Derived	No	98	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3433-Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Hunter-Macleay Dry Sclerophyll Forests This includes PCT's: 1608, 3431, 3433, 3436, 3437, 3439, 3442, 3444, 3446	Hunter-Macleay Dry Sclerophyll Forests >=50% and <70%	3433_Mod-good	Yes	23	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Hunter-Macleay Dry Sclerophyll Forests This includes PCT's: 1608, 3431, 3433, 3436, 3437, 3439, 3442, 3444, 3446	Hunter-Macleay Dry Sclerophyll Forests >=50% and <70%	3433_Derived	No	17	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3436-Hunter Coast Sandy Creekflat Low Paperbark Scrub	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Hunter-Macleay Dry Sclerophyll Forests This includes PCT's: 1608, 3431, 3433, 3436, 3437, 3439, 3442, 3444, 3446	Hunter-Macleay Dry Sclerophyll Forests >=50% and <70%	3436_Mod-good	Yes	19	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3436-Hunter Coast Sandy Creekflat Low Paperbark Scru						
3581-Hunter Coast Foothills Apple Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 1681, 3578, 3579, 3580, 3581, 3582, 3583, 3584, 3585, 3586, 3587, 3588, 3589, 3590, 3591, 3592, 3593, 3594, 3595, 3596, 3597, 3598	Sydney Coastal Dry Sclerophyll Forests <50%	3581_Mod-good	No	16	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3582-Hunter Coast Lowland Apple-Bloodwood Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 1681, 3578, 3579, 3580, 3581, 3582, 3583, 3584, 3585, 3586, 3587, 3588, 3589, 3590, 3591, 3592, 3593, 3594, 3595, 3596, 3597, 3598	Sydney Coastal Dry Sclerophyll Forests <50%	3582_Mod-good	Yes	142	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 1681, 3578, 3579, 3580, 3581, 3582, 3583, 3584, 3585, 3586, 3587, 3588, 3589, 3590, 3591, 3592, 3593, 3594, 3595, 3596, 3597, 3598	Sydney Coastal Dry Sclerophyll Forests <50%	3582_Derived	No	81	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3583-Hunter Coast Lowland Scribbly Gum Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 3583, 3592, 3594	Sydney Coastal Dry Sclerophyll Forests >=50% and <70%	3583_Mod-good	Yes	40	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sydney Coastal Dry Sclerophyll Forests This includes PCT's: 3583, 3592, 3594	Sydney Coastal Dry Sclerophyll Forests >=50% and <70%	3583_Derived	No	116	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3617-Sydney Hinterland Peppermint-Apple Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Sydney Hinterland Dry Sclerophyll Forests This includes PCT's: 612, 621, 624, 1614, 1631, 1666, 1667, 3599, 3600, 3601, 3602, 3603, 3604, 3605, 3606, 3607, 3608, 3609, 3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3618, 3619, 3620, 3621, 3622, 3623, 3625, 3626, 3627	Sydney Hinterland Dry Sclerophyll Forests <50%	3617_Mod-good	Yes	948	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3621-Sydney Hinterland Turpentine-Apple Gully Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Sydney Hinterland Dry Sclerophyll Forests This includes PCT's: 612, 621, 624, 1614, 1631, 1666, 1667, 3599, 3600, 3601, 3602, 3603, 3604, 3605, 3606, 3607, 3608, 3609, 3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3618, 3619, 3620, 3621, 3622, 3623, 3625, 3626, 3627	Sydney Hinterland Dry Sclerophyll Forests <50%	3621_Mod-good	No	129	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

4042-Lower North Riverflat Eucalypt-Paperbark Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Coastal Floodplain Wetlands This includes PCT's: 4015, 4023, 4024, 4025, 4026, 4027, 4029, 4034, 4035, 4036, 4037, 4041, 4042, 4044, 4046, 4049, 4050, 4051, 4055, 4059	Coastal Floodplain Wetlands >=70% and <90%	4042_Mod-good	No	19	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Coastal Floodplain Wetlands This includes PCT's: 4015, 4023, 4024, 4025, 4026, 4027, 4029, 4034, 4035, 4036, 4037, 4041, 4042, 4044, 4046, 4049, 4050, 4051, 4055, 4059	Coastal Floodplain Wetlands >=70% and <90%	4042_Derived	No	14	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

4044-Northern Creekflat Eucalypt-Paperbark Mesic Swamp Forest	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057	-	4044_Mod-good	No	6	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 3272, 3906, 3983, 3985, 3986, 3988, 3989, 3990, 3995, 3997, 3998, 4000, 4001, 4004, 4006, 4009, 4013, 4019, 4020, 4021, 4044, 4047, 4057	-	4044_Derived	No	7	Wyong, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Acacia bynoeana / Bynoe's Wattle	**3582_Mod-good, 3582_Derived, 3583_Mod-good, 3583_Derived**	5.8	174.00
Angophora inopina / Charmhaven Apple	**3250_Mod-good, 3582_Mod-good**	3.7	142.00

Anthochaera phrygia / Regent Honeyeater	**3263_Mod-good**	0.5	29.00
Asperula asthenes / Trailing Woodruff	**3242_Mod-good, 3250_Mod-good**	2.8	100.00
Callocephalon fimbriatum / Gang-gang Cockatoo	**3150_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3244_Mod-good**	15.4	610.00
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo	**3150_Mod-good, 3230_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3230_Plantation, 3250_Mod-good, 3029_Mod-good, 3433_Mod-good**	10.1	397.00
Cercartetus nanus / Eastern Pygmy-possum	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3029_Mod-good, 3581_Mod-good, 3244_Mod-good, 3433_Mod-good**	159.0	5923.00

Chalinolobus dwyeri / Large-eared Pied Bat	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3581_Mod-good, 3244_Mod-good, 3150_Derived, 3230_Derived, 3250_Derived, 3263_Derived, 3433_Mod-good, 3433_Derived**	252.1	12994.00
Corunastylis sp. Charmhaven (NSW896673) / Corunastylis sp. Charmhaven (NSW896673)	**3433_Mod-good, 3433_Derived, 3582_Mod-good, 3582_Derived, 3583_Derived**	6.1	205.00
Corybas dowlingii / Red Helmet Orchid	**3150_Mod-good, 3150_Plantation, 3250_Mod-good, 3433_Mod-good, 3582_Mod-good**	34.9	1302.00
Cryptostylis hunteriana / Leafless Tongue Orchid	**3250_Mod-good, 3250_Derived, 3582_Mod-good, 3582_Derived, 3583_Derived**	7.1	117.00
Cynanchum elegans / White-flowered Wax Plant	**3250_Mod-good**	0.2	6.00

Dendrobium melaleucaphilum / Spider orchid	**3250_Mod-good**	0.2	6.00
Epacris purpurascens var. purpurascens / Epacris purpurascens var. purpurascens	**3150_Mod-good, 3250_Mod-good**	14.0	21.00
Genoplesium insigne / Variable Midge Orchid	**3582_Mod-good, 3582_Derived, 3583_Derived**	10.7	389.00
Grammitis stenophylla / Narrow-leaf Finger Fern	**3150_Mod-good, 3250_Mod-good**	5.9	187.00
Grevillea parviflora subsp. parviflora / Small-flower Grevillea	**3582_Mod-good, 3582_Derived, 3583_Derived**	11.9	280.00
Heleioporus australiacus / Giant Burrowing Frog	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3230_Plantation, 3029_Mod-good, 3150_Derived, 3230_Derived**	73.6	2123.00
Hoplocephalus bitorquatus / Pale-headed Snake	**3250_Mod-good**	3.6	117.00

Hoplocephalus stephensii / Stephens' Banded Snake	**3150_Mod-good, 3230_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3250_Mod-good, 3029_Mod-good, 3581_Mod-good, 3244_Mod-good, 3433_Mod-good, 3436_Mod-good, 3582_Mod-good, 3583_Mod-good, 4042_Mod-good**	234.7	9195.00
Lathamus discolor / Swift Parrot	**3436_Mod-good, 3582_Mod-good, 3582_Derived, 3583_Mod-good, 3583_Derived**	3.4	171.00
Litoria littlejohni / Littlejohn's Tree Frog	**3150_Mod-good, 3230_Mod-good, 3617_Mod-good, 3621_Mod-good, 3230_Plantation, 3029_Mod-good**	70.3	2702.00
Melaleuca biconvexa / Biconvex Paperbark	**3150_Mod-good, 3242_Mod-good, 3250_Mod-good**	6.1	203.00
Melaleuca groveana / Grove's Paperbark	**3250_Mod-good**	2.0	4.00

Mixophyes balbus / Stuttering Frog	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3029_Mod-good, 3581_Mod-good, 3244_Mod-good, 3150_Derived, 3230_Derived, 3263_Derived**	192.0	11133.00
Mixophyes iteratus / Giant Barred Frog	**3150_Mod-good, 3230_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3230_Plantation, 3029_Mod-good, 3150_Derived, 3230_Derived**	10.8	319.00
Myotis macropus / Southern Myotis	**3582_Mod-good, 3583_Derived, 4042_Mod-good, 4042_Derived**	2.4	76.00
Ninox connivens / Barking Owl	**3150_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good**	16.5	649.00

Ninox strenua / Powerful Owl	**3150_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good**	32.7	1277.00
Notamacropus parma / Parma Wallaby	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3029_Mod-good, 3581_Mod-good, 3244_Mod-good, 3433_Mod-good, 3582_Mod-good, 4042_Mod-good**	212.7	7443.00
Petauroides volans / Southern Greater Glider	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3029_Mod-good, 3581_Mod-good, 3244_Mod-good, 3433_Mod-good**	246.6	9532.00

Petaurus norfolcensis / Squirrel Glider	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3581_Mod-good, 3244_Mod-good, 3433_Mod-good, 3436_Mod-good, 3582_Mod-good, 3583_Mod-good, 4042_Mod-good, 4044_Mod-good**	250.1	9658.00
Petrogale penicillata / Brush-tailed Rock-wallaby	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3250_Mod-good, 3029_Mod-good, 3581_Mod-good, 3244_Mod-good**	77.5	4077.00

Phascogale tapoatafa / Brush-tailed Phascogale	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3581_Mod-good, 3244_Mod-good, 3433_Mod-good, 3436_Mod-good, 3582_Mod-good, 3583_Mod-good, 4042_Mod-good, 4044_Mod-good**	250.1	9389.00
Phascolarctos cinereus / Koala	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3029_Mod-good, 3581_Mod-good, 3244_Mod-good, 3433_Mod-good, 3436_Mod-good, 3582_Mod-good, 3583_Mod-good, 4042_Mod-good, 4044_Mod-good**	253.4	9814.00

Potorous tridactylus / Long-nosed Potoroo	**3150_Mod-good, 3230_Mod-good, 3242_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3581_Mod-good, 3244_Mod-good, 3433_Mod-good, 3436_Mod-good, 3582_Mod-good, 3583_Mod-good, 4042_Mod-good, 4044_Mod-good**	168.3	5923.00
Pseudophryne australis / Red-crowned Toadlet	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3617_Mod-good, 3621_Mod-good, 3230_Plantation, 3029_Mod-good, 3150_Derived, 3230_Derived**	49.9	1453.00
Rhizanthella slateri / Eastern Australian Underground Orchid	**3150_Mod-good, 3242_Mod-good**	70.9	3547.00

Rhodamnia rubescens / Scrub Turpentine	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3150_Plantation, 3230_Plantation, 3250_Mod-good, 3029_Mod-good, 3150_Derived, 3230_Derived, 3250_Derived, 3263_Derived**	1025.0	3075.00
Rhodomyrtus psidioides / Native Guava	**3150_Mod-good, 3242_Mod-good, 3263_Mod-good, 3250_Mod-good, 3029_Mod-good**	17.9	1080.00
Rutidosis heterogama / Heath Wrinklewort	**3250_Mod-good, 3583_Derived**	0.7	15.00
Senna acclinis / Rainforest Cassia	**3150_Mod-good, 3242_Mod-good, 3263_Mod-good, 3029_Mod-good**	19.2	789.00
Syzygium paniculatum / Magenta Lilly Pilly	**3150_Mod-good, 3242_Mod-good, 3250_Mod-good**	61.0	122.00
Tetratheca juncea / Black-eyed Susan	**3242_Mod-good, 3250_Mod-good, 3250_Derived, 3582_Mod-good, 3582_Derived, 3583_Mod-good, 3583_Derived**	14.7	417.00
Thelymitra adorata / Wyong Sun Orchid	**3583_Derived**	0.8	21.00

Tyto novaehollandiae / Masked Owl	**3150_Mod-good, 3230_Mod-good, 3263_Mod-good, 3230_Plantation**	7.7	283.00
Tyto tenebricosa / Sooty Owl	**3150_Mod-good, 3230_Mod-good, 3239_Mod-good, 3242_Mod-good, 3263_Mod-good, 3230_Plantation, 3029_Mod-good, 3244_Mod-good, 4042_Mod-good**	91.7	5369.00
Vespadelus troughtoni / Eastern Cave Bat	**3150_Mod-good, 3239_Mod-good, 3242_Mod-good, 3617_Mod-good, 3621_Mod-good, 3150_Plantation, 3250_Mod-good, 3581_Mod-good, 3244_Mod-good, 3150_Derived, 3250_Derived, 3433_Mod-good, 3433_Derived**	127.8	6475.00

Credit Retirement Options

Like-for-like credit retirement options

Acacia bynoeana / Bynoe's Wattle	Spp	IBRA subregion
	Acacia bynoeana / Bynoe's Wattle	Any in NSW

Angophora inopina / Charmhaven Apple	Spp	IBRA subregion
	Angophora inopina / Charmhaven Apple	Any in NSW
Anthochaera phrygia / Regent Honeyeater	Spp	IBRA subregion
	Anthochaera phrygia / Regent Honeyeater	Any in NSW
Asperula asthenes / Trailing Woodruff	Spp	IBRA subregion
	Asperula asthenes / Trailing Woodruff	Any in NSW
Callocephalon fimbriatum / Gang-gang Cockatoo	Spp	IBRA subregion
	Callocephalon fimbriatum / Gang-gang Cockatoo	Any in NSW
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo	Spp	IBRA subregion
	Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo	Any in NSW
Cercartetus nanus / Eastern Pygmy-possum	Spp	IBRA subregion
	Cercartetus nanus / Eastern Pygmy-possum	Any in NSW

Chalinolobus dwyeri / Large-eared Pied Bat	Spp	IBRA subregion
	Chalinolobus dwyeri / Large-eared Pied Bat	Any in NSW
Corunastylis sp. Charmhaven (NSW896673) / Corunastylis sp. Charmhaven (NSW896673)	Spp	IBRA subregion
	Corunastylis sp. Charmhaven (NSW896673) / Corunastylis sp. Charmhaven (NSW896673)	Any in NSW
Corybas dowlingii / Red Helmet Orchid	Spp	IBRA subregion
	Corybas dowlingii / Red Helmet Orchid	Any in NSW
Cryptostylis hunteriana / Leafless Tongue Orchid	Spp	IBRA subregion
	Cryptostylis hunteriana / Leafless Tongue Orchid	Any in NSW
Cynanchum elegans / White-flowered Wax Plant	Spp	IBRA subregion
	Cynanchum elegans / White-flowered Wax Plant	Any in NSW
Dendrobium melaleucaphilum / Spider orchid	Spp	IBRA subregion
	Dendrobium melaleucaphilum / Spider orchid	Any in NSW

Epacris purpurascens var. purpurascens / Epacris purpurascens var. purpurascens	Spp	IBRA subregion
	Epacris purpurascens var. purpurascens / Epacris purpurascens var. purpurascens	Any in NSW
Genoplesium insigne / Variable Midge Orchid	Spp	IBRA subregion
	Genoplesium insigne / Variable Midge Orchid	Any in NSW
Grammitis stenophylla / Narrow-leaf Finger Fern	Spp	IBRA subregion
	Grammitis stenophylla / Narrow-leaf Finger Fern	Any in NSW
Grevillea parviflora subsp. parviflora / Small-flower Grevillea	Spp	IBRA subregion
	Grevillea parviflora subsp. parviflora / Small-flower Grevillea	Any in NSW
Heleioporus australiacus / Giant Burrowing Frog	Spp	IBRA subregion
	Heleioporus australiacus / Giant Burrowing Frog	Any in NSW
Hoplocephalus bitorquatus / Pale-headed Snake	Spp	IBRA subregion
	Hoplocephalus bitorquatus / Pale-headed Snake	Any in NSW

Hoplocephalus stephensii / Stephens' Banded Snake	Spp	IBRA subregion
	Hoplocephalus stephensii / Stephens' Banded Snake	Any in NSW
Lathamus discolor / Swift Parrot	Spp	IBRA subregion
	Lathamus discolor / Swift Parrot	Any in NSW
Litoria littlejohni / Littlejohn's Tree Frog	Spp	IBRA subregion
	Litoria littlejohni / Littlejohn's Tree Frog	Any in NSW
Melaleuca biconvexa / Biconvex Paperbark	Spp	IBRA subregion
	Melaleuca biconvexa / Biconvex Paperbark	Any in NSW
Melaleuca groveana / Grove's Paperbark	Spp	IBRA subregion
	Melaleuca groveana / Grove's Paperbark	Any in NSW
Mixophyes balbus / Stuttering Frog	Spp	IBRA subregion
	Mixophyes balbus / Stuttering Frog	Any in NSW
Mixophyes iteratus / Giant Barred Frog	Spp	IBRA subregion

	Mixophyes iteratus / Giant Barred Frog	Any in NSW
Myotis macropus / Southern Myotis	Spp	IBRA subregion
	Myotis macropus / Southern Myotis	Any in NSW
Ninox connivens / Barking Owl	Spp	IBRA subregion
	Ninox connivens / Barking Owl	Any in NSW
Ninox strenua / Powerful Owl	Spp	IBRA subregion
	Ninox strenua / Powerful Owl	Any in NSW
Notamacropus parma / Parma Wallaby	Spp	IBRA subregion
	Notamacropus parma / Parma Wallaby	Any in NSW
Petauroides volans / Southern Greater Glider	Spp	IBRA subregion
	Petauroides volans / Southern Greater Glider	Any in NSW
Petaurus norfolcensis / Squirrel Glider	Spp	IBRA subregion
	Petaurus norfolcensis / Squirrel Glider	Any in NSW

Petrogale penicillata / Brush-tailed Rock-wallaby	Spp	IBRA subregion
	Petrogale penicillata / Brush-tailed Rock-wallaby	Any in NSW
Phascogale tapoatafa / Brush-tailed Phascogale	Spp	IBRA subregion
	Phascogale tapoatafa / Brush-tailed Phascogale	Any in NSW
Phascolarctos cinereus / Koala	Spp	IBRA subregion
	Phascolarctos cinereus / Koala	Any in NSW
Potorous tridactylus / Long-nosed Potoroo	Spp	IBRA subregion
	Potorous tridactylus / Long-nosed Potoroo	Any in NSW
Pseudophryne australis / Red-crowned Toadlet	Spp	IBRA subregion
	Pseudophryne australis / Red-crowned Toadlet	Any in NSW
Rhizanthella slateri / Eastern Australian Underground Orchid	Spp	IBRA subregion
	Rhizanthella slateri / Eastern Australian Underground Orchid	Any in NSW
Rhodamnia rubescens / Scrub Turpentine	Spp	IBRA subregion

	Rhodamnia rubescens / Scrub Turpentine	Any in NSW
Rhodomyrtus psidioides / Native Guava	Spp	IBRA subregion
	Rhodomyrtus psidioides / Native Guava	Any in NSW
Rutidosis heterogama / Heath Wrinklewort	Spp	IBRA subregion
	Rutidosis heterogama / Heath Wrinklewort	Any in NSW
Senna acclinis / Rainforest Cassia	Spp	IBRA subregion
	Senna acclinis / Rainforest Cassia	Any in NSW
Syzygium paniculatum / Magenta Lilly Pilly	Spp	IBRA subregion
	Syzygium paniculatum / Magenta Lilly Pilly	Any in NSW
Tetratheca juncea / Black-eyed Susan	Spp	IBRA subregion
	Tetratheca juncea / Black-eyed Susan	Any in NSW
Thelymitra adorata / Wyong Sun Orchid	Spp	IBRA subregion
	Thelymitra adorata / Wyong Sun Orchid	Any in NSW

Tyto novaehollandiae / Masked Owl	Spp	IBRA subregion
	Tyto novaehollandiae / Masked Owl	Any in NSW
Tyto tenebricosa / Sooty Owl	Spp	IBRA subregion
	Tyto tenebricosa / Sooty Owl	Any in NSW
Vespadelus troughtoni / Eastern Cave Bat	Spp	IBRA subregion
	Vespadelus troughtoni / Eastern Cave Bat	Any in NSW

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048775/BAAS18097/25/00062530	HTP BDAR - Wyong IBRA subregion - Scattered Trees	05/08/2025
Assessor Name	Report Created	BAM Data version *
Alex Cockerill	13/02/2026	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	13/02/2026
Assessment Revision	BOS entry trigger	Assessment Type
0	Major Project	Scattered Trees

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees Credit Requirement

Class	Contains hollows	Number of trees	Ecosystem credits
4042-Lower North Riverflat Eucalypt-Paperbark Forest			
2	False	5.0	3
			3
			3

Species credits for threatened species

The scattered tree module is not applicable. This species much be assessed using chapter 5 of the BAM and BAM-C development module

Lathamus discolor Swift Parrot
Anthochaera phrygia Regent Honeyeater

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048775/BAAS18097/25/00062530	HTP BDAR - Wyong IBRA subregion - Scattered Trees	05/08/2025
Assessor Name	Report Created	BAM Data version *
Alex Cockerill	13/02/2026	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	13/02/2026
Assessment Revision	BOS entry trigger	Assessment Type
0	Major Project	Scattered Trees

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Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name
Black Falcon	Falco subniger
Black-necked Stork	Ephippiorhynchus asiaticus
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae
Dusky Woodswallow	Artamus cyanopterus cyanopterus
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis
Eastern False Pipistrelle	Falsistrellus tasmaniensis
Eastern Osprey	Pandion cristatus
Flame Robin	Petroica phoenicea
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis
Little Eagle	Hieraaetus morphnoides
Little Lorikeet	Glossopsitta pusilla
Regent Honeyeater	Anthochaera phrygia
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami
Speckled Warbler	Chthonicola sagittata
Spotted Harrier	Circus assimilis
Swift Parrot	Lathamus discolor

Varied Sittella	Daphoenositta chrysoptera
White-bellied Sea-Eagle	Haliaeetus leucogaster
White-throated Needletail	Hirundapus caudacutus

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

Scattered Tree Report

Proposal Details

Assessment Id
00048775/BAAS18097/25/00062530

Assessment name
HTP BDAR - Wyong IBRA subregion - Scattered Trees

BAM data last updated *
05/08/2025

Assessor Name
Alex Cockerill

Report Created
13/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
13/02/2026

Assessment Revision
0

Assessment Type
Scattered Trees

BOS entry trigger
Major Project

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Scattered Trees

PCT code	PCT name	No. of trees	Species	DBHOB Category	Contain hollows	Class	Assessment required
4042	Lower North Riverflat Eucalypt-Paperbark Forest	5	Eucalyptus tereticornis	>= 20cm and <50cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00048775/BAAS18097/25/00062530

Proposal Name
HTP BDAR - Wyong IBRA subregion - Scattered Trees

BAM data last updated *
05/08/2025

Assessor Name
Alex Cockerill

Assessor Number
BAAS17020

BAM Data version *
Current classification (live - default) (82)

Proponent Names

Report Created
13/02/2026

Date Finalised
13/02/2026

Assessment Revision
0

BOS entry trigger
Major Project

Assessment Type
Scattered Trees

BAM Case Status
Finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Like for like)

PCT	TEC	HBT Cr	No HBT Cr	Credits
4042-Lower North Riverflat Eucalypt-Paperbark Forest	Not a TEC	0	3	3

Credit classes for 4042

Like-for-like options

Class	Trading group	HBT	Credits	IBRA region
Coastal Floodplain Wetlands	Coastal Floodplain Wetlands >=70% and <90%	No	3	Wyong, Hunter, Pittwater and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Credit Summary Report

Proposal Details

Assessment Id
00048830/BAAS17046/24/00048832

Proposal Name
HTP BDAR - Yengo IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Report Created
12/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/02/2026

Assessment Revision
7

BOS entry trigger

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

Blue Mountains Peppermint Shrub Forest											
10	3599_Mod-good	Not a TEC	68.1	68.1	8.6	PCT Cleared - 0%	High Sensitivity to Gain			1.50		218
											Subtotal	**218**
Central Coast Escarpment Moist Forest											
3	3230_Mod-good	Not a TEC	78.1	69.2	16.1	PCT Cleared - 25%	High Sensitivity to Gain			1.50		417
											Subtotal	**417**
Hunter Escarpment Footslopes Ironbark Forest											
8	3438_Mod-good	Not a TEC	79.5	76.3	2	PCT Cleared - 24%	High Sensitivity to Gain			1.50		57
											Subtotal	**57**
Hunter Escarpment Grey Box Forest											
9	3489_Mod-good	Not a TEC	84.3	82.7	4.7	PCT Cleared - 2%	High Sensitivity to Gain			1.50		147
											Subtotal	**147**

Hunter Range Blue Gum Gully Forest												
4	3237_Mod-good	Not a TEC	80.8	64.2	5.9	PCT Cleared - 2%	High Sensitivity to Gain			1.50		142
											Subtotal	**142**
Hunter Range Colluvial Apple-Gum Forest												
13	3238_Mod-good	Not a TEC	100	71.2	0.05	PCT Cleared - 4%	High Sensitivity to Gain			1.50		1
											Subtotal	**1**
Hunter Range Creekflat Apple-Red Gum Forest												
19	4039_Mod-good	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	97	97.0	0.12	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		6
											Subtotal	**6**

Hunter Range Ironbark Forest												
11	3605_Mod-good	Not a TEC	68.4	65.7	60.6	PCT Cleared - 2%	High Sensitivity to Gain			1.50		1493
											Subtotal	**1493**
Hunter Range Sheltered Grey Gum Forest												
5	3239_Mod-good	Not a TEC	74.2	67.2	101.4	PCT Cleared - 1%	High Sensitivity to Gain			1.50		2556
21	3239_Plantation	Not a TEC	49.2	48.9	2.8	PCT Cleared - 1%	High Sensitivity to Gain			1.50		52
											Subtotal	**2608**
Hunter Range Turpentine-Grey Myrtle Gully Forest												
2	3152_Mod-good	Not a TEC	75.9	58.4	0.92	PCT Cleared - 1%	High Sensitivity to Gain			1.50		20
											Subtotal	**20**

Hunter River Oak Mesic Forest											
20	4072_Mod-good	Not a TEC	93	93.0	0.13	PCT Cleared - 66%	High Sensitivity to Gain			1.75		5
											Subtotal	**5**
Lower Hunter Red Gum-Paperbark Riverflat Forest												
14	3328_Mod-good	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	32.6	31.9	1.1	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		17
											Subtotal	**17**
Lower Hunter Spotted Gum-Ironbark Forest												
15	3444_Mod-good	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	67.6	64.2	1.3	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		42

22	3444_Derived	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	100	100.0	0.32	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		16
											Subtotal	**58**
Lower North Foothills Ironbark-Box-Gum Grassy Forest												
16	3446_Mod-good	Central Hunter Valley eucalypt forest and woodland	71.2	63.4	1.1	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		45
											Subtotal	**45**
Lower North Hinterland Riparian Dry Rainforest												
23	3086_Mod-good	Not a TEC	82.7	68.6	1.9	PCT Cleared - 46%	High Sensitivity to Gain			1.50		49
											Subtotal	**49**

Lower North Ranges Riparian Turpentine Forest												
1	3087_Mod-good	Not a TEC	89.9	68.8	2.8	PCT Cleared - 27%	High Sensitivity to Gain			1.50		73
											Subtotal	**73**
Lower North Ranges Turpentine Moist Forest												
6	3242_Mod-good	Not a TEC	70.4	56.3	10.4	PCT Cleared - 13%	High Sensitivity to Gain			1.50		220
											Subtotal	**220**
Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest												
7	3244_Mod-good	Not a TEC	89.3	79.6	0.65	PCT Cleared - 39%	High Sensitivity to Gain			1.50		19
											Subtotal	**19**
Lower North White Mahogany-Spotted Gum Moist Forest												
18	3241_Mod-good	Not a TEC	74.8	71.8	13.1	PCT Cleared - 31%	High Sensitivity to Gain			1.50		352
											Subtotal	**352**

Northwest Sydney Sandstone Grey Myrtle Dry Rainforest											
17	3151_Mod-good	Not a TEC	62.6	51.9	1.8	PCT Cleared - 2%	High Sensitivity to Gain			1.50	36
										Subtotal	**36**
Sydney Hinterland Peppermint-Apple Forest											
12	3617_Mod-good	Not a TEC	93.6	93.6	2.3	PCT Cleared - 2%	High Sensitivity to Gain			1.50	80
										Subtotal	**80**
										Total	**6063**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Anthochaera phrygia / Regent Honeyeater (Fauna)									
3087_Mod-good	89.9	89.9	0.04	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	3

3152_Mod-good	75.9	75.9	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	9
3230_Mod-good	78.1	78.1	0.04	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	2
3239_Mod-good	74.2	74.2	16.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	903
3489_Mod-good	84.3	84.3	3.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	218
3605_Mod-good	68.4	68.4	19.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	990
3444_Mod-good	67.6	67.6	0.27	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	14

3241_Mod-good	74.8	74.8	2.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	164
3328_Mod-good	32.6	32.6	0.42	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	10
3151_Mod-good	62.6	62.6	0.32	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	15
3238_Mod-good	100.0	100.0	0.05	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	4
3086_Mod-good	82.7	82.7	0.21	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	13
								Subtotal	**2345**

Callocephalon fimbriatum / Gang-gang Cockatoo (Fauna)									
3087_Mod-good	89.9	89.9	0.08	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	4
3237_Mod-good	80.8	80.8	0.86	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	35
3239_Mod-good	67.2	67.2	3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	100
3489_Mod-good	84.3	84.3	0.83	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	35
3605_Mod-good	68.4	68.4	2.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	93
								Subtotal	**267**
Cercartetus nanus / Eastern Pygmy-possum (Fauna)									
3087_Mod-good	68.8	68.8	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	82

3152_Mod-good	58.4	58.4	0.82	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	24
3230_Mod-good	69.2	69.2	12.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	436
3237_Mod-good	64.2	64.2	2.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	83
3239_Mod-good	67.2	67.2	77.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	2594
3242_Mod-good	56.3	56.3	6.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	192
3244_Mod-good	79.6	79.6	0.34	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	14

3438_Mod-good	76.3	76.3	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	76
3489_Mod-good	82.7	82.7	3.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	134
3599_Mod-good	68.1	68.1	7.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	251
3605_Mod-good	65.7	65.7	45.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	1483
3617_Mod-good	93.6	93.6	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	107
3238_Mod-good	71.2	71.2	0.05	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	2

3328_Mod-good	31.9	31.9	0.83	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	13
3444_Mod-good	64.2	64.2	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	42
3446_Mod-good	63.4	63.4	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	36
3151_Mod-good	51.9	51.9	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	48
3241_Mod-good	71.8	71.8	13.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	469
4039_Mod-good	97.0	97.0	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	6

4072_Mod-good	93.0	93.0	0.13	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	6
3239_Plantation	48.9	48.9	0.25	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	6
3086_Mod-good	68.6	68.6	1.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	65
								Subtotal	**6169**
Chalinolobus dwyeri / Large-eared Pied Bat (Fauna)									
3152_Mod-good	58.4	58.4	0.92	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	40
3230_Mod-good	69.2	69.2	16.1	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	834

3237_Mod-good	64.2	64.2	5.9	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	285
3239_Mod-good	67.2	67.2	101.4	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	5113
3242_Mod-good	56.3	56.3	10.4	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	441
3244_Mod-good	79.6	79.6	0.65	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	39
3438_Mod-good	76.3	76.3	2	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	114

3489_Mod-good	82.7	82.7	4.7	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	294
3599_Mod-good	68.1	68.1	8.6	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	437
3605_Mod-good	65.7	65.7	60.6	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	2986
3617_Mod-good	93.6	93.6	2.3	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	161
3238_Mod-good	71.2	71.2	0.05	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	3

3328_Mod-good	31.9	31.9	1.1	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	26
3444_Mod-good	64.2	64.2	1.3	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	63
3446_Mod-good	63.4	63.4	1.1	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	54
3151_Mod-good	51.9	51.9	1.8	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	72
3241_Mod-good	71.8	71.8	13.1	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	704

3239_Plantation	48.9	48.9	2.8	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	104
3444_Derived	100.0	100.0	0.32	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	24
3086_Mod-good	68.6	68.6	1.9	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	98
								Subtotal	**11892**
Cynanchum elegans / White-flowered Wax Plant (Flora)									
3237_Mod-good	80.8	80.8	0.26	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Endangered	Endangered	False	11
3239_Mod-good	74.2	74.2	2.2	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Endangered	Endangered	False	83
								Subtotal	**94**

Eucalyptus fracta / Broken Back Ironbark (Flora)									
3489_Mod-good	84.3	84.3	0.45	Geographic Distribution	Seedbank Persistence	Endangered	Not Listed	True	28
3605_Mod-good	68.4	68.4	12.6	Geographic Distribution	Seedbank Persistence	Endangered	Not Listed	True	649
								Subtotal	**677**
Eucalyptus glaucina / Slaty Red Gum (Flora)									
3239_Mod-good	N/A	N/A	24	Biodiversity Conservation Act listing status	Seedbank Persistence	Vulnerable	Vulnerable	False	48
								Subtotal	**48**
Grammitis stenophylla / Narrow-leaf Finger Fern (Flora)									
3239_Mod-good	74.2	74.2	2.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	83
								Subtotal	**83**
Lathamus discolor / Swift Parrot (Fauna)									
3239_Mod-good	74.2	74.2	0.43	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	24

3489_Mod-good	84.3	84.3	0.62	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	39
3605_Mod-good	68.4	68.4	0.07	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	4
3444_Mod-good	67.6	67.6	0.23	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	12
								Subtotal	**79**
Melaleuca groveana / Grove's Paperbark (Flora)									
3087_Mod-good	N/A	N/A	8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	16
3239_Mod-good	N/A	N/A	12	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	24

3605_Mod-good	N/A	N/A	211	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	422
3151_Mod-good	N/A	N/A	2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	4
								Subtotal	**466**
Myotis macropus / Southern Myotis (Fauna)									
3239_Mod-good	67.2	67.2	0.03	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1
3489_Mod-good	82.7	82.7	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	42
3605_Mod-good	65.7	65.7	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	34
3238_Mod-good	71.2	71.2	0.05	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2

3328_Mod-good	31.9	31.9	0.94	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	15
3444_Mod-good	64.2	64.2	0.36	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	12
3151_Mod-good	51.9	51.9	0.06	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2
3241_Mod-good	71.8	71.8	0.44	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	16
3444_Derived	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	16
								Subtotal	**140**
Ninox strenua / Powerful Owl (Fauna)									
3087_Mod-good	89.9	89.9	0.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	36

3152_Mod-good	75.9	75.9	0.47	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	18
3230_Mod-good	78.1	78.1	6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	235
3237_Mod-good	80.8	80.8	5.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	207
3239_Mod-good	74.2	74.2	42.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1575
3242_Mod-good	70.4	70.4	0.87	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	31
3244_Mod-good	89.3	89.3	0.65	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	29
3438_Mod-good	79.5	79.5	2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	79

3605_Mod-good	68.4	68.4	13	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	444
3444_Mod-good	67.6	67.6	0.43	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	15
3446_Mod-good	71.2	71.2	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	40
3241_Mod-good	74.8	74.8	2.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	106
								Subtotal	**2815**
Notamacropus parma / Parma Wallaby (Fauna)									
3087_Mod-good	68.8	68.8	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	82
3152_Mod-good	58.4	58.4	0.84	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	25

3230_Mod-good	69.2	69.2	12.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	443
3237_Mod-good	64.2	64.2	5.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	188
3239_Mod-good	67.2	67.2	90.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	3027
3242_Mod-good	56.3	56.3	6.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	193
3244_Mod-good	79.6	79.6	0.34	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	14
3489_Mod-good	82.7	82.7	4.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	196

3605_Mod-good	65.7	65.7	45.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1484
3617_Mod-good	93.6	93.6	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	107
3238_Mod-good	71.2	71.2	0.05	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	2
3151_Mod-good	51.9	51.9	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	48
3239_Plantation	48.9	48.9	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	69
3086_Mod-good	68.6	68.6	1.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	65

								Subtotal	**5943**
Olearia cordata / Olearia cordata (Flora)									
3239_Mod-good	74.2	74.2	2.2	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	83
								Subtotal	**83**
Petauroides volans / Southern Greater Glider (Fauna)									
3087_Mod-good	89.9	89.9	2.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	127
3152_Mod-good	75.9	75.9	0.92	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	35
3230_Mod-good	78.1	78.1	16.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	627
3237_Mod-good	80.8	80.8	5.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	239
3239_Mod-good	74.2	74.2	101.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	3766

3242_Mod-good	70.4	70.4	10.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	368
3244_Mod-good	89.3	89.3	0.65	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	29
3438_Mod-good	79.5	79.5	2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	79
3489_Mod-good	84.3	84.3	4.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	200
3599_Mod-good	68.1	68.1	8.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	291
3605_Mod-good	68.4	68.4	60.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	2072
3617_Mod-good	93.6	93.6	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	107

3238_Mod-good	100.0	100.0	0.05	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	3
3328_Mod-good	32.6	32.6	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	18
3444_Mod-good	67.6	67.6	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	44
3446_Mod-good	71.2	71.2	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	40
3151_Mod-good	62.6	62.6	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	58
3241_Mod-good	74.8	74.8	13.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	488
4039_Mod-good	97.0	97.0	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	6

4072_Mod-good	93.0	93.0	0.13	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	6
3239_Plantation	49.2	49.2	2.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	70
3086_Mod-good	82.7	82.7	1.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	79
								Subtotal	**8752**
Petaurus norfolcensis / Squirrel Glider (Fauna)									
3152_Mod-good	75.9	75.9	0.92	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	35
3230_Mod-good	78.1	78.1	16.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	627
3237_Mod-good	80.8	80.8	5.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	239

3239_Mod-good	74.2	74.2	101.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	3766
3242_Mod-good	70.4	70.4	10.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	368
3244_Mod-good	89.3	89.3	0.65	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	29
3438_Mod-good	79.5	79.5	2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	79
3489_Mod-good	82.7	82.7	4.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	196
3599_Mod-good	68.1	68.1	8.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	291
3605_Mod-good	68.4	68.4	60.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2072

3617_Mod-good	93.6	93.6	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	107
3238_Mod-good	100.0	100.0	0.05	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	3
3444_Mod-good	67.6	67.6	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	44
3446_Mod-good	71.2	71.2	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	40
3241_Mod-good	74.8	74.8	13.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	488
4039_Mod-good	97.0	97.0	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	6
3239_Plantation	49.2	49.2	2.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	70

3086_Mod-good	82.7	82.7	1.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	79
								Subtotal	**8539**
Petrogale penicillata / Brush-tailed Rock-wallaby (Fauna)									
3087_Mod-good	68.8	68.8	0.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	41
3152_Mod-good	58.4	58.4	0.39	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	17
3230_Mod-good	69.2	69.2	15.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	791
3237_Mod-good	64.2	64.2	0.09	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	4
3239_Mod-good	67.2	67.2	27.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	1368

3242_Mod-good	56.3	56.3	7.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	328
3244_Mod-good	79.6	79.6	0.31	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	19
3438_Mod-good	76.3	76.3	2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	114
3605_Mod-good	65.7	65.7	13.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	658
3444_Mod-good	64.2	64.2	0.58	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	28
3446_Mod-good	63.4	63.4	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	54
3241_Mod-good	71.8	71.8	6.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	356
								Subtotal	**3778**

Phascogale tapoatafa / Brush-tailed Phascogale (Fauna)									
3152_Mod-good	75.9	75.9	0.92	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	35
3230_Mod-good	78.1	78.1	16.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	627
3237_Mod-good	80.8	80.8	5.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	239
3239_Mod-good	74.2	74.2	101.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	3766
3242_Mod-good	70.4	70.4	10.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	368
3244_Mod-good	89.3	89.3	0.65	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	29
3438_Mod-good	79.5	79.5	2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	79

3605_Mod-good	68.4	68.4	60.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2072
3617_Mod-good	93.6	93.6	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	107
3238_Mod-good	100.0	100.0	0.05	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	3
3446_Mod-good	71.2	71.2	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	40
3151_Mod-good	62.6	62.6	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	58
3239_Plantation	49.2	49.2	2.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	70
								Subtotal	**7493**

Phascolarctos cinereus / Koala (Fauna)									
3087_Mod-good	89.9	89.9	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	127
3152_Mod-good	75.9	75.9	0.92	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	35
3230_Mod-good	78.1	78.1	16.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	627
3237_Mod-good	80.8	80.8	5.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	239
3239_Mod-good	74.2	74.2	101.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3766

3242_Mod-good	70.4	70.4	10.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	368
3244_Mod-good	89.3	89.3	0.65	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	29
3438_Mod-good	79.5	79.5	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	79
3489_Mod-good	84.3	84.3	4.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	200
3599_Mod-good	68.1	68.1	8.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	291
3605_Mod-good	68.4	68.4	60.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	2072

3617_Mod-good	93.6	93.6	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	107
3238_Mod-good	100.0	100.0	0.05	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3
3328_Mod-good	32.6	32.6	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	18
3444_Mod-good	67.6	67.6	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	44
3446_Mod-good	71.2	71.2	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	40
3151_Mod-good	62.6	62.6	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	58

3241_Mod-good	74.8	74.8	13.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	488
4039_Mod-good	97.0	97.0	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	6
4072_Mod-good	93.0	93.0	0.13	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	6
3239_Plantation	49.2	49.2	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	70
3086_Mod-good	82.7	82.7	1.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	79
								Subtotal	**8752**

Prostanthera cineolifera / Singleton Mint Bush (Flora)									
3237_Mod-good	80.8	80.8	2.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	108
3239_Mod-good	74.2	74.2	32.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1220
3489_Mod-good	84.3	84.3	0.45	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	19
3605_Mod-good	68.4	68.4	12.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	436
								Subtotal	**1783**
Pseudophryne australis / Red-crowned Toadlet (Fauna)									
3152_Mod-good	75.9	75.9	0.08	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	2

3230_Mod-good	78.1	78.1	1.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	42
3237_Mod-good	80.8	80.8	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	66
3239_Mod-good	74.2	74.2	6.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	190
3242_Mod-good	70.4	70.4	3.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	87
3605_Mod-good	68.4	68.4	0.04	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	1
3239_Plantation	49.2	49.2	0.63	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	12

								Subtotal	**400**
Rhizanthella slateri / Eastern Australian Underground Orchid (Flora)									
3242_Mod-good	56.3	56.3	10.4	Population size	Ecology or response to management is poorly known	Vulnerable	Endangered	True	441
								Subtotal	**441**
Rhodamnia rubescens / Scrub Turpentine (Flora)									
3087_Mod-good	N/A	N/A	54	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	162
3152_Mod-good	N/A	N/A	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	6
3230_Mod-good	N/A	N/A	23	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	69
3237_Mod-good	N/A	N/A	12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	36

3239_Mod-good	N/A	N/A	134	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	402
3242_Mod-good	N/A	N/A	38	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	114
3605_Mod-good	N/A	N/A	117	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	351
3238_Mod-good	N/A	N/A	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	3
3151_Mod-good	N/A	N/A	4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	12
3241_Mod-good	N/A	N/A	76	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	228

3086_Mod-good	N/A	N/A	16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	48
								Subtotal	**1431**
Tyto novaehollandiae / Masked Owl (Fauna)									
3152_Mod-good	75.9	75.9	0.08	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	3
3237_Mod-good	80.8	80.8	3.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	132
3239_Mod-good	74.2	74.2	8.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	314
3244_Mod-good	89.3	89.3	0.31	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	14
3438_Mod-good	79.5	79.5	0.02	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1

3605_Mod-good	68.4	68.4	4.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	146
3241_Mod-good	74.8	74.8	1.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	56
								Subtotal	**666**
Tyto tenebricosa / Sooty Owl (Fauna)									
3087_Mod-good	89.9	89.9	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	158
3152_Mod-good	75.9	75.9	0.45	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	26
3230_Mod-good	78.1	78.1	15.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	917
3237_Mod-good	80.8	80.8	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	300

3239_Mod-good	74.2	74.2	61.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	3433
3242_Mod-good	70.4	70.4	9.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	488
3244_Mod-good	89.3	89.3	0.34	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	23
3489_Mod-good	84.3	84.3	0.45	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	28
3599_Mod-good	68.1	68.1	3.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	165
3605_Mod-good	68.4	68.4	35.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	1839
3617_Mod-good	93.6	93.6	1.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	100

3238_Mod-good	100.0	100.0	0.05	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	4
3151_Mod-good	62.6	62.6	0.27	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	13
3239_Plantation	49.2	49.2	2.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	104
3086_Mod-good	82.7	82.7	1.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	118
								Subtotal	**7716**
Velleia perfoliata / Velleia perfoliata (Flora)									
3239_Mod-good	67.2	67.2	2.2	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	75
								Subtotal	**75**
Vespadelus troughtoni / Eastern Cave Bat (Fauna)									
3237_Mod-good	64.2	64.2	5.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	285

3239_Mod-good	67.2	67.2	101.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	5113
3242_Mod-good	56.3	56.3	10.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	441
3244_Mod-good	79.6	79.6	0.65	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	39
3438_Mod-good	76.3	76.3	2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	114
3489_Mod-good	82.7	82.7	4.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	294
3599_Mod-good	68.1	68.1	8.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	437
3605_Mod-good	65.7	65.7	60.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	2986

3617_Mod-good	93.6	93.6	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	161
3444_Mod-good	64.2	64.2	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	63
3446_Mod-good	63.4	63.4	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	54
3241_Mod-good	71.8	71.8	13.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	704
4039_Mod-good	97.0	97.0	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	9
3239_Plantation	48.9	48.9	2.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	104
3444_Derived	100.0	100.0	0.32	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	24
								Subtotal	**10828**

Zieria involucrata / Zieria involucrata (Flora)									
3239_Mod-good	67.2	67.2	2.2	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Endangered	Vulnerable	False	75
								Subtotal	**75**

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00048830/BAAS17046/24/00048832

Assessment name
HTP BDAR - Yengo IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Report Created
12/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
7

BOS entry trigger

Date Finalised
12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3087_Mod-good	3087-Lower North Ranges Riparian Turpentine Forest	Mod-good	2.82	2	Area A (1.33 ha) Area B (1.49 ha)
2	3152_Mod-good	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest	Mod-good	0.92	1	Area A (0.25 ha) Area B (0.67 ha)

3	3230_Mod-good	3230-Central Coast Escarpment Moist Forest	Mod-good	16.06	3	Area A (11.98 ha) Area B (4.03 ha) HZ (0.05 ha)
4	3237_Mod-good	3237-Hunter Range Blue Gum Gully Forest	Mod-good	5.92	3	Area A (2.89 ha) Area B (3.03 ha)
5	3239_Mod-good	3239-Hunter Range Sheltered Grey Gum Forest	Mod-good	101.45	6	Area A (78.83 ha) Area B (22.56 ha) HZ (0.06 ha)
6	3242_Mod-good	3242-Lower North Ranges Turpentine Moist Forest	Mod-good	10.44	3	Area A (5.35 ha) Area B (5.08 ha) HZ (0.01 ha)
7	3244_Mod-good	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Mod-good	0.65	1	Area A (0.47 ha) Area B (0.18 ha)
8	3438_Mod-good	3438-Hunter Escarpment Footslopes Ironbark Forest	Mod-good	2	2	Area A (1.48 ha) Area B (0.5 ha) HTZ (0.02 ha)
9	3489_Mod-good	3489-Hunter Escarpment Grey Box Forest	Mod-good	4.74	2	Area A (4.04 ha) Area B (0.7 ha)
10	3599_Mod-good	3599-Blue Mountains Peppermint Shrub Forest	Mod-good	8.55	3	Area A (8.54 ha) Area B (0.01 ha)
11	3605_Mod-good	3605-Hunter Range Ironbark Forest	Mod-good	60.61	5	Area A (47.01 ha) Area B (13.46 ha) HZ (0.14 ha)
12	3617_Mod-good	3617-Sydney Hinterland Peppermint-Apple Forest	Mod-good	2.29	2	Area A (2.29 ha)

13	3238_Mod-good	3238-Hunter Range Colluvial Apple-Gum Forest	Mod-good	0.05	1	Area A (0.01 ha) Area B (0.04 ha)
14	3328_Mod-good	3328-Lower Hunter Red Gum-Paperbark Riverflat Forest	Mod-good	1.08	1	Area A (0.91 ha) Area B (0.17 ha)
15	3444_Mod-good	3444-Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	1.3	1	Area A (0.94 ha) Area B (0.36 ha)
16	3446_Mod-good	3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest	Mod-good	1.13	1	Area A (0.45 ha) Area B (0.68 ha)
17	3151_Mod-good	3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest	Mod-good	1.85	1	Area A (0.87 ha) Area B (0.98 ha)
18	3241_Mod-good	3241-Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	13.06	3	Area A (11.84 ha) Area B (1.01 ha) Area HZ (0.21 ha)
19	4039_Mod-good	4039-Hunter Range Creekflat Apple-Red Gum Forest	Mod-good	0.12	1	Area A (0.12 ha)
20	4072_Mod-good	4072-Hunter River Oak Mesic Forest	Mod-good	0.13	1	Area A (0.13 ha)
21	3239_Plantation	3239-Hunter Range Sheltered Grey Gum Forest	Plantation	2.83	2	Area A (2.76 ha) Area B (0.07 ha)
22	3444_Derived	3444-Lower Hunter Spotted Gum-Ironbark Forest	Derived	0.32	1	Area A (0.32 ha)
23	3086_Mod-good	3086-Lower North Hinterland Riparian Dry Rainforest	Mod-good	1.9	1	Area A (0.78 ha) Area B (1.12 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048830/BAAS17046/24/00048832	HTP BDAR - Yengo IBRA subregion	05/08/2025
Assessor Name	**Report Created**	**BAM Data version ***
	12/02/2026	Current classification (live - default) (82)
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS17020	Major Projects	Finalised
Assessment Revision	**BOS entry trigger**	**Date Finalised**
7		12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	Botaurus poiciloptilus	4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Black Bittern	Ixobrychus flavicollis	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest

Black Falcon	Falco subniger	3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4072-Hunter River Oak Mesic Forest
Black-necked Stork	Ephippiorhynchus asiaticus	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest

Black-necked Stork	Ephippiorhynchus asiaticus	3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Broad-headed Snake	Hoplocephalus bungaroides	3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest

Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Diamond Firetail	Stagonopleura guttata	3239-Hunter Range Sheltered Grey Gum Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3489-Hunter Escarpment Grey Box Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3087-Lower North Ranges Riparian Turpentine Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest

Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
Eastern False Pipistrelle	Falsistrellus tasmaniensis	3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Eastern Osprey	Pandion cristatus	3087-Lower North Ranges Riparian Turpentine Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest

Eastern Osprey	Pandion cristatus	3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Flame Robin	Petroica phoenicea	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Gang-gang Cockatoo	Callocephalon fimbriatum	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest

Gang-gang Cockatoo	Callocephalon fimbriatum	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Golden-tipped Bat	Phoniscus papuensis	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Greater Broad-nosed Bat	Scoteanax rueppellii	3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest

Greater Broad-nosed Bat	Scoteanax rueppellii	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Grey-headed Flying-fox	Pteropus poliocephalus	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest

Grey-headed Flying-fox	Pteropus poliocephalus	3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Large Bent-winged Bat	Miniopterus orianae oceanensis	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Little Bent-winged Bat	Miniopterus australis	3087-Lower North Ranges Riparian Turpentine Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Little Bent-winged Bat	Miniopterus australis	3438-Hunter Escarpment Footslopes Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Little Eagle	Hieraaetus morphnoides	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Little Lorikeet	Glossopsitta pusilla	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest

Little Lorikeet	Glossopsitta pusilla	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
New Holland Mouse	Pseudomys novaehollandiae	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
Olive Whistler	Pachycephala olivacea	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
Painted Honeyeater	Grantiella picta	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest

Painted Honeyeater	Grantiella picta	3230-Central Coast Escarpment Moist Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
Pilotbird	Pycnoptilus floccosus	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
Red-legged Pademelon	Thylogale stigmatica	3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
Regent Honeyeater	Anthochaera phrygia	3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Rosenberg's Goanna	Varanus rosenbergi	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest

Rosenberg's Goanna	Varanus rosenbergi	3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
Scarlet Robin	Petroica boodang	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4072-Hunter River Oak Mesic Forest
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest

South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
South-eastern Hooded Robin	Melanodryas cucullata cucullata	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
Speckled Warbler	Chthonicola sagittata	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest

Speckled Warbler	Chthonicola sagittata	3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Spotted Harrier	Circus assimilis	3438-Hunter Escarpment Footslopes Ironbark Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Spotted-tailed Quoll	Dasyurus maculatus	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Square-tailed Kite	Lophoictinia isura	3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest

Square-tailed Kite	Lophoictinia isura	3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
Swift Parrot	Lathamus discolor	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest

Swift Parrot	Lathamus discolor	3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Turquoise Parrot	Neophema pulchella	3239-Hunter Range Sheltered Grey Gum Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
Varied Sittella	Daphoenositta chrysoptera	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest

White-bellied Sea-Eagle	Haliaeetus leucogaster	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
White-throated Needletail	Hirundapus caudacutus	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3489-Hunter Escarpment Grey Box Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest

White-throated Needletail	Hirundapus caudacutus	3238-Hunter Range Colluvial Apple-Gum Forest
		3328-Lower Hunter Red Gum-Paperbark Riverflat Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Yellow-bellied Glider	Petaurus australis	3087-Lower North Ranges Riparian Turpentine Forest
		3152-Hunter Range Turpentine-Grey Myrtle Gully Forest
		3230-Central Coast Escarpment Moist Forest
		3237-Hunter Range Blue Gum Gully Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3599-Blue Mountains Peppermint Shrub Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest
		3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	3230-Central Coast Escarpment Moist Forest
		3239-Hunter Range Sheltered Grey Gum Forest
		3242-Lower North Ranges Turpentine Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3605-Hunter Range Ironbark Forest
		3617-Sydney Hinterland Peppermint-Apple Forest

Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	3238-Hunter Range Colluvial Apple-Gum Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00048830/BAAS17046/24/00048832	Proposal Name HTP BDAR - Yengo IBRA subregion	BAM data last updated * 05/08/2025
Assessor Name	Report Created 12/02/2026	BAM Data version * Current classification (live - default) (82)
Assessor Number BAAS17020	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 7	BOS entry trigger	Date Finalised 12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Acacia bynoeana Bynoe's Wattle	No (surveyed)	☑ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Acacia pendula - endangered population Acacia pendula population in the Hunter catchment	No (surveyed)	☑ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Anthochaera phrygia Regent Honeyeater	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Burhinus grallarius Bush Stone-curlew	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Callistemon linearifolius Netted Bottle Brush	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Callocephalon fimbriatum Gang-gang Cockatoo	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☐ Jun ☑ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Cercartetus nanus Eastern Pygmy-possum	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Chalinolobus dwyeri Large-eared Pied Bat	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☑ Mar ☑ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☑ Nov ☑ Dec ☑ Survey month outside the specified months?

Cymbidium canaliculatum - endangered population Cymbidium canaliculatum population in the Hunter Catchment	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cynanchum elegans White-flowered Wax Plant	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Dillwynia tenuifolia Dillwynia tenuifolia	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Epacris purpurascens var. purpurascens Epacris purpurascens var. purpurascens	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus camaldulensis - endangered population Eucalyptus camaldulensis population in the Hunter catchment	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus fracta Broken Back Ironbark	Yes (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Eucalyptus glaucina Slaty Red Gum	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus pumila Pokolbin Mallee	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Grammitis stenophylla Narrow-leaf Finger Fern	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Grevillea parviflora subsp. parviflora Small-flower Grevillea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Heleioporus australiacus Giant Burrowing Frog	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?

Hibbertia puberula Hibbertia puberula	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Hoplocephalus bungaroides Broad-headed Snake	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Hoplocephalus stephensii Stephens' Banded Snake	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Lathamus discolor Swift Parrot	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Leionema lamprophyllum subsp. fractum Leionema lamprophyllum subsp. fractum	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Litoria aurea Green and Golden Bell Frog	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Litoria booroolongensis Booroolong Frog	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Litoria littlejohni Littlejohn's Tree Frog	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Melaleuca biconvexa Biconvex Paperbark	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Melaleuca groveana Grove's Paperbark	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Miniopterus australis Little Bent-winged Bat	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☑ Dec ☐ Survey month outside the specified months?
Miniopterus orianae oceanensis Large Bent-winged Bat	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☑ Dec ☐ Survey month outside the specified months?
Mixophyes balbus Stuttering Frog	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Mixophyes iteratus Giant Barred Frog	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Myotis macropus Southern Myotis	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☑ Dec ☑ Survey month outside the specified months?
Ninox connivens Barking Owl	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Ninox strenua Powerful Owl	Yes (surveyed)	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Notamacropus parma Parma Wallaby	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Olearia cordata Olearia cordata	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pandion cristatus Eastern Osprey	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Persoonia hirsuta Hairy Geebung	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petauroides volans Southern Greater Glider	Yes (surveyed)	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Petaurus norfolcensis Squirrel Glider	Yes (surveyed)	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petrogale penicillata Brush-tailed Rock-wallaby	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascogale tapoatafa Brush-tailed Phascogale	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Prostanthera cineolifera Singleton Mint Bush	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Pseudophryne australis Red-crowned Toadlet	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?

Pteropus poliocephalus Grey-headed Flying-fox	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Pterostylis gibbosa Illawarra Greenhood	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rhizanthella slateri Eastern Australian Underground Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rhodamnia rubescens Scrub Turpentine	Yes (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rhodomyrtus psidioides Native Guava	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rutidosis heterogama Heath Wrinklewort	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☑ Dec ☐ Survey month outside the specified months?

Senna acclinis Rainforest Cassia	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Syzygium paniculatum Magenta Lilly Pilly	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Tetratheca glandulosa Tetratheca glandulosa	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto novaehollandiae Masked Owl	Yes (surveyed)	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto tenebricosa Sooty Owl	Yes (surveyed)	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Velleia perfoliata Velleia perfoliata	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Vespadelus troughtoni Eastern Cave Bat	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☑ Mar ☑ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☑ Nov ☑ Dec ☑ Survey month outside the specified months?
Zieria involucrata Zieria involucrata	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Acacia gordonii	Acacia gordonii	Habitat constraints
Asterolasia elegans	Asterolasia elegans	Refer to BAR
Brown Pomaderris	Pomaderris brunnea	Refer to BAR
Darwinia biflora	Darwinia biflora	Refer to BAR
Darwinia peduncularis	Darwinia peduncularis	Habitat constraints
Downy Wattle	Acacia pubescens	Refer to BAR
Dural Land Snail	Pommerhelix duralensis	Refer to BAR
Eucalyptus sp. Cattai	Eucalyptus sp. Cattai	Refer to BAR
Grevillea parviflora subsp. supplicans	Grevillea parviflora subsp. supplicans	Refer to BAR
Gyrostemon thesioides	Gyrostemon thesioides	Refer to BAR
Hibbertia superans	Hibbertia superans	Refer to BAR
Kunzea rupestris	Kunzea rupestris	Habitat constraints
Lasiopetalum joyceae	Lasiopetalum joyceae	Refer to BAR

Leptospermum deanei	Leptospermum deanei	Refer to BAR
Leucopogon fletcheri subsp. fletcheri	Leucopogon fletcheri subsp. fletcheri	Refer to BAR
Micromyrtus blakelyi	Micromyrtus blakelyi	Refer to BAR
Pimelea curviflora var. curviflora	Pimelea curviflora var. curviflora	Refer to BAR
Seringia denticulata in the Hawkesbury local government area	Seringia denticulata - endangered population	Refer to BAR
Spreading Guinea Flower	Hibbertia procumbens	Refer to BAR

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00048830/BAAS17046/24/00048832

Proposal Name
HTP BDAR - Yengo IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Assessor Number
BAAS17020

BAM Data version *
Current classification (live - default) (82)

Proponent Names

Report Created
12/02/2026

BAM Case Status
Finalised

Assessment Revision
7

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		

Species
Chalinolobus dwyeri / Large-eared Pied Bat
Eucalyptus fracta / Broken Back Ironbark

Lathamus discolor / Swift Parrot
Tyto tenebricosa / Sooty Owl
Vespadelus troughtoni / Eastern Cave Bat
Anthochaera phrygia / Regent Honeyeater
Petrogale penicillata / Brush-tailed Rock-wallaby
Rhizanthella slateri / Eastern Australian Underground Orchid
Rhodamnia rubescens / Scrub Turpentine

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

BAM Biodiversity Credit Report (Like for like)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3087-Lower North Ranges Riparian Turpentine Forest	Not a TEC	2.8	73	0	73
3152-Hunter Range Turpentine-Grey Myrtle Gully Forest	Not a TEC	0.9	20	0	20
3230-Central Coast Escarpment Moist Forest	Not a TEC	16.1	0	417	417
3237-Hunter Range Blue Gum Gully Forest	Not a TEC	5.9	142	0	142
3239-Hunter Range Sheltered Grey Gum Forest	Not a TEC	104.3	2556	52	2608
3242-Lower North Ranges Turpentine Moist Forest	Not a TEC	10.4	0	220	220
3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Not a TEC	0.7	19	0	19
3438-Hunter Escarpment Footslopes Ironbark Forest	Not a TEC	2.0	57	0	57
3489-Hunter Escarpment Grey Box Forest	Not a TEC	4.7	147	0	147
3599-Blue Mountains Peppermint Shrub Forest	Not a TEC	8.6	218	0	218
3605-Hunter Range Ironbark Forest	Not a TEC	60.6	1493	0	1493
3617-Sydney Hinterland Peppermint-Apple Forest	Not a TEC	2.3	80	0	80
3238-Hunter Range Colluvial Apple-Gum Forest	Not a TEC	0.1	1	0	1
3328-Lower Hunter Red Gum-Paperbark Riverflat Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	1.1	0	17	17

3444-Lower Hunter Spotted Gum-Ironbark Forest	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	1.6	0	58	58
3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest	Central Hunter Valley eucalypt forest and woodland	1.1	0	45	45
3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest	Not a TEC	1.9	0	36	36
3241-Lower North White Mahogany-Spotted Gum Moist Forest	Not a TEC	13.1	352	0	352
4039-Hunter Range Creekflat Apple-Red Gum Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	0.1	0	6	6
4072-Hunter River Oak Mesic Forest	Not a TEC	0.1	0	5	5
3086-Lower North Hinterland Riparian Dry Rainforest	Not a TEC	1.9	0	49	49

3086-Lower North Hinterland Riparian Dry Rainforest

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Dry Rainforests This includes PCT's: 388, 547, 616, 627, 1124, 1539, 1540, 1543, 2068, 2079, 3010, 3014, 3055, 3056, 3057, 3059, 3061, 3062, 3064, 3065, 3066, 3068, 3070, 3072, 3074, 3075, 3076, 3077, 3079, 3080, 3082, 3083, 3086, 3089, 3091, 3092, 3093, 3095, 3096, 3097, 3098, 3099, 3101, 3103, 3104, 3105, 3106, 3109, 3110, 3111, 3112, 3113, 3114, 3116, 3117, 3118, 3120, 3151, 3469, 4110, 4111, 4112, 4143, 4144	Dry Rainforests <50%	3086_Mod-good	No	49	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3087-Lower North Ranges Riparian Turpentine Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	North Coast Wet Sclerophyll Forests This includes PCT's: 487, 613, 1563, 1575, 3058, 3060, 3067, 3073, 3078, 3084, 3087, 3088, 3102, 3125, 3136, 3137, 3138, 3139, 3140, 3141, 3142, 3145, 3147, 3148, 3149, 3150, 3153, 3154, 3156, 3157, 3158, 3160, 3161, 3162, 3163, 3164, 3165, 3166, 3168, 3169, 3171, 3172, 3173, 3174, 3176, 3177, 3178, 3180, 4043, 4115	North Coast Wet Sclerophyll Forests <50%	3087_Mod-good	Yes	73	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3151-Northwest Sydney Sandstone Grey Myrtle Dry Rainforest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Dry Rainforests This includes PCT's: 388, 547, 616, 627, 1124, 1539, 1540, 1543, 2068, 2079, 3010, 3014, 3055, 3056, 3057, 3059, 3061, 3062, 3064, 3065, 3066, 3068, 3070, 3072, 3074, 3075, 3076, 3077, 3079, 3080, 3082, 3083, 3086, 3089, 3091, 3092, 3093, 3095, 3096, 3097, 3098, 3099, 3101, 3103, 3104, 3105, 3106, 3109, 3110, 3111, 3112, 3113, 3114, 3116, 3117, 3118, 3120, 3151, 3469, 4110, 4111, 4112, 4143, 4144	Dry Rainforests <50%	3151_Mod-good	No	36	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3152-Hunter Range Turpentine-Grey Myrtle Gully Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3152_Mod-good	Yes	20	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3230-Central Coast Escarpment Moist Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3230_Mod-good	No	417	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3237-Hunter Range Blue Gum Gully Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3237_Mod-good	Yes	142	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3238-Hunter Range Colluvial Apple-Gum Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3238_Mod-good	Yes	1	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3239-Hunter Range Sheltered Grey Gum Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3239_Mod-good	Yes	2556	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3239_Plantation	No	52	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3241-Lower North White Mahogany-Spotted Gum Moist Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3241_Mod-good	Yes	352	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3242-Lower North Ranges Turpentine Moist Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3242_Mod-good	No	220	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3244_Mod-good	Yes	19	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3328-Lower Hunter Red Gum-Paperbark Riverflat Forest	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 3145, 3181, 3185, 3188, 3192, 3258, 3328, 4024, 4025, 4039, 4041, 4058, 4138	-	3328_Mod-good	No	17	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3438-Hunter Escarpment Footslopes Ironbark Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Hunter-Macleay Dry Sclerophyll Forests This includes PCT's: 1608, 1612, 3431, 3432, 3433, 3434, 3435, 3436, 3437, 3438, 3439, 3441, 3442, 3443, 3444, 3445, 3446, 3447, 4157, 4158	Hunter-Macleay Dry Sclerophyll Forests <50%	3438_Mod-good	Yes	57	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3438-Hunter Escarpment Footslopes Ironbark Forest

3444-Lower Hunter Spotted Gum-Ironbark Forest

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3444_Mod-good	No	42	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3444_Derived	No	16	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3446-Lower North Foothills Ironbark-Box-Gum Grassy Forest

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Central Hunter Valley eucalypt forest and woodland This includes PCT's: 1176, 3314, 3315, 3431, 3438, 3446, 3485, 3490, 3497	-	3446_Mod-good	No	45	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3489-Hunter Escarpment Grey Box Forest

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Central Gorge Dry Sclerophyll Forests This includes PCT's: 3081, 3472, 3473, 3474, 3475, 3476, 3477, 3478, 3479, 3480, 3481, 3482, 3483, 3484, 3486, 3487, 3488, 3489, 3490, 3491, 3493, 3494, 3495, 3496, 3497, 3498, 3499, 3509	Central Gorge Dry Sclerophyll Forests <50%	3489_Mod-good	Yes	147	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3599-Blue Mountains Peppermint Shrub Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Sydney Hinterland Dry Sclerophyll Forests This includes PCT's: 612, 621, 624, 1614, 1631, 1666, 1667, 3599, 3600, 3601, 3602, 3603, 3604, 3605, 3606, 3607, 3608, 3609, 3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3618, 3619, 3620, 3621, 3622, 3623, 3625, 3626, 3627	Sydney Hinterland Dry Sclerophyll Forests <50%	3599_Mod-good	Yes	218	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3605-Hunter Range Ironbark Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Sydney Hinterland Dry Sclerophyll Forests This includes PCT's: 612, 621, 624, 1614, 1631, 1666, 1667, 3599, 3600, 3601, 3602, 3603, 3604, 3605, 3606, 3607, 3608, 3609, 3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3618, 3619, 3620, 3621, 3622, 3623, 3625, 3626, 3627	Sydney Hinterland Dry Sclerophyll Forests <50%	3605_Mod-good	Yes	1493	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3617-Sydney Hinterland Peppermint-Apple Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Sydney Hinterland Dry Sclerophyll Forests This includes PCT's: 612, 621, 624, 1614, 1631, 1666, 1667, 3599, 3600, 3601, 3602, 3603, 3604, 3605, 3606, 3607, 3608, 3609, 3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3618, 3619, 3620, 3621, 3622, 3623, 3625, 3626, 3627	Sydney Hinterland Dry Sclerophyll Forests <50%	3617_Mod-good	Yes	80	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
4039-Hunter Range Creekflat Apple-Red Gum Forest	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 3145, 3181, 3185, 3188, 3192, 3258, 3328, 4024, 4025, 4039, 4041, 4058, 4138	-	4039_Mod-good	No	6	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

4072-Hunter River Oak Mesic Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Eastern Riverine Forests This includes PCT's: 42, 85, 485, 1714, 3020, 4061, 4063, 4066, 4070, 4072, 4073, 4075, 4077, 4080, 4081, 4085	Eastern Riverine Forests >=50% and <70%	4072_Mod-good	No	5	Yengo, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

4072-Hunter River Oak Mesic Forest

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Anthochaera phrygia / Regent Honeyeater	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3239_Mod-good, 3489_Mod-good, 3605_Mod-good, 3444_Mod-good, 3241_Mod-good, 3328_Mod-good, 3151_Mod-good, 3238_Mod-good, 3086_Mod-good**	43.4	2345.00
Callocephalon fimbriatum / Gang-gang Cockatoo	**3087_Mod-good, 3237_Mod-good, 3239_Mod-good, 3489_Mod-good, 3605_Mod-good**	7.5	267.00

Cercartetus nanus / Eastern Pygmy-possum	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3489_Mod-good, 3599_Mod-good, 3605_Mod-good, 3617_Mod-good, 3238_Mod-good, 3328_Mod-good, 3444_Mod-good, 3446_Mod-good, 3151_Mod-good, 3241_Mod-good, 4039_Mod-good, 4072_Mod-good, 3239_Plantation, 3086_Mod-good**	183.4	6169.00

Chalinolobus dwyeri / Large-eared Pied Bat	**3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3489_Mod-good, 3599_Mod-good, 3605_Mod-good, 3617_Mod-good, 3238_Mod-good, 3328_Mod-good, 3444_Mod-good, 3446_Mod-good, 3151_Mod-good, 3241_Mod-good, 3239_Plantation, 3444_Derived, 3086_Mod-good**	237.2	11892.00
Cynanchum elegans / White-flowered Wax Plant	**3237_Mod-good, 3239_Mod-good**	2.5	94.00
Eucalyptus fracta / Broken Back Ironbark	**3489_Mod-good, 3605_Mod-good**	13.1	677.00
Eucalyptus glaucina / Slaty Red Gum	**3239_Mod-good**	24.0	48.00
Grammitis stenophylla / Narrow-leaf Finger Fern	**3239_Mod-good**	2.2	83.00
Lathamus discolor / Swift Parrot	**3239_Mod-good, 3489_Mod-good, 3605_Mod-good, 3444_Mod-good**	1.4	79.00

Melaleuca groveana / Grove's Paperbark	**3087_Mod-good, 3239_Mod-good, 3605_Mod-good, 3151_Mod-good**	233.0	466.00
Myotis macropus / Southern Myotis	**3239_Mod-good, 3489_Mod-good, 3605_Mod-good, 3238_Mod-good, 3328_Mod-good, 3444_Mod-good, 3151_Mod-good, 3241_Mod-good, 3444_Derived**	4.3	140.00
Ninox strenua / Powerful Owl	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3605_Mod-good, 3444_Mod-good, 3446_Mod-good, 3241_Mod-good**	75.8	2815.00

Notamacropus parma / Parma Wallaby	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3489_Mod-good, 3605_Mod-good, 3617_Mod-good, 3238_Mod-good, 3151_Mod-good, 3239_Plantation, 3086_Mod-good**	178.0	5943.00
Olearia cordata / Olearia cordata	**3239_Mod-good**	2.2	83.00
Petauroides volans / Southern Greater Glider	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3489_Mod-good, 3599_Mod-good, 3605_Mod-good, 3617_Mod-good, 3238_Mod-good, 3328_Mod-good, 3444_Mod-good, 3446_Mod-good, 3151_Mod-good, 3241_Mod-good, 4039_Mod-good, 4072_Mod-good, 3239_Plantation, 3086_Mod-good**	239.9	8752.00

Petaurus norfolcensis / Squirrel Glider	**3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3489_Mod-good, 3599_Mod-good, 3605_Mod-good, 3617_Mod-good, 3238_Mod-good, 3444_Mod-good, 3446_Mod-good, 3241_Mod-good, 4039_Mod-good, 3239_Plantation, 3086_Mod-good**	234.0	8539.00
Petrogale penicillata / Brush-tailed Rock-wallaby	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3605_Mod-good, 3444_Mod-good, 3446_Mod-good, 3241_Mod-good**	75.4	3778.00

Phascogale tapoatafa / Brush-tailed Phascogale	**3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3605_Mod-good, 3617_Mod-good, 3238_Mod-good, 3446_Mod-good, 3151_Mod-good, 3239_Plantation**	206.2	7493.00
Phascolarctos cinereus / Koala	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3489_Mod-good, 3599_Mod-good, 3605_Mod-good, 3617_Mod-good, 3238_Mod-good, 3328_Mod-good, 3444_Mod-good, 3446_Mod-good, 3151_Mod-good, 3241_Mod-good, 4039_Mod-good, 4072_Mod-good, 3239_Plantation, 3086_Mod-good**	239.9	8752.00

Prostanthera cineolifera / Singleton Mint Bush	**3237_Mod-good, 3239_Mod-good, 3489_Mod-good, 3605_Mod-good**	48.8	1783.00
Pseudophryne australis / Red-crowned Toadlet	**3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3605_Mod-good, 3239_Plantation**	14.5	400.00
Rhizanthella slateri / Eastern Australian Underground Orchid	**3242_Mod-good**	10.4	441.00
Rhodamnia rubescens / Scrub Turpentine	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3605_Mod-good, 3238_Mod-good, 3151_Mod-good, 3241_Mod-good, 3086_Mod-good**	477.0	1431.00
Tyto novaehollandiae / Masked Owl	**3152_Mod-good, 3237_Mod-good, 3239_Mod-good, 3244_Mod-good, 3438_Mod-good, 3605_Mod-good, 3241_Mod-good**	17.9	666.00

Tyto tenebricosa / Sooty Owl	**3087_Mod-good, 3152_Mod-good, 3230_Mod-good, 3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3489_Mod-good, 3599_Mod-good, 3605_Mod-good, 3617_Mod-good, 3238_Mod-good, 3151_Mod-good, 3239_Plantation, 3086_Mod-good**	140.7	7716.00
Velleia perfoliata / Velleia perfoliata	**3239_Mod-good**	2.2	75.00
Vespadelus troughtoni / Eastern Cave Bat	**3237_Mod-good, 3239_Mod-good, 3242_Mod-good, 3244_Mod-good, 3438_Mod-good, 3489_Mod-good, 3599_Mod-good, 3605_Mod-good, 3617_Mod-good, 3444_Mod-good, 3446_Mod-good, 3241_Mod-good, 4039_Mod-good, 3239_Plantation, 3444_Derived**	215.4	10828.00
Zieria involucrata / Zieria involucrata	**3239_Mod-good**	2.2	75.00

Credit Retirement Options

Like-for-like credit retirement options

Anthochaera phrygia / Regent Honeyeater	Spp	IBRA subregion
	Anthochaera phrygia / Regent Honeyeater	Any in NSW
Callocephalon fimbriatum / Gang-gang Cockatoo	Spp	IBRA subregion
	Callocephalon fimbriatum / Gang-gang Cockatoo	Any in NSW
Cercartetus nanus / Eastern Pygmy-possum	Spp	IBRA subregion
	Cercartetus nanus / Eastern Pygmy-possum	Any in NSW
Chalinolobus dwyeri / Large-eared Pied Bat	Spp	IBRA subregion
	Chalinolobus dwyeri / Large-eared Pied Bat	Any in NSW
Cynanchum elegans / White-flowered Wax Plant	Spp	IBRA subregion
	Cynanchum elegans / White-flowered Wax Plant	Any in NSW
Eucalyptus fracta / Broken Back Ironbark	Spp	IBRA subregion
	Eucalyptus fracta / Broken Back Ironbark	Any in NSW
Eucalyptus glaucina / Slaty Red Gum	Spp	IBRA subregion

	Eucalyptus glaucina / Slaty Red Gum	Any in NSW
Grammitis stenophylla / Narrow-leaf Finger Fern	Spp	IBRA subregion
	Grammitis stenophylla / Narrow-leaf Finger Fern	Any in NSW
Lathamus discolor / Swift Parrot	Spp	IBRA subregion
	Lathamus discolor / Swift Parrot	Any in NSW
Melaleuca groveana / Grove's Paperbark	Spp	IBRA subregion
	Melaleuca groveana / Grove's Paperbark	Any in NSW
Myotis macropus / Southern Myotis	Spp	IBRA subregion
	Myotis macropus / Southern Myotis	Any in NSW
Ninox strenua / Powerful Owl	Spp	IBRA subregion
	Ninox strenua / Powerful Owl	Any in NSW
Notamacropus parma / Parma Wallaby	Spp	IBRA subregion
	Notamacropus parma / Parma Wallaby	Any in NSW

Olearia cordata / Olearia cordata	Spp	IBRA subregion
	Olearia cordata / Olearia cordata	Any in NSW
Petauroides volans / Southern Greater Glider	Spp	IBRA subregion
	Petauroides volans / Southern Greater Glider	Any in NSW
Petaurus norfolcensis / Squirrel Glider	Spp	IBRA subregion
	Petaurus norfolcensis / Squirrel Glider	Any in NSW
Petrogale penicillata / Brush-tailed Rock-wallaby	Spp	IBRA subregion
	Petrogale penicillata / Brush-tailed Rock-wallaby	Any in NSW
Phascogale tapoatafa / Brush-tailed Phascogale	Spp	IBRA subregion
	Phascogale tapoatafa / Brush-tailed Phascogale	Any in NSW
Phascolarctos cinereus / Koala	Spp	IBRA subregion
	Phascolarctos cinereus / Koala	Any in NSW
Prostanthera cineolifera / Singleton Mint Bush	Spp	IBRA subregion

	Prostanthera cineolifera / Singleton Mint Bush	Any in NSW
Pseudophryne australis / Red-crowned Toadlet	Spp	IBRA subregion
	Pseudophryne australis / Red-crowned Toadlet	Any in NSW
Rhizanthella slateri / Eastern Australian Underground Orchid	Spp	IBRA subregion
	Rhizanthella slateri / Eastern Australian Underground Orchid	Any in NSW
Rhodamnia rubescens / Scrub Turpentine	Spp	IBRA subregion
	Rhodamnia rubescens / Scrub Turpentine	Any in NSW
Tyto novaehollandiae / Masked Owl	Spp	IBRA subregion
	Tyto novaehollandiae / Masked Owl	Any in NSW
Tyto tenebricosa / Sooty Owl	Spp	IBRA subregion
	Tyto tenebricosa / Sooty Owl	Any in NSW
Velleia perfoliata / Velleia perfoliata	Spp	IBRA subregion
	Velleia perfoliata / Velleia perfoliata	Any in NSW

Vespadelus troughtoni / Eastern Cave Bat	Spp	IBRA subregion
	Vespadelus troughtoni / Eastern Cave Bat	Any in NSW
Zieria involucrata / Zieria involucrata	Spp	IBRA subregion
	Zieria involucrata / Zieria involucrata	Any in NSW

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048830/BAAS18097/25/00055858	HTP - Yengo IBRA subregion	05/08/2025
Assessor Name	Report Created	BAM Data version *
	12/02/2026	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/02/2026
Assessment Revision	BOS entry trigger	Assessment Type
1	Major Project	Scattered Trees

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees Credit Requirement

Class	Contains hollows	Number of trees	Ecosystem credits
3489-Hunter Escarpment Grey Box Forest			
2	False	9.0	5
			5
			5

Species credits for threatened species

The scattered tree module is not applicable. This species much be assessed using chapter 5 of the BAM and BAM-C development module

Lathamus discolor Swift Parrot
Anthochaera phrygia Regent Honeyeater

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048830/BAAS18097/25/00055858	HTP - Yengo IBRA subregion	05/08/2025
Assessor Name	Report Created	BAM Data version *
	12/02/2026	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/02/2026
Assessment Revision	BOS entry trigger	Assessment Type
1	Major Project	Scattered Trees

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name
Black Falcon	Falco subniger
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae
Dusky Woodswallow	Artamus cyanopterus cyanopterus
Flame Robin	Petroica phoenicea
Little Eagle	Hieraaetus morphnoides
Little Lorikeet	Glossopsitta pusilla
Regent Honeyeater	Anthochaera phrygia
Scarlet Robin	Petroica boodang
South-eastern Hooded Robin	Melanodryas cucullata cucullata
Speckled Warbler	Chthonicola sagittata
Swift Parrot	Lathamus discolor
Varied Sittella	Daphoenositta chrysoptera
White-throated Needletail	Hirundapus caudacutus

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

BAM Predicted Species Report

Common Name	Scientific Name	Plant Community Type(s)
Black-necked Stork	Ephippiorhynchus asiaticus	3489-Hunter Escarpment Grey Box Forest
Painted Honeyeater	Grantiella picta	3489-Hunter Escarpment Grey Box Forest
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3489-Hunter Escarpment Grey Box Forest
White-bellied Sea-Eagle	Haliaeetus leucogaster	3489-Hunter Escarpment Grey Box Forest

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
Black-necked Stork	Ephippiorhynchus asiaticus	Habitat constraints
Painted Honeyeater	Grantiella picta	Habitat constraints
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	Habitat constraints
White-bellied Sea-Eagle	Haliaeetus leucogaster	Habitat constraints

Scattered Tree Report

Proposal Details

Assessment Id
00048830/BAAS18097/25/00055858

Assessment name
HTP - Yengo IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Report Created
12/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/02/2026

Assessment Revision
1

Assessment Type
Scattered Trees

BOS entry trigger
Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees

PCT code	PCT name	No. of trees	Species	DBHOB Category	Contain hollows	Class	Assessment required
3489	Hunter Escarpment Grey Box Forest	9	Eucalyptus sparsifolia	>= 20cm and <50cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00048830/BAAS18097/25/00055858

Proposal Name
HTP - Yengo IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Assessor Number
BAAS17020

BAM Data version *
Current classification (live - default) (82)

Proponent Names

Report Created
13/02/2026

Date Finalised
12/02/2026

Assessment Revision
1

BOS entry trigger
Major Project

Assessment Type
Scattered Trees

BAM Case Status
Finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Like for like)

PCT	TEC	HBT Cr	No HBT Cr	Credits
3489-Hunter Escarpment Grey Box Forest	Not a TEC	0	5	5

Credit classes for 3489

Like-for-like options

Class	Trading group	HBT	Credits	IBRA region
Central Gorge Dry Sclerophyll Forests	Central Gorge Dry Sclerophyll Forests <50%	No	5	Yengo, Cumberland, Hunter, Kerrabee, Pittwater, Wollemi and Wyong. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Credit Summary Report

Proposal Details

Assessment Id
00048860/BAAS17046/24/00048861

Proposal Name
HTP BDAR - Hunter IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Report Created
12/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/02/2026

Assessment Revision
8

BOS entry trigger

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

Central Hunter Ironbark Grassy Woodland												
6	3431_Thinned	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	69.5	64.3	71.1	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		2286
7	3431_Plantation	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	44.9	39.7	15.2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		301
9	3431_Poor	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	48.4	42.7	8.4	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		179
											Subtotal	**2766**

Central Hunter Ironbark Grassy Woodland												
13	3431_Disturbed_Grassland	Not a TEC	13.1	13.1	79.7	PCT Cleared - 86%	High Sensitivity to Gain			2.00		0
											Subtotal	**0**
Central Hunter Ironbark-Spotted Gum Forest												
4	3315_Thinned	Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	74.6	70.3	9.6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		336
											Subtotal	**336**
Central Hunter Ironbark-Spotted Gum Forest												
5	3315_Derived	Not a TEC	18.4	18.4	17.5	PCT Cleared - 78%	High Sensitivity to Gain			2.00		160
											Subtotal	**160**

Central Hunter Riparian Forest											
11	4015_Thinned	Not a TEC	73.7	68.7	6.8	PCT Cleared - 88%	High Sensitivity to Gain			2.00	234
12	4015_Derived	Not a TEC	34	34.0	3.8	PCT Cleared - 88%	High Sensitivity to Gain			2.00	64
										Subtotal	**298**
Central Hunter Slopes Grey Box Forest											
1	3314_Thinned	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	69.8	66.9	50	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	1674
2	3314_Poor	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	32.3	31.9	21.2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	338

											Subtotal	**2012**
Central Hunter Slopes Grey Box Forest												
3	3314_Disturbed_Grassland	Not a TEC	10.8	10.8	56.4	PCT Cleared - 71%	High Sensitivity to Gain			2.00		0
											Subtotal	**0**
Hunter Escarpment Footslopes Ironbark Forest												
8	3438_Mod-good	Not a TEC	89.2	82.5	6.8	PCT Cleared - 24%	High Sensitivity to Gain			1.50		209
											Subtotal	**209**
Hunter Range Creekflat Apple-Red Gum Forest												
14	4039_Mod-good	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	90.4	85.2	1	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		44
											Subtotal	**44**

Hunter Range Ironbark Forest											
22	3605_Mod-good	Not a TEC	64.2	64.2	1.8	PCT Cleared - 2%	High Sensitivity to Gain			1.50		43
											Subtotal	**43**
Hunter River Oak Mesic Forest											
15	4072_Mod-good	Not a TEC	65.3	65.3	0.24	PCT Cleared - 66%	High Sensitivity to Gain			1.75		7
											Subtotal	**7**
Lower Hunter Spotted Gum-Ironbark Forest											
10	3444_Mod-good	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	72	66.4	41	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		1362
19	3444_Derived	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	38.3	38.3	2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		39

										Subtotal	**1401**
Lower North Hinterland Riparian Dry Rainforest											
17	3086_Mod-good	Not a TEC	95.8	95.8	5.6	PCT Cleared - 46%	High Sensitivity to Gain			1.50	199
										Subtotal	**199**
Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest											
21	3244_Mod-good	Not a TEC	66.6	66.6	1.1	PCT Cleared - 39%	High Sensitivity to Gain			1.50	27
										Subtotal	**27**
Lower North White Mahogany-Spotted Gum Moist Forest											
18	3241_Mod-good	Not a TEC	73	73.0	7.1	PCT Cleared - 31%	High Sensitivity to Gain			1.50	193
										Subtotal	**193**

Namoi-Upper Hunter River Red Gum Forest												
16	4089_Poor	Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	18.2	17.2	4.3	Population size	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	37
20	4089_Derived	Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	20.7	20.7	8.3	Population size	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	85
											Subtotal	**122**
											Total	**7817**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits

Anthochaera phrygia / Regent Honeyeater (Fauna)									
3444_Mod-good	72.0	72.0	29.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	1573
4015_Derived	34.0	34.0	0.03	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	1
4039_Mod-good	90.4	90.4	0.15	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	10
3431_Disturbed_Grassland	13.1	13.1	0.38	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	4
3444_Derived	38.3	38.3	0.28	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	8

3315_Thinned	74.6	74.6	0.18	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	10
3431_Thinned	69.5	69.5	14.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	748
3241_Mod-good	73.0	73.0	4.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	242
3314_Thinned	69.8	69.8	0.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	5
3086_Mod-good	95.8	95.8	0.82	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	59
3244_Mod-good	66.6	66.6	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	52

3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	86
								Subtotal	**2798**
Callocephalon fimbriatum / Gang-gang Cockatoo (Fauna)									
3314_Thinned	69.8	69.8	1.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	46
3431_Thinned	69.5	69.5	11.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	393
3431_Plantation	44.9	44.9	0.18	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	4
3431_Poor	48.4	48.4	1.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	40
3444_Mod-good	72.0	72.0	2.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	99

4015_Thinned	73.7	73.7	0.69	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	25
3605_Mod-good	64.2	64.2	0.98	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	31
								Subtotal	**638**
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo (Fauna)									
3314_Thinned	69.8	69.8	3.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	114
3431_Thinned	69.5	69.5	0.64	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	22
3431_Poor	48.4	48.4	0.83	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	20
3444_Mod-good	72.0	72.0	2.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	99

4015_Thinned	73.7	73.7	0.45	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	17
								Subtotal	**272**
Cercartetus nanus / Eastern Pygmy-possum (Fauna)									
3314_Thinned	66.9	66.9	0.09	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	3
3315_Thinned	70.3	70.3	6.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	240
3431_Thinned	64.3	64.3	23	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	738
3431_Plantation	39.7	39.7	3.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	74

3438_Mod-good	82.5	82.5	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	75
3431_Poor	42.7	42.7	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	35
3444_Mod-good	66.4	66.4	23.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	777
4015_Thinned	68.7	68.7	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	69
4039_Mod-good	85.2	85.2	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	44
4072_Mod-good	65.3	65.3	0.24	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	8

3086_Mod-good	95.8	95.8	5.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	266
3241_Mod-good	73.0	73.0	7.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	258
3244_Mod-good	66.6	66.6	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	36
3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	57
								Subtotal	**2680**
Chalinolobus dwyeri / Large-eared Pied Bat (Fauna)									
3314_Thinned	66.9	66.9	0.13	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	7

3315_Thinned	70.3	70.3	9.6	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	504
3315_Derived	18.4	18.4	17.5	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	241
3431_Thinned	64.3	64.3	5.8	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	282
3431_Plantation	39.7	39.7	0.27	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	8
3438_Mod-good	82.5	82.5	6.5	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	400

3444_Mod-good	66.4	66.4	27.2	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	1356
3431_Disturbed_Grassland	13.1	13.1	2.3	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	22
3086_Mod-good	95.8	95.8	5.4	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	386
3241_Mod-good	73.0	73.0	7.1	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	387
3444_Derived	38.3	38.3	0.43	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	12

3244_Mod-good	66.6	66.6	1.1	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	54
3605_Mod-good	64.2	64.2	1.8	Environment Protection and Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	86
								Subtotal	**3745**
Corybas dowlingii / Red Helmet Orchid (Flora)									
3241_Mod-good	73.0	73.0	2.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	77
								Subtotal	**77**
Cymbidium canaliculatum - endangered population / Cymbidium canaliculatum population in the Hunter Catchment (Flora)									
3314_Poor	N/A	N/A	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered Population	Not Listed	False	2

3431_Thinned	N/A	N/A	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered Population	Not Listed	False	2
3431_Plantation	N/A	N/A	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered Population	Not Listed	False	2
3431_Poor	N/A	N/A	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered Population	Not Listed	False	2
3444_Mod-good	N/A	N/A	1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered Population	Not Listed	False	2
								Subtotal	**10**
Delma vescolineata / Hunter Valley Delma (Fauna)									
3314_Thinned	66.9	66.9	50	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	1674

3314_Poor	32.3	32.3	21.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	342
3314_Disturbed_Grassland	10.8	10.8	56.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	304
3315_Thinned	74.6	74.6	9.6	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	357
3315_Derived	18.4	18.4	17.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	160
3431_Thinned	64.3	64.3	71.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	2286
3431_Plantation	39.7	39.7	15.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	301

3431_Poor	42.7	42.7	8.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	179
4015_Thinned	68.7	68.7	6.8	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	234
4015_Derived	34.0	34.0	3.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	59
3431_Disturbed_Grassland	13.1	13.1	79.7	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	522
4089_Poor	17.2	17.2	4.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	37
3444_Derived	38.3	38.3	1.6	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	31

4089_Derived	20.7	20.7	8.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	85
								Subtotal	**6571**
Diuris tricolor / Pine Donkey Orchid (Flora)									
3314_Thinned	66.9	66.9	2.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	53
3314_Poor	31.9	31.9	0.22	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	3
3314_Disturbed_Grassland	10.8	10.8	6.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	27
3431_Thinned	64.3	64.3	4.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	111

3431_Plantation	39.7	39.7	0.55	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	8
3431_Poor	42.7	42.7	0.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	3
3431_Disturbed_Grassland	13.1	13.1	26.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	132
								Subtotal	**337**
Eucalyptus camaldulensis - endangered population / Eucalyptus camaldulensis population in the Hunter catchment (Flora)									
3431_Plantation	39.7	39.7	3.8	Biodiversity Conservation Act listing status	Seedbank Persistence	Endangered Population	Not Listed	False	75
4089_Poor	18.2	18.2	2.3	Biodiversity Conservation Act listing status	Seedbank Persistence	Endangered Population	Not Listed	False	21
								Subtotal	**96**

Eucalyptus glaucina / Slaty Red Gum (Flora)									
3314_Poor	N/A	N/A	2	Biodiversity Conservation Act listing status	Seedbank Persistence	Vulnerable	Vulnerable	False	4
3431_Thinned	N/A	N/A	4	Biodiversity Conservation Act listing status	Seedbank Persistence	Vulnerable	Vulnerable	False	8
3431_Plantation	N/A	N/A	1	Biodiversity Conservation Act listing status	Seedbank Persistence	Vulnerable	Vulnerable	False	2
3431_Poor	N/A	N/A	3	Biodiversity Conservation Act listing status	Seedbank Persistence	Vulnerable	Vulnerable	False	6
								Subtotal	**20**
Lathamus discolor / Swift Parrot (Fauna)									
3444_Mod-good	72.0	72.0	26	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1403

3431_Disturbed_Grassland	13.1	13.1	0.31	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	3
3444_Derived	38.3	38.3	0.25	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	7
3315_Thinned	74.6	74.6	0.18	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	10
3431_Thinned	69.5	69.5	13.8	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	718
3314_Thinned	69.8	69.8	0.06	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	3

								Subtotal	2144
Myotis macropus / Southern Myotis (Fauna)									
3314_Thinned	66.9	66.9	12.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	418
3314_Poor	31.9	31.9	7.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	116
3314_Disturbed_Grassland	10.8	10.8	19.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	104
3315_Thinned	70.3	70.3	3.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	111
3315_Derived	18.4	18.4	10.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	100
3431_Thinned	64.3	64.3	30.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	987

3431_Plantation	39.7	39.7	5.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	102
3438_Mod-good	82.5	82.5	0.15	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	6
3431_Poor	42.7	42.7	4.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	105
3444_Mod-good	66.4	66.4	9.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	306
4015_Thinned	68.7	68.7	3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	102
4015_Derived	34.0	34.0	1.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	24
3431_Disturbed_Grassland	13.1	13.1	31.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	208

4039_Mod-good	85.2	85.2	0.58	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	25
4072_Mod-good	65.3	65.3	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	4
4089_Poor	17.2	17.2	4.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	37
3086_Mod-good	95.8	95.8	1.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	74
3241_Mod-good	73.0	73.0	3.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	113
3444_Derived	38.3	38.3	0.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	8
4089_Derived	20.7	20.7	5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	51
								Subtotal	**3001**

Ninox connivens / Barking Owl (Fauna)									
3431_Thinned	69.5	69.5	0.11	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	4
3431_Poor	48.4	48.4	3.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	76
4015_Thinned	73.7	73.7	0.27	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	10
								Subtotal	**90**
Ninox strenua / Powerful Owl (Fauna)									
3315_Thinned	74.6	74.6	6.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	230
3431_Thinned	69.5	69.5	0.34	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	12
3438_Mod-good	89.2	89.2	5.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	264

3431_Poor	42.7	42.7	3.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	67
3444_Mod-good	72.0	72.0	2.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	103
4015_Thinned	73.7	73.7	0.27	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	10
4039_Mod-good	90.4	90.4	0.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	9
4072_Mod-good	65.3	65.3	0.14	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	5
3241_Mod-good	73.0	73.0	3.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	123
3086_Mod-good	95.8	95.8	0.44	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	21

3244_Mod-good	66.6	66.6	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	36
3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	57
								Subtotal	**937**
Ozothamnus tesselatus / Ozothamnus tesselatus (Flora)									
3431_Thinned	69.5	69.5	0.41	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	11
3431_Plantation	44.9	44.9	0.01	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1
3431_Poor	48.4	48.4	0.23	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	4
								Subtotal	**16**

Petauroides volans / Southern Greater Glider (Fauna)									
3315_Thinned	74.6	74.6	9.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	350
3431_Thinned	69.5	69.5	0.23	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	8
3431_Plantation	44.9	44.9	0.09	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	2
3438_Mod-good	89.2	89.2	6.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	289
3444_Mod-good	72.0	72.0	41	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	1476
4039_Mod-good	90.4	90.4	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	47
4072_Mod-good	65.3	65.3	0.24	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	8

3241_Mod-good	73.0	73.0	7.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	258
3086_Mod-good	95.8	95.8	5.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	266
3244_Mod-good	66.6	66.6	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	36
3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	57
								Subtotal	**2797**
Petaurus norfolcensis / Squirrel Glider (Fauna)									
3314_Poor	32.3	32.3	21.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	342
3431_Plantation	44.9	44.9	15.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	341

3438_Mod-good	89.2	89.2	6.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	301
3431_Poor	48.4	48.4	8.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	203
3444_Mod-good	72.0	72.0	41	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1476
4039_Mod-good	90.4	90.4	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	47
4089_Poor	18.2	18.2	4.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	39
3315_Thinned	74.6	74.6	9.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	357
3431_Thinned	69.5	69.5	71.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2473

3241_Mod-good	73.0	73.0	7.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	258
3314_Thinned	69.8	69.8	50	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1745
3086_Mod-good	95.8	95.8	5.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	266
3244_Mod-good	66.6	66.6	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	36
3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	57
								Subtotal	**7941**
Petrogale penicillata / Brush-tailed Rock-wallaby (Fauna)									
3315_Thinned	70.3	70.3	5.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	306

3438_Mod-good	82.5	82.5	1.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	90
3444_Mod-good	66.4	66.4	1.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	93
4039_Mod-good	85.2	85.2	0.44	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	28
3241_Mod-good	73.0	73.0	1.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Vulnerable	True	82
								Subtotal	**599**
Phascogale tapoatafa / Brush-tailed Phascogale (Fauna)									
3314_Poor	32.3	32.3	21.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	342
3431_Plantation	44.9	44.9	15.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	341

3438_Mod-good	89.2	89.2	6.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	301
3431_Poor	48.4	48.4	8.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	203
4089_Poor	18.2	18.2	4.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	39
3315_Thinned	74.6	74.6	9.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	357
3431_Thinned	69.5	69.5	71.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	2473
4015_Thinned	73.7	73.7	6.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	251
3314_Thinned	69.8	69.8	50	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1745

3244_Mod-good	66.6	66.6	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	36
3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	57
								Subtotal	**6145**
Phascolarctos cinereus / Koala (Fauna)									
3314_Thinned	69.8	69.8	0.13	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	5
3315_Thinned	74.6	74.6	9.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	357
3431_Thinned	69.5	69.5	48.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1699

3431_Plantation	44.9	44.9	4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	90
3438_Mod-good	89.2	89.2	6.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	289
3431_Poor	48.4	48.4	3.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	89
3444_Mod-good	72.0	72.0	38.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1394
4015_Thinned	73.7	73.7	4.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	157
4039_Mod-good	90.4	90.4	0.95	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	43

4072_Mod-good	65.3	65.3	0.24	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	8
3241_Mod-good	73.0	73.0	7.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	258
3086_Mod-good	95.8	95.8	5.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	266
3244_Mod-good	66.6	66.6	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	36
3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	57
								Subtotal	**4748**

Planigale maculata / Common Planigale (Fauna)									
3314_Thinned	69.8	69.8	47.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	1654
3314_Poor	32.3	32.3	11.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	187
3314_Disturbed_Grassland	10.8	10.8	50.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	272
3315_Thinned	74.6	74.6	9.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	357
3315_Derived	18.4	18.4	17.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	160

3431_Thinned	69.5	69.5	58.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	2043
3431_Plantation	44.9	44.9	15.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	341
3438_Mod-good	89.2	89.2	6.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	301
3431_Poor	48.4	48.4	8.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	203
3444_Mod-good	72.0	72.0	0.64	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	23
4015_Thinned	73.7	73.7	0.44	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	16

3431_Disturbed_Grassland	13.1	13.1	59	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	387
3086_Mod-good	95.8	95.8	5.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	266
3244_Mod-good	66.6	66.6	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	36
3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	57
								Subtotal	**6303**
Pomaderris queenslandica / Scant Pomaderris (Flora)									
3431_Thinned	64.3	64.3	0.41	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	13

3431_Plantation	39.7	39.7	0.01	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	1
3431_Poor	42.7	42.7	0.23	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	5
								Subtotal	**19**
Prasophyllum petilum / Tarengo Leek Orchid (Flora)									
3314_Thinned	66.9	66.9	2.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	70
3314_Poor	31.9	31.9	0.22	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	4
3431_Thinned	64.3	64.3	4.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	147

3431_Plantation	39.7	39.7	0.55	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	11
3438_Mod-good	82.5	82.5	0.07	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3
3431_Poor	42.7	42.7	0.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	4
3444_Mod-good	66.4	66.4	4.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	136
								Subtotal	**375**
Prasophyllum sp. Wybong / Prasophyllum sp. Wybong (Flora)									
3314_Thinned	66.9	66.9	2.1	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Not Listed	Critically Endangered	True	105

3314_Poor	31.9	31.9	0.22	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Not Listed	Critically Endangered	True	5
3431_Thinned	64.3	64.3	4.6	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Not Listed	Critically Endangered	True	221
3431_Plantation	39.7	39.7	0.55	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Not Listed	Critically Endangered	True	16
3438_Mod-good	82.5	82.5	0.07	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Not Listed	Critically Endangered	True	4
3431_Poor	42.7	42.7	0.2	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Not Listed	Critically Endangered	True	6

3444_Mod-good	66.4	66.4	4.1	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Not Listed	Critically Endangered	True	204
								Subtotal	**561**
Prostanthera cineolifera / Singleton Mint Bush (Flora)									
3438_Mod-good	89.2	89.2	5.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	235
3444_Mod-good	72.0	72.0	9.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	335
3241_Mod-good	73.0	73.0	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	81
3605_Mod-good	64.2	64.2	0.57	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	18

								Subtotal	**669**
Pterostylis chaetophora / Pterostylis chaetophora (Flora)									
3314_Thinned	66.9	66.9	2.1	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	69
3314_Poor	31.9	31.9	0.22	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	4
3431_Thinned	64.3	64.3	3.3	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	105
3431_Plantation	39.7	39.7	0.55	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	11
3431_Poor	42.7	42.7	0.2	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	4

3444_Mod-good	66.4	66.4	4.3	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	142
3241_Mod-good	73.0	73.0	4.6	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	168
3444_Derived	38.3	38.3	0.24	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	5
3244_Mod-good	66.6	66.6	1.1	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	36
								Subtotal	**544**
Pterostylis gibbosa / Illawarra Greenhood (Flora)									
3431_Thinned	69.5	69.5	12.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	440

3431_Plantation	44.9	44.9	0.63	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	14
3438_Mod-good	82.5	82.5	0.07	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3
3431_Poor	48.4	48.4	0.25	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	6
								Subtotal	**463**
Rhodamnia rubescens / Scrub Turpentine (Flora)									
3241_Mod-good	N/A	N/A	15	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	45
3086_Mod-good	N/A	N/A	11	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	33
								Subtotal	**78**

Tyto novaehollandiae / Masked Owl (Fauna)									
3431_Thinned	69.5	69.5	0.11	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	4
3431_Poor	48.4	48.4	3.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	76
4015_Thinned	68.7	68.7	0.27	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	9
								Subtotal	**89**
Tyto tenebricosa / Sooty Owl (Fauna)									
3444_Mod-good	72.0	72.0	2.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	133
3086_Mod-good	95.8	95.8	0.44	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	32
3241_Mod-good	73.0	73.0	3.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	174

3244_Mod-good	66.6	66.6	0.97	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	48
								Subtotal	**387**
Vespadelus troughtoni / Eastern Cave Bat (Fauna)									
3314_Thinned	66.9	66.9	0.13	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	7
3315_Thinned	70.3	70.3	9.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	504
3315_Derived	18.4	18.4	17.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	241
3431_Thinned	64.3	64.3	5.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	282
3431_Plantation	39.7	39.7	0.27	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	8

3438_Mod-good	82.5	82.5	6.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	400
3444_Mod-good	66.4	66.4	27.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	1356
4015_Thinned	68.7	68.7	0.72	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	37
3431_Disturbed_Grassland	13.1	13.1	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	22
4039_Mod-good	85.2	85.2	0.64	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	41
3241_Mod-good	73.0	73.0	7.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	387
3444_Derived	38.3	38.3	0.43	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	12

3244_Mod-good	66.6	66.6	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	54
3605_Mod-good	64.2	64.2	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	True	86
								Subtotal	**3437**

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00048860/BAAS17046/24/00048861

Assessment name
HTP BDAR - Hunter IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Report Created
12/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
8

BOS entry trigger

Date Finalised
12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3314_Thinned	3314-Central Hunter Slopes Grey Box Forest	Thinned	50.02	4	Area A (34.29 ha) Area B (15.73 ha)
2	3314_Poor	3314-Central Hunter Slopes Grey Box Forest	Poor	21.18	4	Area A (19.36 ha) Area B (1.82 ha)

3	3314_Disturbed_Grassland	3314-Central Hunter Slopes Grey Box Forest	Disturbed_Grassland	56.4	5	Area A (56.4 ha)
4	3315_Thinned	3315-Central Hunter Ironbark-Spotted Gum Forest	Thinned	9.56	3	Area A (5.5 ha) Area B (4.06 ha)
5	3315_Derived	3315-Central Hunter Ironbark-Spotted Gum Forest	Derived	17.46	3	Area A (17.46 ha)
6	3431_Thinned	3431-Central Hunter Ironbark Grassy Woodland	Thinned	71.14	5	Area A (38.16 ha) Area B (32.98 ha)
7	3431_Plantation	3431-Central Hunter Ironbark Grassy Woodland	Plantation	15.18	3	Area A (7.68 ha) Area B (7.5 ha)
8	3438_Mod-good	3438-Hunter Escarpment Footslopes Ironbark Forest	Mod-good	6.76	3	Area A (3.22 ha) Area B (3.54 ha)
9	3431_Poor	3431-Central Hunter Ironbark Grassy Woodland	Poor	8.4	3	Area A (3.94 ha) Area B (4.46 ha)
10	3444_Mod-good	3444-Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	41.02	4	Area A (22.71 ha) Area B (18.31 ha)
11	4015_Thinned	4015-Central Hunter Riparian Forest	Thinned	6.81	3	Area A (4.32 ha) Area B (2.49 ha)
12	4015_Derived	4015-Central Hunter Riparian Forest	Derived	3.78	2	Area A (3.78 ha)
13	3431_Disturbed_Grassland	3431-Central Hunter Ironbark Grassy Woodland	Disturbed_Grassland	79.69	5	Area A (79.69 ha)
14	4039_Mod-good	4039-Hunter Range Creekflat Apple-Red Gum Forest	Mod-good	1.04	1	Area A (0.73 ha) Area B (0.31 ha)

15	4072_Mod-good	4072-Hunter River Oak Mesic Forest	Mod-good	0.24	1	Area A (0.24 ha)
16	4089_Poor	4089-Namoi-Upper Hunter River Red Gum Forest	Poor	4.31	2	Area A (1.19 ha) Area B (3.12 ha)
17	3086_Mod-good	3086-Lower North Hinterland Riparian Dry Rainforest	Mod-good	5.55	3	Area A (5.55 ha)
18	3241_Mod-good	3241-Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	7.06	3	Area A (7.06 ha)
19	3444_Derived	3444-Lower Hunter Spotted Gum-Ironbark Forest	Derived	2.04	2	Area A (2.04 ha)
20	4089_Derived	4089-Namoi-Upper Hunter River Red Gum Forest	Derived	8.27	3	Area A (8.27 ha)
21	3244_Mod-good	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Mod-good	1.08	1	Area A (1.08 ha)
22	3605_Mod-good	3605-Hunter Range Ironbark Forest	Mod-good	1.78	1	Area A (1.78 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048860/BAAS17046/24/00048861	HTP BDAR - Hunter IBRA subregion	05/08/2025
Assessor Name	**Report Created**	**BAM Data version ***
	12/02/2026	Current classification (live - default) (82)
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS17020	Major Projects	Finalised
Assessment Revision	**BOS entry trigger**	**Date Finalised**
8		12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	Botaurus poiciloptilus	4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
Australian Painted Snipe	Rostratula australis	4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
Black Bittern	Ixobrychus flavicollis	3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Black Falcon	Falco subniger	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Black-necked Stork	Ephippiorhynchus asiaticus	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest

Broad-billed Sandpiper	Limicola falcinellus	3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3605-Hunter Range Ironbark Forest
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Corben's Long-eared Bat	Nyctophilus corbeni	3315-Central Hunter Ironbark-Spotted Gum Forest
		3438-Hunter Escarpment Footslopes Ironbark Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
Diamond Firetail	Stagonopleura guttata	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		4089-Namoi-Upper Hunter River Red Gum Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest

Dusky Woodswallow	Artamus cyanopterus cyanopterus	4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Eastern False Pipistrelle	Falsistrellus tasmaniensis	3431-Central Hunter Ironbark Grassy Woodland
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Eastern Grass Owl	Tyto longimembris	4015-Central Hunter Riparian Forest
Eastern Osprey	Pandion cristatus	3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest

Eastern Osprey	Pandion cristatus	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Flame Robin	Petroica phoenicea	3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Gang-gang Cockatoo	Callocephalon fimbriatum	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Greater Broad-nosed Bat	Scoteanax rueppellii	3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest

Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Grey-headed Flying-fox	Pteropus poliocephalus	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Large Bent-winged Bat	Miniopterus orianae oceanensis	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest

Large Bent-winged Bat	Miniopterus orianae oceanensis	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Little Bent-winged Bat	Miniopterus australis	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
Little Eagle	Hieraaetus morphnoides	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Little Lorikeet	Glossopsitta pusilla	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest

Little Lorikeet	Glossopsitta pusilla	4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
New Holland Mouse	Pseudomys novaehollandiae	3315-Central Hunter Ironbark-Spotted Gum Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
Painted Honeyeater	Grantiella picta	4015-Central Hunter Riparian Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Regent Honeyeater	Anthochaera phrygia	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Rose-crowned Fruit-Dove	Ptilinopus regina	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
Scarlet Robin	Petroica boodang	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest

Scarlet Robin	Petroica boodang	3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
South-eastern Hooded Robin	Melanodryas cucullata cucullata	4015-Central Hunter Riparian Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Speckled Warbler	Chthonicola sagittata	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Speckled Warbler	Chthonicola sagittat	3605-Hunter Range Ironbark Forest
Spotted Harrier	Circus assimilis	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
Spotted-tailed Quoll	Dasyurus maculatus	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Square-tailed Kite	Lophoictinia isura	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest

Square-tailed Kite	Lophoictinia isura	3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Swift Parrot	Lathamus discolor	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Turquoise Parrot	Neophema pulchella	3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3605-Hunter Range Ironbark Forest
Varied Sittella	Daphoenositta chrysoptera	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest

Varied Sittella	Daphoenositta chrys	3605-Hunter Range Ironbark Forest
White-bellied Sea-Eagle	Haliaeetus leucogaster	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
White-throated Needletail	Hirundapus caudacutus	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		4015-Central Hunter Riparian Forest
		4039-Hunter Range Creekflat Apple-Red Gum Forest
		4072-Hunter River Oak Mesic Forest
		4089-Namoi-Upper Hunter River Red Gum Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Wompoo Fruit-Dove	Ptilinopus magnificus	3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
Yellow-bellied Glider	Petaurus australis	3438-Hunter Escarpment Footslopes Ironbark Forest

Yellow-bellied Glider	Petaurus australis	3444-Lower Hunter Spotted Gum-Ironbark Forest
		3086-Lower North Hinterland Riparian Dry Rainforest
		3241-Lower North White Mahogany-Spotted Gum Moist Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	3314-Central Hunter Slopes Grey Box Forest
		3315-Central Hunter Ironbark-Spotted Gum Forest
		3431-Central Hunter Ironbark Grassy Woodland
		3438-Hunter Escarpment Footslopes Ironbark Forest
		3444-Lower Hunter Spotted Gum-Ironbark Forest
		3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
		3605-Hunter Range Ironbark Forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00048860/BAAS17046/24/00048861	Proposal Name HTP BDAR - Hunter IBRA subregion	BAM data last updated * 05/08/2025
Assessor Name	Report Created 12/02/2026	BAM Data version * Current classification (live - default) (82)
Assessor Number BAAS17020	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 8	BOS entry trigger	Date Finalised 12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Acacia bynoeana Bynoe's Wattle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Acacia pendula - endangered population Acacia pendula population in the Hunter catchment	No (surveyed)	☑ Jan ☑ Feb ☑ Mar ☐ Apr ☑ May ☐ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Angophora inopina Charmhaven Apple	No (surveyed)	☑ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Anthochaera phrygia Regent Honeyeater	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Aprasia parapulchella Pink-tailed Legless Lizard	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☑ Survey month outside the specified months?
Asperula asthenes Trailing Woodruff	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Burhinus grallarius Bush Stone-curlew	No (surveyed)	☑ Jan ☐ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Callistemon linearifolius Netted Bottle Brush	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Callocephalon fimbriatum Gang-gang Cockatoo	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cercartetus nanus Eastern Pygmy-possum	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Chalinolobus dwyeri Large-eared Pied Bat	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Corybas dowlingii Red Helmet Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Crinia tinnula Wallum Froglet	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cymbidium canaliculatum - endangered population Cymbidium canaliculatum population in the Hunter Catchment	Yes (surveyed)	☑ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?

Cynanchum elegans White-flowered Wax Plant	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☑ May ☐ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Delma vescolineata Hunter Valley Delma	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Dillwynia tenuifolia Dillwynia tenuifolia	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Diuris tricolor Pine Donkey Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Diuris tricolor - endangered population Pine Donkey Orchid population in the Muswellbrook local government area	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Eucalyptus camaldulensis - endangered population Eucalyptus camaldulensis population in the Hunter catchment	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?

Eucalyptus camfieldii Camfield's Stringybark	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus castrensis Singleton Mallee	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus fracta Broken Back Ironbark	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus glaucina Slaty Red Gum	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus parramattensis subsp. decadens Eucalyptus parramattensis subsp. decadens	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus pumila Pokolbin Mallee	No (surveyed)	☑ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?

Grevillea parviflora subsp. parviflora Small-flower Grevillea	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Hoplocephalus stephensii Stephens' Banded Snake	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☑ Survey month outside the specified months?
Lathamus discolor Swift Parrot	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Leionema lamprophyllum subsp. fractum Leionema lamprophyllum subsp. fractum	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?

Litoria aurea Green and Golden Bell Frog	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Litoria brevipalmata Green-thighed Frog	No (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Melaleuca biconvexa Biconvex Paperbark	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Melaleuca groveana Grove's Paperbark	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Miniopterus australis Little Bent-winged Bat	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Miniopterus orianae oceanensis Large Bent-winged Bat	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Myotis macropus Southern Myotis	Yes (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox connivens Barking Owl	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox strenua Powerful Owl	Yes (surveyed)	☑ Jan ☐ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ozothamnus tesselatus Ozothamnus tesselatus	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pandion cristatus Eastern Osprey	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?

Petauroides volans Southern Greater Glider	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?
Petaurus norfolcensis Squirrel Glider	Yes (surveyed)	☑ Jan ☐ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?
Petrogale penicillata Brush-tailed Rock-wallaby	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☑ Nov ☑ Dec ☐ Survey month outside the specified months?
Phascogale tapoatafa Brush-tailed Phascogale	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☐ Sep ☑ Oct ☑ Nov ☑ Dec ☑ Survey month outside the specified months?
Phascolarctos cinereus Koala	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Planigale maculata Common Planigale	Yes (surveyed)	☑ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pomaderris queenslandica Scant Pomaderris	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Prasophyllum petilum Tarengo Leek Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Prasophyllum sp. Wybong Prasophyllum sp. Wybong	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Prostanthera cineolifera Singleton Mint Bush	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Pseudophryne australis Red-crowned Toadlet	No (surveyed)	☑ Jan ☑ Feb ☐ Mar ☑ Apr ☑ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pterostylis chaetophora Pterostylis chaetophora	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pterostylis gibbosa Illawarra Greenhood	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rhodamnia rubescens Scrub Turpentine	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rhodomyrtus psidioides Native Guava	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Rutidosis heterogama Heath Wrinklewort	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☑ Dec ☐ Survey month outside the specified months?
Syzygium paniculatum Magenta Lilly Pilly	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Tetratheca juncea Black-eyed Susan	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?

Tyto novaehollandiae Masked Owl	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto tenebricosa Sooty Owl	Yes (surveyed)	☑ Jan ☐ Feb ☐ Mar ☑ Apr ☑ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Vespadelus troughtoni Eastern Cave Bat	Yes (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Broad-billed Sandpiper	Limicola falcinellus	Habitat constraints
Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	Dromaius novaehollandiae - endangered population	Refer to BAR
Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
North Rothbury Persoonia	Persoonia pauciflora	Refer to BAR
Rough Doubletail	Diuris praecox	Refer to BAR

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00048860/BAAS17046/24/00048861

Proposal Name
HTP BDAR - Hunter IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Assessor Number
BAAS17020

BAM Data version *
Current classification (live - default) (82)

Proponent Names

Report Created
12/02/2026

BAM Case Status
Finalised

Assessment Revision
8

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
12/02/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	Endangered Ecological Community	4089-Namoi-Upper Hunter River Red Gum Forest

Species
Chalinolobus dwyeri / Large-eared Pied Bat

Lathamus discolor / Swift Parrot
Petrogale penicillata / Brush-tailed Rock-wallaby
Vespadelus troughtoni / Eastern Cave Bat
Anthochaera phrygia / Regent Honeyeater
Rhodamnia rubescens / Scrub Turpentine
Prasophyllum sp. Wybong / Prasophyllum sp. Wybong
Tyto tenebricosa / Sooty Owl

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

BAM Biodiversity Credit Report (Like for like)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3314-Central Hunter Slopes Grey Box Forest	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	71.2	0	2012	2012
3314-Central Hunter Slopes Grey Box Forest	Not a TEC	56.4	0	0	0
3315-Central Hunter Ironbark-Spotted Gum Forest	Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	9.6	0	336	336
3315-Central Hunter Ironbark-Spotted Gum Forest	Not a TEC	17.5	0	160	160
3431-Central Hunter Ironbark Grassy Woodland	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	94.7	2286	480	2766
3438-Hunter Escarpment Footslopes Ironbark Forest	Not a TEC	6.8	209	0	209
3444-Lower Hunter Spotted Gum-Ironbark Forest	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	43.1	0	1401	1401
4015-Central Hunter Riparian Forest	Not a TEC	10.6	234	64	298
3431-Central Hunter Ironbark Grassy Woodland	Not a TEC	79.7	0	0	0
4039-Hunter Range Creekflat Apple-Red Gum Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	1.0	44	0	44
4072-Hunter River Oak Mesic Forest	Not a TEC	0.2	0	7	7

4089-Namoi-Upper Hunter River Red Gum Forest	Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	12.6	37	85	122
3086-Lower North Hinterland Riparian Dry Rainforest	Not a TEC	5.6	199	0	199
3241-Lower North White Mahogany-Spotted Gum Moist Forest	Not a TEC	7.1	193	0	193
3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	Not a TEC	1.1	27	0	27
3605-Hunter Range Ironbark Forest	Not a TEC	1.8	43	0	43

3086-Lower North Hinterland Riparian Dry Rainforest

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Dry Rainforests This includes PCT's: 388, 547, 616, 627, 1124, 1539, 1540, 1543, 2068, 2079, 3010, 3014, 3055, 3056, 3057, 3059, 3061, 3062, 3064, 3065, 3066, 3068, 3070, 3072, 3074, 3075, 3076, 3077, 3079, 3080, 3082, 3083, 3086, 3089, 3091, 3092, 3093, 3095, 3096, 3097, 3098, 3099, 3101, 3103, 3104, 3105, 3106, 3109, 3110, 3111, 3112, 3113, 3114, 3116, 3117, 3118, 3120, 3151, 3469, 4110, 4111, 4112, 4143, 4144	Dry Rainforests <50%	3086_Mod-good	Yes	199	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3241-Lower North White Mahogany-Spotted Gum Moist Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3241_Mod-good	Yes	193	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3244-Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Northern Hinterland Wet Sclerophyll Forests This includes PCT's: 3063, 3069, 3094, 3115, 3144, 3152, 3155, 3167, 3170, 3179, 3230, 3231, 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241, 3242, 3243, 3244, 3245, 3246, 3247, 3248, 3249, 3250, 3251, 3252, 3253, 3254, 3255, 3256, 3257, 3258, 3259, 3260, 3261, 3262, 3263, 3264, 3285, 4109	Northern Hinterland Wet Sclerophyll Forests <50%	3244_Mod-good	Yes	27	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3314-Central Hunter Slopes Grey Box Forest	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions This includes PCT's: 1603, 1605, 1691, 1692, 3314, 3431, 3485	-	3314_Thinned	No	1674	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions This includes PCT's: 1603, 1605, 1691, 1692, 3314, 3431, 3485	-	3314_Poor	No	338	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3314-Central Hunter Slopes Grey Box Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Coastal Valley Grassy Woodlands This includes PCT's: 618, 1603, 1604, 1691, 3312, 3314, 3315, 3318, 3319, 3320, 3323, 3325, 3327, 3328, 3329, 3330, 3332, 4052	Coastal Valley Grassy Woodlands >=70% and <90%	3314_Disturbed_Grassland	No	0	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3315-Central Hunter Ironbark-Spotted Gum Forest	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions This includes PCT's: 1604, 3315	-	3315_Thinned	No	336	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3315-Central Hunter Ironbark-Spotted Gum Forest

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Coastal Valley Grassy Woodlands This includes PCT's: 618, 1603, 1604, 1691, 3312, 3314, 3315, 3318, 3319, 3320, 3323, 3325, 3327, 3328, 3329, 3330, 3332, 4052	Coastal Valley Grassy Woodlands >=70% and <90%	3315_Derived	No	160	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3431-Central Hunter Ironbark Grassy Woodland

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions This includes PCT's: 1603, 1605, 1691, 1692, 3314, 3431, 3485	-	3431_Thinned	Yes	2286	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions This includes PCT's: 1603, 1605, 1691, 1692, 3314, 3431, 3485	-	3431_Plantation	No	301	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions This includes PCT's: 1603, 1605, 1691, 1692, 3314, 3431, 3485	-	3431_Poor	No	179	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3431-Central Hunter Ironbark Grassy Woodland	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Hunter-Macleay Dry Sclerophyll Forests This includes PCT's: 3431, 3442, 3446	Hunter-Macleay Dry Sclerophyll Forests >=70% and <90%	3431_Disturbed_Grassland	No	0	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3438-Hunter Escarpment Footslopes Ironbark Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Hunter-Macleay Dry Sclerophyll Forests This includes PCT's: 1608, 1612, 3431, 3432, 3433, 3434, 3435, 3436, 3437, 3438, 3439, 3441, 3442, 3443, 3444, 3445, 3446, 3447, 4157, 4158	Hunter-Macleay Dry Sclerophyll Forests <50%	3438_Mod-good	Yes	209	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3444-Lower Hunter Spotted Gum-Ironbark Forest	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3444_Mod-good	No	1362	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions This includes PCT's: 3433, 3442, 3443, 3444, 4158	-	3444_Derived	No	39	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

3605-Hunter Range Ironbark Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Sydney Hinterland Dry Sclerophyll Forests This includes PCT's: 612, 621, 624, 1614, 1631, 1666, 1667, 3599, 3600, 3601, 3602, 3603, 3604, 3605, 3606, 3607, 3608, 3609, 3610, 3611, 3612, 3613, 3614, 3615, 3616, 3617, 3618, 3619, 3620, 3621, 3622, 3623, 3625, 3626, 3627	Sydney Hinterland Dry Sclerophyll Forests <50%	3605_Mod-good	Yes	43	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

4015-Central Hunter Riparian Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Coastal Floodplain Wetlands This includes PCT's: 4015, 4023, 4024, 4025, 4026, 4027, 4029, 4034, 4035, 4036, 4037, 4041, 4042, 4044, 4046, 4049, 4050, 4051, 4055, 4059	Coastal Floodplain Wetlands >=70% and <90%	4015_Thinned	Yes	234	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Coastal Floodplain Wetlands This includes PCT's: 4015, 4023, 4024, 4025, 4026, 4027, 4029, 4034, 4035, 4036, 4037, 4041, 4042, 4044, 4046, 4049, 4050, 4051, 4055, 4059	Coastal Floodplain Wetlands >=70% and <90%	4015_Derived	No	64	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

4039-Hunter Range Creekflat Apple-Red Gum Forest	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 3145, 3181, 3185, 3188, 3192, 3258, 3328, 4024, 4025, 4039, 4041, 4058, 4138	-	4039_Mod-good	Yes	44	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

4072-Hunter River Oak Mesic Forest	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Eastern Riverine Forests This includes PCT's: 42, 85, 485, 1714, 3020, 4061, 4063, 4066, 4070, 4072, 4073, 4075, 4077, 4080, 4081, 4085	Eastern Riverine Forests >=50% and <70%	4072_Mod-good	No	7	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

4072-Hunter River Oak Mesic Forest

4089-Namoi-Upper Hunter River Red Gum Forest

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions This includes PCT's: 42, 1698, 4089	-	4089_Poor	Yes	37	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions This includes PCT's: 42, 1698, 4089	-	4089_Derived	No	85	Hunter, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Anthochaera phrygia / Regent Honeyeater	**3444_Mod-good, 4015_Derived, 4039_Mod-good, 3431_Disturbed_Grassland, 3444_Derived, 3315_Thinned, 3431_Thinned, 3241_Mod-good, 3314_Thinned, 3086_Mod-good, 3244_Mod-good, 3605_Mod-good**	52.7	2798.00
Callocephalon fimbriatum / Gang-gang Cockatoo	**3314_Thinned, 3431_Thinned, 3431_Plantation, 3431_Poor, 3444_Mod-good, 4015_Thinned, 3605_Mod-good**	18.9	638.00
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo	**3314_Thinned, 3431_Thinned, 3431_Poor, 3444_Mod-good, 4015_Thinned**	7.9	272.00

Cercartetus nanus / Eastern Pygmy-possum	**3314_Thinned, 3315_Thinned, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3431_Poor, 3444_Mod-good, 4015_Thinned, 4039_Mod-good, 4072_Mod-good, 3086_Mod-good, 3241_Mod-good, 3244_Mod-good, 3605_Mod-good**	79.3	2680.00
Chalinolobus dwyeri / Large-eared Pied Bat	**3314_Thinned, 3315_Thinned, 3315_Derived, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3444_Mod-good, 3431_Disturbed_Grassland, 3086_Mod-good, 3241_Mod-good, 3444_Derived, 3244_Mod-good, 3605_Mod-good**	85.0	3745.00
Corybas dowlingii / Red Helmet Orchid	**3241_Mod-good**	2.1	77.00
Cymbidium canaliculatum - endangered population / Cymbidium canaliculatum population in the Hunter Catchment	**3314_Poor, 3431_Thinned, 3431_Plantation, 3431_Poor, 3444_Mod-good**	5.0	10.00

Delma vescolineata / Hunter Valley Delma	**3314_Thinned, 3314_Poor, 3314_Disturbed_Grassland, 3315_Thinned, 3315_Derived, 3431_Thinned, 3431_Plantation, 3431_Poor, 4015_Thinned, 4015_Derived, 3431_Disturbed_Grassland, 4089_Poor, 3444_Derived, 4089_Derived**	353.5	6571.00
Diuris tricolor / Pine Donkey Orchid	**3314_Thinned, 3314_Poor, 3314_Disturbed_Grassland, 3431_Thinned, 3431_Plantation, 3431_Poor, 3431_Disturbed_Grassland**	41.2	337.00
Eucalyptus camaldulensis - endangered population / Eucalyptus camaldulensis population in the Hunter catchment	**3431_Plantation, 4089_Poor**	6.1	96.00
Eucalyptus glaucina / Slaty Red Gum	**3314_Poor, 3431_Thinned, 3431_Plantation, 3431_Poor**	10.0	20.00
Lathamus discolor / Swift Parrot	**3444_Mod-good, 3431_Disturbed_Grassland, 3444_Derived, 3315_Thinned, 3431_Thinned, 3314_Thinned**	40.6	2144.00

Myotis macropus / Southern Myotis	**3314_Thinned, 3314_Poor, 3314_Disturbed_Grassland, 3315_Thinned, 3315_Derived, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3431_Poor, 3444_Mod-good, 4015_Thinned, 4015_Derived, 3431_Disturbed_Grassland, 4039_Mod-good, 4072_Mod-good, 4089_Poor, 3086_Mod-good, 3241_Mod-good, 3444_Derived, 4089_Derived**	154.2	3001.00
Ninox connivens / Barking Owl	**3431_Thinned, 3431_Poor, 4015_Thinned**	3.5	90.00
Ninox strenua / Powerful Owl	**3315_Thinned, 3431_Thinned, 3438_Mod-good, 3431_Poor, 3444_Mod-good, 4015_Thinned, 4039_Mod-good, 4072_Mod-good, 3241_Mod-good, 3086_Mod-good, 3244_Mod-good, 3605_Mod-good**	25.7	937.00
Ozothamnus tesselatus / Ozothamnus tesselatus	**3431_Thinned, 3431_Plantation, 3431_Poor**	0.7	16.00

Petauroides volans / Southern Greater Glider	**3315_Thinned, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3444_Mod-good, 4039_Mod-good, 4072_Mod-good, 3241_Mod-good, 3086_Mod-good, 3244_Mod-good, 3605_Mod-good**	73.9	2797.00
Petaurus norfolcensis / Squirrel Glider	**3314_Poor, 3431_Plantation, 3438_Mod-good, 3431_Poor, 3444_Mod-good, 4039_Mod-good, 4089_Poor, 3315_Thinned, 3431_Thinned, 3241_Mod-good, 3314_Thinned, 3086_Mod-good, 3244_Mod-good, 3605_Mod-good**	244.1	7941.00
Petrogale penicillata / Brush-tailed Rock-wallaby	**3315_Thinned, 3438_Mod-good, 3444_Mod-good, 4039_Mod-good, 3241_Mod-good**	11.1	599.00
Phascogale tapoatafa / Brush-tailed Phascogale	**3314_Poor, 3431_Plantation, 3438_Mod-good, 3431_Poor, 4089_Poor, 3315_Thinned, 3431_Thinned, 4015_Thinned, 3314_Thinned, 3244_Mod-good, 3605_Mod-good**	196.2	6145.00

Phascolarctos cinereus / Koala	**3314_Thinned, 3315_Thinned, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3431_Poor, 3444_Mod-good, 4015_Thinned, 4039_Mod-good, 4072_Mod-good, 3241_Mod-good, 3086_Mod-good, 3244_Mod-good, 3605_Mod-good**	132.4	4748.00
Planigale maculata / Common Planigale	**3314_Thinned, 3314_Poor, 3314_Disturbed_Grassland, 3315_Thinned, 3315_Derived, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3431_Poor, 3444_Mod-good, 4015_Thinned, 3431_Disturbed_Grassland, 3086_Mod-good, 3244_Mod-good, 3605_Mod-good**	294.2	6303.00
Pomaderris queenslandica / Scant Pomaderris	**3431_Thinned, 3431_Plantation, 3431_Poor**	0.7	19.00
Prasophyllum petilum / Tarengo Leek Orchid	**3314_Thinned, 3314_Poor, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3431_Poor, 3444_Mod-good**	11.8	375.00

Prasophyllum sp. Wybong / Prasophyllum sp. Wybong	**3314_Thinned, 3314_Poor, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3431_Poor, 3444_Mod-good**	11.8	561.00
Prostanthera cineolifera / Singleton Mint Bush	**3438_Mod-good, 3444_Mod-good, 3241_Mod-good, 3605_Mod-good**	17.4	669.00
Pterostylis chaetophora / Pterostylis chaetophora	**3314_Thinned, 3314_Poor, 3431_Thinned, 3431_Plantation, 3431_Poor, 3444_Mod-good, 3241_Mod-good, 3444_Derived, 3244_Mod-good**	16.5	544.00
Pterostylis gibbosa / Illawarra Greenhood	**3431_Thinned, 3431_Plantation, 3438_Mod-good, 3431_Poor**	13.6	463.00
Rhodamnia rubescens / Scrub Turpentine	**3241_Mod-good, 3086_Mod-good**	26.0	78.00
Tyto novaehollandiae / Masked Owl	**3431_Thinned, 3431_Poor, 4015_Thinned**	3.5	89.00
Tyto tenebricosa / Sooty Owl	**3444_Mod-good, 3086_Mod-good, 3241_Mod-good, 3244_Mod-good**	7.1	387.00

Vespadelus troughtoni / Eastern Cave Bat	**3314_Thinned, 3315_Thinned, 3315_Derived, 3431_Thinned, 3431_Plantation, 3438_Mod-good, 3444_Mod-good, 4015_Thinned, 3431_Disturbed_Grassland, 4039_Mod-good, 3241_Mod-good, 3444_Derived, 3244_Mod-good, 3605_Mod-good**	81.0	3437.00

Credit Retirement Options

Like-for-like credit retirement options

Anthochaera phrygia / Regent Honeyeater	Spp	IBRA subregion
	Anthochaera phrygia / Regent Honeyeater	Any in NSW
Callocephalon fimbriatum / Gang-gang Cockatoo	Spp	IBRA subregion
	Callocephalon fimbriatum / Gang-gang Cockatoo	Any in NSW
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo	Spp	IBRA subregion
	Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo	Any in NSW

Cercartetus nanus / Eastern Pygmy-possum	Spp	IBRA subregion
	Cercartetus nanus / Eastern Pygmy-possum	Any in NSW
Chalinolobus dwyeri / Large-eared Pied Bat	Spp	IBRA subregion
	Chalinolobus dwyeri / Large-eared Pied Bat	Any in NSW
Corybas dowlingii / Red Helmet Orchid	Spp	IBRA subregion
	Corybas dowlingii / Red Helmet Orchid	Any in NSW
Cymbidium canaliculatum - endangered population / Cymbidium canaliculatum population in the Hunter Catchment	Spp	IBRA subregion
	Cymbidium canaliculatum - endangered population / Cymbidium canaliculatum population in the Hunter Catchment	Any in NSW
Delma vescolineata / Hunter Valley Delma	Spp	IBRA subregion
	Delma vescolineata / Hunter Valley Delma	Any in NSW
Diuris tricolor / Pine Donkey Orchid	Spp	IBRA subregion
	Diuris tricolor / Pine Donkey Orchid	Any in NSW

Eucalyptus camaldulensis - endangered population / Eucalyptus camaldulensis population in the Hunter catchment	Spp	IBRA subregion
	Eucalyptus camaldulensis - endangered population / Eucalyptus camaldulensis population in the Hunter catchment	Any in NSW
Eucalyptus glaucina / Slaty Red Gum	Spp	IBRA subregion
	Eucalyptus glaucina / Slaty Red Gum	Any in NSW
Lathamus discolor / Swift Parrot	Spp	IBRA subregion
	Lathamus discolor / Swift Parrot	Any in NSW
Myotis macropus / Southern Myotis	Spp	IBRA subregion
	Myotis macropus / Southern Myotis	Any in NSW
Ninox connivens / Barking Owl	Spp	IBRA subregion
	Ninox connivens / Barking Owl	Any in NSW
Ninox strenua / Powerful Owl	Spp	IBRA subregion
	Ninox strenua / Powerful Owl	Any in NSW

Ozothamnus tesselatus / Ozothamnus tesselatus	Spp	IBRA subregion
	Ozothamnus tesselatus / Ozothamnus tesselatus	Any in NSW
Petauroides volans / Southern Greater Glider	Spp	IBRA subregion
	Petauroides volans / Southern Greater Glider	Any in NSW
Petaurus norfolcensis / Squirrel Glider	Spp	IBRA subregion
	Petaurus norfolcensis / Squirrel Glider	Any in NSW
Petrogale penicillata / Brush-tailed Rock-wallaby	Spp	IBRA subregion
	Petrogale penicillata / Brush-tailed Rock-wallaby	Any in NSW
Phascogale tapoatafa / Brush-tailed Phascogale	Spp	IBRA subregion
	Phascogale tapoatafa / Brush-tailed Phascogale	Any in NSW
Phascolarctos cinereus / Koala	Spp	IBRA subregion
	Phascolarctos cinereus / Koala	Any in NSW
Planigale maculata / Common Planigale	Spp	IBRA subregion

	Planigale maculata / Common Planigale	Any in NSW
Pomaderris queenslandica / Scant Pomaderris	Spp	IBRA subregion
	Pomaderris queenslandica / Scant Pomaderris	Any in NSW
Prasophyllum petilum / Tarengo Leek Orchid	Spp	IBRA subregion
	Prasophyllum petilum / Tarengo Leek Orchid	Any in NSW
Prasophyllum sp. Wybong / Prasophyllum sp. Wybong	Spp	IBRA subregion
	Prasophyllum sp. Wybong / Prasophyllum sp. Wybong	Any in NSW
Prostanthera cineolifera / Singleton Mint Bush	Spp	IBRA subregion
	Prostanthera cineolifera / Singleton Mint Bush	Any in NSW
Pterostylis chaetophora / Pterostylis chaetophora	Spp	IBRA subregion
	Pterostylis chaetophora / Pterostylis chaetophora	Any in NSW
Pterostylis gibbosa / Illawarra Greenhood	Spp	IBRA subregion
	Pterostylis gibbosa / Illawarra Greenhood	Any in NSW

Rhodamnia rubescens / Scrub Turpentine	Spp	IBRA subregion
	Rhodamnia rubescens / Scrub Turpentine	Any in NSW
Tyto novaehollandiae / Masked Owl	Spp	IBRA subregion
	Tyto novaehollandiae / Masked Owl	Any in NSW
Tyto tenebricosa / Sooty Owl	Spp	IBRA subregion
	Tyto tenebricosa / Sooty Owl	Any in NSW
Vespadelus troughtoni / Eastern Cave Bat	Spp	IBRA subregion
	Vespadelus troughtoni / Eastern Cave Bat	Any in NSW

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048860/BAAS18097/25/00055867	HTP - Hunter IBRA subregion	05/08/2025
Assessor Name	Report Created	BAM Data version *
	12/02/2026	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/02/2026
Assessment Revision	BOS entry trigger	Assessment Type
1	Major Project	Scattered Trees

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees Credit Requirement

Class	Contains hollows	Number of trees	Ecosystem credits
3431-Central Hunter Ironbark Grassy Woodland			
3	True	6.0	6
3	True	2.0	2
3	True	5.0	5
2	False	1.0	1
			14
4015-Central Hunter Riparian Forest			
2	True	1.0	1
3	True	1.0	1
			2
3314-Central Hunter Slopes Grey Box Forest			
3	True	1.0	1
			1
3489-Hunter Escarpment Grey Box Forest			
3	True	1.0	1
			1
			18

Species credits for threatened species

The scattered tree module is not applicable. This species much be assessed using chapter 5 of the BAM and BAM-C development module

Eucalyptus pumila Pokolbin Mallee
Lathamus discolor Swift Parrot
Persoonia pauciflora North Rothbury Persoonia
Anthochaera phrygia Regent Honeyeater
Acacia pendula - endangered population Acacia pendula population in the Hunter catchment
Prasophyllum sp. Wybong Prasophyllum sp. Wybong

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00048860/BAAS18097/25/00055867	HTP - Hunter IBRA subregion	05/08/2025
Assessor Name	Report Created	BAM Data version *
	12/02/2026	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/02/2026
Assessment Revision	BOS entry trigger	Assessment Type
1	Major Project	Scattered Trees

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Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name
Black Falcon	Falco subniger
	Falco subniger
	Falco subniger
	Falco subniger
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis
	Melithreptus gularis gularis
	Melithreptus gularis gularis
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae
	Climacteris picumnus victoriae
	Climacteris picumnus victoriae
	Climacteris picumnus victoriae
Dusky Woodswallow	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis
	Micronomus norfolkensis
	Micronomus norfolkensis

Eastern False Pipistrelle	Falsistrellus tasmaniensis
Eastern Osprey	Pandion cristatus
	Pandion cristatus
Flame Robin	Petroica phoenicea
	Petroica phoenicea
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis
	Pomatostomus temporalis temporalis
Little Eagle	Hieraaetus morphnoides
	Hieraaetus morphnoides
	Hieraaetus morphnoides
	Hieraaetus morphnoides
Little Lorikeet	Glossopsitta pusilla
	Glossopsitta pusilla
	Glossopsitta pusilla
	Glossopsitta pusilla
Regent Honeyeater	Anthochaera phrygia
	Anthochaera phrygia
	Anthochaera phrygia
Scarlet Robin	Petroica boodang
	Petroica boodang
	Petroica boodang
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami
South-eastern Hooded Robin	Melanodryas cucullata cucullata
	Melanodryas cucullata cucullata
Speckled Warbler	Chthonicola sagittata
	Chthonicola sagittata
	Chthonicola sagittata
	Chthonicola sagittata
Spotted Harrier	Circus assimilis
	Circus assimilis
	Circus assimilis
Swift Parrot	Lathamus discolor
	Lathamus discolor
	Lathamus discolor
	Lathamus discolor

Varied Sittella	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
White-throated Needletail	Hirundapus caudacutus
	Hirundapus caudacutus
	Hirundapus caudacutus
	Hirundapus caudacutus
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris
	Saccolaimus flaviventris

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Black-necked Stork	Ephippiorhynchus asiaticus	3314-Central Hunter Slopes Grey Box Forest
		3431-Central Hunter Ironbark Grassy Woodland
		4015-Central Hunter Riparian Forest
		3489-Hunter Escarpment Grey Box Forest
Painted Honeyeater	Grantiella picta	4015-Central Hunter Riparian Forest
		3489-Hunter Escarpment Grey Box Forest
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3314-Central Hunter Slopes Grey Box Forest
		4015-Central Hunter Riparian Forest
		3489-Hunter Escarpment Grey Box Forest
White-bellied Sea-Eagle	Haliaeetus leucogaster	3314-Central Hunter Slopes Grey Box Forest
		3431-Central Hunter Ironbark Grassy Woodland
		4015-Central Hunter Riparian Forest
		3489-Hunter Escarpment Grey Box Forest

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
Black-necked Stork	Ephippiorhynchus asiaticus	Habitat constraints
Painted Honeyeater	Grantiella picta	Habitat constraints
White-bellied Sea-Eagle	Haliaeetus leucogaster	Habitat constraints

Scattered Tree Report

Proposal Details

Assessment Id
00048860/BAAS18097/25/00055867

Assessment name
HTP - Hunter IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Report Created
12/02/2026

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/02/2026

Assessment Revision
1

Assessment Type
Scattered Trees

BOS entry trigger
Major Project

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Scattered Trees

PCT code	PCT name	No. of trees	Species	DBHOB Category	Contain hollows	Class	Assessment required
3314	Central Hunter Slopes Grey Box Forest	1	Eucalyptus moluccana	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

Scattered Tree Report

3431	Central Hunter Ironbark Grassy Woodland	6	Eucalyptus crebra	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
3431	Central Hunter Ironbark Grassy Woodland	2	Eucalyptus moluccana	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
3431	Central Hunter Ironbark Grassy Woodland	5	Eucalyptus tereticornis	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
3431	Central Hunter Ironbark Grassy Woodland	1	Allocasuarina luehmannii	>= 20cm and <50cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
3489	Hunter Escarpment Grey Box Forest	1	Eucalyptus tereticornis	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
4015	Central Hunter Riparian Forest	1	Eucalyptus tereticornis	>= 20cm and <50cm	True	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

Scattered Tree Report

4015	Central Hunter Riparian Forest	1	Eucalyptus tereticornis	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00048860/BAAS18097/25/00055867

Proposal Name
HTP - Hunter IBRA subregion

BAM data last updated *
05/08/2025

Assessor Name

Assessor Number
BAAS17020

BAM Data version *
Current classification (live - default) (82)

Proponent Names

Report Created
12/02/2026

Date Finalised
12/02/2026

Assessment Revision
1

BOS entry trigger
Major Project

Assessment Type
Scattered Trees

BAM Case Status
Finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Like for like)

PCT	TEC	HBT Cr	No HBT Cr	Credits
3314-Central Hunter Slopes Grey Box Forest	Not a TEC	1	0	1
3431-Central Hunter Ironbark Grassy Woodland	Not a TEC	13	1	14
4015-Central Hunter Riparian Forest	Not a TEC	2	0	2
3489-Hunter Escarpment Grey Box Forest	Not a TEC	1	0	1

Credit classes for 3314

Like-for-like options

Class	Trading group	HBT	Credits	IBRA region
Coastal Valley Grassy Woodlands	Coastal Valley Grassy Woodlands >=70% and <90%	Yes	1	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

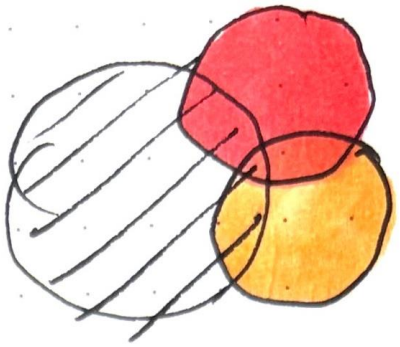
Credit classes for 3431

Like-for-like options

Class	Trading group	HBT	Credits	IBRA region
Hunter-Macleay Dry Sclerophyll Forests	Hunter-Macleay Dry Sclerophyll Forests >=70% and <90%	Yes	13	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Hunter-Macleay Dry Sclerophyll Forests	Hunter-Macleay Dry Sclerophyll Forests >=70% and <90%	No	1	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Credit classes for 3489	**Like-for-like options**				
	Class	Trading group	HBT	Credits	IBRA region
	Central Gorge Dry Sclerophyll Forests	Central Gorge Dry Sclerophyll Forests <50%	Yes	1	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Credit classes for 4015	**Like-for-like options**				
	Class	Trading group	HBT	Credits	IBRA region

	Coastal Floodplain Wetlands	Coastal Floodplain Wetlands >=70% and <90%	Yes	2	Hunter, Ellerston, Karuah Manning, Kerrabee, Liverpool Range, Peel, Tomalla, Upper Hunter, Wyong and Yengo. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.



Appendix F

Herbarium correspondence

BOTANIC GARDENS OF SYDNEY

National Herbarium of New South Wales

Lukas CLEWS
WSP
Level 27/680 George Street
Sydney, NSW 2000
AUSTRALIA

BIS Enquiry No: 22473
Botanical.Is@botanicgardens.nsw.gov.au
Ph. No: (02) 4631 5135
Date: 30 November 2023

Dear Lukas,

Re: 30 samples from Dunedoo east through to Ulan and north to Cassilis

Thank you for your enquiry of 20-Nov-23. We are happy to provide the following information:

1. ***Eucalyptus macrorhyncha*** Det. A. Orme & S. McCune 29 Nov 2023

2. ***Eucalyptus macrorhyncha*** - with possible influence from *E. cannonii* Det. A. Orme & S. McCune 29 Nov 2023

3. ***Eucalyptus macrorhyncha*** <-> ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023

4. ***Eucalyptus macrorhyncha*** Det. A. Orme & S. McCune 29 Nov 2023

5. ***Eucalyptus*** possible ***macrorhyncha*** <-> ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023 - buds indicate influence from *E.cannonii*

6. ***Eucalyptus macrorhyncha*** <-> ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023 - keeping

7. ***Eucalyptus macrorhyncha*** <-> ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023 - keeping

8. ***Eucalyptus macrorhyncha*** <-> ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023 - keeping

9. ***Eucalyptus macrorhyncha*** <-> ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023 - keeping

10. ***Eucalyptus macrorhyncha*** <-> ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023

11. ***Eucalyptus macrorhyncha*** **<->** ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023

12. ***Eucalyptus macrorhyncha*** **<->** ***E. cannonii*** Det. A. Orme & S. McCune 29 Nov 2023

13. ***Eucalyptus macrorhyncha*** Det. A. Orme & S. McCune 29 Nov 2023

14. ***Eucalyptus macrorhyncha*** with possible influence from *E. cannonii* Det. A. Orme & S. McCune 29 Nov 2023

15. ***Eucalyptus macrorhyncha*** Det. A. Orme & S. McCune 29 Nov 2023

16. ***Eucalyptus cannonii*** Det. A. Orme & S. McCune 29 Nov 2023 – not kept as poor specimen

17. ***Swainsona reticulata*** Det. P. Jobson 23 Nov 2023 Keeping

18. ***Swainsona reticulata*** Det. P. Jobson 23 Nov 2023

19. ***Swainsona reticulata*** Det. P. Jobson 23 Nov 2023

20. ***Pomaderris*** probably ***queenslandica*** Det. S. McCune 27 Nov 2023 - mature leaves and flowers and/or fruits needed

21. ***Swainsona reticulata*** Det. P. Jobson 23 Nov 2023

22. ***Leucochrysum albicans*** var. ***tricolor*** Conf. P. Jobson 23 Nov 2023 - keeping

23. ***Bothriochloa macra*** Det. S. McCune 27 Nov 2023

24. ***Bothriochloa macra*** Det. S. McCune 27 Nov 2023

25. ***Bothriochloa macra*** Det. S. McCune 27 Nov 2023

26. ***Rhodomyrtus psidioides*** Conf. P. Jobson 24 Nov 2023 - keeping

27. ***Rhodomyrtus psidioides*** Conf. P. Jobson 24 Nov 2023

28. ***Rhodomyrtus psidioides*** Conf. P. Jobson 24 Nov 2023

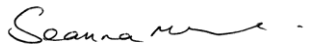
29. ***Rhodomyrtus psidioides*** Conf. P. Jobson 24 Nov 2023

30. ***Acacia ausfeldii*** Conf. P. Jobson 24 Nov 2023 - keeping

An invoice for $440.00 (incl. GST) will be forwarded to you separately by our finance section to cover cost of identification.

Thank you for your enquiry.

Yours sincerely,



Seanna McCune
Identification Senior Technical Officer
Botanical Identification Service

BOTANIC GARDENS OF SYDNEY

National Herbarium of New South Wales

Mark STABLES
WSP
331 Wattley Hill Road
Wootton, NSW 2423
AUSTRALIA

BIS Enquiry No: 22405
Botanical.Is@botanicgardens.nsw.gov.au
Ph. No: (02) 4631 5135
Date: 3 April 2024

Dear Mark,

Thank you for your enquiry of 10-Oct-23. We are happy to provide the following information:

Re: 4 specimens from Singorimbah Station & Pokolbin State Forest

Eleocharis obicis Det. P Jobson 1 Feb 2024 - retained

MS14-01 ***Eucalyptus fracta*** Conf. P Jobson & A Orme 1 Feb 2024 - retained

MS14-02-03 ***Prostanthera cineolifera*** Conf. P Jobson 1 Feb 2024 - retained

Thank you for your enquiry.

Yours sincerely,

Seanna McCune
Identification Senior Technical Officer
Botanical Identification Service

BOTANIC GARDENS OF SYDNEY

National Herbarium of New South Wales

Deborah LANDENBERGER
WSP
PO Box 1162
Newcastle, NSW 2300
AUSTRALIA

BIS Enquiry No: 22599
Botanical.Is@botanicgardens.nsw.gov.au
Ph. No: (02) 4631 5135
Date: 10 July 2024

Dear Deborah LANDENBERGER,
Identification of potential Senna acclinis

Thank you for your enquiry of 12-Mar-24. We are happy to provide the following information:

Senna acclinis Conf. SF McCune 10 July 2024

I've retained your specimen for the Herbarium collection, and would be grateful for the collection date and the collector's name if not you?

You have not been charged for this enquiry.

Yours sincerely,

Seanna McCune
Identification Senior Technical Officer
Botanical Identification Service

BOTANIC GARDENS OF SYDNEY

National Herbarium of New South Wales

Sebastian MILLER
WSP-ecology
Level 27/680 George Street
Sydney, NSW 2000

BIS Enquiry No: 22795
Botanical.Is@botanicgardens.nsw.gov.au
Ph. No: (02) 4631 5135
Date: 18 October 2024

Dear Sebastian,

Re: orchid Id – Transgrid easement near Eraring Power Station - Cooranbong

Your orchid specimen has been determined as:

Genoplesium insigne (syn. *Corunastylis insignis*) – det. A.E. Orme, 18th Oct 2024.

We have retained your specimen for the herbarium collection – NSW 1138852, in spirit.

An invoice for $75.00 (incl. GST) will be forwarded to you separately by our finance section to cover cost of expedited identification.

Thank you for your enquiry.

Yours sincerely,

Andrew Orme
Identification Senior Technical Officer
Botanical Identification Service

BOTANIC GARDENS OF SYDNEY

National Herbarium of New South Wales

Tasman CARR
Se 1, Lvl 3
51-55 Bolton St
WSP Australia
Newcastle, NSW 2290

BIS Enquiry No: 22774
Botanical.Is@botanicgardens.nsw.gov.au
Ph. No: (02) 4631 5135
Date: 19 December 2024

Dear Tasman,

Re: plant identification – Corrabare State Forest & Singleton Military Area

Thank you for your enquiry of 27th Sep 2024. We are happy to provide the following information:

Corrabare State Forest specimen - leaves consistent with *Melaleuca groveana* - material inadequate for identification – det. S.F. McCune, 18th Dec 2024 – specimen not retained.

Singleton Military Area specimen - possibly *Pterostylis gibbosa* - det. A.E. Orme, 19th Dec 2024:

* specimen pressed & dried → rehydrated but segments remained reduced in size
* labellum (hairs, dimensions, channelled shape) & labellum hinge consistent with *P. gibbosa*
* free points consistent with *P. gibbosa*
* synsepalum reduced and undersize - unable to examine or compare
* image of "neighbouring individual" appears consistent with *P. gibbosa*
* image of vouchered plant inadequate
* if possible, please recollect and place specimen in solution of 70% ethanol & 30% water (methylated spirits can be used instead of ethanol); and take image of open flower of specimen plant.
* specimen retained - rehydrated and placed in EtOH for spirit collection

An invoice for $110.00 (incl. GST) will be forwarded to you separately by our finance section to cover cost of identification.

Thank you for your enquiry.

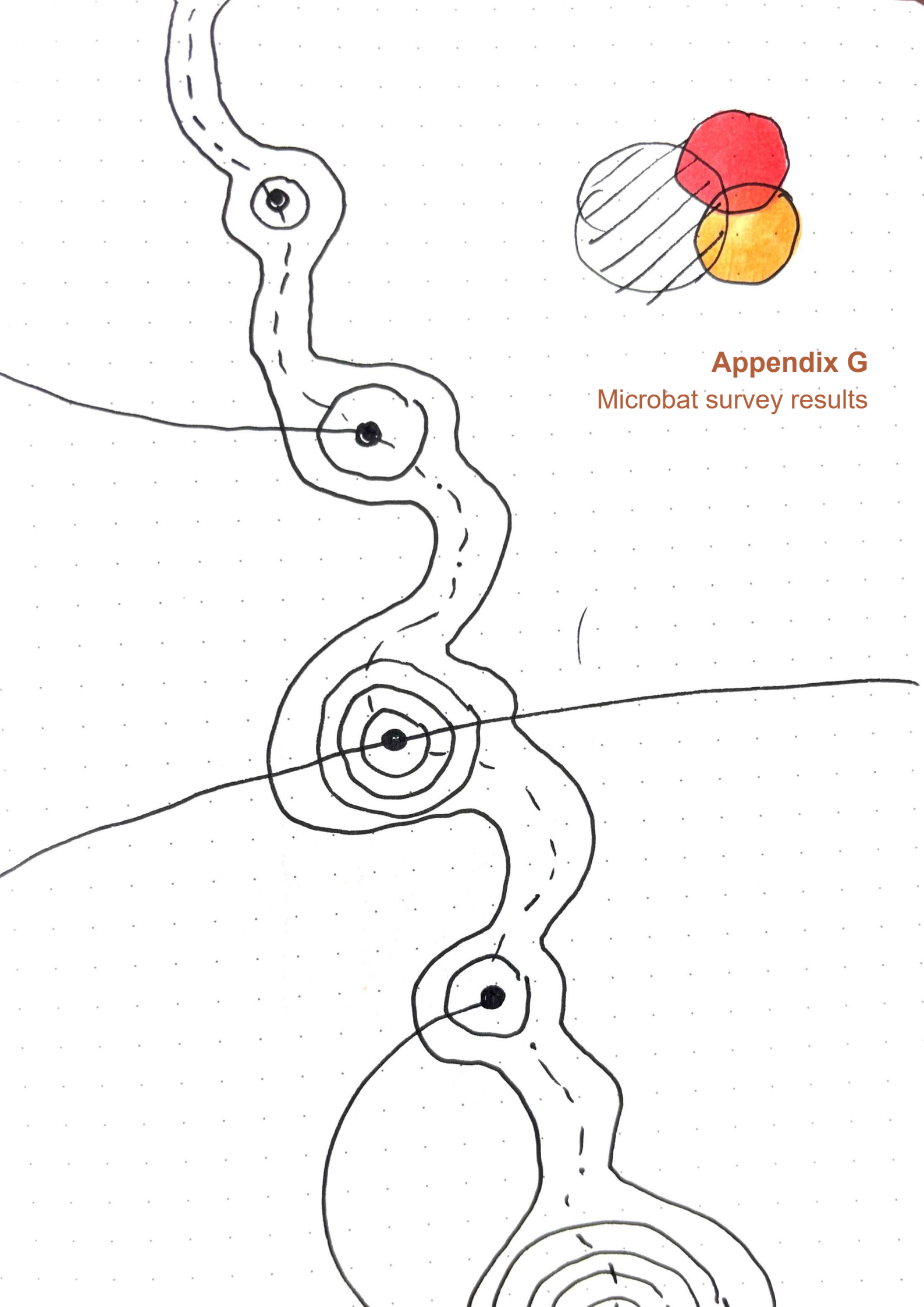
Yours sincerely,

Andrew Orme
Identification Senior Technical Officer
Botanical Identification Service

AUSTRALIAN INSTITUTE OF BOTANICAL SCIENCE

visit NSW Flora Online at plantnet.rbgsyd.nsw.gov.au
to help you identify the plants of New South Wales

NSW GOVERNMENT Planning & Environment



Appendix G

Microbat survey results

Microbat Call Identification Report

Prepared for ("Client"):	WSP Australia
Survey location/project name:	Hunter Transmission Project
Survey dates:	January – May 2024
Client project reference:	
Job no.:	WSP-2404
Report date:	25 September 2024

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Methods

Data received

Balance! Environmental received a mix of full-spectrum (*.WAV) and zero-crossing (*.ZC) sequence files, recorded on Anabat Swift and Chorus detectors, plus ZCA files from Anabat Express units. The data were recorded at multiple sites, between January and May 2024 (see **Table 1**).

Table 1 Anabat deployment schedule: Hunter Transmission Project, January-May 2024.

Survey period and location	Start	End	No. Recording Nights	Anabat Serial	Site ID	File type	No. of files
Jan 22-25 2024 Corrabare State Forest	22/02/2024	25/02/2024	3	583114	Anabat 1_583114	ZC	1464
	22/02/2024	25/02/2024	3	583124	Anabat 2_583124	ZC	1273
	22/02/2024	25/02/2024	3	583138	Anabat 3_583138	ZC	1452
Jan 22-Feb 08 2024 Pokolbin State Forest	29/01/2024	27/02/2024	29	2982	ANA-1_HTP	WAV	4026
	30/01/2024	27/02/2024	28	7220	ANA-2_HTP	WAV	2752
	31/01/2024	26/02/2024	26	2945	ANA-3_HTP	WAV	2406
	1/02/2024	26/02/2024	25	2963	ANA-4_HTP	Wav	1728
Feb 12-16 2024 Bulga	12/02/2024	16/02/2024	4	657547	Bulga Anabat 1	ZC	16855
	12/02/2024	16/02/2024	4	583124	Bulga Anabat 2	ZC	4474
	12/02/2024	16/02/2024	4	583114	Bulga Anabat 3	ZC	7887
	12/02/2024	16/02/2024	4	583138	Bulga Anabat 4	ZC	1543
Feb 19-May 20 2024 Gehrmann Property	20/02/2024	7/04/2024	48	583138		ZC	31550
Feb 20-May 21 2024 Corrabare North Flora Reserve	20/02/2024	8/04/2024	49	657547		ZC	51053
Feb 12-23 2024 Pokolbin, Corrabare and Watagans State Forests_NVE	12/02/2024	17/02/2024	5	3067		ZC	1679
	12/02/2024	17/02/2024	5	3095		ZC	2988
	12/02/2024	17/02/2024	5	3157		ZCA	5
	12/02/2024	17/02/2024	5	7754		ZC	1315
	17/02/2024	22/02/2024	5	3067		ZC	1329
	17/02/2024	22/02/2024	5	3095		ZC	3500
	17/02/2024	22/02/2024	5	3157		ZCA	5
	17/02/2024	22/02/2024	5	7754		ZC	1553
	22/02/2024	26/02/2024	5	3067		ZC	1675
	22/02/2024	26/02/2024	5	3095		ZC	27
	22/02/2024	26/02/2024	5	3157		ZCA	4
	22/02/2024	26/02/2024	5	7754		ZC	2070
Feb 26-29 2024 Singleton Military Area	26/02/2024	29/02/2024	3	583090	Anabat Express (A1)	ZCA	3
	26/02/2024	29/02/2024	3	unknown	Anabat Swift (A2)	ZC	364

Post-processing

Anabat Insight (Version 2.1.2; Titley Scientific, Brisbane) was used to extract individual acoustic trigger events from each Anabat Express ZCA files and store them in zero-crossing call sequence format (*.ZC files). ZCA conversion settings were as follows:

- Maximum file duration = 10 s
- Recording window = 2 s
- Minimum event duration = 2 ms
- Minimum trigger frequency = 8 kHz
- Maximum trigger frequency = 500 kHz
- Smoothing = Auto

The Anabat Swift WAV files recorded at Pokolbin State Forest between 29th January and 27th February were also converted to ZC sequence file format to make the data consistent across all sites, and expedite processing and analysis.

The entire ZC file dataset was then scanned with a "noise" filter to separate files containing potentially-identifiable bat calls from those with only non-bat background noise and/or short duration calls (<4 pulses) that would be of little use for species identification. To achieve this, the following filter criteria were applied to every ZC file using the Search tool:

- Characteristic frequency (Fc) = 10 – 165 kHz
- Pulse duration (Dur) = 2 – 120 ms
- Time between pulses (TBC) = 5 – 1500 ms

For a file to pass the filter it had to contain a minimum of four (4) bat call pulses that met all the above criteria. Files that failed the Search filter (i.e., "noise" files) were excluded from further analysis.

Call analysis

All ZC files containing identifiable bat calls were analysed in *Anabat Insight*, as follows:

1. The Decision Tree tool was used to scan all ZC files and group them according to the average metrics of the calls within. Decision Tree grouping was based primarily on characteristic frequency (Fc), with some frequency groups further subdivided using metrics such as pulse duration (Dur), slope of the characteristic section (Sc), and a custom "bandwidth" metric derived from the difference between maximum frequency (Fmax) and Fc.
2. Differentiation of the species present within each Decision Tree group was achieved by:
    a. using the Search tool in an iterative process to find signals meeting species-specific metric-based filters
        i. for each target species, the relevant files were searched on a "per pulse" basis, initially accepting only files with at least 50% of pulses, and a minimum of five pulses overall meeting the species-specific criteria.
        ii. subsequent iterations of the searches used slightly broader criteria boundaries and/or varied acceptance limits (e.g. minimum of 10 pulses without the % of pulses limit).
    b. at the conclusion of each Search iteration, at least 10% of the calls that passed the filter (i.e. likely belonged to the target species) were manually vetted before applying the relevant species label.

Call metrics used in the Search process, along with the manual vetting process, relied upon published call descriptions (Pennay *et al.* 2004) and/or were derived from regionally relevant reference calls.

The likelihood of species' occurrence in the survey area was confirmed by referring to relevant distributional information (e.g., Australasian Bat Society 2021; Baker & Gynther 2023; Churchill 2008).

Some Decision Tree groups inevitably include an enormous volume of calls, often with multiple individuals and species occurring in each file. Once the iterative Search process has extracted the most reliably identifiable calls of each member species of those groups, the remaining calls in each group were ignored and moved to a "surplus calls" folder.

Species presence

Where a call receives a unique species label in the above iterative process, it is implied that the identification is highly reliable. Those positive identifications result in the species' presence being shown as "Definite" for the relevant site in the Results tables.

Some calls could not be reliably identified, but potentially represented species additional to those that were positively identified for the relevant site. These "unresolved" calls received a species-complex label. Any members of a species complex that were not also positively identified from other calls recorded at the relevant site are listed as "Possibly present" in the Results.

Reporting standard

The format and content of this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003), available on-line at http://www.ausbats.org.au/.

Species nomenclature follows Armstrong *et al.* (2020).

Results & Discussion

The total dataset, following ZCA conversion and noise/short-call filtering included 40,548 ZC files; however, only 3444 of those files were required to identify every species present across all survey sites. The other 37,104 "surplus" files were processed only to Decision Tree group level and were subsequently ignored once all species were identified for each site.

A total of 3514 individual bat calls were identified, with 90% (3150) of those calls assigned positively to the following 20 taxa:

- *Rhinolophus megaphyllus*
- *Chalinolobus dwyeri*
- *Chalinolobus gouldii*
- *Chalinolobus morio*
- *Falsistrellus tasmaniensis*
- *Myotis macropus*
- *Nyctophilus* sp.†
- *Scoteanax rueppellii*
- *Scotorepens balstoni*
- *Scotorepens orion*
- *Vespadelus darlingtoni*
- *Vespadelus pumilus*
- *Vespadelus regulus*
- *Vespadelus vulturnus*
- *Miniopterus australis*
- *Miniopterus orianae oceanensis*
- *Austronomus australis*
- *Micronomus norfolkensis*
- *Ozimops planiceps*
- *Ozimops ridei*

† Up to three *Nyctophilus* spp. potentially occur in the study area, including: *N. corbeni, N. geoffroyi* and *N. gouldi*.

One additional species – *Vespadelus troughtoni* – may also have been recorded; however, it's calls and those of *V. vulturnus* are almost impossible to distinguish, so both species were listed as "Possible" at sites where the relevant call types were detected. *V. vulturnus* was identified reliably only for one site (Corrabare SF, Anabat 583114, 24/01/2024), with the six detected calls having a characteristic frequency (Fc) of ~47 kHz, which is too low for *V. troughtoni*. All calls assigned to the species pair had Fc~49-52 kHz. Numerous other unresolved calls in the same frequency range could have been from either of these *Vespadelus* spp. or *Chalinolobus morio*. The latter species was positively differentiated only where most pulses in a sequence had distinctive downward-sweeping tails (*cf.* mostly upward-sweeping tails, or "hooks", assigned to *Vespadelus* spp.).

Species detected at each site are presented in **Table 2(a-c)**.

Sample spectrograms of each identified call type are presented in **Appendix 1**.

References

Armstrong, K.N., Reardon, T.B., and Jackson, S.M. (2020). A current taxonomic list of Australian Chiroptera. Australasian Bat Society. Version 2020-06-09. URL: http://ausbats.org.au/species-list/4593775065

Australasian Bat Society (2021), *BatMap.* http://ausbats.org.au/batmap. Accessed 12/2/2024.

Baker, A.M. and Gynther, I.C. (editors) (2023). *Strahan's Mammals of Australia*. Fourth Edition; Reed New Holland Publishers; Sydney.

Churchill, S. (2008). *Australian Bats.* Jacana Books, Allen & Unwin; Sydney.

Pennay, M., Law, B. and Reinhold, L. (2004). *Bat Calls of New South Wales*. Department of Environment and Conservation, Hurstville.

Reardon, T. (2003). Standards in bat detector based surveys. *Australasian Bat Society Newsletter* **20**, 41-43.

Table 2a Bats recorded during the Hunter Transmission Project surveys, January-May 2024.

♦ Definite – at least one calls from the site was attributed unequivocally to the species

□ Possible – calls like those of the species were recorded but could not be reliably identified

Area/period	Corrabare State Forest_Jan 22-25 2024			Pokolbin State Forest_Jan 22-Feb 08 2024			
Detector/site	Anabat_583114	Anabat_583124	Anabat_583138	ANA-1_HTP (2982)	ANA-2_HTP (7220)	ANA-3_HTP (2945)	ANA-4_HTP (2963)
Rhinolophus megaphyllus	D	D	D	D	D	D	D
Chalinolobus dwyeri	D	D	D	D	D	D	
Chalinolobus gouldii	D	D		D	D	D	D
Chalinolobus morio	D	D		D	D	D	
Falsistrellus tasmaniensis	D		D	p	D	p	
Myotis macropus	p		p				
Nyctophilus sp.	D		D			D	D
Scoteanax rueppellii	p				p	D	
Scotorepens balstoni	D		D	D	D	D	
Scotorepens orion	D	D	D	D	D	D	D
Vespadelus darlingtoni			p	D	D	D	
Vespadelus pumilus	D		D				
Vespadelus regulus	D		D	D	D	D	
Vespadelus troughtoni		p		p	p	p	
Vespadelus vulturnus	D	p	p	p	p	p	
Miniopterus australis	D	D	D	D	D	D	D
Miniopterus orianae oceanensis	D		D	D	D	D	
Austronomus australis	D			D	D	D	
Micronomus norfolkensis	D	D		D	D	D	
Ozimops planiceps				D	D	D	D
Ozimops ridei		D		D	D	D	

Table 2b Bats recorded during the Hunter Transmission Project surveys, January-May 2024.

♦ Definite – at least one calls from the site was attributed unequivocally to the species

□ Possible – calls like those of the species were recorded but could not be reliably identified

Area/period	Bulga_Feb 12-16 2024				Gehrmann Property_Feb 19-May 20 2024	Corrabare North Flora Reserve_Feb 20-May 21 2024
Detector/site	Anabat 1	Anabat 2	Anabat 3	Anabat 4		
Rhinolophus megaphyllus				D	D	D
Chalinolobus dwyeri	D	D	D	D	D	D
Chalinolobus gouldii	D	D	D	D	D	D
Chalinolobus morio	D	D	D	D	D	D
Falsistrellus tasmaniensis					p	p
Myotis macropus	D	D		D		
Nyctophilus sp.					D	D
Scoteanax rueppellii	D	D		D	p	
Scotorepens balstoni	D	D	D	D	D	D
Scotorepens orion	D	D	D	D	D	D
Vespadelus darlingtoni	p	D				
Vespadelus pumilus						
Vespadelus regulus	D	p				D
Vespadelus troughtoni		p	p	p	p	p
Vespadelus vulturnus	p	p	p	p	p	p
Miniopterus australis	D	D	D	D	D	D
Miniopterus orianae oceanensis	D	D	D	D		D
Austronomus australis		D	D	D	D	D
Micronomus norfolkensis	D	D	D	D	D	D
Ozimops planiceps	D	D	D	D	D	D
Ozimops ridei	D	D	p	D	D	D

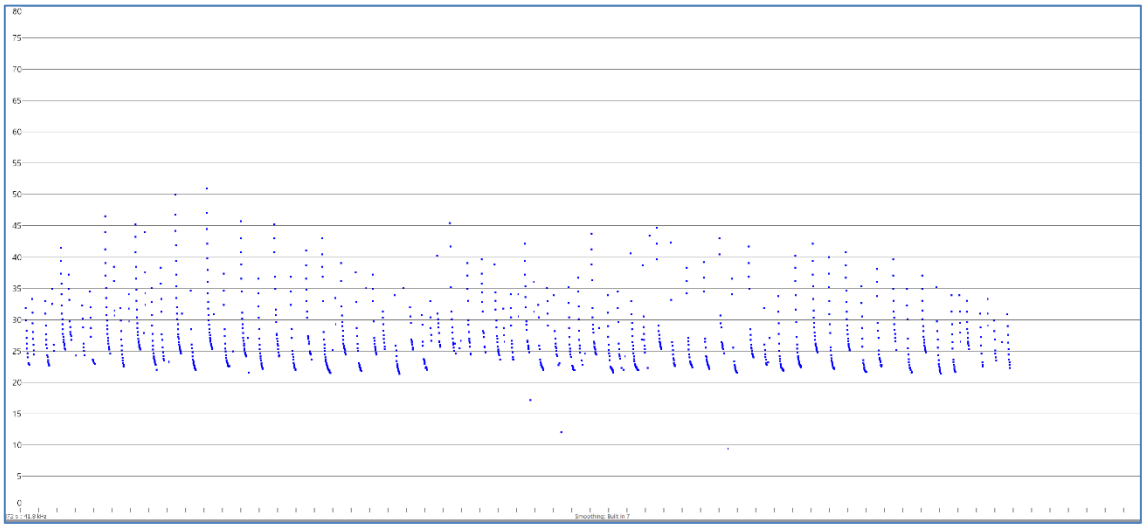
Table 2c Bats recorded during the Hunter Transmission Project surveys, January-May 2024.

♦ Definite – at least one calls from the site was attributed unequivocally to the species

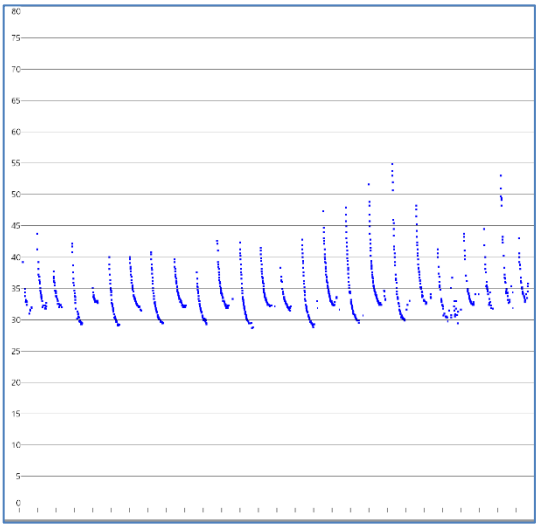
□ Possible – calls like those of the species were recorded but could not be reliably identified

Area/period	Pokolbin, Corrabare, Watagans State Forests_NVE_Feb 12-23 2024											Singleton Military Area_Feb 26-29 2024	
Sub-period	Feb 12 - 17				Feb 17 - 22				Feb 22 - 26				
Detector/site	3067	3095	3157	7754	3067	3095	3157	7754	3067	3157	7754	Anabat Swift (A2)	Express (A1)
Rhinolophus megaphyllus	D	D	D	D	D	D	D	D	D	D	D		D
Chalinolobus dwyeri		D	D		D	D	D	D				D	D
Chalinolobus gouldii	D	D	D	D	D	D	D	D				D	D
Chalinolobus morio	D	D	D	D	D	D	D	D			D	D	D
Falsistrellus tasmaniensis		D	D			p	p	p					p
Myotis macropus					p								
Nyctophilus sp.		D	D		D	D	D	D	D	D	D	D	D
Scoteanax rueppellii	p	D				p							D
Scotorepens balstoni	D		D				D					D	D
Scotorepens orion	D	D	D	D	D	D	p	p			D	D	D
Vespadelus darlingtoni		D	D			p	p						
Vespadelus pumilus				p	D			D	p	D	D	D	D
Vespadelus regulus		D	D		D	p	D		D			D	D
Vespadelus troughtoni		p	p	p	p			p			p	p	p
Vespadelus vulturnus		p	p	p	p			p			p	p	p
Miniopterus australis	D	D	D	D	D	D	D	D	D	D	D	D	D
Miniopterus orianae oceanensis	D	D	D	D	D	D	D	D	D	D		D	D
Austronomus australis	D	D	D			D		D					D
Micronomus norfolkensis	D		D		D	D		D					D
Ozimops planiceps		D	D		D	D		D					D
Ozimops ridei	D	D	D	D	D	D	D	D			D		D

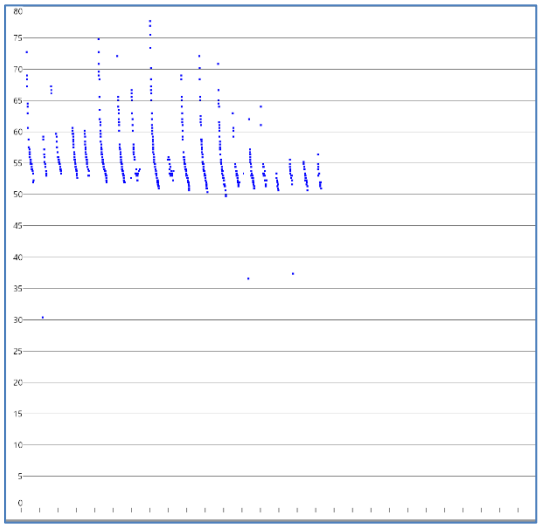
Appendix 1 Representative call sequences from the HTP surveys, January-May 2024.
x-axis = 10 ms per tick-mark; time between pulses removed ("compressed")



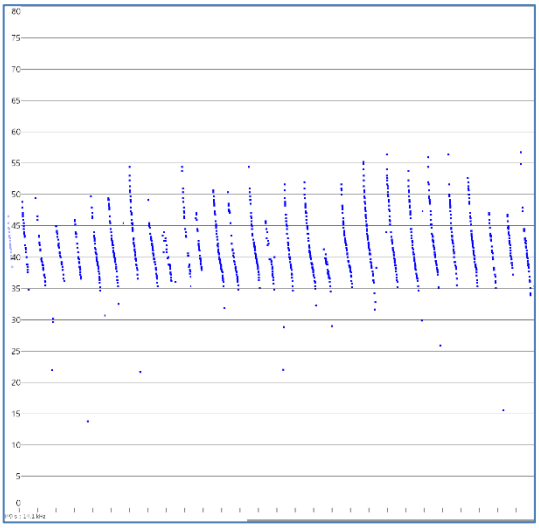
Chalinolobus dwyeri



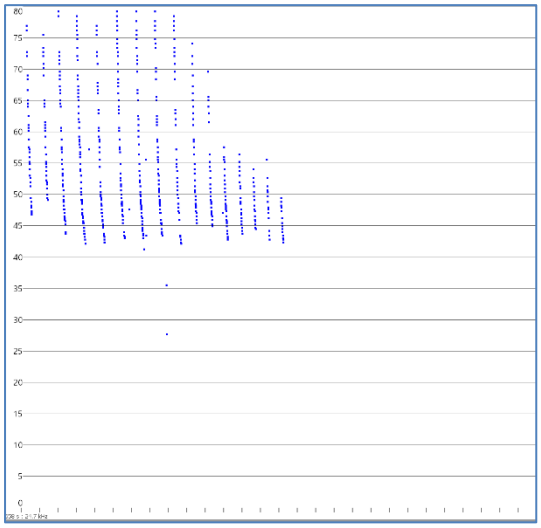
Chalinolobus gouldii



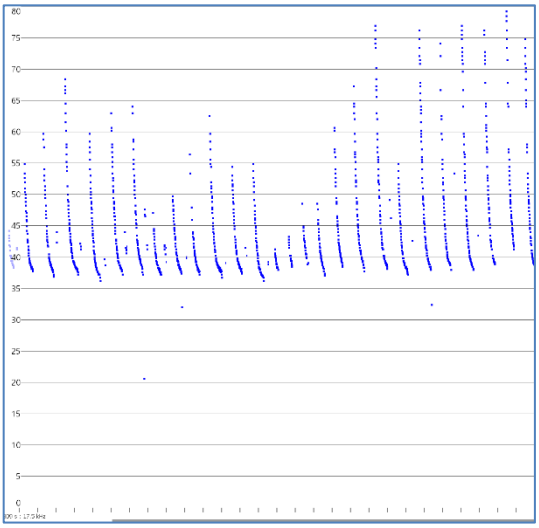
Chalinolobus morio



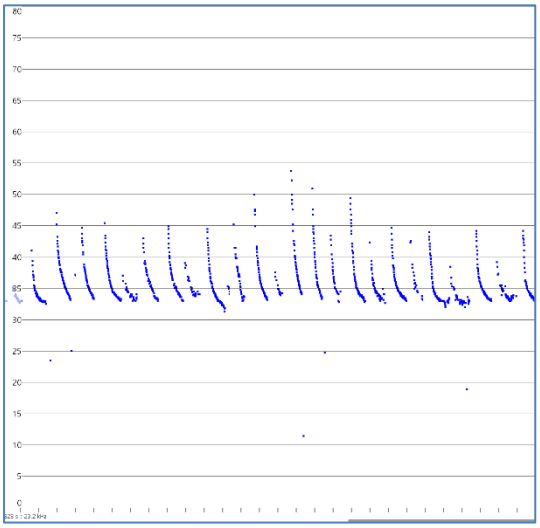
Myotis macropus



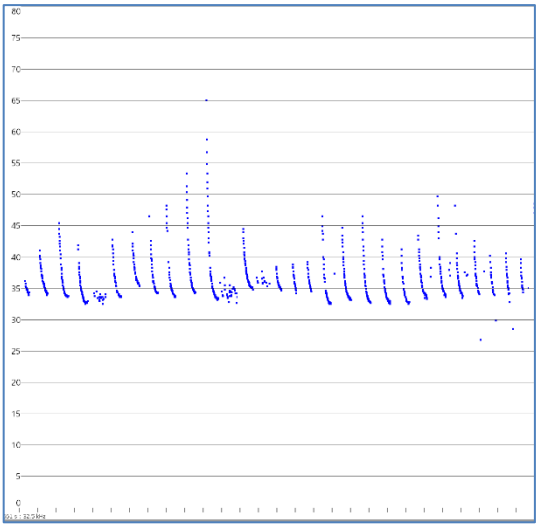
Nyctophilus sp.



Falsistrellus tasmaniensis



Scoteanax rueppellii



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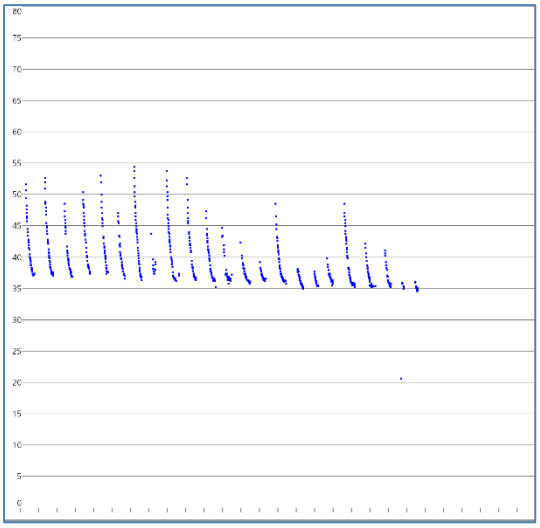

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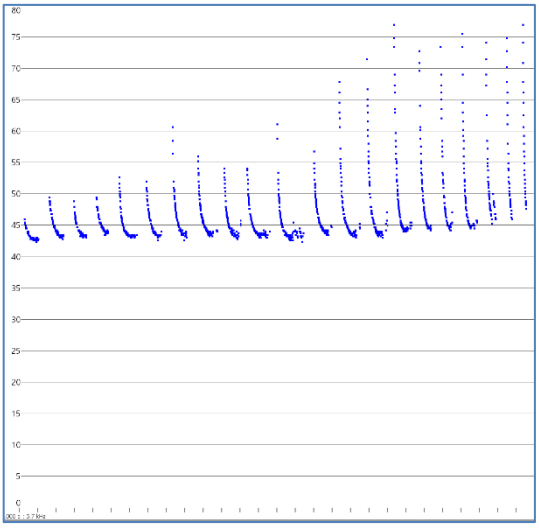
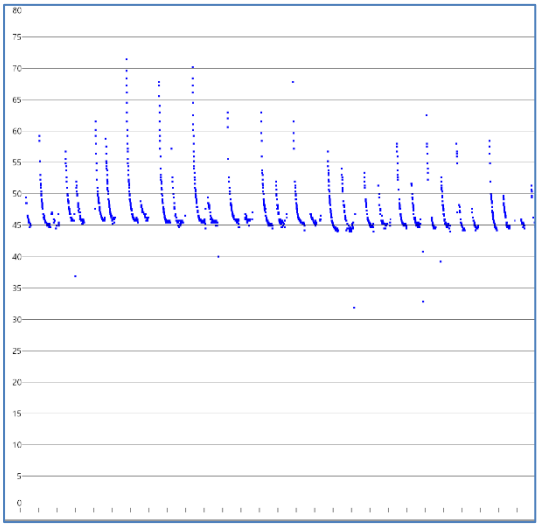
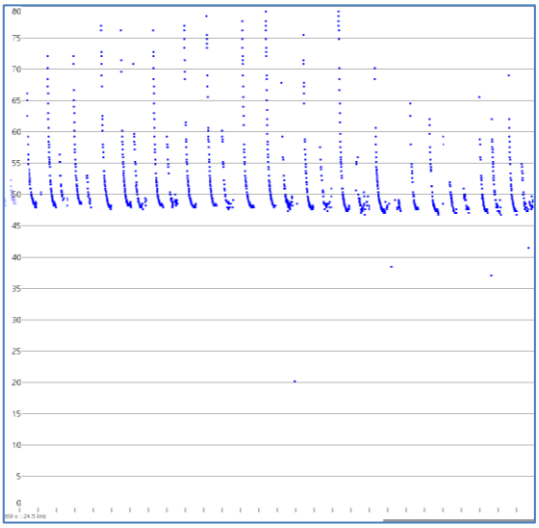


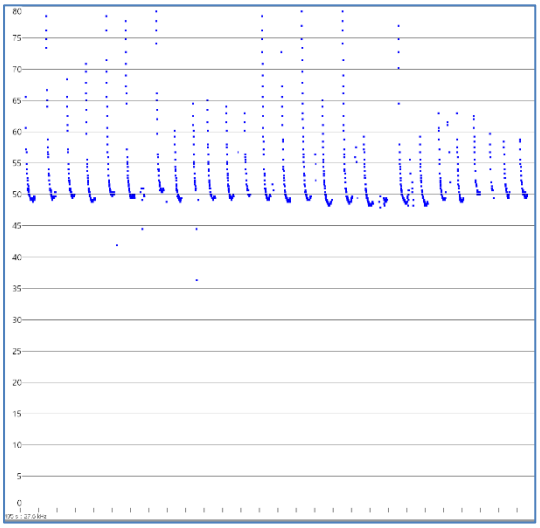
Vespadelus darlingtoni



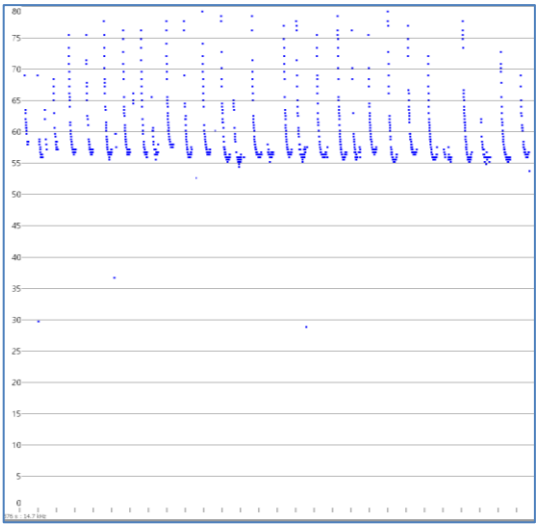
Vespadelus regulus



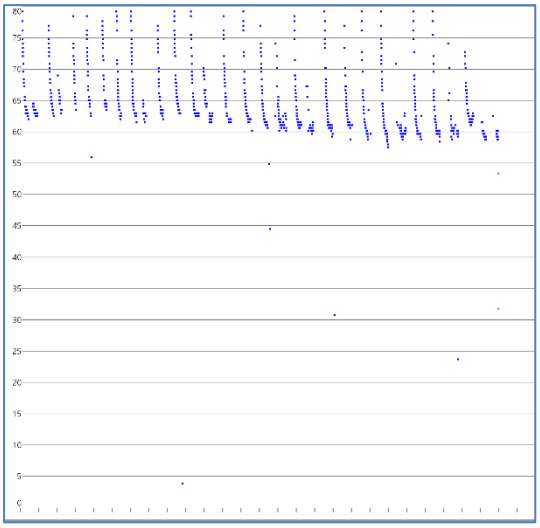
Vespadelus vulturnus



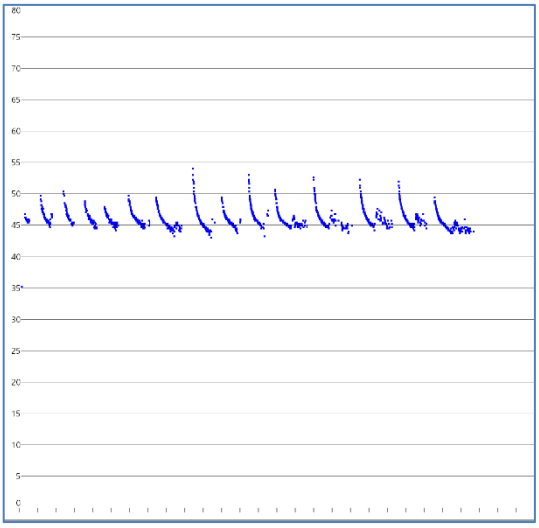
V. vulturnus or *V. troughtoni*



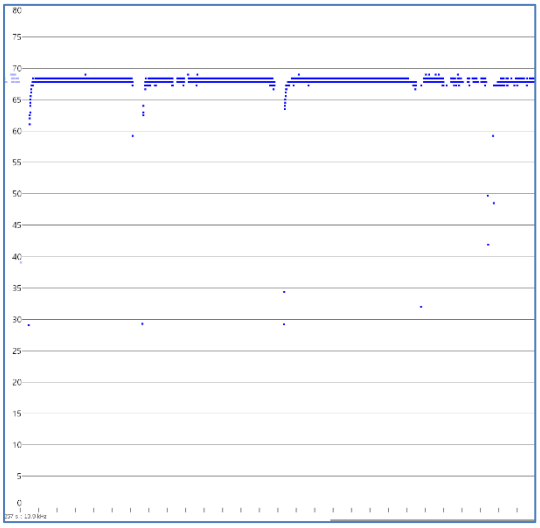
Vespadelus pumilus



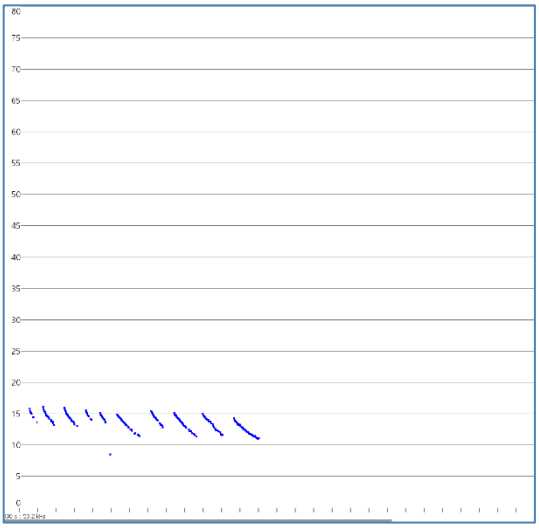
Miniopterus australis



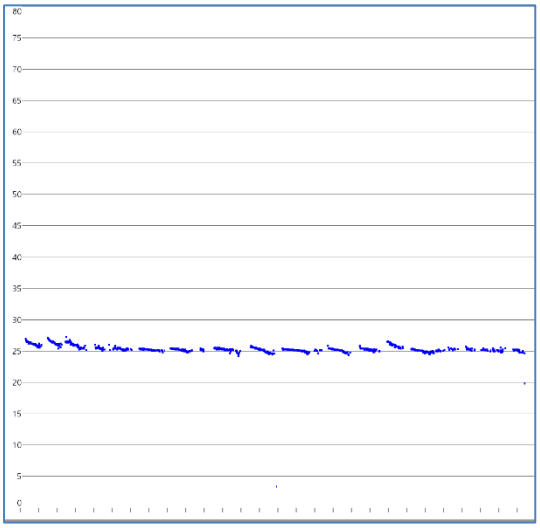
Miniopterus orianae oceanensis



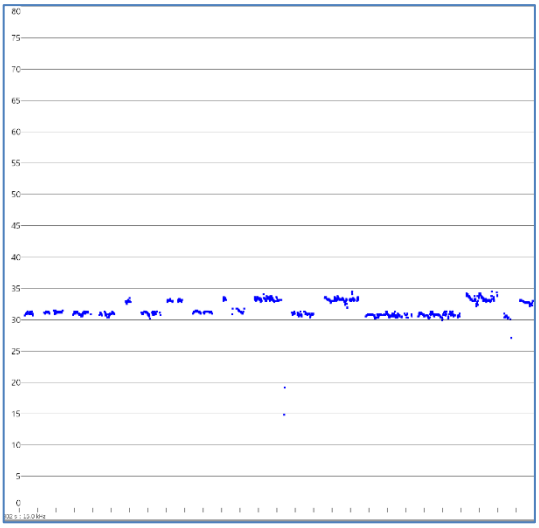
Rhinolophus megaphyllus



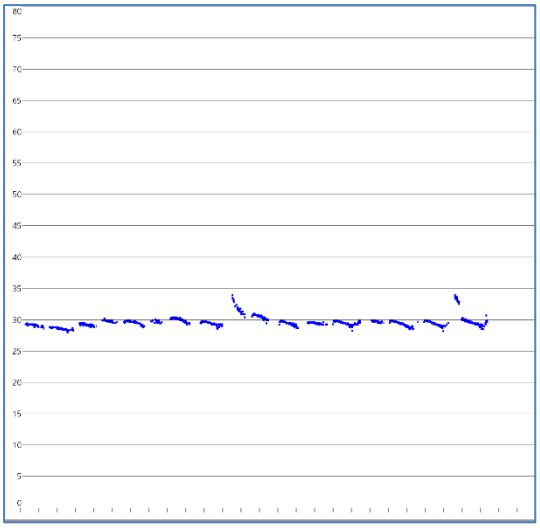
Austronomus australis



Ozimops planiceps



Micronomus norfolkensis



Ozimops ridei

Identification of echolocation call sequences recorded at Pokolbin and Watagans State Forest, New South Wales

Methods

Data

Data was received by hard drive in January of 2025. In total 66,390 WAV files were received, collected at three locations and 11 sites over 97 survey nights from the 17th November to the 18th December 2024 (Table 1).

Bat call analysis and species identification

Acoustic recordings made with Wildlife Acoustics Song Meter Mini-Bat-Full Spectrum (FS) Detectors. Files were initially filtered to exclude from further analysis any files containing only non-bat noise or bat calls with fewer than three identifiable pulses. A Decision Tree analysis was then applied to the files that passed the filter (i.e. contained potentially identifiable bat calls) to group and label files based on the average zero-crossing metrics (e.g. characteristic frequency, slope, duration) of the calls within each file using Anabat Insight v2.0.8. Please note that decision tree is based on the ZC metrics of each recording. All files were then checked and labelled manually.

Call identification was based on call keys and descriptions for bat species in New South Wales (Pennay et al. 2004), and with further reference to information on bat species in southern Queensland (Reinhold et al. 2001), plus the authors' own resource of echolocation recordings collected in southern Victoria (A. Lo Cascio unpublished data).

Nomenclature follows Jackson and Groves (2015). Identifications were supported by distribution information in a curated source of distribution records maintained by the Australasian Bat Society, Inc. (https://www.ausbats.org.au/batmap.html).

Results

If an identification could not be made unambiguously from this dataset, then presence of the species is regarded as a possibility, and presence should be assumed. Statements on species presence are based on this premise. If confirmation of the presence of any species listed here with an ambiguous identification is required, then further work would be necessary (see point 8 in the Limitations section).

Filtering marked 50,237 recordings as noise. In line with the scope of the project a species inventory per recording site was completed. Species complexes were identified only if they included a species not previously identified at a site and therefore should be taken as a presence.

The reliability of identifications attributed to bat species are defined as follows:

- Definite (D)—for call sequences that could be attributed unambiguously to the species.

- Probable (Pr)—for call sequences that are probably attributable to the species named, but with a low likelihood of an alternative attribution to another species that produces echolocation calls with similar characteristics.
- Possible (Po)—for call sequences that are possibly attributable to the species named, but with a moderate to high likelihood of an alternative attribution to another species that produces echolocation calls with similar characteristics.

Table 2 provides a summary of the presence of species at each site. Example spectrograms for species of conservation significance are provided in Appendix 1.

Table 1. Deployment summary

Location	Site	Serial	Latitude	Longitude	First night	Last night	Total nights
Pokolbin_SF_Nov_2024	Tower 60_SN583138	583138	-32.836427	151.208738	17/11/2024	21/11/2024	4
	Tower 64_SN583124	583124	-32.82654	151.20697	17/11/2024	21/11/2024	4
Song Meter Mini Bats_Watagans_SF_Nov-Dec_2024	Line 1 SN2967		*-34.93366*	*144.23102*	28/11/2024	11/12/2024	13
	Line 2 SN3042		*-34.88756*	*144.38042*	28/11/2024	11/12/2024	13
	Line 3 SN3131		*-34.92837*	*144.26198*	28/11/2024	12/12/2024	14
	Line 4 SN2965		*-34.86941*	*144.35172*	28/11/2024	11/12/2024	13
	Line 5 SN3044		*-34.89188*	*144.18261*	29/11/2024	13/12/2024	14
Watagans_SF_Dec_2024	0018 Tower 14 - collected 18.12.24	110018	-33.03336	151.31798	13/12/2024	18/12/2024	5
	3067 Tower 13 - collected 18.12.24	583067	-33.036563	151.32104	12/12/2024	16/12/2024	4
	3124 Tower 16 - collected 18.12.24	583124	-33.025715	151.306705	12/12/2024	19/12/2024	7
	3138 Tower 25 - collected 18.12.24	583138	-33.009675	151.265885	12/12/2024	18/12/2024	6

*Location values for Song Meter Mini Bats_Watagans_SF_Nov-Dec_2024 are incorrect. Information provided with the project facilitated correction.

Table 2. Species presence per site.

Location	Pokolbin_SF_Nov_2024		Song Meter Mini Bats_Watagans_SF_Nov-Dec_2024					Watagans_SF_Dec_2024			
Sites	Tower 60_SN583138	Tower 64_SN583124	Line 1 SN2967	Line 2 SN3042	Line 3 SN3131	Line 4 SN2965	Line 5 SN3044	0018 Tower 14 - collected 18.12.24	3067 Tower 13 - collected 18.12.24	3124 Tower 16 - collected 18.12.24	3138 Tower 25 - collected 18.12.24
Total files from client	4,993	2,242	10,550	4,003	10,016	6,825	5,919	7,293	4,000	3,531	7,018
Sum of noise	2,066	1,228	8,143	3,591	8,313	6,197	5,522	5,312	1,477	3,029	5,359
Austronomus australis	D	D	D					D	D	D	D
Saccolaimus flaviventris			Po								
Chalinolobus dwyeri	D	D	D		D			D		D	D
Ozimops planiceps	D		D	D				D	D		
Ozimops ridei	D	D	D	D				D	D	D	D
Micronomus norfolkensis	D	D	D	D			D	D	D	D	D
Chalinolobus gouldii	D	D	D				D	D	D	D	D
Scotorepens balstoni										Pr	
Scoteanax rueppellii	D		D				D	D	D		D
Falsistrellus tasmaniensis	D	D	D					D	D		D
Miniopterus orianae oceanensis									D		D
Nyctophilus spp./*Myotis macropus*			D			D		D	D	D	D
Vespadelus darlingtoni			D				D		D		D
Vespadelus regulus		D							D	D	D
Vespadelus vulturnus	D										
Chalinolobus morio	D	D							D	D	
Miniopterus australis	D	D								D	D
Rhinolophus megaphyllus	D		D	D	D			D	D	D	D
C. gouldii or O. ridei			Pr						Pr		
C. gouldii or S. balstoni	Pr										
Vespadelus spp. M.o. oceansis	Pr	Pr	Pr				Pr	Pr	Pr		Pr
Ozimops spp	Pr		Pr				Pr	Pr			
Vespadelus spp.@ 50 KhZ	Pr	Pr							Pr	Pr	Pr
Vespadelus spp./*C. morio*	Pr	Pr						Pr	Pr	Pr	Pr

Reliability of species identification for species of conservation significance.

Saccolaimus flaviventris

No echolocation sequence was attributed unambiguously to *S. flaviventris*. One sequence was inspected and manually identified as possibly belonging to the species. **This species was identified in this dataset.**

Chalinolobus dwyeri

This species can be identified reliably from representations in Zero Crossings format. The alternating pattern of high and low characteristic frequency in successive pulses is diagnostic. **This species was identified in this dataset.**

Micronomus norfolkensis

This species can be identified reliably from representations in Zero Crossings format. The alternating pattern of high and low characteristic frequency in successive pulses combined with the pulse shape (convex 'upside down cup shapes') is diagnostic, and attribution to this species was made for examples with these features. **This species was identified in this dataset.**

Scoteanax rueppellii

Scoteanax rueppellii can be distinguished by a frequency of 32 – 36 kHz, lack of a tail or short down-sweeping tail, frequency of the knee greater than 37 kHz, and drop of more than 3 kHz from the knee to the characteristic section. A longer pre-characteristic section can separate the species from *Falsistrellus tasmaniensis* at lower frequencies (below 36.5 kHz). **This species was identified in this dataset.**

Falsistrellus tasmaniensis

Clutter type calls where there was insufficient detail of the initial portion of the call or characteristic frequency (c. 35 kHz) to allow separation from *Scoteanax rueppellii* or *Scotorepens orion* were assigned to a complex group based on Fc. **This species was identified in this dataset.**

Miniopterus orianae oceanensis

The search phase echolocation calls of *M.o. orianae* sometimes have 'drooped' (decreasing frequency) terminations to pulses, but pulses also terminate abruptly without increasing or decreasing terminating frequency sweeps. The presence of echoes can make interpretations of the character of pulse terminations difficult, especially in Zero Crossings format. The frequency characteristics of the feeding buzz can also be used to separate Miniopterus from vespertilionids, but there are typically relatively few feeding buzz examples in a dataset. These features can be used in combination, when present, and as observed across several quality examples to make a relatively confident identification of *M. orianae* at a particular recording site. Other useful features for use in identification have been reported for Miniopterus species in the Solomon Islands (energy distribution at different points of the pulse; Pennay and Lavery 2017), but their applicability needs to be demonstrated further in Australia, as well as the degree to which such features are diagnostic. **This species was identified in this dataset**.

Myotis macropus/Nyctophilus species

Calls of *Myotis macropus*, and species of long-eared bat Nyctophilus spp. cannot always be separated reliably. These species are typically reported as a species complex. All calls within this dataset attributed to this complex were visually inspected. **This species was identified in this dataset.**

Vespadelus species including V. troughtoni

Within this region of New South Wales three Vespadelus species, Vespadelus vulturnus, V. troughtoni and V. pumilus are reported as having calls that overlap at ~ 50 kHz. Although V. pumilus is often seen calling a little higher. This species was identified in this dataset.

Miniopterus australis

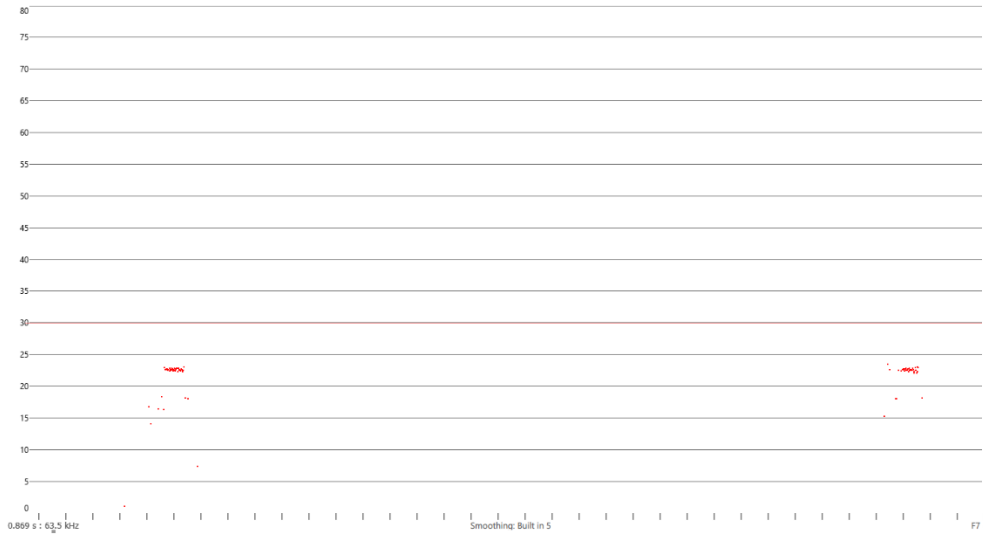
Highly distinctive calls with characteristic frequency 56-60kHz. Calls without clear definition could be confused with Vespadelus spp clutter calls, or Chalinolobus morio were calls appear to have a down sweeping tail. **This species was identified in this dataset**.

Limitations

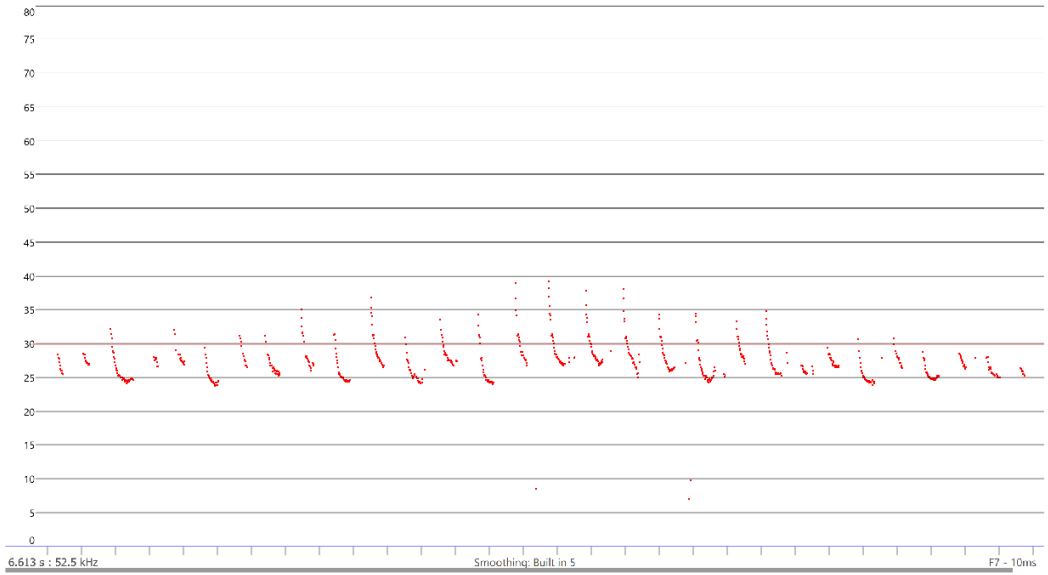
The identifications presented in this report have been made within the following context:

1. The identifications made herein were based on the ultrasonic acoustic data recorded and provided by WolfPeak.
2. The scope of this report extended to providing information on the identification of bat species in the recordings provided. Further comment on these species and the possible impacts of a planned project on bat species were not part of the scope.
3. In the case of the present report the equipment was operated by WolfPeak during the survey.
4. Other than the general location of the study area, Amanda Lo Cascio (ABN 59 357 037 376) has not been provided with detailed information of the survey area, has not made a visit to observe the habitats available for bats, nor have we visited the specific project areas on a previous occasion.
5. Amanda Lo Cascio (ABN 59 357 037 376) has had no input into the overall design and timing of this bat survey, recording site placement, nor the degree of recording site replication.
6. The identifications listed herein have been made to the best of our ability given the available materials, and we reserve the right to re-examine the data and revise any identification following a query. It is the client's and / or proponent's responsibility to provide supporting evidence for any identification, which might require follow-up trapping effort or non-invasive methods such as video recordings. Amanda Lo Cascio (ABN 59 357 037 376) bears no liability for any follow-up work that may be required to support an identification based initially on the analysis of acoustic recordings undertaken and reported on here.
7. There are a variety of factors that affect the 'detectability' of each bat species, given the frequency, power and shape characteristics of their calls. Further information on the analysis and the various factors that can impinge on the reliability of identifications can be provided upon request.
8. The analysis of ultrasonic recordings is one of several methods that can be used to survey for bats, and comprehensive surveys typically employ more than one method. If an identification in the present report is ambiguous or in question, a trapping programme would help to resolve the presence of the possibilities in the project area.
9. This version of the document supersedes any previous version. Previous drafts are not authorised by us for submission to the regulator or the public domain.

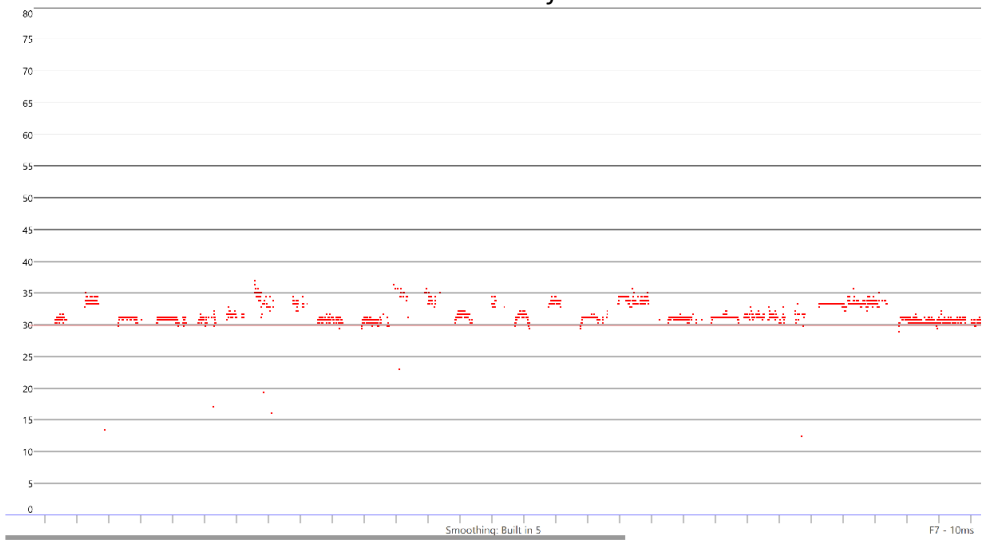
Appendix 1. Representative call sequences of species of conservation significance and Ozimops species phonic groups



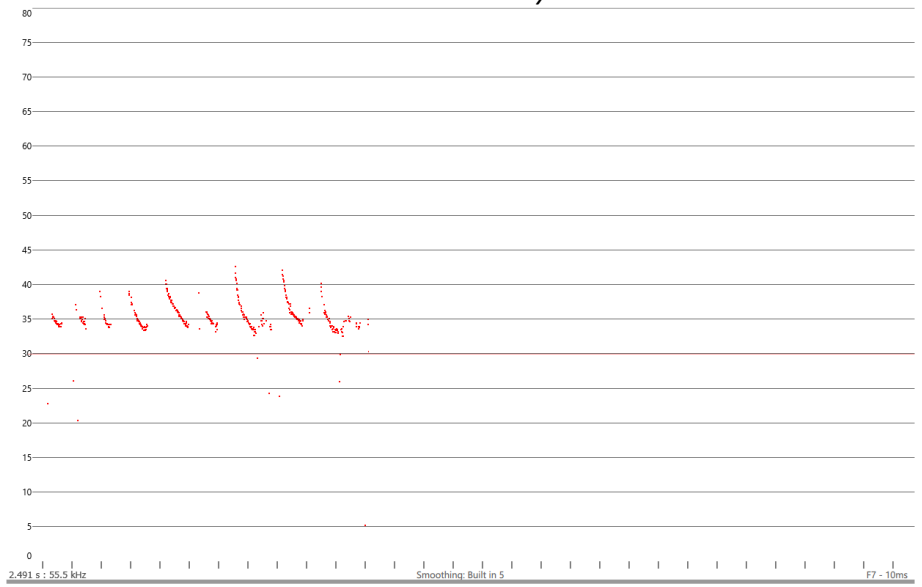
Possible *Saccolaimus flaviventris*



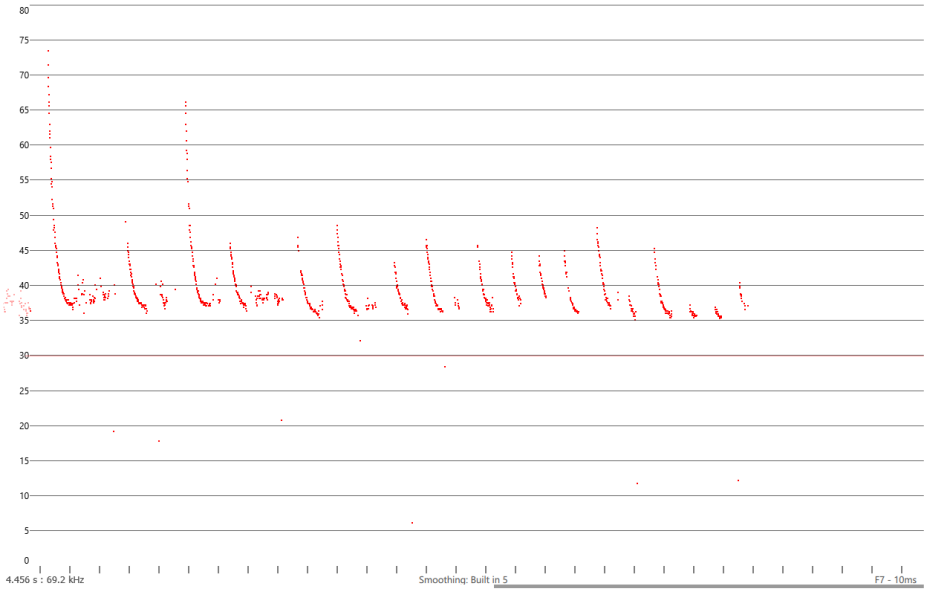
Chalinolobus dwyeri



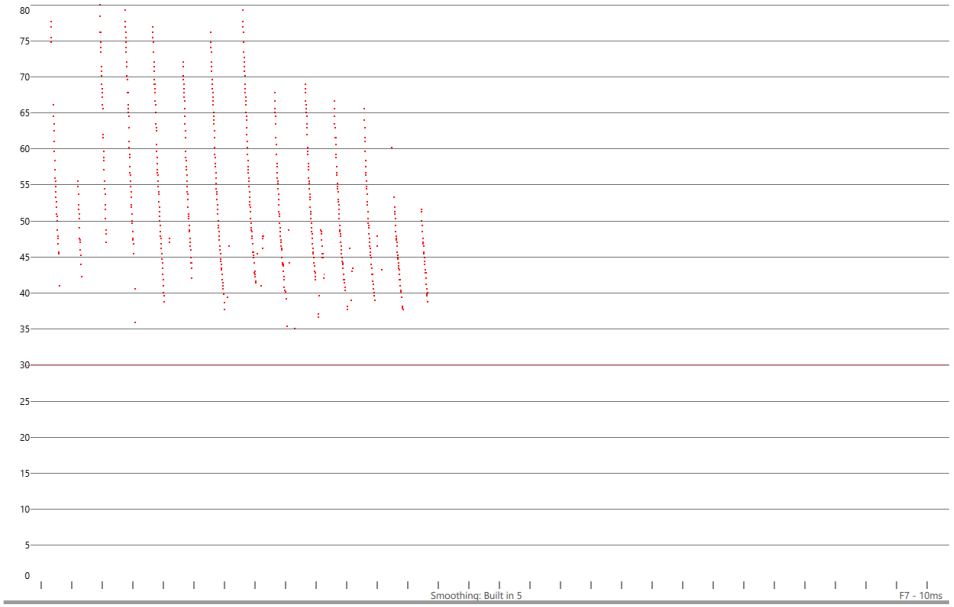
Micronomus norfolkensis



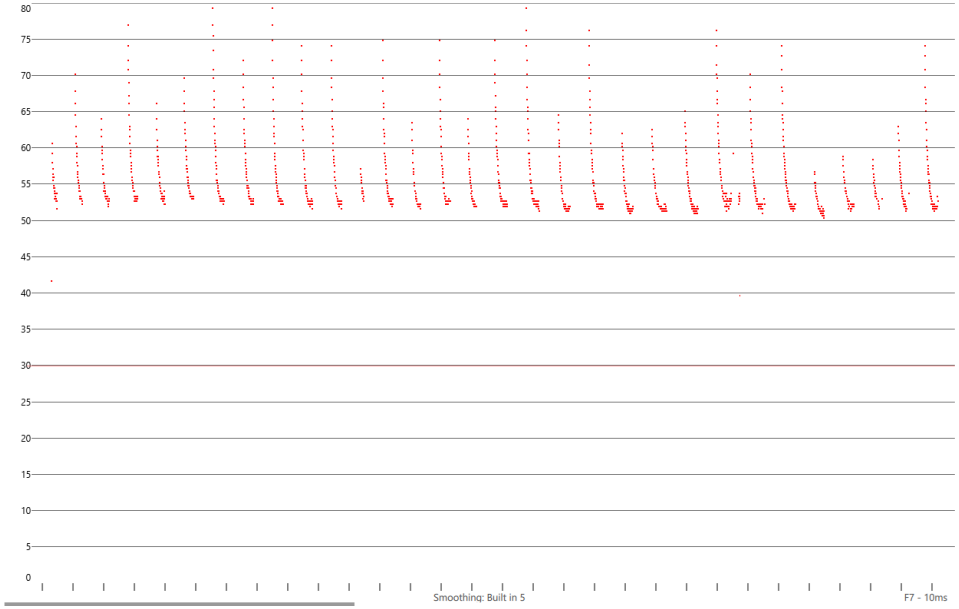
Scoteanax rueppellii



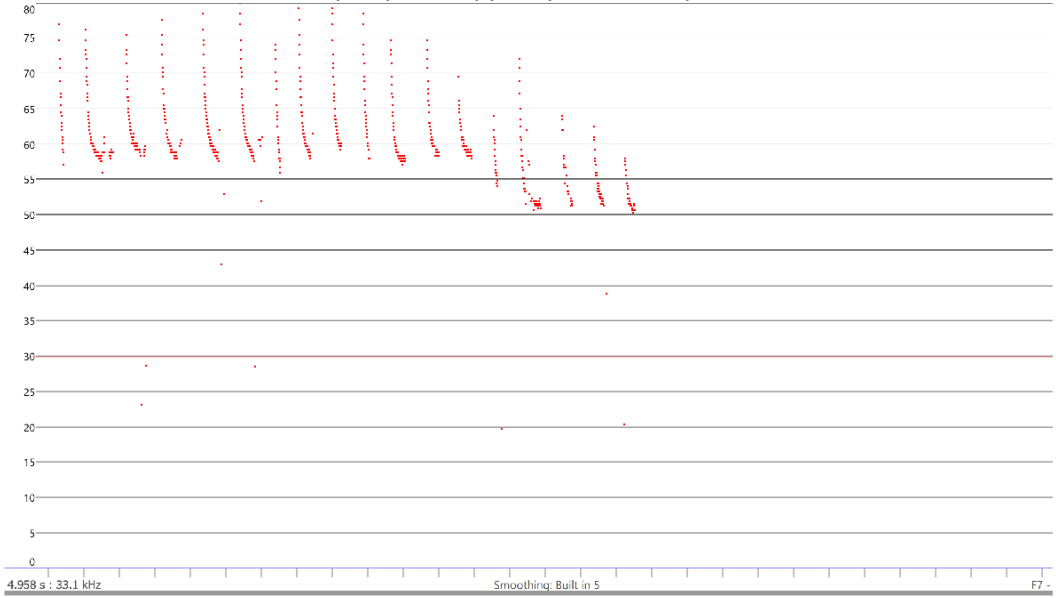
Falsistrellus tasmaniensis



Nyctophilus spp./*Myotis macropus*



Vespadelus spp@ *50 KhZ*



Miniopterus australis

References

Armstrong, K.N., Reardon, T.B., and Jackson, S.M. (2020). A current taxonomic list of Australian Chiroptera. Australasian Bat Society. Version 2020-06-09. http://ausbats.org.au/species-list/4593775065

Baker, A.M. and Gynther, I.C. (editors) (2023). Strahan's Mammals of Australia. Fourth Edition; Reed New Holland Publishers; Sydney.

Churchill, S. (2008). Australian Bats. Jacana Books, Allen & Unwin; Sydney.

Pennay, M., Law, B. and Reinhold, L. (2004). Bat Calls of New South Wales. Department of Environment and Conservation, Hurstville.

Reardon, T. (2003). Standards in bat detector based surveys. Australasian Bat Society Newsletter 20, 41-43.

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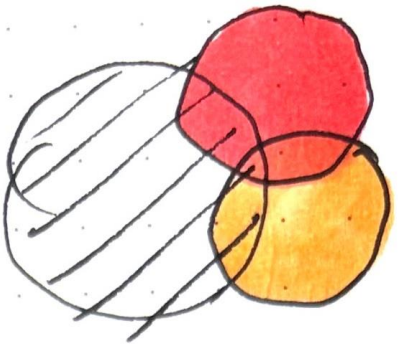


Appendix H

Recorded fauna

Table H.1 Fauna species list

Survey method	Common name	Scientific name
Anabat (Passive and Active)	Large Bent-winged Bat	*Miniopterus orianae oceanensis*
	Chocolate Wattled Bat	*Chalinolobus morio*
	Eastern Broad-nosed Bat	*Scotorepens orion*
	Eastern Coastal Free-tailed Bat	*Micronomus norfolkensis*
	Eastern False Pipistrelle	*Falsistrellus tasmaniensis*
	Eastern Forest Bat	*Vespadelus pumilus*
	Eastern Free-tailed Bat	*Ozimops ridei*
	Eastern Horseshoe Bat	*Rhinolophus megaphyllus*
	Gould's Wattled Bat	*Chalinolobus gouldii*
	Greater Broad-nosed Bat	*Scoteanax rueppellii*
	Inland Broad-nosed Bat	*Scotorepens balstoni*
	Large Forest Bat	*Vespadelus darlingtoni*
	Large-eared Pied Bat	*Chalinolobus dwyeri*
	Little Bent-winged Bat	*Miniopterus australis*
	Little Forest Bat	*Vespadelus vulturnus*
	Nyctophilus sp.	*Nyctophilus sp.*
	South-eastern Free-tailed Bat	*Ozimops planiceps*
	Southern Forest Bat	*Vespadelus regulus*
	Southern Myotis	*Myotis macropus*
	White-striped Free-tailed Bat	*Austronomus australis*
Camera trap	Australian Brush-turkey	*Alectura lathami*
	Australian Bush Rat	*Rattus fuscipes*
	Australian King-Parrot	*Alisterus scapularis*
	Bassian Thrush	*Zoothera lunulata*
	Black Rat	*Rattus rattus*
	Brown Antechinus	*Antechinus stuartii*
	Brush Turkey	*Alectura lathami*
	Brush-tailed Phascogale	*Phascogale tapoatafa*
	Cat	*Felis catus*
	Common Brush-tailed Possum	*Trichosurus vulpecula*
	Common Dunnart	*Sminthopsis murina*
	Common Planigale	*Planigale maculata*

Survey method	Common name	Scientific name
	Common Ringtail Possum	*Pseudocheirus peregrinus*
	Common Wombat	*Vombatus ursinus*
	Cow	*Bos taurus*
	Dog	*Canis familiaris*
	Donkey	*Equus asinus*
	Eastern Grey Kangaroo	*Macropus giganteus*
	Eastern Striped Skink	*Ctenotus robustus*
	Eastern Whipbird	*Psophodes olivaceus*
	European Hare	*Lepus europaeus*
	Feathertail Glider	*Acrobates pygmaeus*
	Fox	*Vulpes vulpes*
	Grey Shrike-thrush	*Colluricincla harmonica*
	House Mouse	*Mus musculus*
	King Parrot	*Alisterus scapularis*
	Koala	*Phascolarctos cinereus*
	Lace Monitor	*Varanus varius*
	Long-nosed Bandicoot	*Perameles nasuta*
	Long-nosed Potoroo	*Potorous tridactylus*
	Mountain Dragon	*Rankinia diemensis*
	Northern Brown Bandicoot	*Isoodon macrourus*
	Painted Button-quail	*Turnix varius*
	Pied currawong	*Strepera graculina*
	Pig	*Sus scrofa*
	Eastern Pygmy-possum	*Cercartetus nanus*
	Rabbit	*Oryctolagus cuniculus*
	Red-necked Pademelon	*Thylogale thetis*
	Red-necked Wallaby	*Macropus rufogriseus*
	Short-beaked Echidna	*Tachyglossus aculeatus*
	Skink	*Lampropholis guichenoti*
	Southern Angle-headed Dragon	*Lophosaurus spinipes*
	Speckled Warbler	*Pyrrholaemus sagittatus*
	Spotted Black Snake	*Pseudechis guttatus*
	Spotted Quail-thrush	*Cinclosoma punctatum*

Survey method	Common name	Scientific name
	Spotted-tail Quoll	*Dasyurus maculatus*
	Sugar Glider	*Petaurus breviceps*
	Superb Fairy-wren	*Malurus cyaneus*
	Superb Lyrebird	*Menura novaehollandiae*
	Swamp Wallaby	*Wallabia bicolor*
	Tawny Frogmouth	*Podargus strigoides*
	Tree Skink	*Egernia striolata*
	Variegated Fairy Wren	*Malurus lamberti*
	White-browed Scrubwren	*Sericornis frontalis*
	White-throated Treecreeper	*Cormobates leucophaea*
	Wonga Pigeon	*Leucosarcia melanoleuca*
	Yellow-footed Antechinus	*Antechinus flavipes*
	Yellow-tailed Black-cockatoo	*Calyptorhynchus funereus*
	Yellow-throated Scrubwren	*Sericornis citreogularis*
Drone	Crimson Rosella	*Platycercus elegans*
	Eastern Grey Kangaroo	*Macropus giganteus*
	Feathertail Glider	*Acrobates pygmaeus*
	Fox	*Vulpes vulpes*
	Gang-gang Cockatoo	*Callocephalon fimbriatum*
	Glossy Black-Cockatoo	*Calyptorhynchus lathami*
	Grey-headed Flying-fox	*Pteropus poliocephalus*
	Koala	*Phascolarctos cinereus*
	Long-nosed Bandicoot	*Perameles nasuta*
	Northern Brown Bandicoot	*Isoodon macrourus*
	Parma Wallaby	*Macropus parma*
	Red-necked Wallaby	*Macropus rufogriseus*
	Ringtail Possum	*Pseudocheirus peregrinus*
	Short-beaked Echidna	*Tachyglossus aculeatus*
	Short-eared Brushtail Possum	*Trichosurus caninus*
	Southern Boobook	*Ninox boobook*
	Southern Greater Glider	*Petauroides volans*
	Squirrel Glider	*Petaurus norfolcensis*
	Sugar Glider	*Petaurus breviceps*

Survey method	Common name	Scientific name
	Sulphur-crested Cockatoo	*Cacatua galerita*
	Superb Lyrebird	*Menura novaehollandiae*
	Swamp Wallaby	*Wallabia bicolor*
	Wedge-tailed Eagle	*Aquila audax*
	Yellow-bellied Glider	*Petaurus australis*
	Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*
Frog surveys	Giant Barred Frog	*Mixophyes iteratus*
	Giant Burrowing Frog	*Heleioporus australiacus*
	Green Stream Frog	*Litoria phyllochroa*
	Littlejohn's Tree Frog	*Litoria littlejohni*
	Blue Mountains Tree Frog	*Litoria citropa*
	Red-crowned toadlet	*Pseudophryne australis*
	Striped Marsh Frog	*Limnodynastes peronii*
	Stuttering Frog	*Mixophyes balbus*
Harp trap	Chocolate Wattled Bat	*Chalinolobus morio*
	Eastern Broad-nosed Bat	*Scotorepens orion*
	Eastern Cave Bat	*Vespadelus troughtoni*
	Eastern Coastal Free-tailed Bat	*Micronomus norfolkensis*
	Eastern Forest Bat	*Vespadelus pumilus*
	Eastern Free-tailed Bat	*Ozimops ridei*
	Eastern Horseshoe Bat	*Rhinolophus megaphyllus*
	Gould's Long-eared Bat	*Nyctophilus gouldii*
	Gould's Wattled Bat	*Chalinolobus gouldii*
	Greater Broad-nosed Bat	*Scoteanax rueppellii*
	Large-eared Pied Bat	*Chalinolobus dwyeri*
	Large Forest Bat	*Vespadelus darlingtoni*
	Lesser Long-eared Bat	*Nyctophilus geoffroyi*
	Little Forest Bat	*Vespadelus vulturnus*
Opportunistic sightings and bird surveys	Australian Brush-turkey	*Alectura lathami*
	Australian Boobook	*Ninox boobook*
	Australian King-Parrot	*Alisterus scapularis*
	Australian Magpie	*Cracticus tibicen*
	Australian Owlet-nightjar	*Aegotheles cristatus*

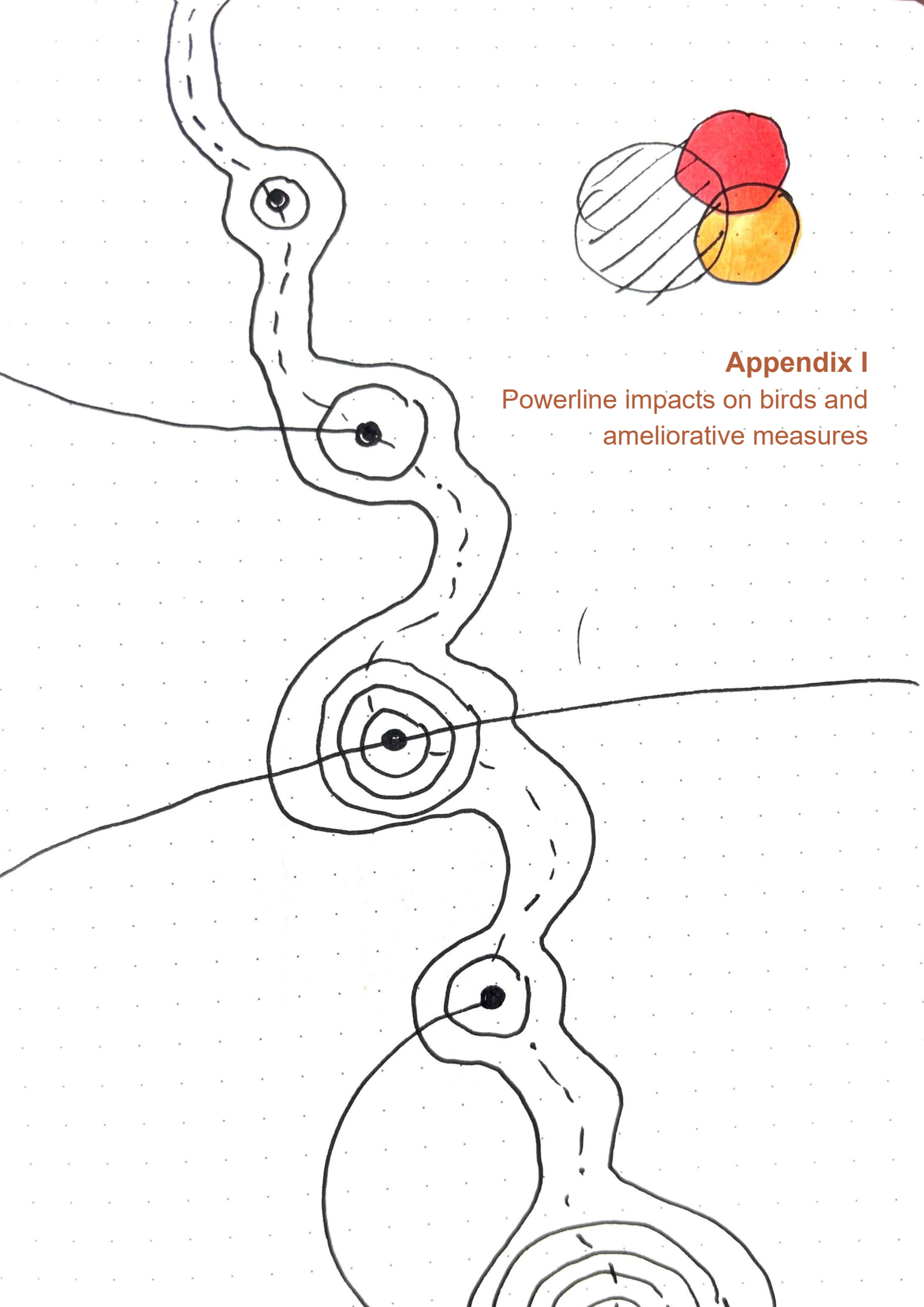
Survey method	Common name	Scientific name
	Australian Raven	*Corvus coronoides*
	Bandicoot sp.	*Perameles*
	Bassian Thrush	*Zoothera lunulata*
	Bell Miner	*Manorina melanophrys*
	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*
	Black-faced Monarch	*Monarcha melanopsis*
	Black Rat	*Rattus rattus*
	Black-soled Frog	*Lechriodus fletcheri*
	Bleating Tree Frog	*Litoria dentata*
	Blue Mountains Tree Frog	*Litoria citropa*
	Broad-palmed Frog	*Litoria latopalmata*
	Broad-tailed Gecko	*Phyllurus platurus*
	Brown Antechinus	*Antechinus stuartii*
	Brown Cuckoo-dove	*Macropygia phasianella*
	Brown Gerygone	*Gerygone mouki*
	Brown Thornbill	*Acanthiza pusilla*
	Brown Tree Snake	*Boiga irregularis*
	Brown-headed Honeyeater	*Melithreptus brevirostris*
	Buff-rumped Thornbill	*Acanthiza reguloides*
	Bush Rat	*Rattus fuscipes*
	Carpet Python	*Morelia spilota*
	Cicadabird	*Coracina tenuirostris*
	Common Brushtail Possum	*Trichosurus vulpecula*
	Common Eastern Froglet	*Crinia signifera*
	Common Ringtail Possum	*Pseudocheirus peregrinus*
	Common Wallaroo	*Osphranter robustus*
	Common Wombat	*Vombatus ursinus*
	Copper-tailed Skink	*Ctenotus taeniolatus*
	Crimson Rosella	*Platycercus elegans*
	Delicate Skink	*Lampropholis delicata*
	Eastern Barn Owl	*Tyto javanica*
	Eastern Dwarf Tree Frog	*Litoria fallax*
	Eastern Koel	*Eudynamys orientalis*

Survey method	Common name	Scientific name
	Eastern Pobblebonk	*Limnodynastes dumerilii*
	Eastern Rosella	*Platycercus eximius*
	Eastern Small-eyed Snake	*Cryptophis nigrescens*
	Eastern Spinebill	*Acanthorhynchus tenuirostris*
	Eastern Stone Gecko	*Diplodactylus vittatus*
	Eastern Stony Creek Frog	*Litoria wilcoxii*
	Eastern Water Dragon	*Intellagama lesueurii*
	Eastern Water Skink	*Eulamprus quoyii*
	Eastern Whipbird	*Psophodes olivaceus*
	Eastern Yellow Robin	*Eopsaltria australis*
	Emerald-spotted Tree Frog	*Litoria peronii*
	Fan-tailed Cuckoo	*Cacomantis flabelliformis*
	Fox	*Vulpes vulpes*
	Gang-gang Cockatoo	*Callocephalon fimbriatum*
	Garden Skink	*Lampropholis guichenoti*
	Giant Barred Frog	*Mixophyes iteratus*
	Glossy Black-Cockatoo	*Calyptorhynchus lathami*
	Golden Whistler	*Pachycephala pectoralis*
	Golden-crowned Snake	*Cacophis squamulosus*
	Grass Skink	*Lampropholis delicata*
	Great Barred Frog	*Mixophyes fasciolatus*
	Greater Glider	*Petauroides volans*
	Green Catbird	*Ailuroedus crassirostris*
	Grey Butcherbird	*Cracticus torquatus*
	Grey Fantail	*Rhipidura albiscapa*
	Grey Shrike-thrush	*Colluricincla harmonica*
	Grey-crowned babbler	*Pomatostomus temporalis*
	Haswell's Frog	*Paracrinia haswelli*
	Jacky Dragon	*Amphibolurus muricatus*
	King Parrot	*Alisterus scapularis*
	Lace Monitor	*Varanus varius*
	Large-billed Scrubwren	*Sericornis magnirostra*
	Laughing Kookaburra	*Dacelo novaeguineae*

Survey method	Common name	Scientific name
	Leaden Flycatcher	*Myiagra rubecula*
	Leaf Green Tree Frog	*Litoria phyllochroa*
	Leaf-tailed Gecko	*Saltuarius cornutus*
	Lesueur's Velvet Gecko	*Amalosia lesueurii*
	Lewins Honeyeater	*Meliphaga lewinii*
	Little Lorikeet	*Glossopsitta pusilla*
	Littlejohn's Tree Frog	*Litoria littlejohni*
	Long-nosed Bandicoot	*Perameles nasuta*
	Masked Lapwing	*Vanellus miles*
	Mountain Dragon	*Rankinia diemensis*
	New Holland Honeyeater	*Phylidonyris novaehollandiae*
	Noisy Friarbird	*Philemon corniculatus*
	Noisy Miner	*Manorina melanocephala*
	Noisy Pitta	*Pitta versicolor*
	Owlet Nightjar	*Aegotheles cristatus*
	Pacific Black Duck	*Anas superciliosa*
	Peron's Tree Frog	*Litoria peronii*
	Pied Butcherbird	*Cracticus nigrogularis*
	Pied Currawong	*Strepera graculina*
	Powerful Owl	*Ninox strenua*
	Purple Swamphen	*Porphyrio porphyrio*
	Rainbow Lorikeet	*Trichoglossus haematodus*
	Red Wattlebird	*Anthochaera carunculata*
	Red-backed Toadlet	*Pseudophryne coriacea*
	Red-bellied Black Snake	*Pseudechis porphyriacus*
	Red-browed Finch	*Neochmia temporalis*
	Red-crowned Toadlet	*Pseudophryne australis*
	Red-necked Pademelon	*Thylogale thetis*
	Red-necked Wallaby	*Notamacropus rufogriseus*
	Rockwarbler	*Origma solitaria*
	Rose Robin	*Petroica rosea*
	Rufous Whistler	*Pachycephala rufiventris*
	Satin Bowerbird	*Ptilonorhynchus violaceus*

Survey method	Common name	Scientific name
	Scarlet Honeyeater	*Myzomela sanguinolenta*
	Screaming Tree Frog	*Litoria quiritatus*
	Shining Bronze-Cuckoo	*Chrysococcyx lucidus*
	Short-beaked Echidna	*Tachyglossus aculeatus*
	Silvereye	*Zosterops lateralis*
	Sooty Owl	*Tyto tenebricosa*
	Southern Boobook	*Ninox novaeseelandiae*
	Southern Long-nosed Bandicoot	*Perameles nasuta*
	Southern Stuttering Frog	*Mixophyes australis*
	South-eastern Hooded Robin	*Melanodryas cucullata cucullata*
	Spotted Pardalote	*Pardalotus punctatus*
	Spotted Quail-thrush	*Cinclosoma punctatum*
	Spotted-tailed Quoll	*Dasyurus maculatus*
	Stephens' Banded Snake	*Hoplocephalus stephensii*
	Striated Thornbill	*Acanthiza lineata*
	Striped Marsh Frog	*Limnodynastes peronii*
	Sugar Glider	*Petaurus breviceps*
	Sulphur-crested Cockatoo	*Cacatua galerita*
	Superb Fairy-wren	*Malurus cyaneus*
	Superb Lyrebird	*Menura novaehollandiae*
	Swamp Wallaby	*Wallabia bicolor*
	Thick-tailed Gecko	*Underwoodisaurus milii*
	Three-toed Skink	*Saiphos equalis*
	Tree Martin	*Petrochelidon nigricans*
	Tusked Frog	*Adelotus brevis*
	Variegated Fairy-wren	*Malurus lamberti*
	Water-rat	*Hydromys chrysogaster*
	Weasel Skink	*Saproscincus mustelinus*
	Wedge-tailed Eagle	*Aquila audax*
	Welcome Swallow	*Hirundo neoxena*
	Whistling Tree Frog	*Litoria verreauxii*
	White-browed Scrubwren	*Sericornis frontalis*
	White-cheeked Honeyeater	*Phylidonyris niger*

Survey method	Common name	Scientific name
	White-eared Honeyeater	*Lichenostomus leucotis*
	White-naped Honeyeater	*Melithreptus lunatus*
	White-necked Heron	*Ardea pacifica*
	White-throated Needletail	*Hirundapus caudacutus*
	White-throated Nightjar	*Eurostopodus mystacalis*
	White-throated Treecreeper	*Cormobates leucophaea*
	Wombat	*Vombatus ursinus*
	Wonga Pigeon	*Leucosarcia melanoleuca*
	Yellow-bellied Glider	*Petaurus australis*
	Yellow-faced honeyeater	*Caligavis chrysops*
	Yellow-faced Honeyeater	*Lichenostomus chrysops*
	Yellow-tailed black-cockatoo	*Calyptorhynchus funereus*
	Yellow-throated Scrubwren	*Sericornis citreogularis*
Tiles	Common Planigale	*Planigale maculata*
	Olive Delma	*Delma inornata*
	Hunter Valley Delma	*Delma vescolineata*



Appendix I

Powerline impacts on birds and ameliorative measures

I1 Introduction

Ecologically, birds encounter power transmission infrastructure in 2 broad ways, as landscape features occurring in their resident territories, whether those territories are permanent or seasonal, or as unfamiliar features they encounter during long or short-distance movements. For birds which migrate, both broad types of power transmission infrastructure interaction may apply during different periods of their lifecycle.

The distinct types of impacts power transmission infrastructure represent to birds also fall into 2 broad categories; impacts associated with the power being carried through the infrastructure and impacts the infrastructure represents as collision risks. The different ways birds encounter power transmission infrastructure determines the type of risk infrastructure will represent to them.

The potential effects of power carried by electrical infrastructure are more likely to affect birds that are familiar with the infrastructure, and who use it on a day to day basis, while the collision risks power transmission infrastructure represents to birds are more likely to affect those birds that are unfamiliar with its presence or distracted by important behaviours.

Both behavioural groups may be at risk from electrocution, for the same 2 behavioural reasons, both familiarity and ignorance.

Collision risk also represents a significant hazard to birds that are familiar with power infrastructure at a given location, just as humans might fall foul of familiar hazards due to concentration distractions. For example, while birds are defending territories, hunting, are being hunted, or aerial displaying, they will naturally be more susceptible to collisions with infrastructure that is usually familiar to them and otherwise avoided, particularly if the obstacles have some degree of detection difficulty.

I2 Power transmission and electric and magnetic fields

Electricity is generated from both natural and artificial sources. Extremely low frequency (ELF) electrical and magnetic fields (EMF) are those that fall within the 0–3000 hertz frequency range. ELF EMF's exist wherever electricity is generated, transmitted or distributed in power lines or cables, or used in electrical appliances (arpansa 2020). Although ELF EMF's are sometimes produced through natural processes, artificial sources are the most common sources of ELF EMF and are generally a product of the generation, distribution and use of electricity at the frequency of 50 hertz in Australia or 60 hertz in some other countries (arpansa 2020). The electrical component of ELF EMF is formed by voltage, but current produces the magnetic field component of ELF EMF (arpansa 2020).

The level of electrical fields is measured in thousands (k) of volts (V) per (/) metre (m), kV/m or just as V/m. The level of magnetic fields is measured in units of amperes (A) per (/) metre (m), A/m, however it is often denoted by its magnetic flux density quantified in units of tesla (T) or microtesla (µT). Another unit that is often applied to the quantification of magnetic fields is the gauss (G) or milliGauss (mG), where one gauss is equal to 10^{-4} T (or 1 mG = 0.1 µT) (arpansa 2020).

I2.1 ELF EMF and birds

It is widely known and observed that, of all fauna groups, birds most regularly use electrical power lines, and their associated infrastructure, such as proposed transmission line towers and poles, for perching and nesting. The reasons bird species use tall structures, such as electrical transmission infrastructure include:

- increased separation from terrestrial threats
- as vantage points to allow early detection of airborne and terrestrial threats
- for a commanding view over a patch of hunting territory
- for the defence and proclamation of breeding territories, and
- as safe elevated locations to build nests and raise their young.

The use of power lines does not extend across all bird species, as the open spaces in which aerial power infrastructure are located is too exposed for many bird species, especially smaller cover preferring bird groups. Therefore, the most common powerline using groups are birds that use open and aerial habitats.

The infrastructure of electricity transmission is often desirable as nesting locations for large species, such as birds of prey and the corvids (ravens and crows), due to their propensity to build on high landscape features in otherwise open habitats.

While several small open country birds, such as larks, pipits and finches have been observed to use power lines through direct observations, there appears to be a reduced use of the tallest power infrastructure by such species, due to the considerable expenditure of energy required to reach it and the considerable separation it represents from their territories.

Aerial foraging species, such as dollarbirds, bee-eaters, swallows, martins and woodswallows are also frequent users of electricity infrastructure for resting or as hunting vantage points, however, the insect prey that this group targets can often be in greater densities closer to the ground, and so lower perches are more desirable when available.

Therefore, as the distance between vegetation from associated electricity infrastructure increases, many smaller bird species appear less likely to use it, particularly when lower and less exposed options are present in their habitats.

In wooded habitats where vegetation heights more closely approach the height of power lines, avifauna appear more likely to use them, due to the increased opportunity to perch on power infrastructure where it is more accessible, because of greater adjacent canopy heights.

Apart from those birds that use power infrastructure as perching opportunities, a small group of birds also use power infrastructure for nesting sites. Birds of prey, storks and cranes, and the corvids are the groups that are most likely to use the tallest power line infrastructure for nesting purposes.

I3 Effects of electric and magnetic fields on birds

Considerable research has been undertaken to determine if there are any significant effects from EMF upon living organisms, including birds. Several scientific papers have endeavoured to determine if there are changes to bird biology because of proximity to EMF with few undertaken on wild birds outside of laboratory contexts. Nevertheless, there are some studies which have tested the effects of EMFs on wild birds.

In their 2005 review paper, Fernie and Reynolds (2005) observe that electrical power lines are widely used throughout the developed world, and that, all electric currents, including those conducted by electrical power lines, produce electric and magnetic fields (EMFs). They note that, due to their propensity to use power line infrastructure, some birds, like humans, are exposed to EMFs throughout their lives. They also note that EMFs have been, not without controversy, implicated in adversely affecting different components of human health, and that past and ongoing laboratory research have used mammal and bird surrogates to determine if EMFs may adversely affect key life systems in humans. Their 2005 review, draws on previous EMF research on effects to wild and aviary kept birds, to determine if this body of work might contribute to the current knowledge on EMF potential to adversely affect humans. They found that the majority of studies found when birds are subjected to EMFs, changes are observed in; bird behaviour, reproductive success, growth and development, physiology and endocrinology, and oxidative stress, although not always with a consistent effect or direction (Fernie and Reynolds 2005).

Fernie et al. (1999) observe that some bird groups reproduce within EMFs from transmission lines, and that critical survival processes are dependent on melatonin, while melatonin has only been equivocally suppressed by EMFs in mammalian species. They erected a study to examined whether EMFs affect photophasic plasma melatonin in adult and fledgling American Kestrels (*Falco sparverius*) during short-term (one breeding season) and long-term (2 breeding seasons) breeding behaviours, and compared the results to observed changes in body mass. The study included kestrels subjected to EMF effects and a control group of kestrels (56 pairs in all) against which results could be compared. They found that EMFs affected plasma melatonin in male kestrels, by suppressed plasma values at 42 days and elevated plasma values at 70 days of EMF exposure. The 42 day melatonin levels in EMF males were the same levels as 70 day control males, suggesting a seasonal phase-shift in melatonin profile due to EMF exposure. Melatonin levels were also suppressed in long-term fledglings but not short-term fledglings or females. They propose higher levels of melatonin in male kestrels than females may affect the sexually different results to EMF exposure. Results found that melatonin levels were not correlated to body-mass in American Kestrels and it was considered likely that results returned by the study are relevant to wild raptors nesting within EMFs (Fernie et al. 1999).

Fernie et al. (2000a) observed that although there was documentation of reduced avian reproductive success when associated with power lines, such impacts had not been directly attributable to EMFs. They also noted that while laboratory studies had been undertaken to determine the effects of EMFs on embryonic development, such studies were unable to test the effects of EMFs on other factors that affect breeding success in wild birds, such as fertility, egg size, hatching, and fledgling success. In response, they undertook a study to determine the effect of EMFs on the reproductive success on birds, using captive American Kestrels (*Falco sparverius*) over 2 consecutive annual breeding seasons. The kestrels were separated into separate control and EMF effect groups. EMF exposure was set to the same levels as would be experienced by wild breeding kestrels and weakly correlated with a reduction in egg laying in only the first year. In both breeding events pairs subjected to EMF exposure, experienced higher fertility and lower hatching success than control pairs. Fledgling success was higher for EMF subjected pairs than control pairs in only one of the breeding events. In a single year when egg composition and embryonic development were examined, eggs were larger, with more yolk, albumen, and water, but exhibited thinner egg shells than control eggs. Late-term EMF embryos were larger and longer than control embryos, although hatchlings were similar in body mass and size (Fernie et al. 2000a).

For their study Fernie et al. (2000a) found that there was a different result in reproductive success in EMF exposed kestrels, resulting in increased fertility, egg size, embryonic development and fledgling success and reducing hatching success when compared to control kestrels.

Fernie et al. (2000b) note that wild birds particularly raptors use electrical transmission infrastructure for perching, hunting, roosting nesting, and consequently are exposed to EMFs. They determined the time periods wild American Kestrels (*Falco sparverius*) were exposed to EMFs from 735-kV power lines, so that the effect of EMFs on the behaviour of captive breeding kestrels could be studied. During their study they found that wild kestrels were exposed to EMFs for 25% to 75% of the observation periods. Over a 24 hr period, it was estimated that EMF exposure to wild kestrels ranged from 71% during courtship, to 90% during incubation, which was comparable to the exposure figures (88%) that captive breeding kestrels were subjected to. The results found that captive female EMF kestrels exhibited increased activity and alertness, and, in comparisons to control females, perched more often on the pen roof. EMF female kestrels were observed to preen and rest less often during the rearing of their broods. As with female EMF kestrels, male EMF kestrels were observed to be more active than control males during courtship, and more alert during incubation. The observed behavioural changes in breeding EMF kestrels were unlikely to contribute to increased growth of nestlings or increase the survival rates of fledglings, or reduce hatching success, though previously reported as such Fernie et al. (2000b). Fernie et al. (2000b) note that behavioural changes observed in captive EMF kestrels may be observed in wild kestrels.

Fernie and Bird (2001) observe that exposure to EMFs alters melatonin, behaviour, growth, and reproduction of captive American Kestrels (*Falco sparverius*), particularly males. Therefore, they undertook a study to determine whether EMF exposure triggers an avian immune response and alters oxidative stress levels. Captive kestrels were bred under control or EMF conditions at levels similar to those wild kestrels are subject to. They found that short-term (single breeding season) exposure to EMFs suppressed plasma total proteins, hematocrits and carotenoids in the first half of the breeding cycle, as well as suppressing erythrocyte cells and lymphocyte proportions at the end of the breeding season. Long-term (2 breeding seasons) studies also resulted in a suppression of hematocrits in the first half of the reproductive. The study deduced that the elevation of granulocytes, and the suppression of carotenoids, total proteins, and previously melatonin in the same kestrels, signified that the short-term EMF male kestrels had higher level of oxidative stress, due to an immune response and/or EMF exposure and that long-term EMF exposure may be linked to higher levels of oxidative stress through EMF exposure alone (Fernie and Bird 2001).

In a study conducted over 9 breeding seasons, Tomas et al. (2012) note that within a single population of Great Tits (*Parus major*), breeding occurrences subjected to the effects of EMF exposure showed an increase in clutch size (7%) and an increase in egg volume (3%). Although the study showed that there was an increase in both clutch size and egg volume the overall average productivity as a function of fledgling and reproductive success, including nestling body mass, did not exhibit any change. In comparison to Great Tit breeding events not associated with artificial EMF influences, researchers noted Great Tit breeding events subjected to artificial EMF's influences realise the same breeding success, but with a greater expenditure of energy resources (Tomas et al. 2012).

I4 Power transmission line bird strike

Bernardino et al. (2018) observe that growing global energy demands are causing worldwide increases in electrical infrastructure, representing significant negative impacts to biodiversity, predominantly birds.

They undertook a systematic review of available literature, dealing with bird power line related collisions, with attention to specific areas of previous research, including:

- an assessment of overall trends in scientific research in recent decades
- a review of existing knowledge of bird collision factors, as well as their effectiveness in reducing collision risk; including
  - species-specific factors (e.g. vision, morphology)
  - site-specific factors (e.g. topography, light and weather conditions, and anthropogenic disturbance), and
  - power line-specific factors (e.g. number of wire levels, wire height and diameter)
- an evaluation of existing mitigation measures (e.g. power line routing, underground cabling, power line configuration, and wire marking), as well as their effectiveness in reducing collision risk (Bernardino et al. 2018).

The Bernardino et al. (2018) review concluded:

- a general paucity of specific scientifically tested information regarding factors leading to bird power line collision
- there are few studies conducted in Asia, Africa, and South America
- several suggested methods of good practice were not at the time of publication, supported by scientific evidence.

Gap analysis undertaken by the Bernardino et al. (2018) study identified 3 key directions for future research, innovation, and scientific testing of current impact avoidance methodologies:

1. Bird behaviour – including the use of data loggers and sensors
2. Impact assessment – the identification and understanding of specific drivers at mortality hotspots, assessment of population-level impacts, development of methods for automatic detection of bird impacts
3. Mitigation measures – outlining a greater need for BACI level studies to determine the effectiveness of different wire- marking/bird avoidance devices and strategies.

They conclude by observing that, globally, the predictiveness and effectiveness of bird power line impact and mitigation, is compromised by a general lack of understanding about the regionally specific complexity of bird ecologies and how they interact with different collision drivers (Bernardino et al. 2018).

In a review of 14 studies, qualified by specific inclusion criteria, Loss et al. (2014) estimated that between 12 and 64 million birds are killed each year in the United States (U.S.) through power line associated fatalities. Eighty-nine percent (89%) of the bird fatalities were attributable to collision mortality, the remaining 11% were caused by electrocution. Variations in mortality rates were a product of the relatively small number of rigorous studies available that deal with the study of bird mortality. The review found that while there is a general dearth of studies, and most were limited in scope (relating to diversity of species, habitat types and locations), the data collected showed that bird mortality associated with power lines in the U.S. is substantial and requires conservation management and policies to lower mortality rates (Loss et al. 2014).

I5 Power transmission line impacts and the project

I5.1 Collision risks

I5.1.1 Alignment geographical context

The project will connect a new overhead 500 kV transmission line between 2 new 500 kV substations at Bayswater and in Olney State Forest. The new substations will be connected to the existing 500 kV transmission lines near Bayswater and Eraring to unlock electricity supply from the Central West Orana and New England Renewable Energy Zones.

From the new 500 kV Bayswater substation, the line will maximise use of existing disturbed mining areas to run south easterly to Lemington before making several crossings of the Hunter River to pass through the Hunter Valley Operations (HVO) coal mine, eventually reaching Bulga Coal mine operations, continuing south to cross over the existing 330 kV lines – Lines 81 and 82, and then co-locates for approximately 4.5 kilometres.

The line then continues south to maximise the use of public land into Pokolbin State Forest, emerging just east of Cedar Creek near Wollombi. It then traverses through NSW National Parks and Wildlife Service (NPWS) managed Corrabare North Flora Reserve and into Corrabare State Forest. The line then spans across to the Watagans through Watagan State Forest and Olney State Forest before truncating at the new 500 kV Olney substation and connection to the existing Eraring-Kemps Creek double circuit 500 kV transmission line.

Ancillary works including road upgrades, access tracks, and temporary construction facilities are included in the design across these NPWS managed estates and State forests. These road upgrades include sections of Martinsville Hill Road and Watagan Road, parts of which are within Jilliby State Conservation Area.

The subject land is located within the Hunter-Central Rivers catchment. The subject land crosses several poor to good quality watercourses including the Hunter River. Watercourses include the upper catchments of Wollombi Brook, which flow towards the north, and crossing the subject land again just before entering the Hunter River near Warkworth.

Additionally, sections of the Dora Creek catchment cross through areas of NPWS managed estate and State forests throughout the southeast end of the subject land. This catchment ends within Lake Macquarie, with the other catchments of the subject land flowing through the Hunter River and into the Tasman Sea at Newcastle (NSW DPI 2006).

The catchments within the subject land have been impacted from a mixture of rural activities, forestry, urban development and mining. These activities have modified the natural aquatic environment substantially, including major infrastructure developments, roads, rail and agriculture.

The lower catchments of Wollombi Brook consist of gently sloping rural land that is largely cleared. Land use in the subject land from the northwest end to the southeast before Pokolbin State Forest consists mostly of cleared rural properties and coal mines. Very few patches of remnant bushland occur within this section of the catchment area. The subject land is dominated by surface runoff from rainfall which concentrates into defined watercourse catchments.

Historic records of rainfall and flood events indicates that runoff is typically confined to the main channels and relatively quickly flow down to the lower portions of the catchments in the subject land. Water quality, quantity and velocity of flows within the subject land have been influenced by agricultural activities. Vegetation removal, agriculture, de-snagging, and construction of in-stream dams has affected the physical stability of the watercourses within the subject land and streambank erosion is common, particularly in the north of the subject land.

I5.1.2 Migratory and nomadic birds

Australia provides important seasonal and stochastic weather derived resources for many bird species from a range of bird groups. International migrant wader species, many from the northern hemisphere visit Australia during the austral summer, with some age cohorts overstaying the austral winter, while some New Zealand bird species visit Australia during the austral winter to escape New Zealand's cooler winter conditions.

Many passerines which breed in southern Australia, winter in northern Australia and New Guinea where food is more readily available during the winter months.

Large numbers of resident water birds are attracted to the ebb and flow of water levels between regional and State level distributions, which often entail long-distance movements to and from ephemeral wetlands.

Apart from migratory movements, many birds move regionally or within their established territories during the seeking of food or for territorial defence.

Not all movements by birds are undertaken during day as some birds move non-stop for days, as is the case with international migrants, and others move at night to avoid predators. A number of waterbirds and shorebirds have been observed to undertake movements from one wetland habitat to another during nocturnal hours (Richardson 2016a). During winter occupation of the Hunter River estuary, migratory wading birds were observed to move equally during day and night periods, as a response to the availability of foraging areas and the need to access roosting areas during high tide levels (Richardson 2004). Long distance movements, representing 1,000's of kilometres, by a number of shorebird species take place continuously without breaks throughout nocturnal and diurnal hours (Battley et al. 2012). McEvoy (2015) observed that long distance movements undertaken by radio-tracked South Australian Pacific Black Ducks, in response to moderate to high rainfall events, were almost exclusively undertaken during nocturnal hours. During the Pacific Black Duck study, reasons for nocturnal movements could not be clearly determined, although avoidance of diurnal avian predators, which are key predators of waterbirds and shorebirds, were cited as a likely incentive to avoiding long distance movements during the day (McEvoy 2015). Birds of prey were observed to be the major predatory risk for diurnal shorebirds in a study of wintering shorebirds in the Hunter River Estuary (Richardson 2004; Richardson 2016c).

Other groups of birds prone to nomadic movements are also likely to be at risk of collision, such as the larger birds of prey. While possessing excellent eyesight, birds of prey are at risk of power line strike as a consequence of their potential to strike obstacles before them when searching the ground for prey and the location of power lines within elevations where they fly.

While most birds of prey are not usually migratory, many periodically move in relation to variations in productivity (i.e. prey availability). Birds of prey respond by moving to areas where greater productivity increases survival and breeding-cycle success. A limited number of larger birds of prey, with some of the largest wingspans (WS) of Australia's birds, have been observed or are expected to regularly occur in habitats associated with the alignment, those most likely to occur in its vicinity from time to time (in order of wingspan width, include; Wedge-tailed Eagle (WS~2.8 metres), Square-tailed Kite (WS~1.3 metres), Little Eagle (WS~1.3 metres), Spotted Harrier (WS~1.2 metres) Black Kite (WS~1.2) Whistling Kite (WS~1.2), Brown Falcon (WS~1.2), Peregrine Falcon (WS~0.95), Australian Hobby (WS~0.9) and Nankeen Kestrel (WS~0.8) (Pizzey and Knight 2012).

While it is highly likely that some bird species, within collision risk bird groups, would be at lesser risk of collision than others, even when closely related (Loss et al. 2014) to those at greatest risk, a greater or lesser proportion of different migrating or nomadic bird species are likely to be impacted by the introduction of additional infrastructure into their flight paths.

I5.1.3 Resident birds

A substantial proportion of birds that occur in territories through which the alignment passes, will not be at risk of power lines strike, since their use of habitat never extends to open areas especially at elevations where power lines are located. Nevertheless, there are some groups of resident birds that favour open areas, which are at increased risk of collision, because power lines occur in the habitats they often frequent. Although resident birds around the alignment footprint are likely to quickly adapt to changes made within their well-known territories, new infrastructure represents an increase in hazardous obstacles with which some groups might collide when distracted by high priority activities, such as hunting, territorial defence, breeding behaviours and learning to fly.

As noted above, a proportion of local birds are unlikely to be placed at risk of collision since their habits do not extend to the open elevated habitats where greater risk of collisions occurs. Large areas of the alignment are associated with either open country or managed understories associated with the new alignment and adjacent infrastructure, where the flight lines of small to small-medium sized birds are much less likely to intercept power lines and for such species, the chances of impact are considered unlikely.

Tall vegetation communities where canopies are dominated by taller forest trees are areas most likely to represent higher risk for smaller resident woodland bird guilds, although their lower flight speeds and sedentary behaviour reduce collision risks for many in this group.

Those considered as bird species to be at higher risk of collision include local birds that fall into guilds of larger and higher-flying birds, and which reside over larger territories, such as birds of prey, ravens and magpies, cockatoos and some parrots, and waterbirds and waterfowl where the alignment rarely occurs near wetland habitat; there is some minor wetland habitat associated with areas such as Lake Liddell and Plashett Reservoir near Bayswater Power Station and the Hunter River.

I5.2 Mitigation of collision risks to birds

Power lines represent a collision risk to birds, because they occur within spaces where they do not expect to encounter obstacles, and, due to a relatively narrow linear profile, power lines easily blend in with the landscape or are obscured by lighting conditions, such as darkness or other light conditions that obscure the presence of the lines or make them appear much further away. Key strategies for reducing the numbers of birds striking power lines is making them visible to birds. Mitigation measures employed in areas where birds are at greater risk often take the form of large bright beacon-like objects to make birds aware of the presence of power lines.

I5.3 EMF and electrocution risks

I5.3.1 Migratory and nomadic birds

Even though some species of migratory birds are electrocuted when they collide with power lines, it is most likely that many of these incidents are associated with smaller power line infrastructure, or installations where individual conductors and earth potentials are close together, such that birds have the potential to touch multiple components of different electrical potential. For birds moving through the alignment, it is considered unlikely that birds would be at high risk of electrocution, as electrocution would require contact with different phases or conductor potentials, and the horizontal separation between individual conductors, or bundled conductors, exceeds the wingspans (WS) of all birds, including the largest migratory birds, such as Brolgas (WS~2.4 metres) Pelicans (WS~2.4–2.6 metres) Black Swans (WS~2.0 metres) and Australian Shelduck (WS~1.2 metres) (Pizzey and Knight 2012). Separation distances between proposed transmission line tower arms and conductors achieved by insulators are shorter than between different conductors (7200 millimetres and smaller designs 5700 millimetres), but the separation, at 3720 millimetres, is beyond the wingspans of all the world's birds. Large bird species are at a greater risk of collision impact injuries, than electrocution, due to their size and flight speed.

The other group of nomadic birds of sufficient sizes to be at risk of electrocution are the larger birds of prey, although as with other large bird species their wing spans are not sufficient to reach between different conductors or from conductors to conductive proposed transmission line tower components. While most are not migratory many periodically move in relation to variations of ecological productivity, since dryer and wetter periods drive resource increases and lulls, and birds of prey respond by moving to areas where greater productivity increases survival and breeding-cycle success. Those larger birds of prey observed in habitats associated with the alignment, or are considered likely to occur in its vicinity from time to time, include; Wedge-tailed Eagle (WS~2.8 metres), Square-tailed Kite (WS~1.3 metres), Little Eagle (WS~1.3 metres), Spotted Harrier (WS~1.2 metres) Black Kite (WS~1.2) Whistling Kite (WS~1.2 metres), Brown Falcon (WS~1.2 metres), Peregrine Falcons (WS~0.95 metres), Australian Hobby (WS~0.9 metres) and Nankeen Kestrel (WS~0.8 metres) (Pizzey and Knight 2012). All bird of prey species have wingspans that are well below the smallest separations between conductors and other conductors, or potential earthing infrastructure components.

Although some birds of prey undertaking dispersive or nomadic movements may occasionally land on powerline infrastructure, under such circumstances they are unlikely to be sufficiently affected by EMF's to be of any significant effect. Nevertheless, birds of prey, which are resident in habitats associated with the alignment, are part of the group of birds which are most likely at risk to longer periods of exposure to EMFs because they often use the infrastructure for perching, but most particularly if they use the infrastructure for nesting. Most of the project's alignment occurs within areas within areas where woodlands and forests are within the landscape, and which offer an abundance of suitably elevated nesting opportunities for birds of prey and so birds of prey using proposed transmission line tower infrastructure for nesting purposes for this project are considered to be rare.

I5.3.2 Resident birds

Those birds that occur as residents in the habitats surrounding power line infrastructure are that subset of all birds that will have to live with power transmission infrastructure for a good portion, if not all, of their lives. However, for many of the birds that live in close association with such infrastructure the greatest risk is loss of habitat during the construction phase of the project. Providing sufficient habitat has been retained for them to survive after the infrastructure's installation their behaviour will continue as it did before construction. A range of small birds that prefer the cover and foraging opportunities that the foliage of trees and shrubs offer will never ascend to the powerline region of the installation or use the bottom of proposed transmission line towers for perches.

Those species most likely to ascend to power lines and the tops of proposed transmission line towers are those species that are tolerant of open spaces and which habitually fly at those elevations and above. The most likely resident bird candidates to use power line infrastructure are large passerines like ravens and crows, birds of prey preferring open habitats, and aerial foraging species, such as woodswallows, swallows and martins, and dollarbirds and bee-eaters. Although magpies will use power lines, they forage on the ground and prefer perches and nesting locations with the added cover of trees. Often the height of high transmission lines is too high for them, and the same for smaller aerial foragers, much of the time, which also prefer to perch low when foraging close to the ground.

Although there is a small group of birds for which proposed transmission line towers are preferable for nest building, including ravens and crows, and medium to large birds of prey, in the landscapes surrounding the project alignments there are ample natural nesting opportunities, which are more likely to be used by these species than transmission line infrastructure. No nests in powerline infrastructure were observed during field works carried out throughout the project's alignments by a wide range of field personnel, but it considered likely that large birds from the group described above may occasionally use infrastructure where there are limited natural options.

When there are limited natural nest site opportunities, such species that have the greatest risk of EMF effects, due to their familiarity with infrastructure and extended periods in relatively close proximity to conductors. Most proposed transmission line towers are designed to minimise their use by birds, however the benefits of power infrastructure to bird behavioural priorities make some individuals determined to use such structures across locations where elevated nest sites in old growth trees are limited.

In assessing the types of proposed transmission line towers likely to be used for the project, the dimensions of the tower structures were considered. The minimum distance from conductors to earthed infrastructure that birds might build nests on is 3930 millimetres, and greater than the wingspans of the largest Australian birds. If a nest is built on an arm with a conductor above it, the height of the nest and the bird will reduce that figure.

The period chicks will occupy the nest from the laying of the egg to leaving the nest has been added below for the birds of prey most likely to occur. For all these species the nest is not usually occupied outside the breeding period.

The largest Australian bird of prey occurring in the alignment locality is the Wedge-tailed Eagle, which has the longest incubation and nestling periods of Australian birds of prey with a maximum incubation period of 45 days, and maximum nestling periods of 85. The maximum nest occupation time for this species, from egg laying to departure, is around 130 days (~19 weeks).

For the next largest group of birds of prey (size wise), including species such as Little Eagle, Square-tailed Kite and Spotted Harrier, the incubation periods are around 40 days and nestling period around 60 days. The maximum nest occupation time for these species, from egg laying to departure, is around 100 days (~14 weeks).

Nest occupancy periods for smaller birds of prey from medium sized birds, such as Whistling Kites and Black Kites (~83 days), reduce progressively with size through the Pacific Baza and falcons, down to the smallest, represented by the Nankeen Kestrel, which has an incubation period of 29 days and a nestling period of 35 days, representing a total nest occupation time of 64 days (~9 weeks). The corvids will fall into a group that is smaller than the kites and largest falcons.

In the relatively recent IUCN *Wildlife and power lines Guidelines for preventing and mitigating wildlife mortality associated with electricity distribution networks* (Martin et al. 2022) it is stated for larger birds with the largest wingspans that:

"On higher-voltage structures the risk is reduced as phase clearances exceed the wingspan of these birds"

It is considered unlikely on this basis that electrocution is a risk factor for birds as even the largest birds are not likely to be electrocuted and the risk becomes even lower for smaller bird species.

From data derived from a range of studies, it is considered likely that EMF's may influence the physiology of birds nesting on proposed transmission line towers. However, the levels of those effects to each species under all different conditions is not easily quantifiable and there is currently no conclusive evidence that such effects would have a significant effect on the long-term viability of local bird populations.

I5.4 Mitigation of EMF impacts to birds

Mitigation for EMF impacts are best implemented by proposed transmission line tower designs that discourage birds from building nest on them. As it is an important priority for managers maintaining power transmission lines to make sure that nesting birds do not constitute a risk to power delivery, proposed transmission line towers being considered are currently designed to discourage their use by birds, which also reduces the numbers of birds which may be affected by EMFs to a minimum.

I6 Conclusions and recommendations

Based on the available research, the following conclusions on potential impacts have been reached:

- Electrocution is unlikely to be a factor due to phase clearances exceed the wingspan of all birds.
- The bird species considered to be at higher risk of collision include local birds that fall into guilds of larger and higher-flying birds, and which reside over larger territories. These birds include birds of prey, ravens and magpies, cockatoos and some parrots, waterbirds, and waterfowl.
- It is likely that EMF's may influence the physiology of birds nesting on proposed transmission line towers. However, the levels of those effects to each species under a range of different conditions is not easily quantifiable and there is currently no conclusive evidence to suggest that such effects would have a significant effect on the long-term viability of local bird populations.

Recommendations for management and mitigation consist of the following:

- line markers, otherwise known as "bird flappers" and "diverters" are well known throughout the world to be an effective mitigation strategy to warn birds of the presence of powerlines and may be included in the project design
- proposed transmission line towers would be designed to discourage nesting to reduce both potential collision and EMF impacts
- although chances of significant risk to local birds is assessed to be low, a biodiversity impact monitoring program (BIMP) will be prepared and implemented for the project to monitor, guide and report on biodiversity impacts during construction and operation phases and this will include a bird collision and EMF monitoring framework and related implementation.

I7 Fauna strike risk assessment

Legend

		Records within 50 km of subject land	Sedentary = 1 Migratory/ dispersive = 1 Local dispersive = 2 Local wetland flights = 3	Not present = 0 Rare = 1 Moderate = 2 Common = 3	< Canopy height = 0 >Canopy <Powerline Height = 1 Powerline height = 3 +>Powerline height = 0	Low </= 3 Moderate = 4 – 5 High = >/=6	Plant community types (PCT's)

Scientific name	Common name	Records within 50 km of subject land	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Anthochaera phrygia	Regent Honeyeater	Y	1	1	0	2 – Low movements below canopy and limited to eastern lowlands and Hunter Valley floor of subject land, but limited to high quality woodland habitats	Species associated with PCT 3230, 3239, 3241, 3244, 3314, 3315, 3431, 3438, 3444, 3599, 3604, 3605, 3621, 3636, 4039, 4058, 4072 & 4073 according to the TBDC. Species polygon as per 'important habitat map'.
Ardeotis australis	Australian Bustard	N	–	–	–	No records within 50 km of the indicative disturbance area, species not present.	N/A

Scientific name	Common name	Records within 50 km of subject land	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Artamus cyanopterus cyanopterus	Dusky Woodswallow	Y	1	2	0	3 – low risk due to moderate population within area but reduced due to flight heights and relatively slow flight movements	Ecosystem credit species, PCT's not required
Burhinus grallarius	Bush Stone-curlew	Y	1	0	0	Unlikely to occur due to the very limited distribution of regional records – e.g. Port Stephens hinterland and Gosford population	Species associated with PCT 3150, 3152, 3230, 3237, 3239, 3242, 3244, 3250, 3314, 3315, 3431, 3438, 3444, 3581, 3604, 3605, 3617, 3620, 3621, 4015, 4039, 4058, 4072 & 4073 according to the TBDC.
Calidris ferruginea	Curlew Sandpiper	Y	1	0	0	Estuarine species with records regionally limited to the lower Hunter estuary and Hexham floodplain	N/A
Calidris melanotos	Pectoral Sandpiper	Y	1	0	0	Estuarine species with records regionally limited to the lower Hunter estuary and Hexham floodplain	N/A
Callocephalon fimbriatum	Gang-gang Cockatoo	Y	1	2	3	6 – Higher canopies on the edge of ranges may exceed powerline heights, species uses such habitats as part of their foraging range.	Species associated with PCT 3029, 3087, 3150, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3599, 3604, 3605, 3617, 3620, 3621, 3636, 4015, 4039, 4058, 4072 & 4073 according to the TBDC. Species recorded

Scientific name	Common name	Records within 50 km of subject land	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Calyptorhynchus lathami lathami	South-eastern Glossy Black-cockatoo	Y	1	2	3	6 – Higher canopies on the edge of ranges may exceed powerline heights, species uses such habitats as part of their foraging range.	Species associated with PCT 3029, 3087, 3150, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3599, 3604, 3605, 3617, 3620, 3621, 3636, 4015, 4039, 4058, 4072 & 4073 according to the TBDC. Species recorded
Chthonicola sagittata	Speckled Warbler	Y	1	2	0	3 – Low due to habits below woodland canopies	Ecosystem credit species, PCT's not required
Circus assimilis	Spotted Harrier	Y	1	1	0	2 – Low due to general scarcity and a general tendency to hunt for terrestrial prey.	Ecosystem credit species, PCT's not required
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Y	1	1	0	2 – Low due to general scarcity and habits limited to strata below, or just over, canopy top in woodlands associated with the subject land.	Ecosystem credit species, PCT's not required
Daphoenositta chrysoptera	Varied Sittella	Y	1	2	0	3 – Low due to habits below woodland canopies and slow flight speeds	Ecosystem credit species, PCT's not required
Ephippiorhynchus asiaticus	Black-necked Stork	N	–	–	–	1 – Records within 50 km of the subject land but associated with wetland habitats not occurring within the or adjacent to the alignment.	N/A

Scientific name	Common name	Records within 50 km of subject land	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Falco hypoleucos	Grey Falcon	N	1	0	1	3 – Low due to extreme rarity (rare stochastic possible) and a general tendency to hunt for terrestrial prey.	Ecosystem credit species, PCT's not required
Falco subniger	Black Falcon	Y	1	1	1	3 – Low due to general scarcity and a general tendency to hunt for terrestrial prey.	Ecosystem credit species, PCT's not required
Glossopsitta pusilla	Little Lorikeet	Y	1	1	1	3 – Low due to general scarcity and habits limited woodland canopies	Ecosystem credit species, PCT's not required
Grantiella picta	Painted Honeyeater	Y	1	1	1	3 – Low due to general scarcity and habits limited acacia woodlands	Ecosystem credit species, PCT's not required
Haliaeetus leucogaster	White-bellied Sea-Eagle	Y	1	1	3	5 – Moderate risk – may be at risk during movements between suitable habitats.	Species associated with PCT 3087, 3150, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3599, 3604, 3605, 3617, 3620, 3621, 3636, 4015, 4039, 4058, 4072 & 4073 according to the TBDC. Species recorded
Hamirostra melanosternon	Black-breasted Buzzard	N	1	1	3	No confirmed records within 50 km of the subject land	N/A

Scientific name	Common name	Records within 50 km of subject land	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Hieraaetus morphnoides	Little Eagle	Y	1	1	3	5 – Moderate risk due to flight heights but reduced due to familiarity with local habitat features.	Species associated with PCT 3087, 3150, 3152, 3237, 3239, 3241, 3242, 3244, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3604, 3605, 3617, 3620, 3621, 3636, 4015, 4039, 4058, 4072, 4073 according to the TBDC.
Hirundapus caudacutus	White-throated Needletail	Y	1	2	0	3 – Low due to high flight heights.	Migratory species, PCT's not required
Lathamus discolor	Swift Parrot	Y	2	1	3 – but will depend on canopy heights	5 – Moderate risk. Although seasonal it is at increased risk due to the speed of flight and flocking tendencies, no breeding but landscape level movements may occur at powerline heights at high speeds.	Species associated with PCT 3029, 3087, 3150, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3599, 3604, 3605, 3617, 3620, 3621, 3636, 4015, 4039, 4058, 4072, 4073 according to the TBDC.
Leipoa ocellata	Malleefowl	Y	–	–	–	Does not occur within 50 km of subject land	N/A
Lophochroa leadbeateri	Pink Cockatoo	N	–	–	–	Does not occur within 50 km of subject land	N/A

Scientific name	Common name	Records within 50 km of subject land	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Lophoictinia isura	Square-tailed Kite	Y	1	1	3	5 – Moderate risk due to flight heights but reduced due to familiarity with local habitat features.	Species associated with PCT 3029, 3150, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3599, 3604, 3605, 3617, 3620, 3621, 3636, 4015, 4039, 4058, 4072, 4073 according to the TBDC.
Melanodryas cucullata cucullata	Hooded Robin (southeastern form)	Y	1	1	0	2 – low due to low population, and flight height well under power lines	Ecosystem credit species, PCT's not required
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Y	1	1	1	3 – low due to low population, and flight height under power lines	Ecosystem credit species, PCT's not required
Neophema pulchella	Turquoise Parrot	Y	1	2	0	3 – low due to moderate population on valley floor in good habitat, and flight height under power lines – population does not occur in ranges or east of ranges.	Ecosystem credit species, PCT's not required

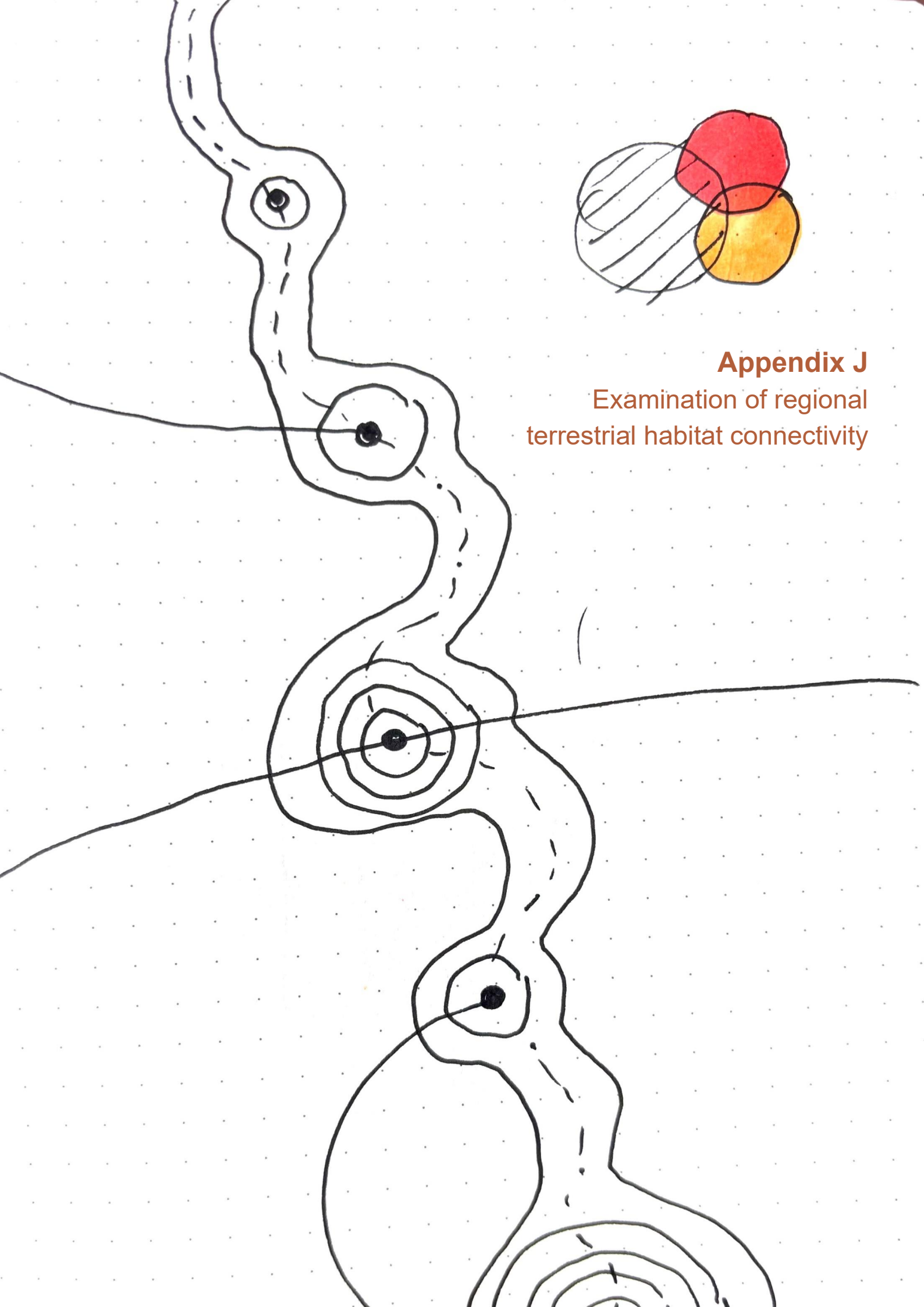
Scientific name	Common name	Records within 50 km of subject land	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Ninox connivens	Barking Owl	Y	1	1	0	2 – low due to low population, and flight height under power lines	Species associated with PCT 3029, 3087, 3150, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3599, 3604, 3605, 3617, 3620, 3621, 3636, 4015, 4039, 4058, 4072, 4073 according to the TBDC. Species recorded
Ninox strenua	Powerful Owl	Y	1	2	3 – due to tall forest habitats associated with ranges	6 – Higher risk due to flight heights in tall forest areas of the ranges, and common in the region.	Species associated with PCT 3029, 3087, 3150, 3152, 3230, 3237, 3239, 3241, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3599, 3604, 3605, 3617, 3620, 3621, 3636, 4015, 4039, 4058, 4072, 4073 according to the TBDC. Species recorded
Pachycephala inornata	Gilbert's Whistler	N	1	1	0	Does not occur within 50 km of subject land	N/A
Petroica boodang	Scarlet Robin	Y	1	2	0	3 – low due to moderate population, but flight height under power lines	Ecosystem credit species, PCT's not required
Petroica phoenicea	Flame Robin	Y	1	1	0	3 – low due to moderate population, but flight height under power lines	Ecosystem credit species, PCT's not required

Scientific name	Common name	Records within 50 km of subject land	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Polytelis swainsonii	Superb Parrot	N	1	0	3	Does not occur within 50 km of subject land	Ecosystem credit species, PCT's not required
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Y	1	2	0	3 – Low due to general scarcity and habits limited to strata below, or just over, canopy top in woodlands associated with the subject land.	Ecosystem credit species, PCT's not required
Stagonopleura guttata	Diamond Firetail	Y	1	1	0	2 – Low due to general scarcity and habits limited to strata below, or just over, canopy top in woodlands associated with the subject land.	Ecosystem credit species, PCT's not required
Tyto novaehollandiae	Masked Owl	Y	1	1	3	5 – Moderate due to Low population, but flight height includes elevations above the canopy and powerline elevations.	Species associated with PCT 3029, 3150, 3152, 3230, 3237, 3239, 3242, 3244, 3250, 3263, 3314, 3315, 3431, 3438, 3444, 3581, 3604, 3605, 3617, 3620, 3621, 4058, 4073 according to the TBDC. Species recorded
Tyto tenebricosa	Sooty Owl	Y	1	2	3 – due to tall forest habitats associated with ranges	6 – Higher risk due to flight heights in tall forest areas of the ranges, and common in the region.	Species associated with PCT 3025, 3029, 3087, 3150, 3230, 3237, 3239, 3241, 3242, 3244, 3250, 3263, 3581, 3605, 3617, 3621 according to the TBDC. Species recorded

I8 References

- ARPANSA. 2020. Extremely low frequency electric and magnetic fields [Online]. Commonwealth of Australia. Available: https://www.arpansa.gov.au/understanding-radiation/what-is-radiation/non-ionising-radiation/low-frequency-electric-magnetic-fields [Accessed 02/06/2020 2020].
- AUSTRALIAN NATIONAL BOTANIC GARDENS 2004. Discover, Information Resources; Mallee plants - surviving harsh environments. In: GARDENS, A. N. B. (ed.). Canberra: Education Services - Australian National Botanic Gardens.
- BAKER-GABB, D. 2003. Recovery Plan for the Black-eared Miner Manorina melanotis 2002-2006: Conservation of old-growth dependent mallee fauna. Adelaide: Department of Environment and Heritage.
- BATTLEY, P. F., WARNOCK, N., TIBBITTS, T. L., GILL JR, R. E., PIERSMA, T., HASSELL, C. J., DOUGLAS, D. C., MULCAHY, D. M., GARTRELL, B. D., SCHUCKARD, R., MELVILLE, D. S. & RIEGEN, A. C. 2012. Contrasting extreme long-distance migration patterns in bar-tailed godwits Limosa lapponica. Journal of Avian Biology, 43 (1), 21-32.
- BERNARDINO, J., BERVANGER, K., BARRIENTOS, R., DWYER, J. F., MAQUES, A. T., MARTINS, R. C., SHAW, J. M., SILVA, J. P. & MOREIRA, F. 2018. Bird collisions with power lines: State of the art and priority areas for research. Biological Conservation, 2018 (222), 1-13.
- DEPARTMENT OF ENVIRONMENT, L., WATER AND PLANNING; 2016a. National Recovery Plan for the Mallee Emu-wren Stipiturus mallee, Red-lored Whistler Pachycepahala rufogularis and Western Whipbird Psephodes nigragularis leucogaster. Canberra.
- FERNIE, K. J. & BIRD, D. M. 2001. Evidence of oxidative stress in American kestrels exposed to electromagnetic fields. Environmental Research, 86 (2), 198-207.
- FERNIE, K. J., BIRD, D. M., DAWSON, R. D. & LAGUE, P. C. 2000a. Effects of electromagnetic fields on the reproductive success of American Kestrels. Physiological and Biochemical Zoology, 73 (1), 60-65.
- FERNIE, K. J., BIRD, D. M. & PETITCLERC, D. 1999. Effects of electromagnetic fields on photaphasic circulating melatonin levels in American Kestrels. Environmental Health Perspectives, 107 (11), 901-904.
- FERNIE, K. J., LEONARD, N. J. & BIRD, D. M. 2000b. Behaviour of free-ranging and captive American kestrels under electromagnetic fields. Journal of toxicology and environmental health Part A, 59 (8), 597-603.
- FERNIE, K. J. & REYNOLDS, S. J. 2005. The effects of electromagnetic fields from power lines on avian reproductive biology and physiology: A review. Journal of Toxicology and environmental health Part B Critical Review, 8 (2), 127-140.
- GARNETT, S. T. & CROWLEY, G. M. 2000. The Action Plan for Australian Birds, Canberra, Environment Australia.
- HIGGINS, P. J. & PETER, J. M. (eds.) 2002. Handbook of Australian, New Zealand and Antarctic Birds, Melbourne: Oxford University Press.
- HIGGINS, P. J., PETER, J. M. & STEELE, W. K. (eds.) 2001. Handbook of Australian, New Zealand and Antarctic Birds Volume 5: Tyrant-flycatchers to Chats, Melbourne: Oxford University Press.
- LACHLAN RIVERINE WORKING GROUP. 2020. Lachlan River and Wetlands - Lachlan Riverine Environmental Water Management Plan [Online]. Lachlan Riverine Environmental Water Management Plan. Available: http://www.lewag.com.au/lachlan-river-wetlands/ [Accessed 19/06/2020 2020].

- LOSS, S. R., WILL, T. & MARRA, P. P. 2014. Refining estimates of bird collision and electrocution mortality a power lines in the United States. PLoS ONE, 9 (7) e101565.
- MARTÍN MARTÍN, J., GARRIDO LÓPEZ, J.R., CLAVERO SOUSA, H. and BARRIOS, V. (eds.) (2022). Wildlife and power lines. Guidelines for preventing and mitigating wildlife mortality associated with electricity distribution networks. Gland, Switzerland: IUCN.
- MCEVOY, J. 2015. Movement Ecology of Pacific Black Duck (Anas sperciliosa) in Arid Australia. Doctor of Philosophy Submission in fulfilment of the requirements for the degree of Doctor of Philosophy, Deakin University.
- MENKHORST, P., ROGERS, D., CLARKE, R., DAVIES, J., MARSACK, P. & FRANKLIN, K. 2019. The Australian Bird Guide - Revised Edition, Clayton South, Victoria, Australia, CSIRO.
- OFFICE FOR ENVIRONMENT & HERITAGE. 2020. Threatened Species - Striated Grasswren Profile [Online]. NSW Government. Available: https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10048 [Accessed 08/07/2020 2020].
- PIZZEY, G. & KNIGHT, F. 2012. The Field Guide to the Birds of Australia, Sydney, HarperCollins.
- RICHARDSON, A. L. 2004. Ecological Niche of the Bar-tailed Godwit (Limosa lapponica) in the Hunter River Estuary: Behavioural Use of Different Habitats. Honours Study for the Degree of Bachelor of Environmental Science, The University of Newcastle.
- RICHARDSON, A. L. 2016a. Selection of nocturnal roost sites by waders in the Hunter Estuary. The Whistler, 10 (2016).
- RICHARDSON, A. L. 2016c. Roosting Waders Attacked by Peregrine Falcons. The Whistler, 10 (2016), 60-61.
- TOMAS, G., BARBA, E., MERINO, S. & MARTINEZ, J. 2012. Clutch size and egg volume in Great Tits (Parus major) increase under low intensity electromagnetic fields: a long-term field study. Environmental Research, 118, 40-46.



Appendix J

Examination of regional terrestrial habitat connectivity

J1 Impacts to regional habitat connectivity

J1.1 Introduction

The key impacts on terrestrial connectivity from the project will be associated with the construction requirements of disturbance area A, which refers to an area around the proposed transmission line towers, areas for stringing sites, laydown areas, switching stations, substation upgrades, construction support sites, new and upgraded access tracks and road upgrades in which vegetation would be removed during construction.

This disturbance would include vegetation (including tree) removal and potential sub-surface impacts through construction activities such as grading, excavation, and full tree removal. Except in areas where only temporary disturbance is required (i.e. temporary access tracks and stringing sites), this area would also be subject to ongoing maintenance during operation (i.e. removal to ground level) for operational and safety requirements (including bushfire risk management).

The remaining disturbance areas within the transmission line corridor (disturbance area B) will retain vegetation to a height of 2 metres.

The proposed operational corridor will effectively result in stepping stones of maintained vegetation within the outer areas of the proposed corridor which will specifically facilitate the movement of most terrestrial fauna species minimum gap requirements, including semi-mobile and sedentary species except for canopy dependent arboreal mammals (e.g. Squirrel Glider).

Furthermore, the retention of understorey vegetation within these zones is likely to further mitigate the potential for increased predation by opportunistic species along the corridor.

There are also many no clearing zones which are areas within the transmission line easement where vegetation removal is not required. These areas occur where there is sufficient separation of 10 metres or more between the maximum operating temperature conductor position and the existing vegetation. This area is excluded from the disturbance area. There are many of these no clearing zones spread throughout the mountainous parts (including Watagan mountains) of the alignment within Wyong and Yengo interim biogeographic regionalisation for Australia (IBRA) subregions, where deep gullies occur that can be completely spanned by the new powerlines. The width of these zones is variable depending on the topography of each spanning location.

The operational use of the easement post construction is expected to be minimal and not result in associated impacts of vehicle strike, noise and lighting that would permanently deter fauna movement or reduce further the majority of habitat values provided by the retain vegetation for connectivity.

J1.2 Co-locating the transmission line impacts on connectivity

Where possible the project has specifically incorporated into the alignment selection the co-location with existing transmission line and infrastructure corridors. The co-location of the infrastructure is a key consideration for minimisation of impacts across a range of environmental variables being considered within the Amendment Report, including biodiversity. The key benefits for co-location for biodiversity include:

- minimising edge effects
- minimising edge to areas ratio of project
- consolidating disturbances to areas within existing known disturbances
- reduced fragmentation.

While there are considerable overall environmental benefits of the project's co-location with existing infrastructure it is acknowledged this will potentially exacerbate the terrestrial connectivity impacts and crossing distances in some PCTs.

J1.3 Target candidate species for mitigation

An effective approach to planning and designing strategies to reduce the negative effects of linear infrastructure on wildlife is to focus on a small number of 'target' species, rather than the hundreds of species that may occur there. This group of target species should reflect the broader assemblage of species in the area that are impacted by the linear infrastructure and represent the needs and requirements of all species. For example, target species should encompass a wide range of groups (e.g. birds, mammals, reptiles etc), include common and endangered species, and cover a range of modes of movement (e.g. flying and walking, terrestrial and arboreal) and gap-crossing abilities.

The threatened species, assessed in this biodiversity development assessment report (BDAR), encompass all mobility classes and subsequently were considered valuable for determining the ecological characteristics for provision of an equivalent or better ecosystem functionality of any alternative biodiversity corridor. However, whilst threatened species have been used for consideration of wildlife connectivity, it is necessary to emphasise that ecosystem functionality is not restricted to these species. Locally occurring non-threatened fauna, such as kangaroos and possums, would also require consideration for ecosystem functionality and connectivity.

Target species were selected from the threatened species list, which were those species identified as having a moderate or higher likelihood of occurrence in the existing corridor, based on the availability of potential habitat, recent records and the professional opinion. Target species were categorised based on their movement capabilities:

- Mobile species are either capable of defending themselves or evading predators in the open, nomadic by nature, or may inhabit open country areas solely or as part of the range of habitats they frequent. Therefore, mobiles species are not considered to be affected by gaps of less than 1000 metres.
- Semi-mobile species are those species with semi-mobile capability, and while large enough to traverse reasonably large gaps in forest vegetation, they are essentially woodland and forest animals that are dependent on cover or woodland trees for their movements. Many small-medium sized birds and small microbats fall into this category, establishing relatively small home ranges in their preferred habitat with a reluctance to move outside those territories, but nevertheless being equipped with the means to cross larger gaps when they are forced to. Semi-mobile species are considered unaffected by gaps less than 100 metres. However, gaps less than 100 metres that also contain traffic and other disturbances may represent a filter or barrier to their movement.
- Sedentary species (many species of amphibian, reptile, small mammals, some Mallee birds) often occur with small territories that they rarely leave, due to the necessity of familiar cover to protect them from predatory animals. Such species are highly dependent upon the integrity of corridor habitats to maintain contact between populations at either end of the corridor. As the key requirements for this group, the least mobile cohort of corridor animals, represent the fundamental components of forest and woodland structure, the same structural components will be utilised by those animals which are more mobile and less dependent upon the linkage function of the corridor. For example, Squirrel Glider, reptiles and some small bird species.

For the purposes of this report, mobile species are not considered further as this group are not likely to be dependent upon specific mitigation measures to overcome the transmission line barrier.

Table J.1 Candidate species impacted by terrestrial connectivity (semi-mobile and sedentary species)

Common name	Barriers	Estimated gap crossing	Use of mitigation approach
Semi-mobile species			
Woodland birds (Brown Treecreeper, Varied Sittella, Diamond Firetail)	Fragmented landscape with no matrix of paddock trees linking adjacent habitat.	Woodland birds considered unlikely to cross unvegetated gaps >100 m.	— Species would typically require habitat stepping-stones to facilitate dispersal — Use of no clearing zones underneath powerlines — Maintained vegetated understorey within B zone. — Maintained vegetated corridors <2 m in height.
Koala	Barriers to movement include roads and urban development. Although known to cross agricultural land with scattered trees, areas devoid of vegetation restrict dispersal.	Species assumed unlikely to cross unvegetated gaps >100 m	— Known to use culvert underpasses, open span bridges and land bridges with appropriate species-specific furniture. — Use of no clearing zones underneath powerlines — Maintained vegetated understorey within B zone. — Maintained vegetated corridors <2 m in height.
Terrestrial mammals (Long-nosed Potoroo, Brush-tailed Rock-wallaby, Parma Wallaby)	Barriers to movement include roads and urban development. Likely to be able to cross powerline easements.	Species assumed likely to cross unvegetated gaps >100 m	— Use of no clearing zones underneath powerlines — Maintained vegetated understorey within B zone. — Maintained vegetated corridors <2 m in height.
Sedentary species			
Arboreal mammals (Squirrel Glider, Eastern Pygmy Possum, Southern Greater Glider, Brush-tailed Phascogale)	These species are likely to be reluctant to come to the ground to cross gaps and crossing width depends on tree height on either side of the gap. Glides of 20 m – 30 m are typical for Squirrel Gliders and Southern Greater Gliders. Eastern Pygmy Possum and Brush-tailed Phascogale are required to cross on the ground.	Gaps >40 m likely to be prohibitive	— Known to use glider poles and canopy bridges over dual-carriageway highways, and likely to use under- transmission glider poles — Use of no clearing zones underneath powerlines — Maintained vegetated corridors <2 m in height.

Common name	Barriers	Estimated gap crossing	Use of mitigation approach
Reptiles (Hunter Valley delma)	Fragmentation of areas of Sand hill habitats and grassy woodlands	Species assumed unlikely to cross unvegetated gap >50 m	— Maintained vegetated understorey within B zone. — Maintained vegetated corridors <2 m in height.
Common native species important for ecosystem function			
Arboreal mammals (e.g. Sugar Glider, Common Brushtail Possum)	Barriers to movement include roads and urban development.	Gaps >40 m likely to be prohibitive	— Known to use glider poles and canopy bridges over dual-carriageway highways, and likely to use Under-Transition glider poles — Use of no clearing zones underneath powerlines — Maintained vegetated understorey within B zone. — Maintained vegetated corridors <2 m in height.
Terrestrial mammals (Kangaroos and Wallabies)	Eastern Grey Kangaroo is an open country species. Swamp Wallaby generally restricted to vegetated habitats.	Swamp Wallaby assumed unlikely to cross gaps >100 m	— Use of no clearing zones underneath powerlines — Maintained vegetated understorey within B zone. — Maintained vegetated corridors <2 m in height.

J1.3.1 Forestry areas management

An important consideration is that much of the alignment passes through operational State Forests such as Olney State Forest, Watagan State Forest, Pokolbin State Forest and Corrabare State Forest.

These operational State Forests are impacted on an ongoing basis by logging activities within smaller forestry coupes.

Installation of permanent connectivity structures within these locations is likely to still be achievable as forestry operations will generally be excluded from the transmission easements and can be used when forests regrow to a suitable size.

J1.3.2 No clearing zones

The no clearing zones that are located continuously along the alignment within Wyong and Yengo IBRA subregions will facilitate undisturbed contiguous corridors of wildlife connectivity for all fauna species. These are located primarily within Olney State Forest, Watagan State Forest, Pokolbin State Forest and Corrabare State Forest but also within area such as:

- Corrabare North Flora Reserve and
- private lands.

J1.3.3 Under-transmission line glider poles and/or glider / possum rope bridges

A novel approach to mitigate the barrier impacts of the transmission line for gliders and possums is the use of under-transmission glider poles and/or rope bridges which can include timber poles and/or retained tall tree stumps. It is proposed that these will be installed in areas of identified Squirrel Glider, Southern Greater Glider, Eastern Pygmy Possum and Brush-tailed Phascogale habitat (see Figure 14.7 and Figure 14.8 that illustrate areas of connectivity).

Locations for glider and possum connectivity measures have been identified through the nominated suitable habitat areas that are located within areas that do not contain regular or proximate no clearing zones within 1 kilometre of each other.

The intention is to retain a single row or ideally a 10–20 metre wide strip of tall tree stumps which allows gliders to traverse the gap. The use of 'natural' glider poles (i.e. retained tall tree stumps) offers a number of likely advantages over timber poles and the following points are relevant:

- They are wider than timber poles, providing a large landing surface.
- If the trees are resistant to decay and with the root system still intact, they should remain standing for at least 30 years, if not longer.
- The stumps will maintain bark for a number of years, and eventual decay of the wood will provide food for invertebrates, which in turn are food for Squirrel Gliders.
- If the tree survives pruning when the project is built above it and has coppice regrowth, this will provide additional shelter and food for gliders, and increase the standing life of the stump because the root system remains alive. Nevertheless, it is acknowledged that trees under the project will need to be maintained to safe operating height.
- Tree stumps will also provide habitat for a wide range of other species, including woodland birds, reptiles and other arboreal mammals.
- Chainsaw hollows can be installed into retained stumps if the stems are sufficiently large.
- Provided the tree has been sufficiently pruned and the weight of the canopy reduced, the risk of collapse and damage to the project structure will be minimal.
- Each tree to be retained as a stump should be inspected and pruned by a qualified arborist with a minimum Level 3 Certificate in Arboriculture or equivalent plus demonstrated experience in inspecting and pruning trees for habitat.

- The retained stumps should be located away from the project structure so that if they collapse, they do not damage the proposed transmission line tower. If the stumps, branches or coppice regrowth is within striking distance of the project, they should be inspected by a qualified arborist every few years to assess the extent of coppice growth and decay and residual risk. Coppice regrowth is poorly connected to the main stem and poses a higher incidence of failure than normal branches. A qualified arborist should advise on the required inspection frequency.
- The structural root zone of each retained stump should not be damaged because these are what will support the tree in the long term.
- The retained stumps should be relatively straight and vertical to reduce the risk of collapse and maximise standing longevity. Decay within the trunks is acceptable provided there are multiple stems within gliding range.
- Maintain as much canopy adjacent to the project structures where the stumps will be retained to provide connection to the stumps and provide shelter to the stumps from extreme wind to increase their standing lifespan.

Figure J.1 provides a conceptual diagram for under-transmission line glider poles. This is an example of what could be implemented, the heights of poles and distances between poles included in the diagram are examples only. The glider poles and/or rope bridges that would be implemented would be designed considering the project constraints including:

- clear access must be maintained to transmission infrastructure for operation and maintenance
- an exclusion zone of 30 metres applies from any part of a transmission line structure, and 17 metres from the centre of a transmission line
- a height limit of 4.3 metres applies for all structures and development activities
- all metal structures must be earthed
- structures must be designed so they don't encourage climbing (by people).

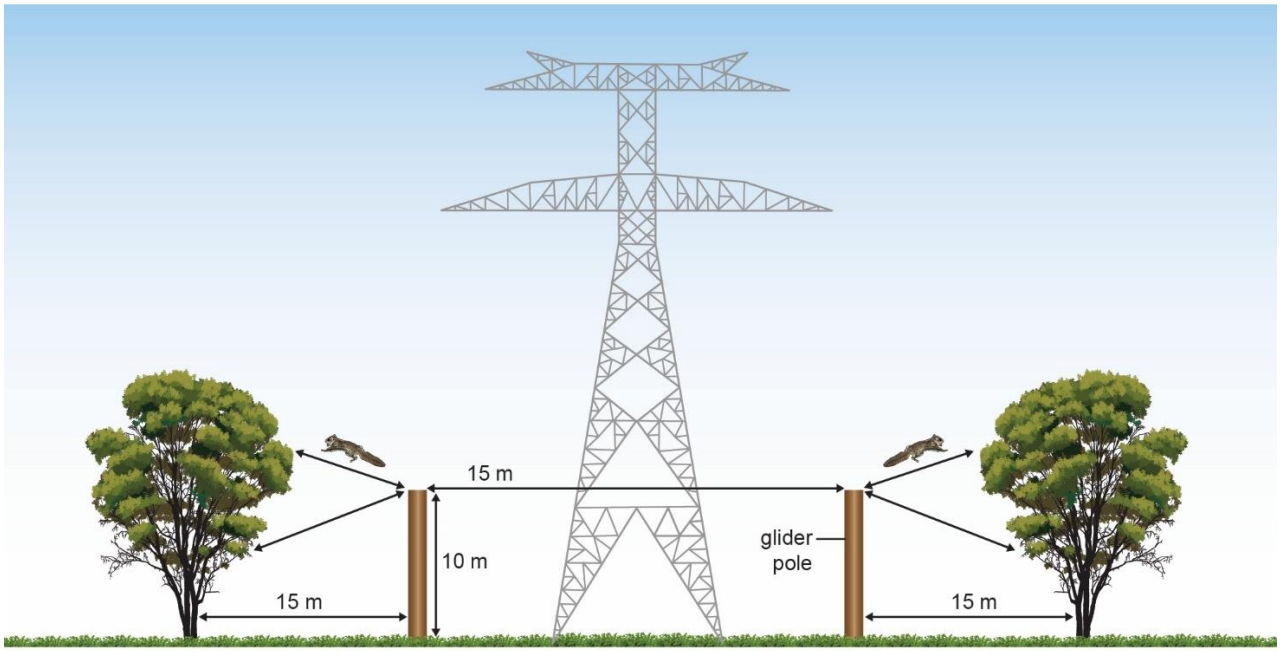


Figure J.1 Conceptual diagram of under-transmission glider poles (pole heights and distances to be determined during detailed design and in accordance with restrictions on structures within the easements)

J1.4 Connectivity strategy

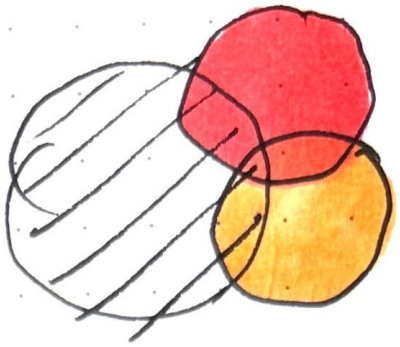
While connectivity is particularly important for the arboreal mammal species listed in the previous section, connectivity is also important for a range of other threatened and protected native species, including but not limited to:

- terrestrial mammals
- terrestrial frogs
- terrestrial reptiles
- terrestrial birds
- aquatic fauna.

A proposed Connectivity Strategy will be developed and implemented to avoid and minimise impacts to connectivity for terrestrial species, with particular focus on recorded or assumed fauna species along the project impact area in specific locations, including:

- *Delma vescolineata* (Hunter Valley Delma)
- *Heleioporus australiacus* (Giant Burrowing Frog)
- *Hoplocephalus bitorquatus* (Pale-headed Snake)
- *Hoplocephalus stephensii* (Stephens' Banded Snake)
- *Litoria littlejohni* (Littlejohn's Tree Frog)
- *Mixophyes balbus* (Stuttering Frog)
- *Mixophyes iteratus* (Giant Barred Frog)
- *Notamacropus parma* (Parma Wallaby)
- *Petrogale penicillata* (Brush-tailed Rock-wallaby)
- *Phascolarctos cinereus* (Koala)
- *Planigale maculata* (Common Planigale)
- *Potorous tridactylus* (Long-nosed Potoroo)
- *Pseudophryne australis* (Red-crowned Toadlet).

This will contain detailed and specific information on the approach for connectivity for each of these species and for broader habitat connectivity objectives.



Appendix K

Secretary's Environmental Assessment Requirements relating to biodiversity

Our ref: Hunter Transmission Project (SSI-70610456)

Ms Sophy Townsend
Strategic Advisor - Environment
Energy Corporation Of New South Wales
Level 19
20 Bond Street
Sydney New South Wales 2000

12/08/2024

Subject: Planning Secretary's Environmental Assessment Requirements

Dear Ms Townsend

Please find attached a copy of the Planning Secretary's environmental assessment requirements (SEARs) for the Hunter Transmission Project (SSI-70610456).

The SEARs have been prepared in consultation with relevant public authorities, based on the information you have provided. A copy of the advice from the public authorities is attached for your information.

Where relevant, the Planning Secretary may modify the SEARs to ensure the environmental assessment of the project covers all relevant matters and is consistent with contemporary assessment practice.

Your SEARs will expire two years from the date of issue (or the date they were last modified) unless the Planning Secretary has granted an extension. If you would like to seek an extension, you should contact the department at least three months prior to the expiry date.

If your application is not submitted within two years (or by the agreed extension date), you will need to make a new application for SEARs to progress your project.

Preparing your EIS

Your environmental impact statement (EIS) must be prepared having regard to the department's *State Significant Infrastructure Guidelines* – including the *Preparing an Environmental Impact Statement Guideline*. All relevant guides for State significant projects that are referenced in the SEARs are available at www.planning.nsw.gov.au/Policy-and-Legislation/Planning-reforms/Rapid-Assessment-Framework.

During the preparation of your EIS, you are required to consult with various parties, including the department and relevant agencies, in accordance with *the Undertaking Engagement Guidelines for*

State Significant Projects. For more information, please visit the Prepare EIS page on the NSW planning portal. Agency contact details can be found at https://www.planningportal.nsw.gov.au/major-projects/assessment/guide-agency-directory.

You will need a Registered Environmental Assessment Practitioner (REAP) to declare that your EIS meets certain standards in relation to its completeness, accuracy, quality and clarity before it is submitted to the department, as per Division 5 of Part 8 of the Environmental Planning and Assessment Regulation 2021. A pro forma declaration can be found in Appendix B of the Preparing an Environmental Impact Statement Guideline.

Submitting your EIS

Once you submit your EIS, we will check it for completeness to confirm it addresses the requirements in Part 8 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

Information needed to determine the application fee

Your EIS will need to be accompanied by an Estimated Development Cost (EDC) supporting the estimated development cost for your project. You must ensure that the information in the report is consistent with the information provided in your EIS.

Once you submit your Estimated Development Cost Report, we will check it for completeness against the requirements of the EP&A Regulation and the relevant Planning Circular.

Public exhibition requirements

We will advise whether hard and/or electronic copies of the EIS will be required for public exhibition.

Matters of National Environmental Significance

Any development likely to have a significant impact on matters of National Environmental Significance will require approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to approvals required under NSW legislation.

It is your responsibility to contact the Australian Government Department of Climate Change, Energy, the Environment and Water to determine if you need approval under the EPBC Act (https://www.dcceew.gov.au/ or 6274 1111).

If you have any questions, please contact Lauren Clear on 02 8229 2974 or via email at lauren.clear@dpie.nsw.gov.au.

Yours sincerely,

Nicole Brewer
Director
Energy Assessments

as delegate for the Planning Secretary

Planning Secretary's Environmental Assessment Requirements

Section 5.16 of the *Environmental Planning and Assessment Act 1979*

Part 8 of the Environmental Planning and Assessment Regulation 2021

Application Number	SSI-70610456
Project	Hunter Transmission Project, which includes: • two new substations at Bayswater and Olney; • a new double circuit 500 kV overhead transmission line connecting the existing 500 kV line at Bayswater to the existing 500 kV transmission line in the Olney State Forest; and • associated works including upgrades to the existing Bayswater and Eraring substations, adjustments to existing transmission lines, road upgrades, access tracks, temporary construction facilities such as laydown areas, stringing sites, construction support sites and workers accommodation.
Location	Between Bayswater and Olney State Forest for a length of approximately 100 km, within the Muswellbrook, Singleton, City of Cessnock, Central Coast and City of Lake Macquarie Local Government Areas.
Proponent	EnergyCo
Date of Issue	12 August 2024
General Requirements	The Environmental Impact Statement (EIS) must meet the minimum form and content requirements as prescribed by Part 8 of the *Environmental Planning and Assessment Regulation 2021* (the Regulation) and must have regard to the *State Significant Infrastructure Guidelines*. In particular, the EIS must include: • a stand-alone executive summary; • a summary of the background to the project, including alternatives that were considered to the project; • a full description of the project, accompanied by suitable maps and plans, including the: - disturbance area; - physical layout of the project over time, including sections of key components; - key uses and activities to be carried out on site; - likely timing of the project including any stages, the key phases within each stage (site preparation, construction, commissioning, operation, decommissioning and rehabilitation) and the sequencing of these stages and phases; • the relevant strategic context for the project, having regard to: - State legislation, policies and guidelines including current initiatives to improve energy security and reliability in the National Electricity Market; - any other existing, approved or proposed projects that could result in cumulative impacts with the project;

	- an analysis of the feasible alternatives to carrying out the project, considering its objectives, including the consequences of not carrying out the infrastructure; • the relevant statutory context for the project, including: - the assessment pathway for the project under the *Environmental Planning and Assessment Act 1979*; - the approvals required before the project may be carried out; - any relevant matters for consideration; • a description of the engagement that was carried out during the preparation of the EIS, the key issues raised during this engagement and the proposed engagement strategy for the project if it is approved; • an assessment of the likely economic, social and environmental impacts of the project having regard to the requirements in any relevant Government legislation, policies and guidelines (see below), including: - the state of the existing environment; - community views; - the measures that would be implemented to avoid or minimise impacts, including a consolidated summary of the proposed mitigation measures for the project; - the predicted impacts of the project, including any cumulative impacts of the project with existing or proposed developments in the region taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice including the *Cumulative Impact Assessment Guideline* (DPIE); - actions proposed to deal with any uncertainties associated with the assessment; • a detailed evaluation of the merits of the project as a whole. **Estimated Development Cost and Employment** • Provide the estimated cost (EDC) of the project prepared in accordance with the relevant planning circular using the Standard Form of EDC Report. • Provide an estimate of the retained and new jobs that would be created during the construction and operational phases of the project, including details of the methodology to determine the figures provided. In addition the EIS must also be accompanied by a declaration from a Registered Environmental Practitioner that the EIS includes the information specified in the Department's Registered Environmental Assessment Practitioner Guidelines.
Key issues	The level of assessment of key matters must be proportionate to the likely significance of the impacts on the matter. In particular, the EIS must address the following specific matters: **Biodiversity:** • an assessment of the biodiversity impacts of the project, in accordance with the *Biodiversity Conservation Act 2016* (NSW), having regard to the Biodiversity Assessment Method (BAM) and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must: - be prepared using the approved BDAR template; - document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the BAM; - assess any impacts to nearby conservation areas and nature reserves; • an assessment of the likely direct and indirect impacts of the project on listed aquatic threatened species, populations or ecological communities,

scheduled under the Fisheries Management Act 1994, and a description of the measures to minimise and rehabilitate impacts; and
- if an offset is required, details of the measures proposed to address the offset obligations**.**

Heritage:
- an assessment of the impact to Aboriginal heritage (cultural and archaeological), including test excavations, in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011) and the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010);
- evidence of consultation with Aboriginal parties in determining and assessing impacts, having regard to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010);
- if the test excavations do not conform with the Code of Practice, then the excavations may only be carried out with the written endorsement of Heritage NSW following consultation with the Registered Aboriginal Parties;
- assess the impact to historic heritage having regard to *Guidelines for preparing a statement of heritage impact* (DPE, 2023).

Water and Soils:
- an assessment of the impacts of the project on the quantity and quality of the region's surface water resources, including the Hunter River, having regard to NSW Water Quality Objectives;
- details of water requirements, supply arrangements and wastewater disposal arrangements for construction and operation;
- an assessment of the impacts of the project on groundwater aquifers and groundwater dependent ecosystems having regard to the *NSW Aquifer Interference Policy* and relevant Water Sharing Plans;
- an assessment of the potential flooding impacts and risks of the project;
- where the project involves works within 40 metres of the high bank of any river, lake or wetlands (collectively waterfront land), identify likely impacts to the waterfront land, and how the activities are to be designed and implemented in accordance with the DPI *Guidelines for Controlled Activities on Waterfront Land* (2018) and (if necessary) *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (DPI 2003); and *Policy & Guidelines for Fish Habitat Conservation & Management* (DPI, 2013); and
- a description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with *Managing Urban Stormwater: Soils & Construction* (Landcom 2004).

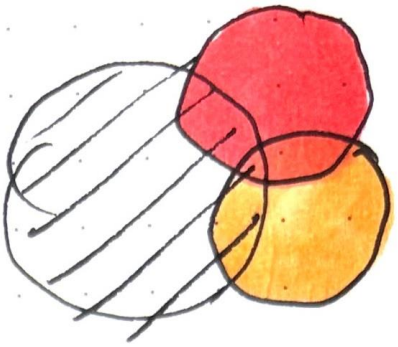
Land:
- an assessment of impacts of the project on soils and land capability of the site and surrounds;
- assessment of impact of the project on agricultural land, land reserved under the National Parks and Wildlife Act 1974 including Watagans National Park and Jilliby State Conservation Area, Corrabare South and Corrabare North Flora Reserves, Crown lands including State Forests, travelling stock reserves, mineral resources and exploration licenses, rail reserves and pipeline corridors.

Contamination
- An assessment of the risk of soil contamination and disturbance of land (including associated with natural occurring asbestos, acid sulfate soils and salinity in the vicinity of the site; including:

	- characterisation of the nature and extent of any contamination on the site and surrounding area; - identification of any construction activities that could disturb or interact with any contaminated soil, groundwater or surface water, including PFAS; - details of measures to manage contaminated impacted soils, groundwater or surface water that may be encountered during construction; and - if required, a contaminated land report prepared by a certified consultant in accordance with guidelines made or approved by the EPA under s105 of the Contaminated Land Management Act 1997, the Regulation, and the State Environmental Planning Policy (Resilience and Hazards) 2021, including reference to the PFAS National Environmental Management Plan 2.0 (Heads of EPAs of Australia and New Zealand, 2020) (NEMP). **Transport:** ● an assessment of the transport impacts of the project on the capacity, condition, safety and efficiency of the local and State road network and the rail network; ● a cumulative impact assessment of traffic from nearby developments (including mining operations); and ● details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from high risk heavy vehicles requiring escort traffic haulage routes), and any other traffic control measures, developed in consultation with the relevant road and / or rail authority ● details of the ongoing maintenance works required to service assets, outlining the measures to maintain the road. **Amenity:** ● an assessment of the likely visual impacts of the project on surrounding residences, scenic or significant vistas, night lighting and road corridors in the public domain; ● an assessment of the construction, operational and road noise and vibration impacts of the project, including corona noise; and ● a description of the measures that would be implemented to avoid / mitigate visual and noise impacts. **Air Quality:** ● an assessment of the air quality impacts of the project. **Hazards:** ● a preliminary risk screening completed in accordance with Chapter 3 of Resilience and Hazard SEPP 2021 and Applying SEPP 33 (DoP, 2011); ● a Preliminary Hazard Analysis (PHA) prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011), should the preliminary risk screening indicate that the project is “potentially hazardous”. ● identify possible effects on telecommunications systems, assess impacts and mitigation measures to avoid potential disruptions to radio communication services, which may include the installation and maintenance of alternative sites; ● an assessment of potential hazards and risks associated with electric and magnetic fields (EMF) having regard to the latest advice of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA);

	• an assessment of the risks to public safety, paying particular attention to bushfire risks, emergency egress and evacuation, and potential impacts to high pressure gas pipelines; • describe the bushfire protection measures for the project, including the proposed approach to vegetation management in the transmission easement, having regard to the requirements in the Planning for bush fire protection guideline (RFS 2019) • assess potential impacts on aviation safety, including: - defined air traffic routes, aircraft operating heights, approach / departure procedures, radar interference, communication systems, navigation aids, use of emergency helicopter access, aerial baiting and culling in the National Parks, safe and efficient aerial application of agricultural fertilisers and pesticide, and aerial fire control; - identify aviation marking requirements; - identify certified aerodromes within 30 km of the transmission line and uncertified aerodromes and landing areas within 10 km of the transmission line, and consider the impact to nearby aerodromes and aircraft landing areas; and - address impacts on obstacle limitation surfaces. **Waste:** • identify, quantify and classify the likely waste streams to be generated throughout all stages of the project, and describe the measures to be implemented to reduce waste generation, manage, reuse, recycle and safely dispose of this waste (in consultation with any relevant waste facilities and Councils). **Social Impact:** • an assessment of the social impacts in accordance with Social Impact Assessment Guideline (DPIE) and consideration of construction workforce accommodation. **Economic:** • an assessment of the benefits of the project for the region and the State as a whole, including: - consideration of any increase in demand for community infrastructure and services, and details of how the construction workforce will be managed to minimise local impacts, including a consideration of the construction workforce accommodation; - an assessment of the impacts to State Forests; and - details of any proposed benefit sharing arrangements.
Plans and Documents	The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Part 8 of the Regulation. Provide these as part of the EIS rather than as separate documents. In addition, the EIS must include high quality files of maps and figures of the subject site and proposal.
Legislation, Policies & Guidelines	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. A list of some of the legislation, policies and guidelines that may be relevant to the assessment of the project can be found at: • https://www.planning.nsw.gov.au/Policy-and-Legislation/Planning-reforms/Rapid-Assessment-Framework/Improving-assessment-guidance

	• https://www.planningportal.nsw.gov.au/major-projects/assessment/policies-and-guidelines; and • https://www.dcceew.gov.au/environment/epbc/publications#assessments
Engagement	During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups, affected landowners, Native Title holders, exploration licence holders, quarry operators and mineral title holders.
Expiry Date	If you do not lodge an EIS for the infrastructure within 2 years of the issue date of these SEARs, your SEARs will expire. If an extension to these SEARs will be required, please consult with the Planning Secretary 3 months prior to the expiry date.



Appendix L

Aquatic biodiversity impact assessment

EnergyCo

February 2026

Hunter Transmission Project

Aquatic Biodiversity Impact Assessment

Question today
Imagine tomorrow
Create for the future

Hunter Transmission Project
Aquatic Biodiversity Impact Assessment

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WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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Appendix A Test of significance
Appendix B Likelihood of occurrence

Abbreviations

ALS	Australian Laboratory Service
BC Act	*Biodiversity Conservation Act 2016*
BMP	Best Management Practices
°C	Celsius
CEMP	Construction Environmental Management Plan
CSSI	critical State significant infrastructure
EIS	environmental impact statement
EP&A	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FM Act	*Fisheries Management Act 1994*
GDE	Groundwater Dependant Ecosystems
HADD	Harmful Alteration, Disruption and Destruction
HTP	Hunter Transmission Project
HVO	Hunter Valley Operations
km	kilometre
kV	kilovolts
L	litre
MNES	Matters of National Environmental Significance
mg	milligrams
mm	millimetre
m	metre
NSW	New South Wales
NTU	Nephelometric Turbidity Unit
pH	potential of hydrogen
PMST	Protected Matters Search Tool
TSS	total suspended solids
µs	microsecond
WM Act	*Water Management Act 2000*

Executive summary

This Aquatic Biodiversity Impact Assessment has been prepared by WSP Australia Pty Ltd on behalf of EnergyCo for the proposed Hunter Transmission Project (HTP, the project). The purpose of this report is to assess the potential impacts the HTP may have on listed aquatic threatened species, populations or ecological communities. This Aquatic Biodiversity Impact Assessment has assessed the potential for the project to impact aquatic species listed on the NSW *Fisheries Management Act 1994* (FM Act).

The project is located within the Hunter-Central Rivers catchment and Hunter River sub-catchment. The HTP will cross 25 named watercourses as well as many unnamed lower order watercourses (88% being Strahler Order <2). Of these, a desktop assessment identified that 19 named watercourses and 55 unnamed watercourses were mapped as key fish habitat (KFH). Of these, four watercourses were determined to contain mapped habitat for Southern purple spotted gudgeon (*Mogurnda adspersa*), which is listed as endangered under the FM Act.

A field assessment was conducted over a three-day period, between 10–12 September 2024, at 7 key aquatic locations:

- Hunter River (2 locations)
- Wollombi Brook
- Loder Creek
- Monkey Place Creek
- Congewai Creek
- Watagan Creek.

All these watercourses are mapped as KFH, with two of them, Wollombi Brook and Congewai Creek, containing mapped Southern purple spotted gudgeon habitat.

The ecological importance of each surveyed watercourse was determined through the assessment of habitat characterisation, key fish habitat, riparian health and water quality. Each watercourse was assigned a watercourse type and watercourse class as outlined in *Policy and guidelines for fish habitat conservation and management* (NSW DPI, 2013). Watercourse type and class ratings determine habitat sensitivity and classification for habitat use.

Six of the seven survey areas were deemed to be a type 1 watercourse and 4 of the 7 were deemed to be class 1 watercourses. One watercourse, Loder Creek, was deemed to be a type 2 watercourse as it lacked type 1 habitat features and 3 of the 7 (Loder Creek, Monkey Place Creek and Watagan Creek) were deemed to be class 2, as they lacked a permanent flow during the site assessment.

As outlined in BDAR mitigation measure B12, a Riparian Vegetation Management Plan (RVMP) will be developed and implemented for the project to manage activities within vegetated riparian zones to minimise impacts to aquatic environments. The plan will be prepared prior to and implemented during any disturbance to a riparian area. This will be the primary aquatic mitigation measure.

The plan will identify the measures to be implemented to minimise impacts from construction activities (such as temporary and permanent waterway crossings) within riparian and aquatic environments. A schedule of works will be stipulated within the approved RVMP. Riparian areas subject to disturbance will be progressively stabilised and rehabilitated.

BDAR mitigation measure B4 also requires micro-siting of associated works and access tracks to minimise vegetation clearing and disturbance of watercourses within the biodiversity study corridor which will include:

- prioritising areas of low biodiversity value
- utilising existing access tracks, where feasible
- locating waterway crossings at narrow width locations
- minimising the quantity of cut and fill activities.

BDAR mitigation measure B16 relates to water quality, watercourse geomorphology and aquatic habitat and states that any watercourse crossings will be designed to minimise disturbance and harm within riparian corridors and rehabilitate aquatic habitat to achieve a 'no net loss' of habitat within the affected area and catchment as a whole, in accordance with the following guidelines:

- *Guidelines for controlled activities on waterfront land (NRA, 2018)*
- *Why do fish need to cross the road? Fish passage requirements for waterway crossings (Fairfull & Witheridge, 2003)*
- *Policy and guidelines for fish habitat conservation and management (DPI, 2013).*

Although no direct impacts to the surrounding aquatic environments (i.e. instream works, works within riparian area) are expected, there is still a risk that indirect impacts from construction of the project may impact local watercourses. To ensure that the surrounding aquatic habitats remain intact and healthy during the project works the following recommendations should be implemented:

- ongoing visual assessments at watercourse crossings to ensure no adverse impacts are observed during construction
- implementation of the Network Operator's construction contractor's Environmental Management Strategy (EMS), or the Network Operator's operational environmental management framework (or similar system).

There are two species listed on the FM Act with the potential to occur in the project impact area. These are the Southern purple spotted gudgeon and the Darling River hardyhead. The Darling River hardyhead is unlikely to occur because the project is outside of its known distribution range, but it has been included in the assessment as a precaution. The project has been determined as being unlikely to result a significant impact on either species.

Overall, with the implementation of the proposed mitigation measures, the project is not expected to result in adverse impacts on aquatic environments, ecological communities and species.

If any instream works are to be performed, appropriate approvals and permits are to be obtained under the FM Act and the WM Act.

The project has been determined as being unlikely to result a significant impact on listed aquatic threatened species, populations or ecological communities listed under the FM Act.

1 Introduction

The Hunter Transmission Project (HTP, the project) involves construction of a new overhead 500 kilovolt (kV) double circuit transmission line of around 100 kilometres, connecting the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in Olney State Forest, near Eraring in the Hunter region of New South Wales (NSW).

The project requires approval from the NSW Minister for Planning and Public Spaces under Division 5.2, Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Due to its strategic importance, the project has been declared as critical State significant infrastructure (CSSI) under section 5.13 of the EP&A Act.

Under this process, the Energy Corporation of NSW (EnergyCo, the proponent) is required to prepare an environmental impact statement (EIS) in accordance with the NSW Environmental Planning and Assessment Regulation 2021. Construction is expected to commence in 2027, subject to NSW Government and Commonwealth planning approvals, and be operational by the end of 2029.

This Aquatic Biodiversity Impact Assessment accompanies the EIS for the HTP and addresses the Secretary's environmental assessment requirements (SEARs) issued on 13 August 2024, of which the relevant component is provided below in Table 1.1.

In addition to the SEARs, advice from several government agencies was received on the HTP. Agency advice relevant to and considered in this Aquatic Biodiversity Impact Assessment is provided on the Major Projects website maintained by the NSW Department of Planning, Housing and Infrastructure (DPHI).

Table 1.1 HTP SEARs – Aquatic biodiversity impact assessment

HTP SEARs:
— an assessment of the likely direct and indirect impacts of the project on listed aquatic threatened species, populations or ecological communities, scheduled under the *Fisheries Management Act 1994*, and a description of the measures to minimise and rehabilitate impacts.

An EIS was prepared in accordance with the requirements of Part 5, Division 5.2 of the EP&A Act. The EIS was placed on public exhibition by the NSW Department of Planning, Housing and Infrastructure (DPHI) for a period of 28 days, between 27 August 2025 and 24 September 2025.

EnergyCo has proposed amendments and refinements to the exhibited project. The amendments and refinements respond to stakeholder and contractor feedback on the project, as well as provide functional improvements to the design and construction methodology of the project. The proposed amendments and refinements take into account submissions received during the public exhibition of the EIS and ongoing design and construction methodology development since the EIS was exhibited. These amendments and refinements have been described and considered in relevant impact assessments.

2 The Hunter Transmission Project

2.1 Proposed development

2.1.1 Location

The project involves development across 5 local government areas (Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie). The HTP corridor extends generally west to east and consists of a transmission line corridor connecting a new Bayswater South switching station to the existing 500 kV transmission line near the Baywater power station and the Olney switching station to the existing 500 kV transmission line between Eraring and Kemps Creek. The project also includes adjustments and upgrades to existing transmission lines connecting Bayswater and Eraring power stations.

2.1.2 Key definitions

Project impact area	The area that has been assumed for the purpose of this EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation. This term is equivalent to Development Site under the BAM. The boundary of the biodiversity study area aligns with (or is within) the project impact area as defined in the EIS, with the exception of access tracks that do not require upgrades or ground disturbance, which have been excluded from the biodiversity study area.
Biodiversity study area	A minimum 140 m wide transmission line corridor focused on the planned infrastructure that was surveyed in accordance with Stage 1 of the BAM. This approach enables a level of flexibility for future design refinement of the transmission line. Where impacts were likely to be larger, the biodiversity study area was widened to accommodate the larger area. The biodiversity study area incorporates the subject land and is within the assessment area as defined in the BAM. The boundary of the biodiversity study area aligns with (or is within) the project impact area as defined in the EIS, with the exception of access tracks that do not require upgrades or ground disturbance, which have been excluded from the biodiversity study area.
Subject land (referred to as Disturbance area in the EIS)	The subject land is land subject to a development, activity, clearing, biodiversity certification or a biodiversity stewardship proposal. It excludes the assessment area which surrounds the subject land (i.e. the area of land in the 1500 m buffer zone around the subject land or 500 m buffer zone for linear projects). This is a subset of the project impact area and is used primarily to assess potential impacts on biodiversity values in the BDAR. Includes the following categories: — disturbance area A — disturbance area A (centreline) — disturbance area B — disturbance area HZ.

2.1.3 The project (as exhibited)

The Hunter Transmission Project (HTP, the project) is critical State significant infrastructure (CSSI). It must be built by the end of 2029 to protect energy security in NSW as the remaining coal-fired power stations close.

The HTP includes:

- a new overhead 500 kilovolt (kV) double circuit transmission line of around 110 kilometres
- 2 new switching stations (Bayswater South and Olney)
- upgrades to the existing Bayswater and Eraring substations
- adjustments and upgrades to existing transmission lines
- property adjustment works to facilitate access to the transmission lines and switching stations
- utility adjustments required for the construction of the transmission network infrastructure
- ancillary works to support construction including road upgrades, establishment of new access tracks and upgrades to existing access tracks, construction support sites (some with temporary worker accommodation), and other construction facilities such as laydown areas.

The HTP corridor runs mostly through power station, mining and government land between Bayswater and Broke. It then traverses the Pokolbin, Corrabare, Watagan and Olney State forests where it joins the existing 500 kV transmission line running between Eraring and Kemps Creek in western Sydney.

An overview of the HTP is provided in Table 2.1 and shown in Figure 2.1 The key project elements are shown in Figure 2.2.

Further details are provided in *Chapter 4 (Project description)* of the project's EIS.

Table 2.1 Project overview

The project	— The critical State significant infrastructure application for the HTP covers 5 local government areas. — Most development would be concentrated in and around the HTP corridor. Some ancillary development such as construction support sites and temporary worker accommodation, road upgrades and laydown areas would be outside the HTP corridor.
Project impact area	— The area that has been assumed for the purpose of this EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.
Construction and operation	— Construction impact area around 2351 ha — Operation impact area around 1261 ha
Subject land (referred to as Disturbance area in the EIS)	— Disturbance area around 1266 ha — Disturbance area A around 683 ha — Disturbance area A (centreline) around 214 ha — Disturbance area B around 367 ha — Disturbance area HZ around 1.84 ha

New transmission line and transmission towers	— Overhead 500 kV double circuit transmission line of around 110 km between Bayswater South 500 kV switching station and Olney 500 kV switching station — Steel lattice towers up to 85 m high and that are spaced anywhere between 75 m to around 1.3 km apart (typically between 300 m and 600 m) — 500 kV transmission lines with a minimum vegetation clearance of 13.5 m — Ancillary infrastructure such as earth wire and communications systems — Construction easement of around 140 m wide — Operational easement around 70 m wide.
Switching stations/ substation works	— New Bayswater South 500 kV switching station – construction impact area around 26.6 ha — Modifications at the existing Bayswater 500 kV/330 kV substation within the existing footprint — New Olney 500 kV switching station – construction impact area around 20 ha — Augmentation and modifications at the existing Eraring 500 kV/330 kV substation, including installation of 2 new transformers.

Adjustments / upgrades and crossings – existing transmission lines	— Adjustments to existing double circuit 500 kV transmission line at Bayswater:
	  — Line 5A1 and 5A2: Eraring – Kemps Creek 500 kV at Ravensdale to connect to the new Olney 500 kV switching station
	  — Line 5A3: Bayswater – Mt Piper 500 kV at Bayswater to connect to the new Bayswater South 500 kV switching station
	  — Line 5A4: Bayswater – Wollar 500 kV at Bayswater to connect to the new Bayswater South 500 kV switching station
	— Adjustments to existing double circuit 330 kV transmission lines:
	  — Line 31: Bayswater – Regentville 330 kV
	  — Line 32: Bayswater – Sydney West 330 kV
	  — Line 81: Newcastle – Liddell 330 kV
	— Crossing of existing double circuit 330 kV transmission lines:
	  — Line 31: Bayswater – Regentville 330 kV at Bayswater
	  — Line 32: Bayswater – Sydney West 330 kV at Bayswater
	  — Line 81: 330 kV: Newcastle – Liddell 330 kV at Lemington and again at the Singleton Military Area
	  — Line 82: 330 kV: Tomago – Liddell 300 kV at Warkworth and again at the Singleton Military Area.

Upgrades – existing transmission lines and towers	— Upgraded earth wire on Line 5A3 and Line 5A4 — Upgraded earth wire and communications systems on Line 5A1 and Line 5A2 — Tower strengthening on various existing towers on Line 5A1, Line 5A2, Line 5A3 and Line 5A4.
Road works	— Modifications to the existing public road network — New and upgraded access tracks for construction and operation.
Construction support sites	— Five construction support sites: Hebden Road, Pikes Gully Road, Gouldsville Road, Wollombi Road and Freemans Drive — Helicopter pads (helipads) indicatively at: Hebden Road, Pikes Gully Road, Gouldsville Road and Freemans Drive.

Ancillary sites	— Laydown areas, which would be established to allow for flexibility in construction and to minimise the need for vehicle movements to and from the construction support sites.
Utility adjustments	— Third party utility works including gas, telecommunications, water, sewer and stormwater.
Timing	— Construction to start in 2027 — Operational by the end of 2029.

2.1.4 The project (as amended)

The proposed amendments and refinements to the exhibited project are collectively referred to in this revised report as the 'amended project'.

The key proposed amendments include:

- realignment of the transmission line at Mount Thorley
- realignment of the transmission line at Gouldsville
- localised easement widening for conductor swing
- changes at Eraring substation
- changes to access tracks
- minor adjustments to the project impact area for intersection upgrades
- adjustments to the proposed access routes for construction
- reconfiguration of construction support sites and temporary worker accommodation facilities
- changes to laydown areas within State forests
- reconfiguration of the Flick Road emergency helicopter landing area
- removal of stringing site in Olney State Forest
- changes to construction plant and equipment types and locations

The key refinements include:

- minor changes at Bayswater substation
- changes to the disturbance area at Olney.

2.1.4.1 Description of amendments and refinements

This section provides a description of the proposed amendments and refinements compared to the exhibited project. These amendments and refinements have been made in response to stakeholder and contractor feedback, as well as feedback received from community submissions on the exhibited project. The design and construction methodology for the project would continue to be refined and confirmed during detailed design. An updated description of the project incorporating the proposed amendments and refinements is included in *Appendix A (Updated project description)* of the amendment report.

The amendments and refinements to the exhibited project (inclusive of the additional information and clarifications for the exhibited project) are collectively referred to in this report as the 'amended project'.

Descriptions of the proposed amendments and refinements as part of the amended project are included in Table 2.2.

Table 2.2 Description of proposed amendments and refinements compared to the exhibited project

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
Amendments			
Changes to 500 kV transmission line infrastructure	Realignment of the transmission line at Mount Thorley	The transmission line alignment between Bulga and Mount Thorley was designed to utilise mining-owned land wherever feasible and avoid the designated conservation offset area associated with the Bulga mining complex. To address safety concerns related to major hazardous facilities, the transmission line alignment has been developed to establish a safe minimum distance from facilities (Enaex and Dyno Nobel) in Mount Thorley Industrial Estate. Further refinements within Mount Thorley-Warkworth mining complex land, adjacent to the Golden Highway, shifted the transmission line alignment away from the Hunter River, further west. This adjustment allowed tower foundations to be sited in areas with reduced peak flood depths and velocities, improving resilience during flood events.	Around four kilometres of the new 500 kV double circuit transmission line at Mount Thorley would be realigned, moving it up to around 900 metres further south and away from the Hunter River. This proposed realignment of the transmission line at Mount Thorley as part of the amended project has been developed with input from the directly impacted landowners and stakeholders and would involve the transmission line continuing south adjacent to the Whittingham to Mount Thorley rail line before deviating in an eastward direction to join the exhibited HTP corridor north of the Putty Road / Broke Road intersection.
	Realignment of the transmission line at Gouldsville	The transmission line alignment in Gouldsville was designed to avoid impacts on high-quality threatened ecological community through co-location with existing electrical infrastructure easements and access tracks.	Around one kilometre of the new 500 kV double circuit transmission line at Gouldsville would be realigned, moving it slightly south towards Long Point Road West and Gouldsville Road. This proposed realignment of the transmission line at Gouldsville as part of the amended project has been developed to further minimise impacts to threatened ecological communities, including the Central Hunter Grey Box – Ironbark Woodland threatened ecological community, listed as endangered under the NSW *Biodiversity Conservation Act 2016*.

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
	Localised easement widening for conductor swing	Section 4.5.1 of the EIS outlines that the operation of the transmission line would occur in a permanent 70-metre-wide easement.	Further development of the project design has identified localised areas of the transmission line easement where the span of conductors between transmission towers would 'swing' during periods of high wind, to a point where there is the potential that during these situations the conductors would extend outside of the 70-metre-wide operational easement. In consultation with Transgrid (as the preferred network operator for the project), the exhibited 70-metre-wide transmission line easement would be widened to be between 80 metres and around 140 metres wide in certain locations so that the transmission line assets stay wholly within the operational easement for the project.
Changes to substation infrastructure	Changes at Eraring substation	Section 4.2.3 in the EIS provides a general overview of the proposed upgrades at Eraring substation, which include: — expansion of the substation to accommodate the installation of new transformers — relocating generator connections from Eraring Power Station and installation/replacement of associated switchgear as required — relocation of the existing transformer spare unit — installation of new 500 kV/330 kV transformer units, augmentation of 500 kV/330 kV bays and associated switchgear and connections — adjustments to existing utilities and drainage infrastructure to accommodate the proposed substation expansion.	At Eraring substation, the amended project proposes to include: — a larger footprint for constructability, including for parking and the adjustment of utilities — substation generator connections on the existing hardstand area — modification works on the existing bench — new poles and adjustment of the existing generator connections into Eraring Power Station — localised undergrounding of the optical ground wire route by trenching between existing transmission towers.

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
Changes to intersections, access roads and access tracks	Changes to access tracks	Access requirements for construction and operation of the project were described in section 4.3.5 of the exhibited EIS. Based on the concept design and early construction planning, potential access routes, including access roads and access tracks within State forests, were identified and are listed in Table 4-7 and shown in Figure 4-10 of the exhibited EIS.	The amended project includes changes to access tracks proposed for use during construction and operation of the project, which have been identified through ongoing development of the project design and feedback received through consultation with landowners, stakeholders and government agencies. Construction of additional/changed sections of access tracks would be consistent with the construction methodology outlined in section 4.3.5 of the EIS. Changes to access tracks would be: — within State forests to provide a more suitable route for construction vehicles, improve access to the HTP corridor for clearing, and avoid the need to cross riparian zones — within Olney State Forest to minimise impacts to a number of threatened amphibian species and their habitat — on land that forms part of the Bulga mining complex to avoid a clean water diversion, keep access for the project separate from access to the mining complex, and avoid direct impacts to existing biodiversity offset areas — for the upgrades to existing transmission lines and towers to ensure access tracks are fit for purpose and to reduce impacts to landowners — off Putty Road to access the proposed realignment of the transmission line at Mount Thorley.

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
	Minor adjustments to the project impact area for intersection upgrades	Section 4.3.5 of the EIS noted that the project would rely on the use of existing public roads during construction and operation of the project. In several locations along the construction routes, upgrade works would be required, including at several intersections (which were listed in Table 4-10 of the EIS), to cater safely for the proposed construction traffic volumes and delivery of oversized equipment or construction material and ensure public road safety.	The assessment of the amended project as part of the revised traffic and transport impact assessment identified the need for an additional intersection upgrade at Jerrys Plains Road southbound off ramp / existing access track at Mount Thorley, as a result of the changes to access tracks associated with the change to transmission line alignment at Mount Thorley. In addition, revised turn warrant assessments were completed for the intersections required to be used for the construction of the project, which identified the need for different intersection treatments than what was included in the EIS for four intersections. This includes: — Freemans Drive / Martinsville Road (intersection ID I-23) – additional land acquisition to accommodate turning vehicle movements — Putty Road / existing access track (intersection ID I-31) – an eastbound merge lane along Putty Road — Cessnock Road / new access track (intersection ID I-37) – widening on Cessnock Road for acceleration and deceleration lanes — Golden Highway / Gouldsville Road (intersection ID I-07), to incorporate a channelised right hand turn. The need for different intersection treatments has resulted in minor adjustments to the project impact area at these locations.

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
	Adjustments to the proposed access routes for construction	Table 4-7 of the EIS provided a summary of the proposed access routes to be used for construction of the project. This list was based on the concept design for the project and early construction planning.	Adjustments to the proposed access routes to be used for construction have been made following a review of the proposed construction methodology for the project. This included the addition of some construction routes now required and the removal of some construction routes no longer required. The complete list of proposed access routes for construction is provided in Table A-7 of the updated project description (*refer to Appendix A (Updated project description*) of the amendment report.

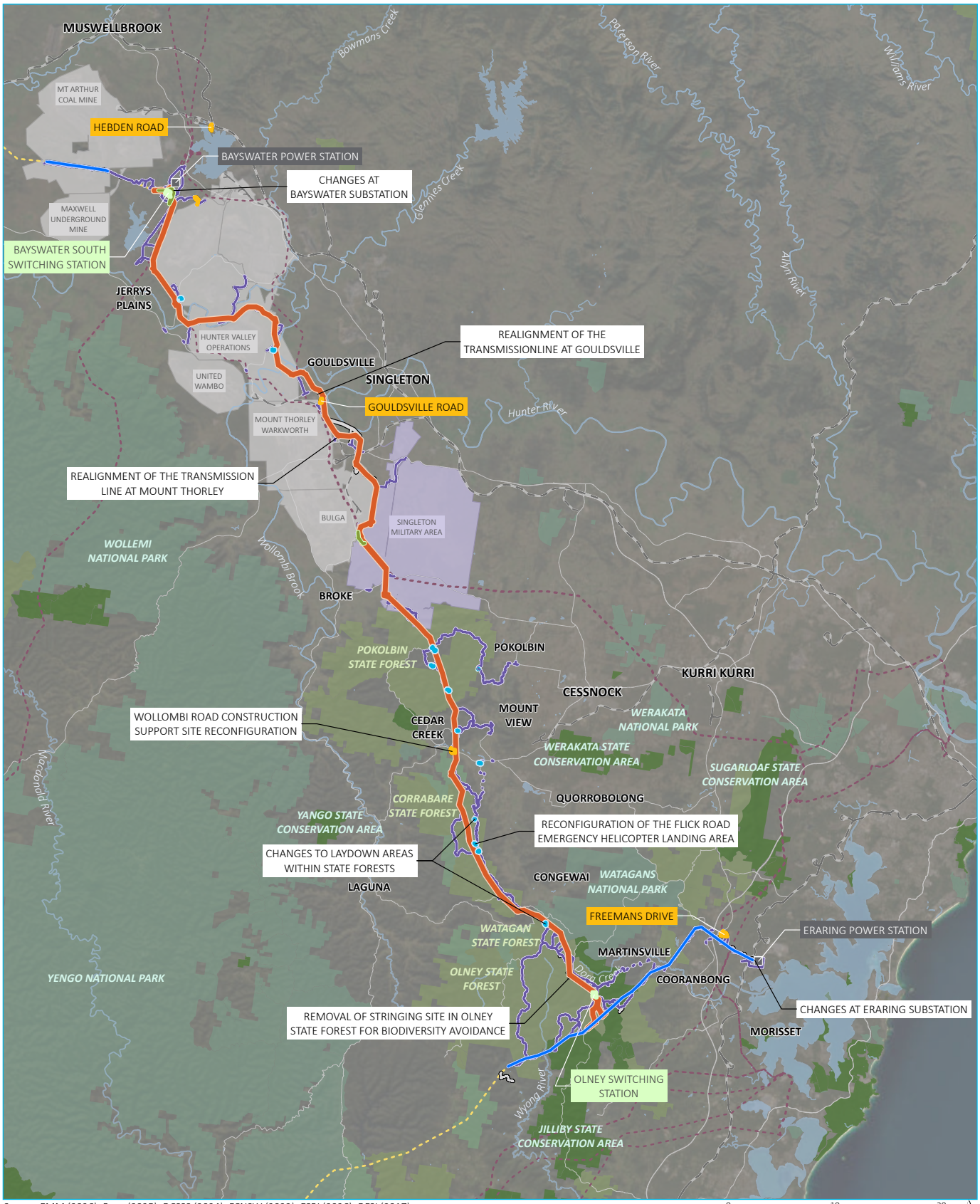
Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
Changes to construction methods and facilities	Reconfiguration of construction support sites and temporary worker accommodation	Section 4.3.6 and section 4.3.7 of the EIS describes the construction support sites and temporary worker accommodation that would be established to support the construction of the HTP. The EIS assumed a peak construction workforce of 830 workers, with allowance for 780 workers to be housed in temporary worker accommodation at the Hebden Road, Gouldsville Road and Freemans Drive construction support sites.	Further consideration of the construction methodology for the project along with feedback received during exhibition of the EIS has identified the need to: — remove provisions for temporary worker accommodation facilities at the Gouldsville Road construction support site — reconfigure the Wollombi Road construction support site to include temporary worker accommodation with capacity to house up to 300 workers. Consistent with other temporary worker accommodation facilities for the project, the temporary worker accommodation at Wollombi Road would be operational 24 hours per day 7 days per week. The amended project would therefore include a change in construction activities proposed to be carried out at both the Gouldsville Road construction support site and the Wollombi Road construction support site. At Gouldsville Road, this would include a decrease in light vehicle movements in and out of the construction support site and reduced operating hours. At the Wollombi Road construction support site, this would include an increase in light vehicle movements in and out of the construction support site and extended operating hours at the construction support site, resulting in potential changes to amenity impacts. This amendment would not change the assumed peak construction workforce.

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
	Changes to laydown areas within State forests	Figure 4-2 of the exhibited EIS shows the locations of laydown areas located outside the HTP corridor. Laydown areas identified in the exhibited EIS as being located within the State forests include: — Broken Back Road in Cedar Creek — Campbell Spring Trail in Cedar Creek — Trig Road/Mf1 Road in Corrabare — Trig Road/Crumps Road in Corrabare — Wollombi Forest Road in Ravensdale.	Feedback received from the Forestry Corporation of NSW during continued development of the project design identified an alternative arrangement of laydown areas for construction within the State forests. As a result, the amended project includes: — removal of the laydown areas included in the exhibited EIS on: — the intersection of Trig Road/Mf1 Road/ North Road in Corrabare State Forest — Wollombi Forest Road (south of Halls Road) in the State Forest of the Watagan Mountains — inclusion of two new laydown areas within the State forests, located near: — the Trig Road/Flick Road intersection in the Corrabare State Forest — the Wollombi Creek Road/Burma Road intersection in the State Forest of the Watagan Mountains. These new laydown areas would perform the same functions as laydown areas described in the exhibited EIS. However, they would result in changes to the project impact area and disturbance area compared to the EIS. Laydown areas would remain as included in the exhibited EIS at: — Broken Back Road in Cedar Creek — Campbell Spring Trail in Cedar Creek — Wollombi Forest Road in Ravensdale.

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
	Reconfiguration of the Flick Road emergency helicopter landing area in response to feedback received from Forestry Corporation of NSW	The construction methodology described in the exhibited EIS noted the project would include the provision of emergency helipads at laydown areas on Wollombi Forest Road and Flick Road for helicopters to land in the event of an emergency.	Continued construction planning and consultation with Foresty Corporation of NSW identified that the arrangement of the emergency helicopter landing site along Flick Road would need to be reconfigured so that its design complements the natural site topography and terrain. As such, the amended project would include the reconfiguration of the emergency helicopter landing site at Flick Road. The amended Flick Road emergency helicopter landing site would result in a change in the disturbance area and project impact area.
	Removal of stringing site in Olney State Forest to minimise impacts to threatened amphibian species	Section 4.3.2 of the EIS outlines the work that would be carried out within the HTP corridor, which includes stringing sites. It is noted that stringing sites would be used for the preparation, assembly and operation of stringing equipment to connect the transmission line to the towers. Stringing sites would be positioned along the HTP corridor at various locations, including in the Olney State Forest north of the Olney switching station.	In response to consultation carried out with species experts and regulators for the biodiversity assessment of the project, refinements to the project to reduce the extent of vegetation clearing have been made within the exhibited HTP corridor in the Olney State Forest to the north of the proposed Olney switching station. These changes have been made to minimise impacts to threatened species, particularly frog species such as the Littlejohn's Tree Frog, within the Olney State Forest. As a result of these changes, the proposed stringing site to the north of the Olney switching station has been removed to minimise disturbance in this location. Alternative construction methodologies would be implemented to connect the transmission line to the towers at this location.

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
	Changes to construction plant and equipment types and locations	Section 4.4.2 of the EIS outlines the plant and equipment required as part of construction for the project.	It is proposed to amend the list of plant and equipment required during construction of the project to also include the following: — diesel generators located at construction support sites and laydown areas — crushing and screening plant located at construction support sites and at laydown areas within State forests — washdown facilities located at construction support sites — wastewater treatment plants at construction support sites. These additional plant and equipment have been added to the proposed list to be used during construction in response to feedback from potential contractors.
Refinements			
Changes to substation infrastructure	Minor changes at Bayswater substation	Section 4.2.3 of the EIS includes a general overview of the proposed upgrades to the Bayswater substation as part of the project, including: — works within the substation to trench and connect communications infrastructure to Bayswater South switching station via underground fibre cable — modifications and upgrades to protection, control, automation and communication equipment. Section 4.2.3 of the EIS also includes a general overview of the proposed construction of Bayswater South switching station. Space would be provided at Bayswater South switching station to allow for additional switching station infrastructure, such as additional line shunt reactors and switching station bays, and connections for additional transmission lines in the future.	Based on continued development of the project design, it has been identified that the project is required to include an underground fibre optic communication connection between the Bayswater substation and the Bayswater South switching station. As part of the amended project, this underground fibre optic connection would be located in a trench within the exhibited HTP corridor. The trench would require excavation of about 200 metres in length and would be around 0.6 metres wide and one metre deep. Changes would also include the fitout of two additional switching bays at Bayswater South switching station. This would occur within the exhibited footprint of the Bayswater South switching station.

Project feature	Amendment / refinement	Summary of exhibited project	Summary of amendment/refinement
Changes to construction methods and facilities	Changes to the disturbance area at Olney	As described in section 7.3 of the EIS, the assessment of biodiversity impacts includes a disturbance area within the project impact area to provide a more accurate estimation of the likely magnitude of vegetation clearance required, and any associated biodiversity impacts. The disturbance area takes a more precise approach than the project impact area and represents areas of direct impacts such as full clearing at transmission towers and partial clearing within the transmission line easement. This approach was adopted to avoid a substantial overestimation of the likely biodiversity impacts and the associated quantity of biodiversity offsets required.	In response to consultation carried out with species experts and regulators for the biodiversity assessment of the project, refinements to the project to reduce to the extent of vegetation clearing have been made within the exhibited HTP corridor in the Olney State Forest to the north of the proposed Olney switching station. These changes have been made to minimise impacts to threatened species and their habitat, particularly a number of amphibian species within the Olney State Forest, including the Littlejohn's Tree Frog. These refinements within Olney State Forest have included adjustments to the disturbance area used to assess the potential impacts to biodiversity. While changes have been made to the disturbance area at this location, the HTP corridor would remain the same within the Olney State Forest as the EIS, and the same approach to vegetation management in the disturbance area as the EIS would apply.



Source: EMM (2026); Beca (2025); DCSSS (2024); FCNSW (2022); ESRI (2026); DFSI (2017)

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KEY

- Exhibited HTP project impact area
- Amended project impact area
  - HTP corridor
  - Switching station
  - Construction support site
  - Laydown area
  - Adjustment to existing transmission line
  - Upgrades to existing transmission line
  - Access tracks, road upgrades and intersection upgrades
- Existing environment
  - Power station
  - 330 kV transmission line
  - 500 kV transmission line
  - Railway
  - Major road
  - Named watercourse
  - Named waterbody
  - State forest
  - NPWS reserve
  - State conservation area
  - Defence
  - Energy

Project overview

Hunter Transmission Project
Amendment Report
Figure 2.1

EMM
creating opportunities

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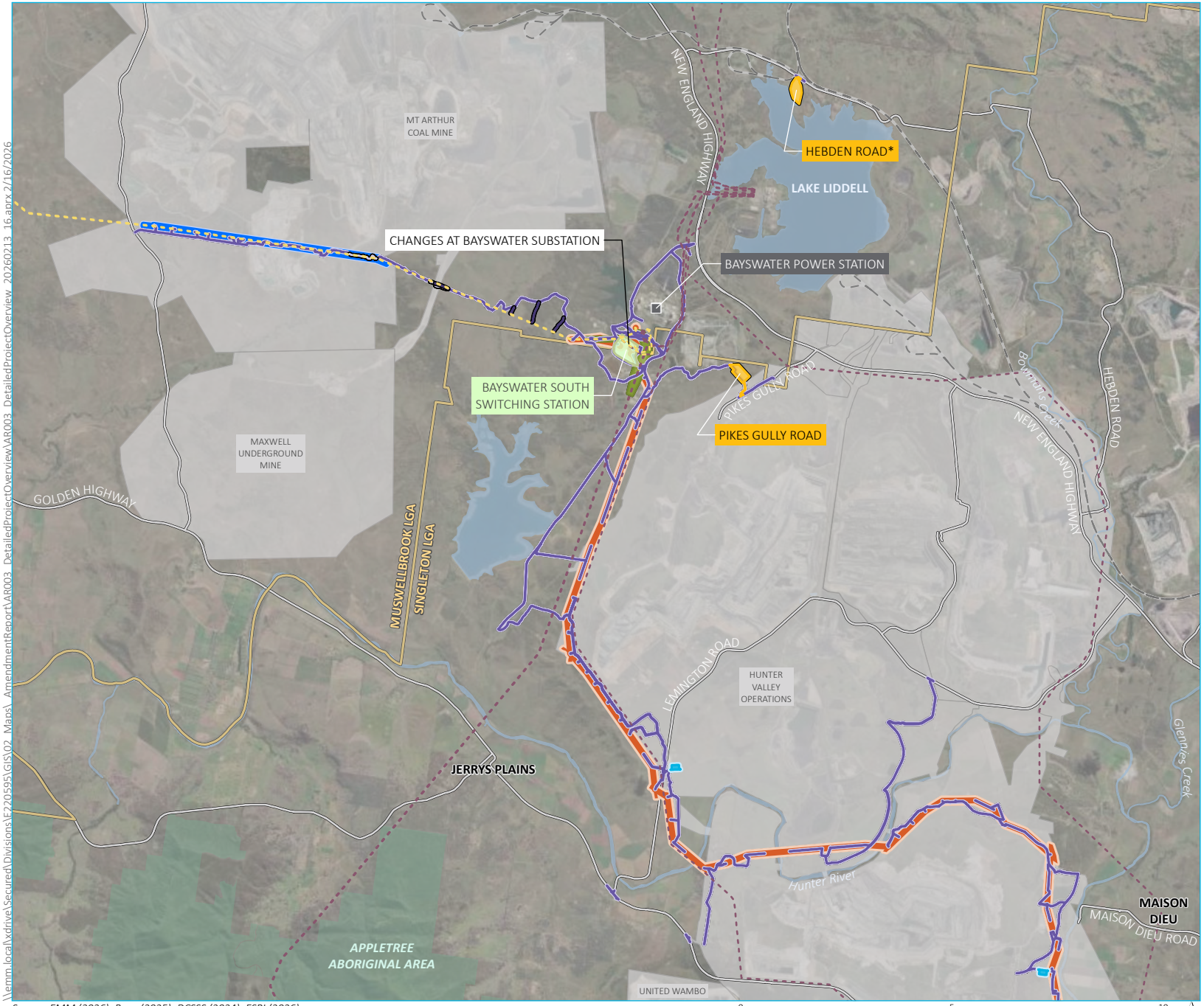

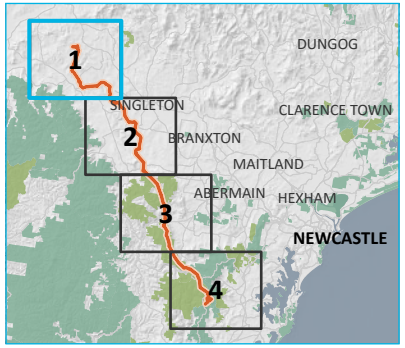

KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades
- New access track
- Access tracks no longer required

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- Energy
- Local government area

Detailed amended project overview
Map 1 of 4

Hunter Transmission Project
Figure 2.2

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

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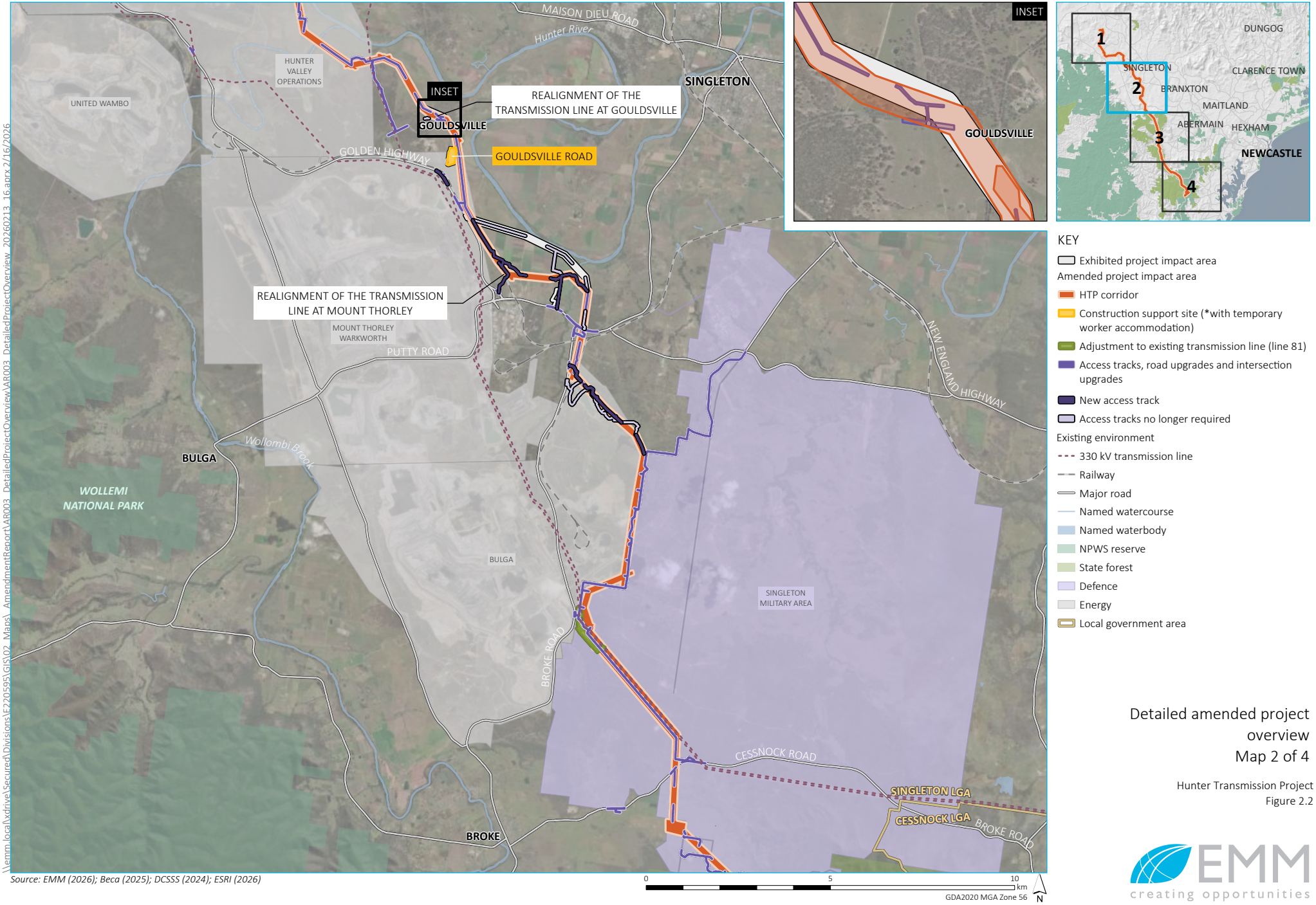

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Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

Detailed amended project overview
Map 2 of 4

Hunter Transmission Project
Figure 2.2

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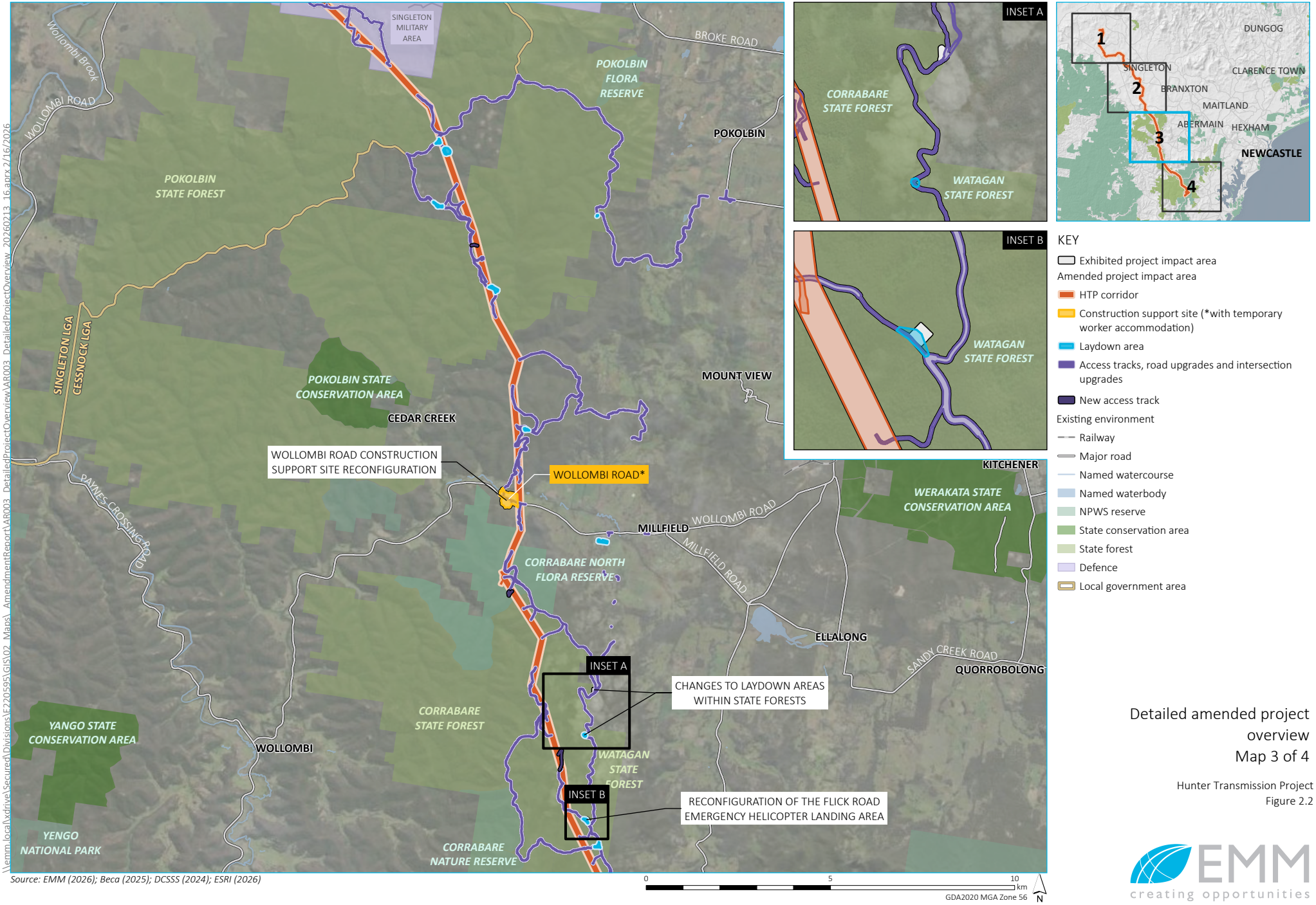

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Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

Detailed amended project overview
Map 3 of 4

Hunter Transmission Project
Figure 2.2

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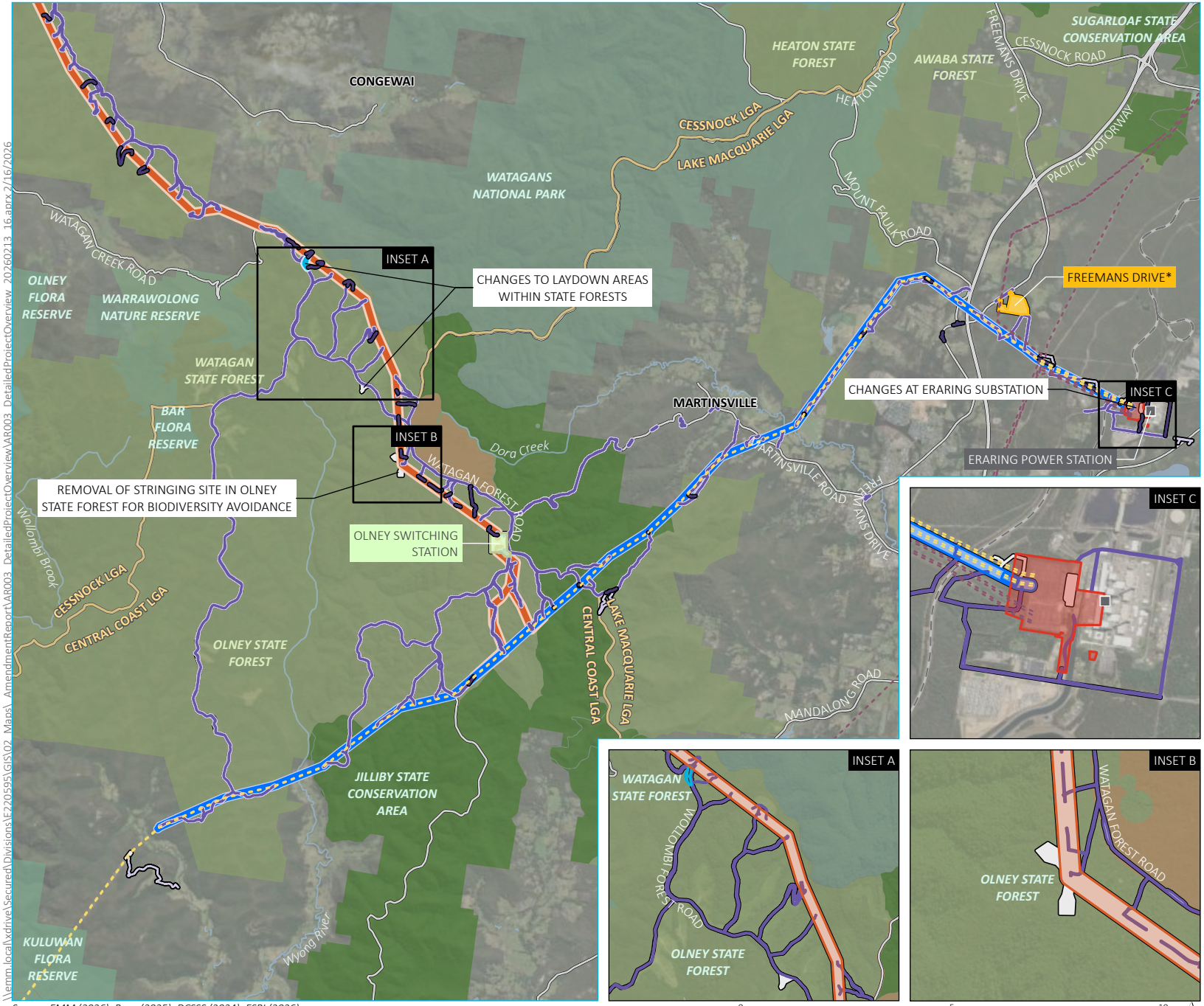

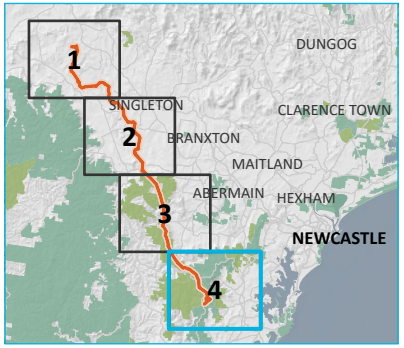

KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades
- New access track
- Access tracks no longer required

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Recreation area
- Local government area

Detailed amended project overview
Map 4 of 4

Hunter Transmission Project
Figure 2.2

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

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3 Assessment methodology

3.1 Government plans, policies and guidelines

This aquatic biodiversity impact assessment has been prepared with reference to the following plans/policies/guidelines:

- *Policy and Guidelines for Fish Habitat Conservation and Management* (NSW DPI, 2013)
- *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Watercourse Crossings* (Fairfull & Witheridge, 2003)
- *Aquatic Ecology in Environmental Impact Assessment – EIA Guideline* (NSW Department of Planning, 2003).

In addition to the listed policies and guidelines, the legislative requirements were also considered during the assessment (see sections 3.1.1 and 3.1.2).

3.1.1 Australian legislation

3.1.1.1 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined in the Act as matters of national environmental significance (MNES). There are 9 MNES to which the EPBC Act applies. These are:

- world heritage sites
- national heritage places
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- listed threatened species and ecological communities
- migratory species
- commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development.

A 'significant impact' is defined under the EPBC Act as 'an impact that is important, notable, or of consequence, having regard to its context or intensity' (Department of the Environment, 2013). A search of EPBC listed aquatic species within the biodiversity study area was completed, however, no listed species are likely to inhabit the project impact area as outlined in Appendix B.

The Australian Government Department of Climate Change, Energy, the Environment and Water declared the HTP (EPBC 2024/09874) to be a controlled action on 13 August 2024 in accordance with the EPBC Act due to likely impacts on species and ecological communities and Commonwealth land.

3.1.2 State legislation

3.1.2.1 Fisheries Management Act 1994 (FM Act)

The NSW *Fisheries Management Act 1994* (FM Act*)* is the primary piece of legislation to conserve important aquatic values and develop NSW fishery resources. This Act has 8 main objectives, however, the following 3 are the most pertinent to this project and assessment:

- conserve fish stocks and key fish habitats (KFH)
- conserve threatened species, populations and ecological communities of fish and marine vegetation
- promote ecologically sustainable development, including the conservation of biological diversity.

Part 7 of the FM Act relates to the protection of fish and aquatic habitats with the objective of conserving the biodiversity of fish and aquatic vegetation.

Schedule 4, 4A and 5 of the FM Act list the threatened aquatic species, communities and populations have been considered in this assessment.

3.1.2.2 Water Management Act 2000

The NSW *Water Management Act 2000* (WM Act) is the main piece of legislation used to manage water in NSW. The main objective of the WM Act is to protect water resources for the State to benefit both short and long-term water use. The objectives that are related to the management of aquatic ecosystems include:

- to apply the principles of ecologically sustainable development
- to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality
- to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna,
- to encourage best practice in the management and use of water.

The WM Act underpins approvals related to water management. The approvals are listed in part 3 of the WM Act. The WM Act aims to protect the health of aquatic environments, therefore if there are any adverse impacts to water quality, this could result in the decrease of available aquatic habitat.

3.1.2.3 Environmental Planning and Assessment Act 1979 (EP&A Act)

The NSW *Environmental Planning Act 1979* (EP&A Act) provides the statutory controls that establish a framework governing what development is permitted or prohibited, and the processes for how assessment and gaining approval for development is undertaken in NSW. It is supported by the Environmental Planning and Assessment Regulation 2000 which provides additional detail and gives effect to the legislation.

Of relevance to the project, part 5 of the EP&A Act deals with infrastructure and environmental impact assessment. Division 5.2 of part 5 sets out the requirements for the assessment and approval of critical State significant infrastructure (CSSI). The Minister for Planning and Public Spaces has declared the project to be a CSSI project under section 5.13 of the EP&A Act.

3.2 Biodiversity study area

The biodiversity study area for the aquatic biodiversity impact assessment includes watercourses that cross the project impact area and are known to contain KFH. A desktop assessment included a 5-kilometre buffer search surrounding the project impact area to determine the potential for threatened species to occur within the crossed watercourses.

Surveyed watercourses were selected if they contained potential habitat for a threatened species or were more likely to be impacted by the project, as identified in the desktop assessment. The final selection for the survey locations was determined by which watercourses were accessible (i.e. land access, safety). The watercourses assessed extended from Lemington Road to Watagan National Park (Figure 4.2).

3.3 Desktop assessment

To determine the need for an EPBC Act or FM Act threatened aquatic species assessment, a desktop study was undertaken. The study included a 5-kilometre buffer search surrounding the biodiversity study area.

3.3.1 Threatened species identification

To identify the nationally threatened aquatic fauna protected under the EPBC Act and the FM Act a search of the biodiversity study area using the Protected Matters Search Tool (PMST), Fisheries NSW spatial data portal and Atlas of Living Australia was conducted in September 2024 (DCCEEW, 2024; DPI, 2024; Atlas of Living Australia, 2024). Only the species that are likely or known to occur within the biodiversity study area were assessed against the likelihood of occurrence (Table 3.1).

3.3.2 Identification of key fish habitat and watercourse information

To identify the KFH a search of the biodiversity study area using the Fisheries NSW spatial data portal was conducted in September 2024 (DPI, 2024). This publicly available data provides information of the location of both KFH and threatened species-specific habitat.

3.3.3 Strahler order

The Strahler order is a classification system used to describe the hierarchy of a watercourse. Each watercourse is assigned an order, which is determined by the number of tributaries that flow into that watercourse. Larger watercourses have a higher Strahler order as more tributaries feed into that system (NSW DPI, 2025). To identify the Strahler order of the watercourses within the biodiversity study area, the SEED database was accessed (NSW DCCEEW, 2022).

3.3.4 Policy review

The aquatic habitats within the biodiversity study area were assessed against the following policy and guidelines for fish habitat conservation and management:

- *Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013)* (NSW DPI, 2013)
- *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Watercourse Crossings* (Fairfull & Witheridge, 2003)
- *Aquatic Ecology in Environmental Impact Assessment – EIA Guideline* (NSW Department of Planning, 2003).

Guidance within these policies was used to suggest mitigation and management measures for the project based on the quality of the watercourses assessed in the desktop assessment.

3.3.5 *Likelihood of occurrence assessment*

The likelihood of occurrence of threatened aquatic species, ecological communities and populations was determined based on the criteria outline in Table 3.1. This method considers the habitat requirements of the species, outcomes of an on-site habitat assessment, the state of habitat connectivity, records of historical and recent presence as identified in the desktop assessment.

Relevant databases were searched in September 2024 for records of threatened aquatic flora and fauna species and significant aquatic habitat (i.e. KFH). This review was used to prepare a list of threatened or migratory aquatic species and any significant habitat previously recorded or predicted to occur in the biodiversity study area. The likelihood of occurrence assessment was subsequently updated based on the field assessment results.

Table 3.1 Likelihood of occurrence criteria for threatened flora and fauna species

Likelihood	Description
Low	Species considered to have a low likelihood of occurrence include species not recorded during the field surveys that fit one or more of the following criteria: — have not been recorded previously in the biodiversity study area and for which the biodiversity study area is beyond the current distribution range — rely on specific habitat types or resources that are not present in the biodiversity study area — are considered locally extinct.
Moderate	Species considered to have a moderate likelihood of occurrence include species not recorded during the field surveys that fit one or more of the following criteria: — have infrequently been recorded previously in the biodiversity study area — use habitat types or resources that are present in the biodiversity study area, although generally in a poor or modified condition — are unlikely to maintain sedentary populations, however, may seasonally use resources within the biodiversity study area opportunistically during variable seasons or migration.
High	Species considered to have a high likelihood of occurrence include species not recorded that fit one or more of the following criteria: — have frequently been recorded previously in the biodiversity study area — use habitat types or resources that are present in the biodiversity study area, that are abundant and/or in good condition within the biodiversity study area — are known or likely to maintain resident populations within the biodiversity study area — are known or likely to visit the biodiversity study area during regular seasonal movements or migration.

3.4 Field survey

Following the desktop assessment, 8 survey sites located along 7 watercourses intersecting the project impact area were selected for adetailed field assessment of aquatic biodiversity values. Of these sites, one (Jilliby Creek), was unable to be accessed due to health and safety risks. The assessment of Jilliby Creek was therefore completed using desktop research.

Watercourses were selected as they were deemed to either contain habitat for a threatened species, were more likely to be impacted by the project (i.e. access road crossings) or were a major watercourse known to have ecological importance. The watercourses assessed during the field survey is identified in Table 3.2 (shown in Figure 4.2).

The field survey assessment was conducted over a 3-day period, between 10–12 September 2024 by Tia Gabruch (aquatic ecologist) who has more than 10 years experience working in freshwater ecology.

Table 3.2 Watercourses assessed

Site (SW ID)	Watercourse	Location	Stream Order
01	Hunter River	-32.516961, 150.937268	9
02	Hunter River	-32.511382, 150.976753	9
05	Wollombi Brook	-35.554303, 151.029558	8
07	Loader Creek	-32.621022, 151.121591	4
8a	Monkey Creek	-32.751977, 151.172002	5
11/12	Congewai Creek	-32.878187, 151.219330	6
13c	Watagan Creek	-33.029977, 151.319049	4

Macroinvertebrates or aquatic vertebrates were not collected as a part of this assessment and only incidental observations were recorded.

Habitat characterisation, KFH assessment, riparian health and water quality were assessed at each location to determine the ecological importance of each watercourse (see section 4.3) The results were used to determine the likelihood of aquatic species occurrence/presence.

3.4.1 Habitat assessment

During the survey the habitat characteristics of each surveyed watercourse was identified. The presence, absence and/or quality of each habitat characteristic determined the overall quality of the aquatic ecosystem. Broad measurement and descriptions of the following habitat characteristics were recorded to determine the quality of attributes of the local ecosystem:

- riparian vegetation condition, including cover and presence of introduced plants and weeds
- morphological description of the stream (i.e. stream gradient, channel morphology)
- instream features (i.e. snags, aquatic vegetation, rocks, woody debris)
- description of bank features (i.e. stability, morphology)
  - the banks of the watercourse are defined as right or left relative to a view downstream
- watercourse measurements (i.e. wetted and bank full width, flow velocity)
- identification of sensitive habitat features as described by Department of Primary Industries (2013)
- identification of fish habitat features
- fish passage barriers.

A reach of around 400 metres at each survey site was assessed. This varied for Loader Creek and Congewai Creek due to access constraints. For these sites, 1 upstream location and 2 downstream locations were assessed. The upstream location acts as a reference point for the project, whereas the downstream sample points were used to determine the extent of potential impacts from the project on the watercourse.

Photographs were taken at all sites to provide a record of habitat conditions (Table 3.2).

3.4.2 Key fish habitat

The *Policy and Guidelines for Fish Habitat Conservation and Management* (NSW DPI, 2013) defines fish habitat sensitivity as “importance of the habitat to the survival of fish”. The watercourse class and sensitivities of fish habitat are determined by the functionality of the watercourse as fish passage (NSW DPI, 2013). Using the characteristics outlined in Table 3.3 and Table 3.4, each watercourse was assigned a sensitivity ranking (watercourse type) and water classification (watercourse class).

The combination of the type and class of each watercourse assigned to the surveyed watercourses has informed the impact assessment and identification of the required mitigations and/or potential design changes that will be required to ensure KFH is protected and maintained as per the requirements of the FM Act.

Table 3.3 KFH classifications

Fish habitat sensitivity	Characteristics of watercourse type (freshwater only)
Type 1 – Highly Sensitive	— Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia — Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in 2 dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants — Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act.
Type 2 – Moderately Sensitive	— Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in type 1 — Weir pools and dams up to full supply level where the weir or dam is across a natural watercourse.
Type 3 – Minimal Sensitive	— Unstable or unvegetated sand or mud substrate — Freshwater habitats not included in Types 1 or 2 — Ephemeral aquatic habitat not supporting native aquatic or wetland vegetation.

Source: DPI, 2013

Table 3.4 Classification of watercourses for fish passage

Classification	Characteristics of watercourse class
Class 1 – Major KFH	Marine or estuarine watercourse or permanently flowing or flooded freshwater watercourse habitat of a threatened or protected fish species or 'critical habitat'.
Class 2 – Moderate KFH	Non-permanently flowing stream, creek or watercourse with clearly defined bed and banks with semi-permanent to permanent waters in pools or is connected wetland areas. Freshwater aquatic vegetation is present. Type 1 and 2 habitats present.
Class 3 – Minimal KFH	Named or unnamed watercourse with intermittent flow and sporadic refuge, breeding or feeding areas for aquatic fauna. Semi-permanent pools form within the watercourse or adjacent wetlands after a rain event. Otherwise, any minor watercourse that interconnects with wetlands or other class 1–3 fish habitats.
Class 4 – Unlikely KFH	Watercourse (generally unnamed) with intermittent flow following rain events only, little or no defined drainage channel, little or no flow or free-standing water or pools post rain events (e.g. dry gullies or shallow floodplain depressions with no aquatic flora present).

Source: DPI, 2013

3.4.3 Water quality

In-situ water quality measurements were taken at each survey location using a handheld YSI ProDSS. Water quality measurements were obtained at around 2/3 of the watercourses' depth and recorded turbidity (NTU), dissolved oxygen (%), pH, temperature (°C) and conductivity (µs/cm). These measurements were used to determine if the water quality at each survey site could support fish and other aquatic species.

4 Existing environment

4.1 Overview

The HTP corridor runs mostly through power station, mining and government land between Bayswater and Broke in the upper Hunter region. It then traverses the Pokolbin, Corrabare, Watagan and Olney State Forests in the lower Hunter region (see Figure 4.2).

The proposed new transmission line would connect the new the Bayswater South switching station to the existing 500 kV transmission line near the Bayswater power station and the new Olney switching station to the existing 500 kV transmission line between Eraring and Kemps Creek.

The project is located within the Hunter-Central Rivers catchment and Hunter River sub-catchment. The project will cross 25 named watercourses as well as many unnamed lower order watercourses (88% being Strahler Order <2). Of these, 4 were determined to contain mapped habitat for aquatic Southern purple spotted gudgeon, which is listed as endangered under the FM Act.

This Aquatic Assessment is limited to assessing impacts to FM Act species. Assessments pertaining to groundwater dependant ecosystems (GDE) and threatened semi-aquatic fauna are discussed in the Biodiversity Development Assessment Report (BDAR).

4.2 Desktop assessment

4.2.1 Catchment and drainage

The HTP is located within the Hunter River and the Tuggerah Lakes and Lake Macquarie catchments, which form part of the Hunter-Central Rivers catchment. This area encompasses around 37,000 km^2 of the east coast of NSW (NSW DPIRD, n.d.). For management purposes the Hunter-Central Rivers catchment is further divided into 3 sub-catchments:

- **Tuggerah Lakes and Lake Macquarie sub-catchment**: extends from the outskirts of Cardiff in the north to just beyond Tumbi Umbi along the coast to the south.
- **Hunter sub-catchment:** includes the Hunter River and all tributaries.
- **Hawkesbury sub-catchment**: extends to the southern outskirts of Newcastle in the north and to Brisbane Water along the coast.

The majority of the watercourses (including the field surveyed watercourses) assessed are located within the Hunter sub-catchment, while all watercourses in the south eastern extent are in the Tuggerah Lakes and Lake Macquarie sub-catchment (see Figure 4.1 and Figure 4.3).

All potential watercourses within the Tuggerah Lakes and Lake Macquarie sub-catchment tend to have a lower Strahler order, except for Dora Creek and Jigadee Creek, which had Strahler orders of 5 and 6.

Water and habitat quality of the Hunter sub-catchment is impacted by various industries within the region particularly agricultural and mining activities and to a lesser extent, infrastructure developments, forestry works and urban development. These anthropogenic activities have modified the natural aquatic environment substantially, including major infrastructure developments, roads, rail and agriculture. As a result, the catchment contains several poor (low water quality and habitat value) to good (high water quality and habitat value) quality watercourses that will be crossed by the HTP.

Most tributaries within the Hunter sub-catchment terminate at the Hunter River, which then eventually flows into the Tasman Sea. The surveyed watercourses directly connected to the Hunter River are Loder Creek and Wollombi Brook and land use surrounding these watercourses are highly modified and/or disturbed as a result of agricultural activity, mining activities or urban development. The watercourses in this area have the potential to have modified banks, riparian vegetation inundated with invasives, poor water quality from agricultural and mining run-off and be subjected to seasonal flooding, which impacts the suitability for good aquatic habitat.

Wollombi Brook is a high order watercourse that is fed by a number of tributaries, including surveyed watercourses Watagan Creek, Monkey Place Creek and Congewai Creek. Monkey Place Creek and Congewai Creek consist of gently sloping rural land that is largely cleared. The land use in the project impact area from the northwest end to the southeast before Pokolbin State Forest consists mostly of cleared rural properties and coal mines. Very few patches of remnant bushland occur within this section of the catchment area. The project impact area is dominated by surface runoff from rainfall which concentrates into defined watercourse catchments. Watagan Creek is located within national, State and conservation parks, that are used for both public recreation and forestry industries. The watercourses within this area remain largely intact as they are not as influenced by anthropogenic activities.

Dora Creek is a watercourse located at the southeast end of the project impact area. Unlike the rest of the watercourses within the project impact area, Dora Creek and associated tributaries terminates at Lake Macquarie and is therefore part of the Tuggerah Lakes and Lake Macquarie sub-catchment (NSW DPI, 2006).

Historic records of rainfall and flood events indicate that runoff is typically confined to the main channels within the Hunter sub-catchment and quickly flows down to the lower portions of the catchments in the project impact area. Water quality, quantity and velocity of flows within the project impact area are influenced by agricultural activities. Vegetation removal, agriculture, de-snagging, and construction of in-stream dams has affected the physical stability of the watercourses within the project impact area and streambank erosion is common, particularly in the north of the project impact area.

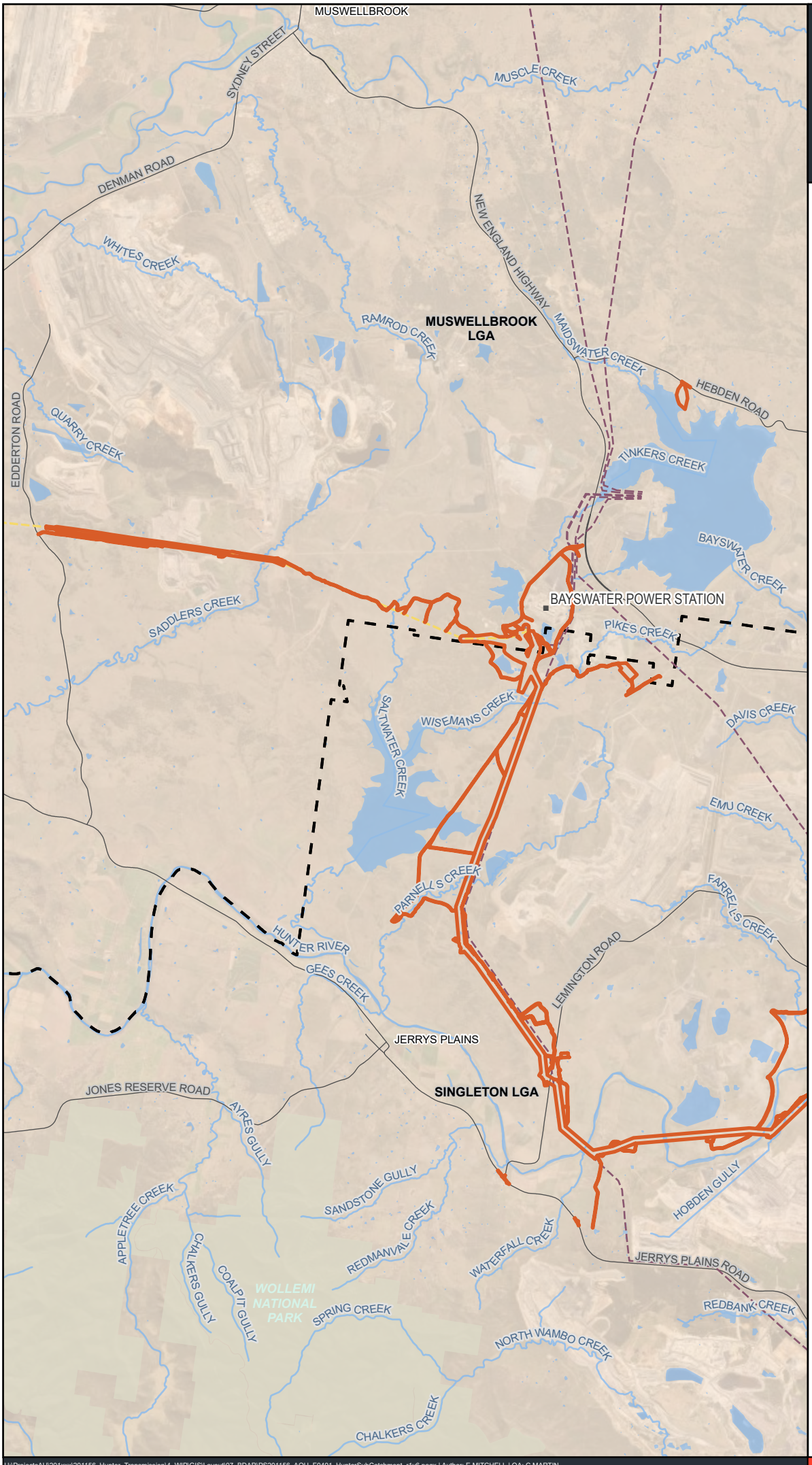
Watercourses throughout HTP are mapped as KFH, indicating that the Hunter River and associated tributaries provide habitat for fish and is likely to support a healthy and stable fish population (see section 3.4.2).

4.2.2 Aquatic biodiversity in Hunter-Central Rivers

The Hunter-Central Rivers catchment spans a large area and contains waterbodies varying in size, health and habitat characterisation throughout its extent. This variety gives rise to an area that can support high biodiversity, particularity of water dependant fauna. Aquatic fauna tends to be extremely sensitive to changes in water quality and health, therefore a plethora of species can indicate a healthy aquatic ecosystem.

Fifty-eight species of frogs are known to inhabit the Hunter-Central Rivers catchment along with a number of semi-aquatic reptiles (i.e. water dragons and turtles) and semi-aquatic mammals (i.e. platypus (*Ornithorhynchus anatinus*), water rats (*Hydromys chrysogaster),* and swamp rats (*Rattus lutreolus*)) (NSW DPI, 2006). Information specific to such semi-aquatic species (amphibians, reptiles, birds and mammals) has been discussed in the BDAR (WSP, 2025).

Watercourses within the Hunter River region contain mapped KFH inhabited by a number of protected marine, estuarine and freshwater species such as black cod (*Epinephelus daemelii*), weedy seadragon (*Phyllopteryx aeniolatus*), southern purple spotted gudgeon and the Darling River hardyhead (*Craterocephalus amniculus)* (NSW DPI, 2006). As such, fauna indicators suggest this catchment is a healthy and diverse aquatic ecosystem.



Hunter Transmission Project Biodiversity Development Assessment Report

Figure 4.1
Hunter-Central River Sub-Catchments

Legend

- Biodiversity study area

Existing environment

- Road
- Power station
- 330 kV transmission line
- 500 kV transmission line
- Named watercourse
- Waterbody
- NPWS reserve
- State forest
- Local government area

Hunter/Central river subcatchments

- HUNTER

0 1 2
Kilometres

Coordinate system: GDA2020 MGA Zone 56
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Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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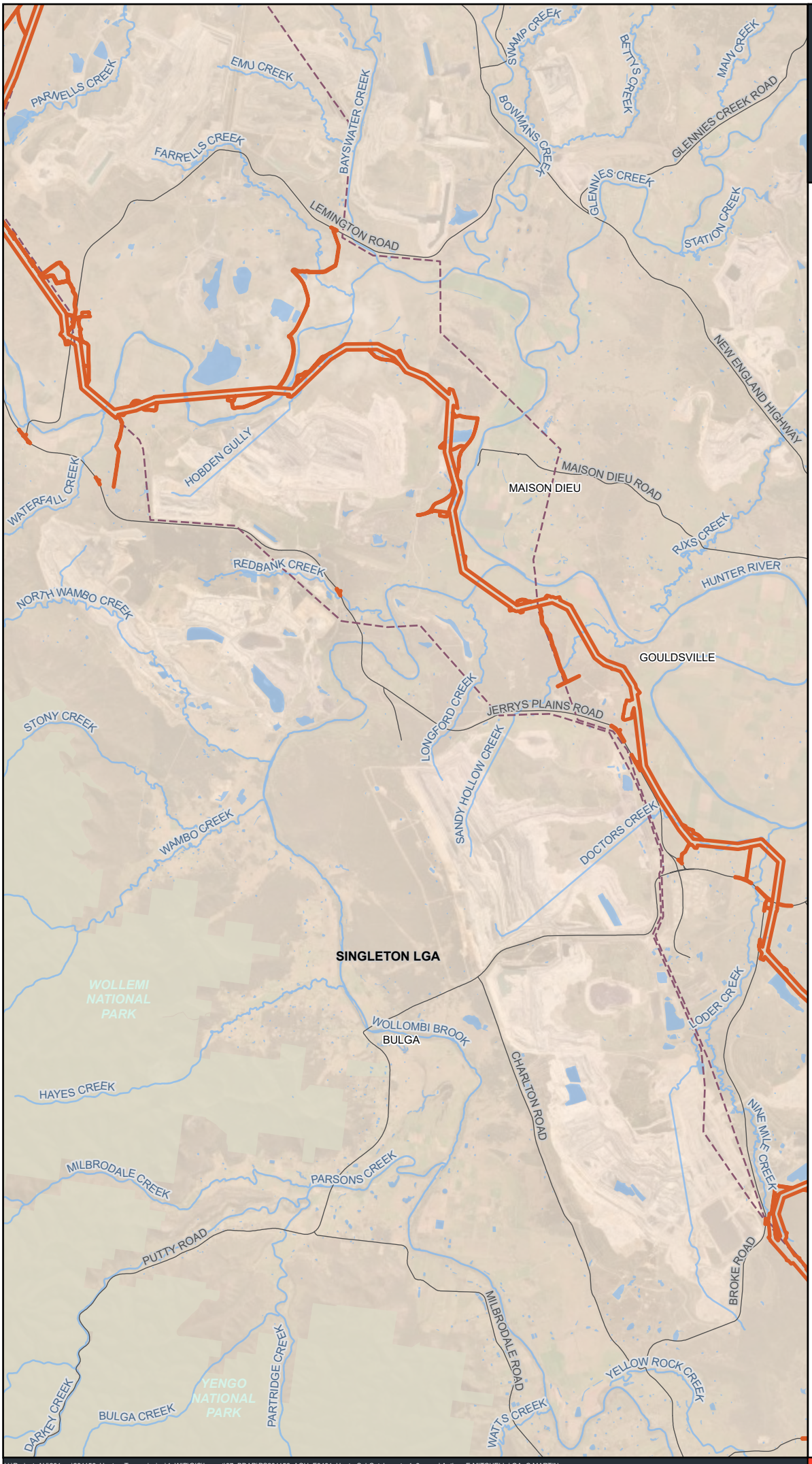

Hunter Transmission Project
Biodiversity Development Assessment Report

Figure 4.1
Hunter-Central River Sub-Catchments

Legend

- Biodiversity study area

Existing environment

- Road
- 330 kV transmission line
- Named watercourse
- Waterbody
- NPWS reserve
- Local government area

Hunter/Central river subcatchments

- HUNTER

0 1 2
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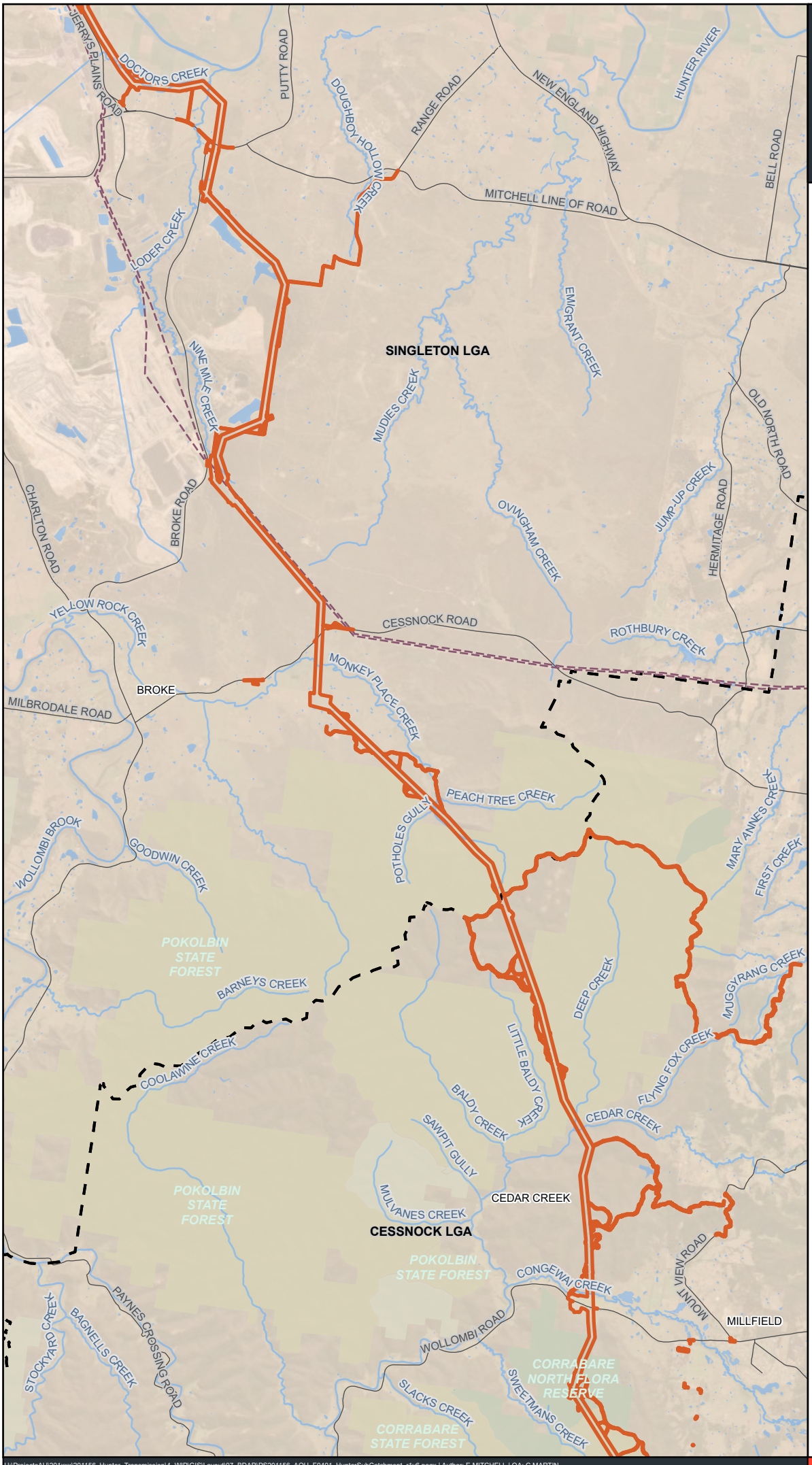

Hunter Transmission Project Biodiversity Development Assessment Report

Figure 4.1
Hunter-Central River Sub-Catchments

Legend

- Biodiversity study area

Existing environment

- Road
- 330 kV transmission line
- Named watercourse
- Waterbody
- NPWS reserve
- Flora reserve
- State forest
- Local government area

Hunter/Central river subcatchments

- HUNTER

0 1 2
Kilometres

Coordinate system: GDA2020 MGA Zone 56
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GDA 2020 1:125,000 Date: 6/01/2026

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Hunter Transmission Project
Biodiversity Development Assessment Report

Figure 4.1
Hunter-Central River Sub-Catchments

Legend

- Biodiversity study area

Existing environment

- Road
- 330 kV transmission line
- Named watercourse
- Waterbody
- NPWS reserve
- State conservation area
- Flora reserve
- State forest
- Local government area

Hunter/Central river subcatchments

- HUNTER
- LAKE.MACQUARIE/ TUGGERAH.LAKES

0 1 2
Kilometres

Coordinate system: GDA2020 MGA Zone 56
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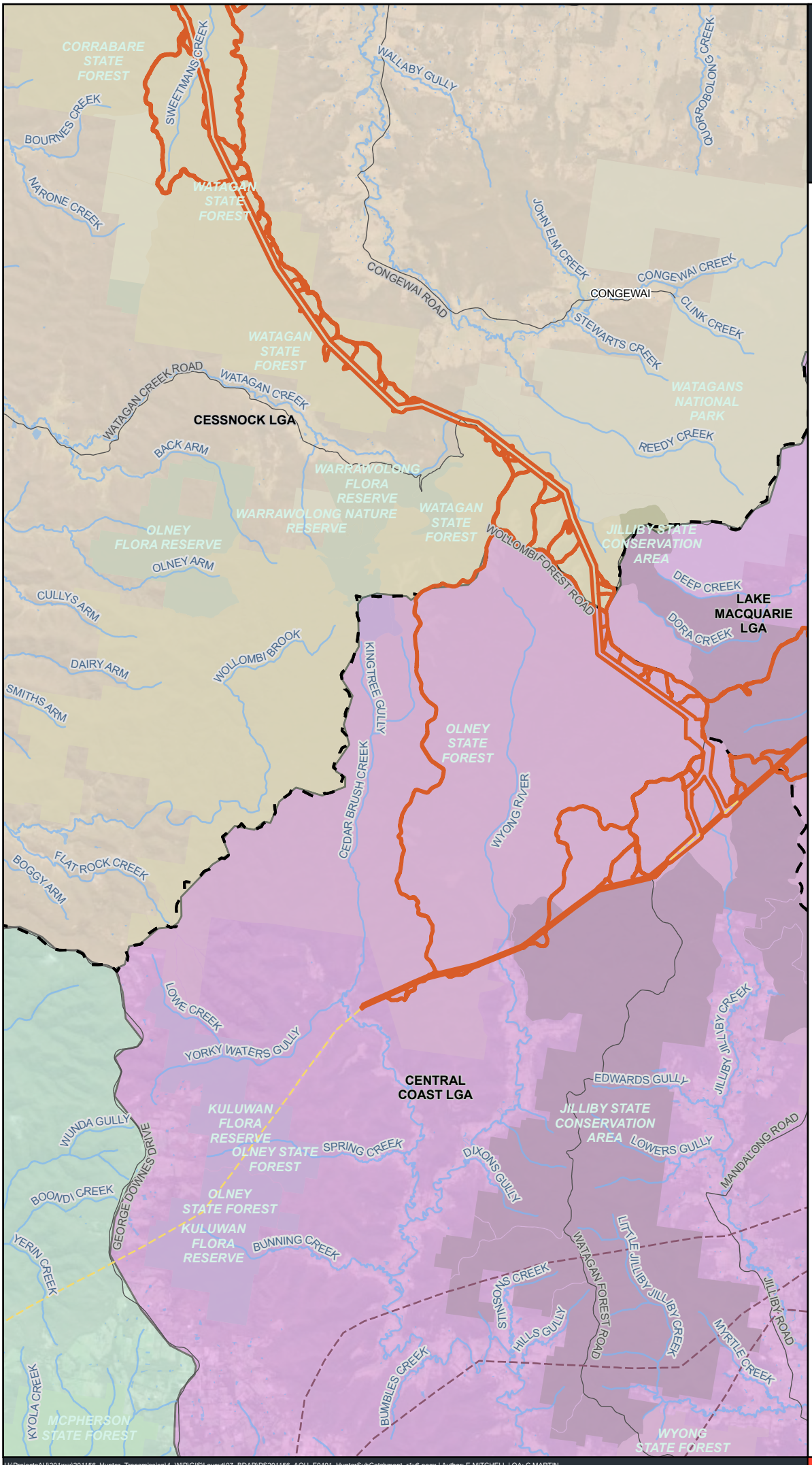

Hunter Transmission Project
Biodiversity Development Assessment Report

Figure 4.1
Hunter-Central River Sub-Catchments

Legend

- Biodiversity study area

Existing environment

- Road
- 330 kV transmission line
- 500 kV transmission line
- Named watercourse
- Waterbody
- NPWS reserve
- State conservation area
- Flora reserve
- State forest
- Local government area

Hunter/Central river subcatchments

- HAWKESBURY
- HUNTER
- LAKE.MACQUARIE/ TUGGERAH.LAKES

0 1 2
Kilometres

Coordinate system: GDA2020 MGA Zone 56
Scale ratio correct when printed at A4

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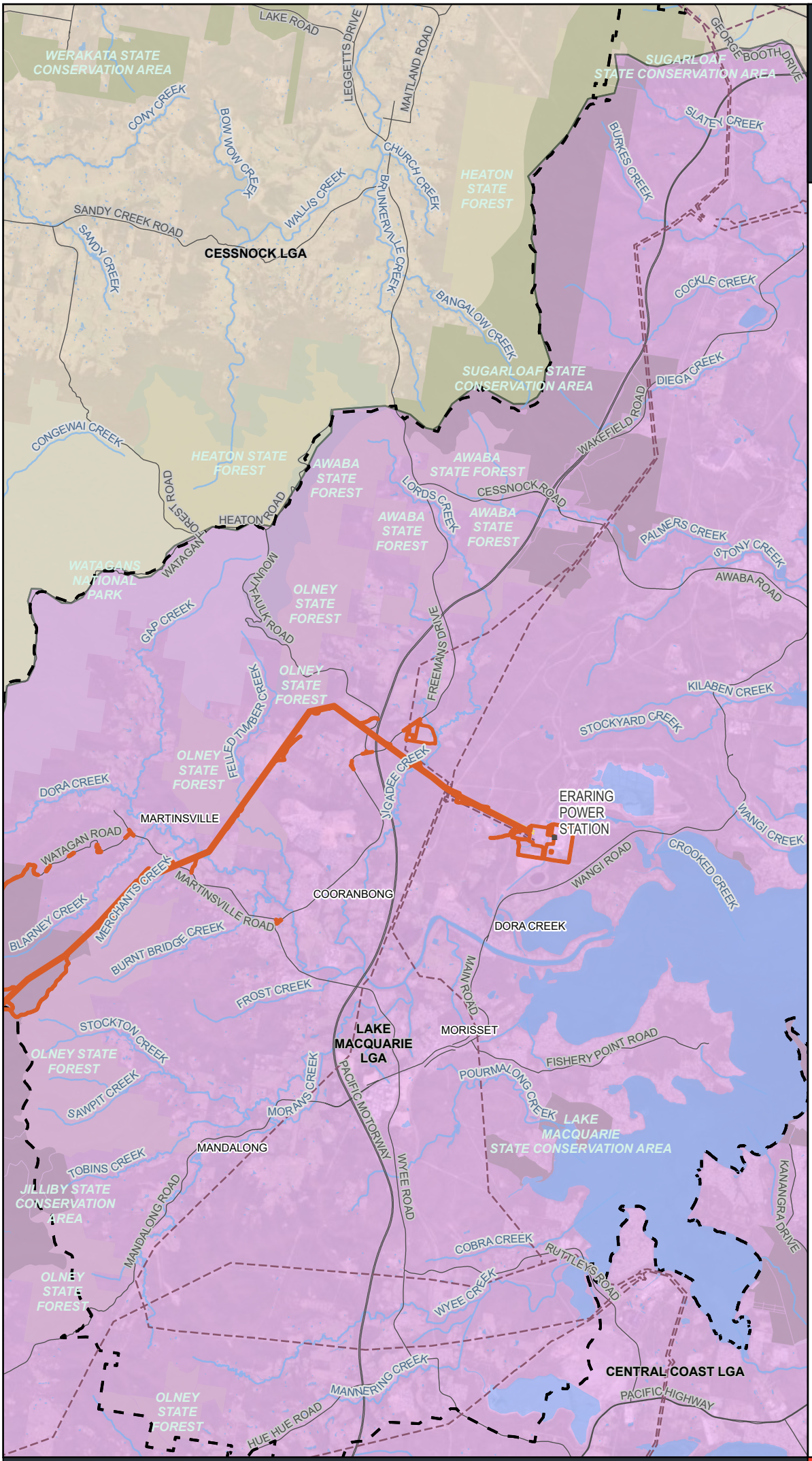


Hunter Transmission Project
Biodiversity Development Assessment Report

Figure 4.1
Hunter-Central River Sub-Catchments

Legend

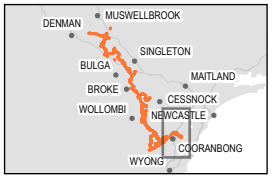
- Biodiversity study area

Existing environment

- Road
- Power station
- 330 kV transmission line
- 500 kV transmission line
- Named watercourse
- Waterbody
- NPWS reserve
- State conservation area
- Flora reserve
- State forest
- Local government area

Hunter/Central river subcatchments

- HUNTER
- LAKE.MACQUARIE/ TUGGERAH.LAKES



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4.2.3 *Fish habitat and crossed watercourses*

4.2.3.1 Crossed watercourses

There are several named and unnamed watercourses intersecting the HTP which contain KFH. A total of 25 named watercourses, 19 of which contain KFH, are expected to be crossed by the HTP (see Table 4.1 and Figure 4.2).

Table 4.1 Named watercourses crossed by the HTP

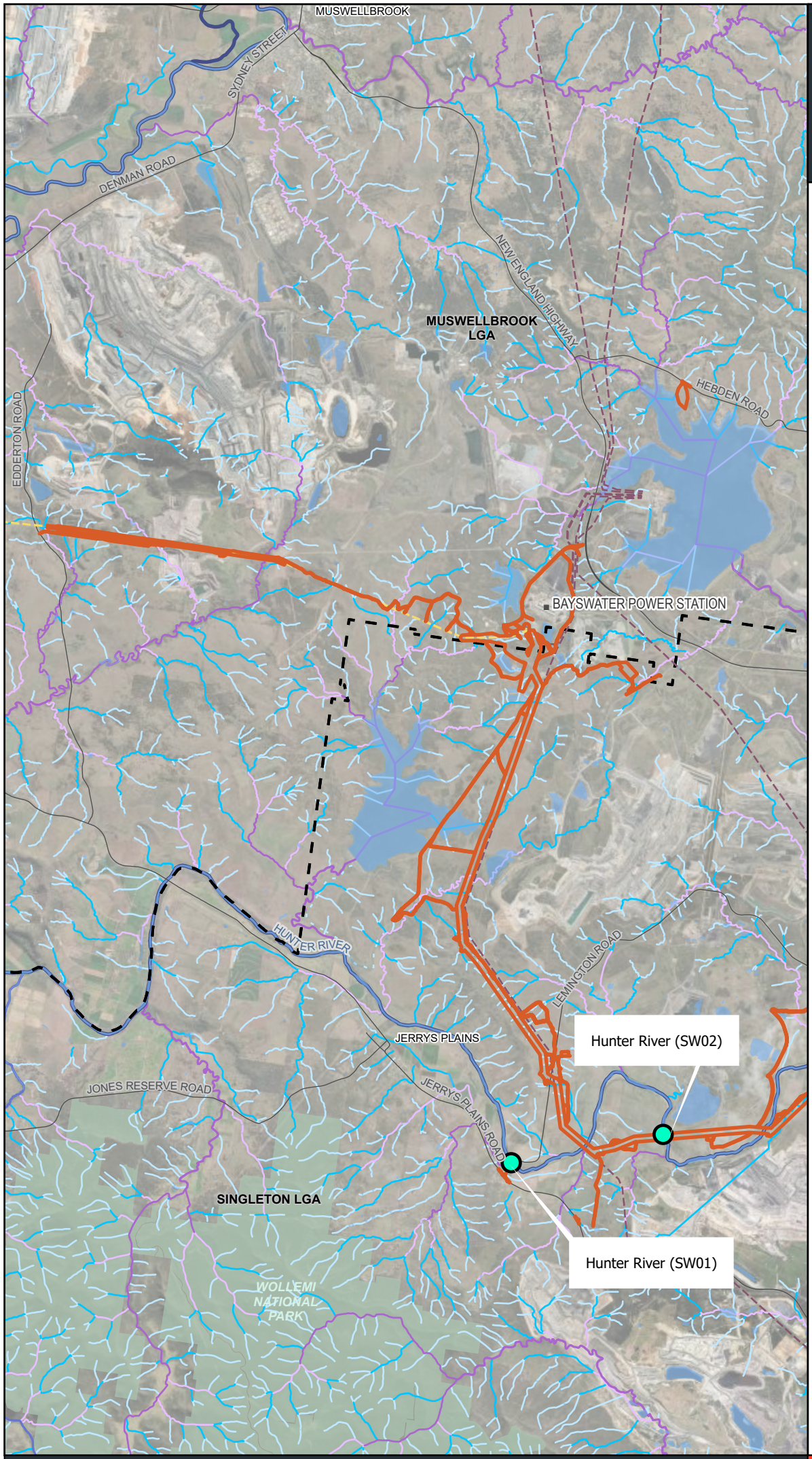
Watercourse name	Strahler order	Key fish habitat present	Indicative distribution of threatened species	Number of crossings	Crossing type (no. of times crossed)
Black Creek	5	Yes	Southern purple spotted gudgeon	1	Access road
Cedar Creek	5	Yes	None	1	Transmission line
Congewai Creek	6	Yes	Southern purple spotted gudgeon	2	Transmission line (1) and access road (1)
Deep Creek	5	Yes	None	1	Transmission line
Doctors Creek	2	Yes	None	6	Transmission line (3) and access road (3)
Farrells Creek	3	No	None	1	Access road (1)
Felled Timber Creek	4	Yes	None	3	Access road (3)
Hobden Gully	2	Yes	None	6	Transmission line (3) and access road (3)
Hunter River	9	Yes	None	3	Transmission line
Jigadee Creek	6	Yes	None	1	Access road
Loder Creek	4	Yes	None	4	Transmission line (1) and access road (3)
Maidswater Creek	4	Yes	None	1	Access road
Monkey Place Creek	5, 4 and 3	Yes	Southern purple spotted gudgeon	4	Transmission line (3) and access road (1)
Nine Mile Creek	2	No	None	2	Transmission line (1) and access road (1)
Parnells Creek	3	Yes	None	2	Transmission line (1) and access road (1)
Peach Tree Creek	4	Yes	None	1	Access road
Pikes Creek	1	No	None	1	Access road
Pokolbin Creek	3	No	None	1	Access road
Potholes Gully	3	Yes	None	1	Transmission line
Saltwater Creek	3	No	None	1	Access road
Sandy Hollow Creek	3	Yes	None	2	Transmission line (1) and access road (1)

Watercourse name	Strahler order	Key fish habitat present	Indicative distribution of threatened species	Number of crossings	Crossing type (no. of times crossed)
Sweetmans Creek	4, 3	Yes	None	2	Transmission line
Watagan Creek	4	Yes	None	1	Transmission line
Wiseman Creek	2	No	None	1	Transmission line
Wollombi Brook	8	Yes	Southern purple spotted gudgeon	1	Transmission line

Around 431 crossings of unnamed watercourses and drainage lines are expected, of theses, 55 contain mapped KFH (see Table 4.2). Although these unnamed watercourses are not major tributaries, they still have the potential to provide potential habitat.

Table 4.2 Unnamed watercourse crossings within HTP

Number of crossings	Strahler order	Key fish habitat present
One unnamed water crossing	5	Yes
Two unnamed watercourse crossing	4	Yes
Eighteen (18) unnamed watercourse crossing	3	Yes
Three unnamed watercourse crossing	3	No
Fourteen (14) unnamed watercourse crossing	2	Yes
Fifty-six (56) unnamed watercourse crossing	2	No
Twenty (20) unnamed watercourse crossing	1	Yes
Three hundred and seventeen (317) unnamed watercourse crossing	1	No



Hunter Transmission Project Biodiversity Development Assessment Report

Figure 4.2
Location of Assessed Watercourses

Legend

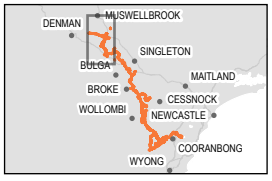
- Biodiversity study area

Existing environment

- Road
- Power station
- 330 kV transmission line
- 500 kV transmission line
- River
- Waterbody
- NPWS reserve
- State forest
- Local government area
- Assessed watercourse

Strahler stream order

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 8
- 9



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Kilometres

Coordinate system: GDA2020 MGA Zone 56
Scale ratio correct when printed at A4

GDA 2020

1:125,000 Date: 6/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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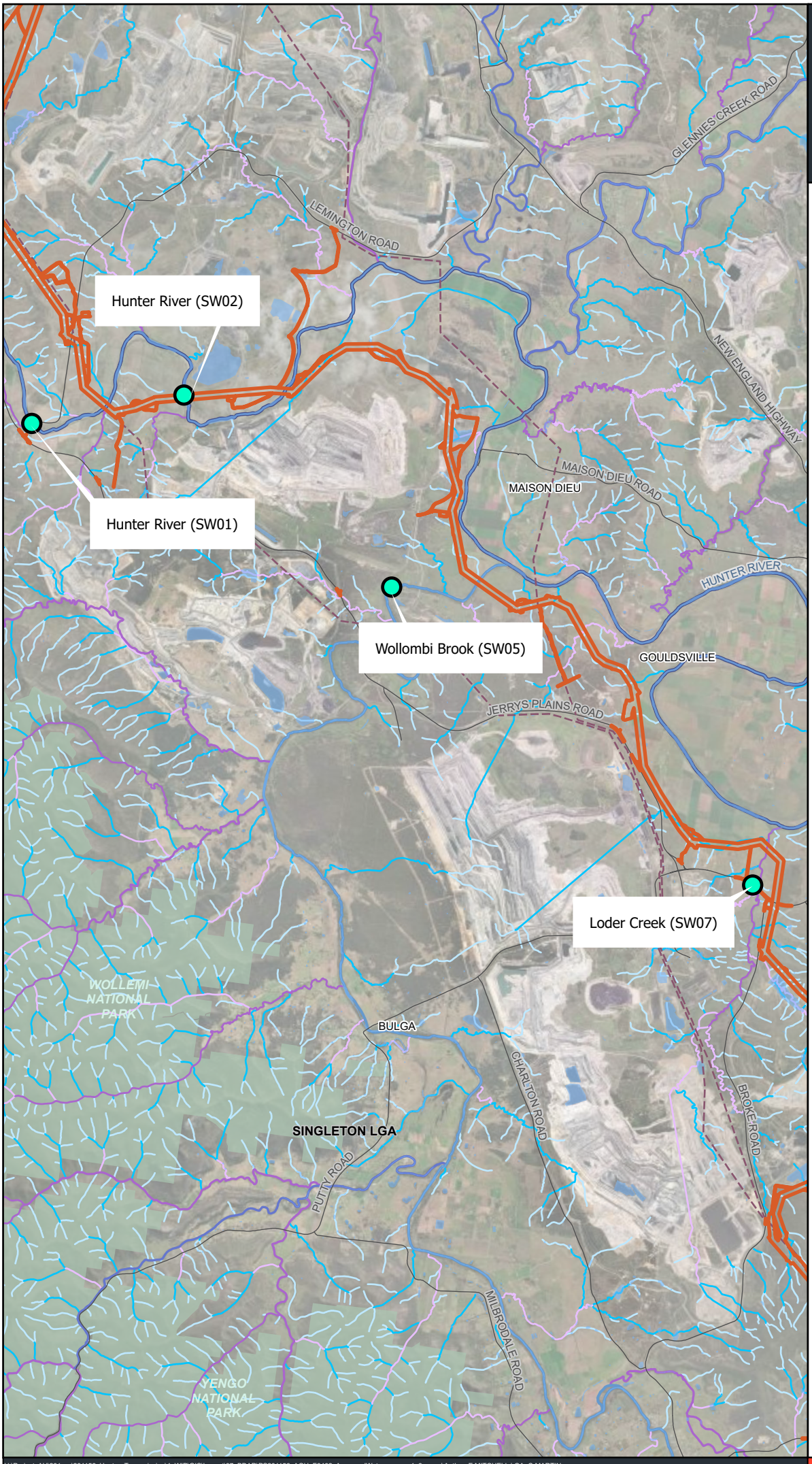

Hunter Transmission Project Biodiversity Development Assessment Report

Figure 4.2
Location of Assessed Watercourses

Legend

- Biodiversity study area

Existing environment

- Road
- 330 kV transmission line
- River
- Waterbody
- NPWS reserve
- Local government area
- Assessed watercourse

Strahler stream order

- 1
- 2
- 3
- 4
- 5
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- 7
- 8
- 9

0 1 2
Kilometres

Coordinate system: GDA2020 MGA Zone 56
Scale ratio correct when printed at A4

GDA 2020

1:125,000 Date: 6/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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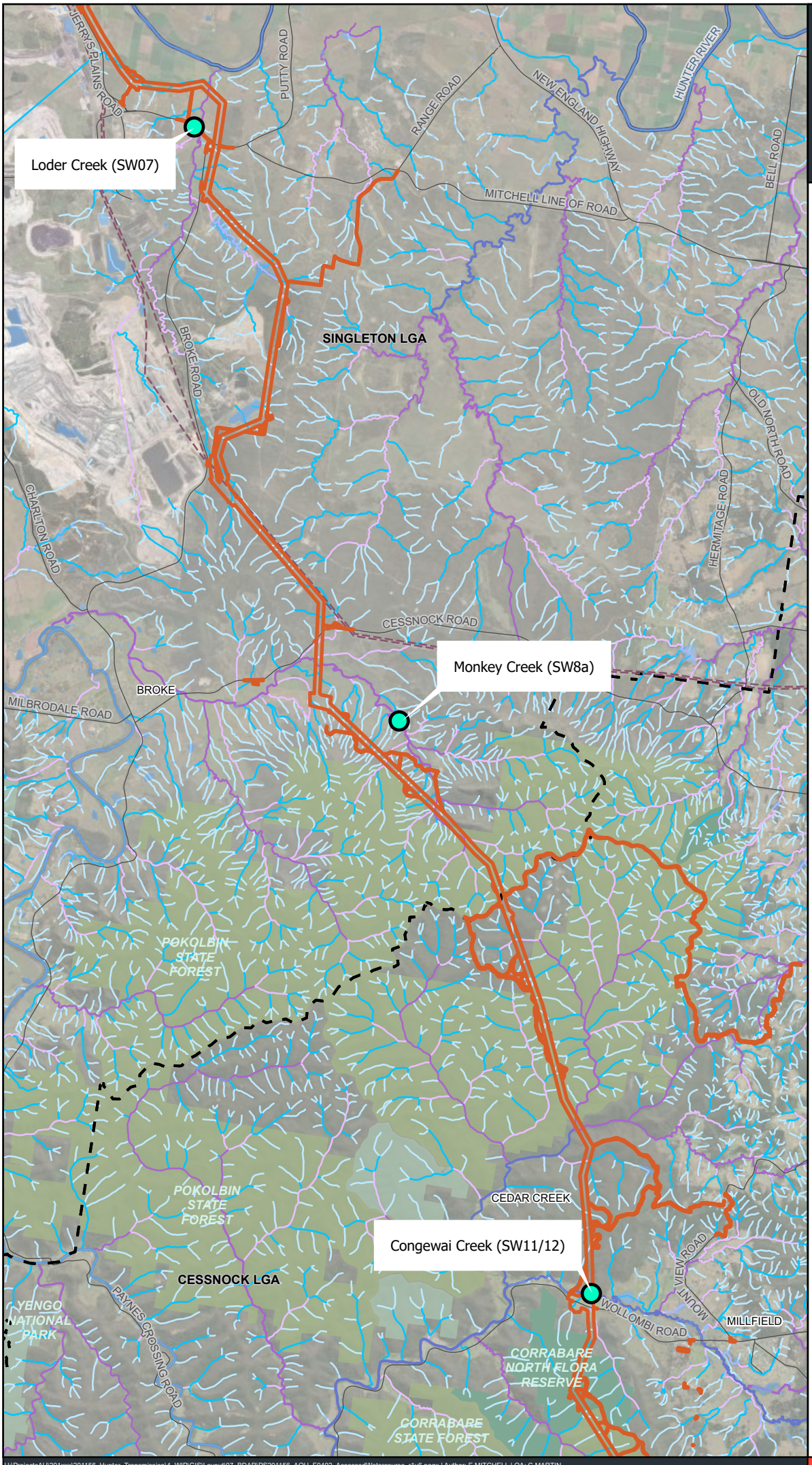

Hunter Transmission Project Biodiversity Development Assessment Report

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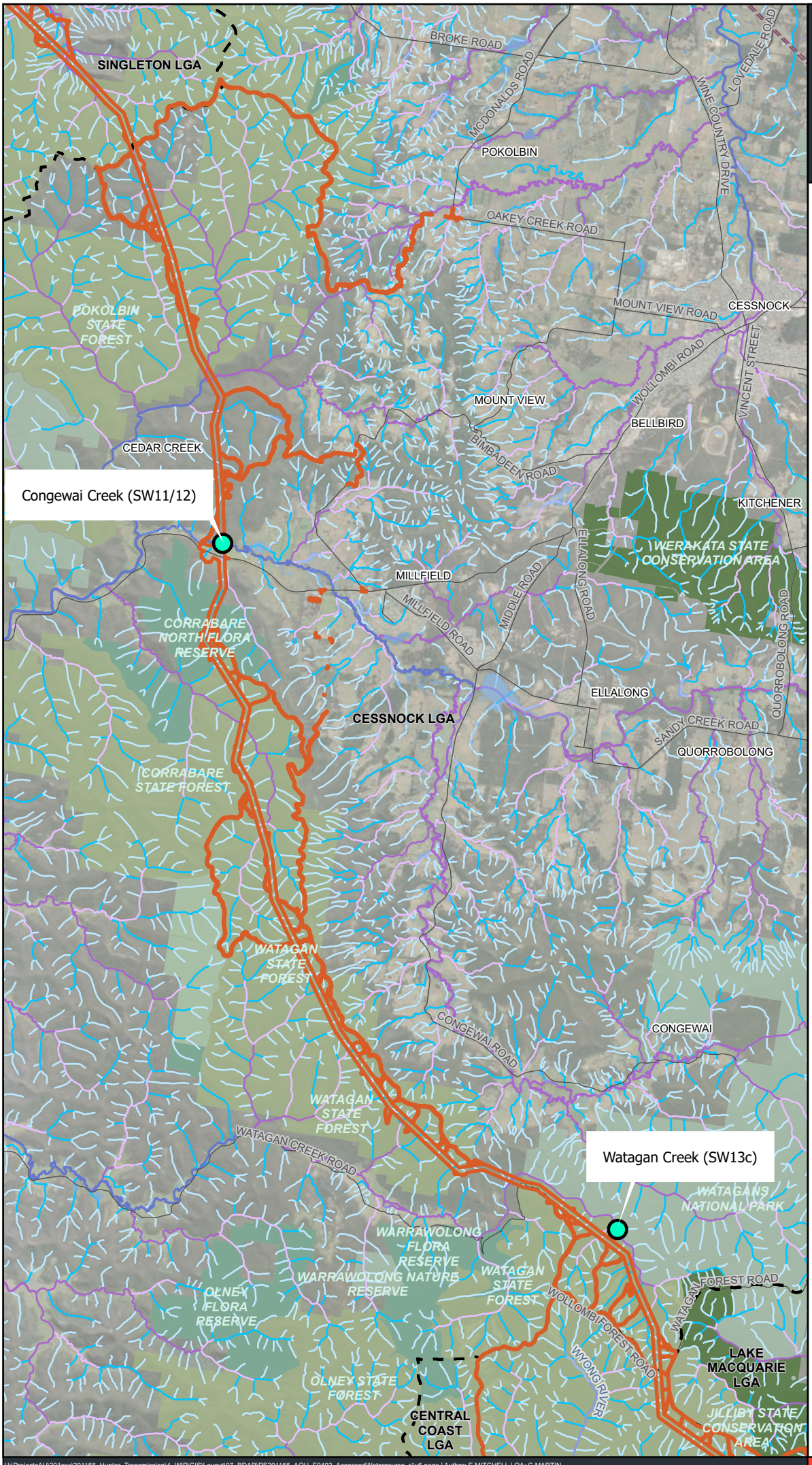

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Hunter Transmission Project
Biodiversity Development Assessment Report

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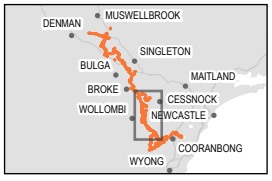

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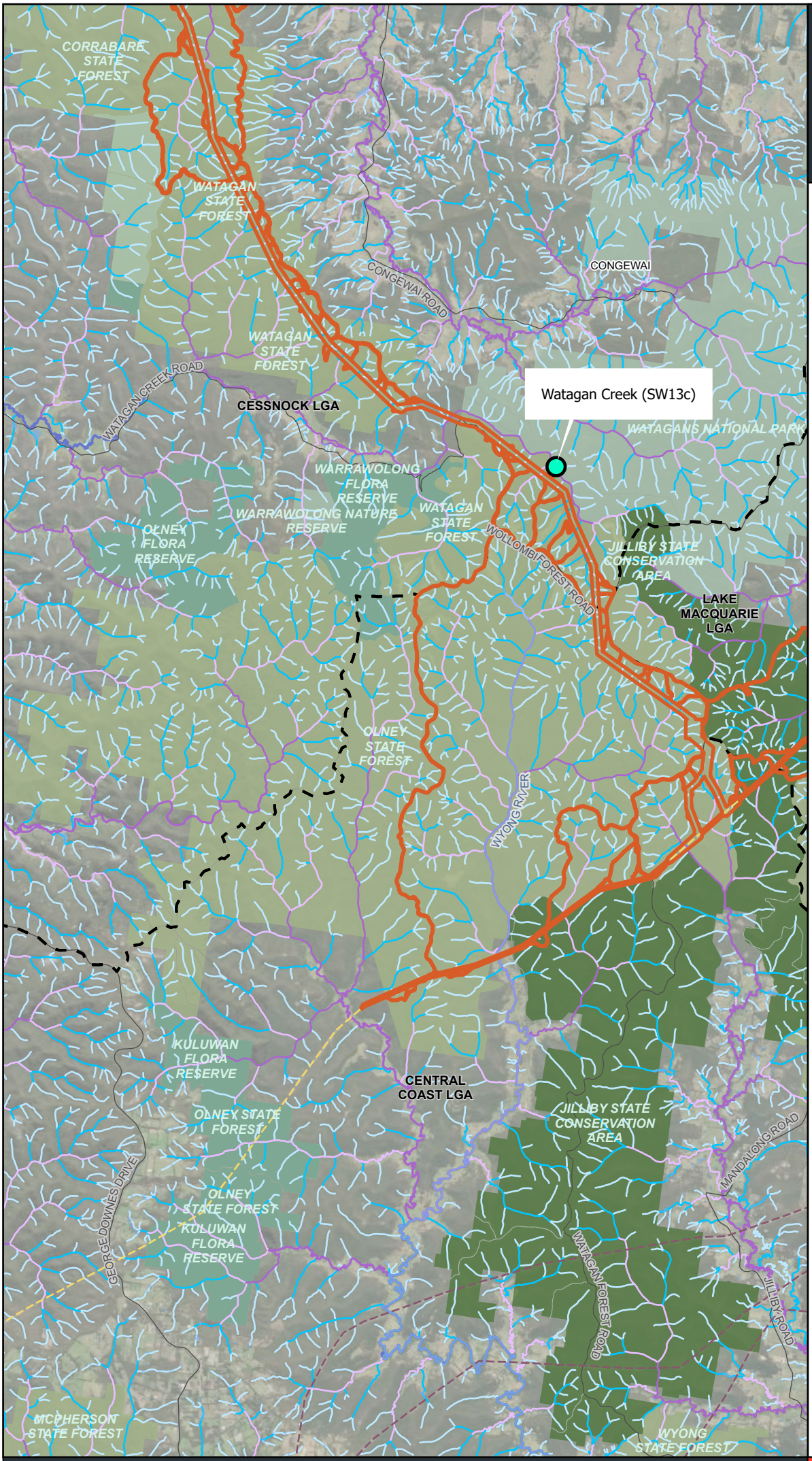

Hunter Transmission Project Biodiversity Development Assessment Report

Figure 4.2
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Legend

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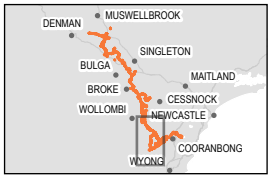

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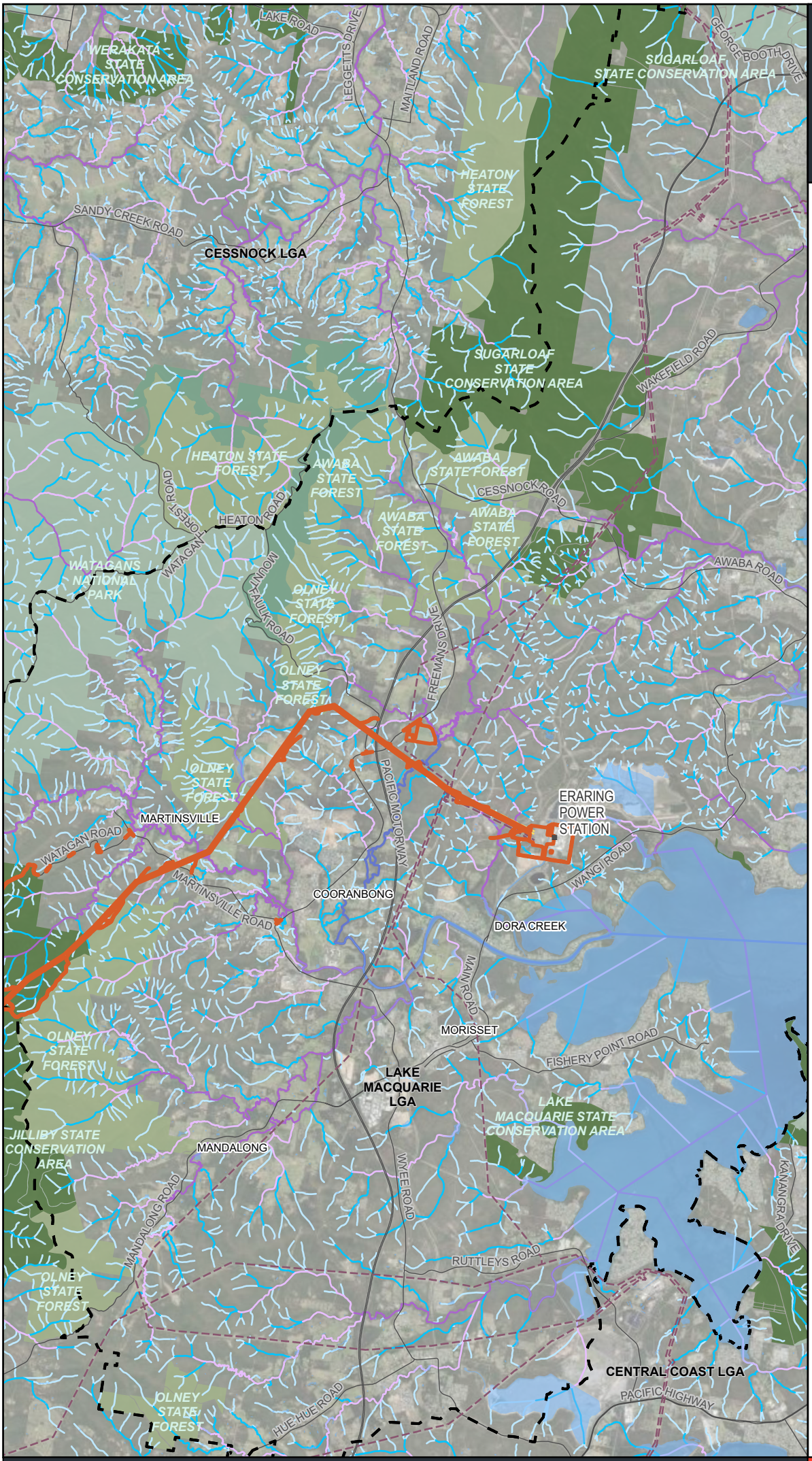

Hunter Transmission Project Biodiversity Development Assessment Report

Figure 4.2
Location of Assessed Watercourses

Legend

- Biodiversity study area

Existing environment

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- State forest
- Local government area

Strahler stream order

- 0
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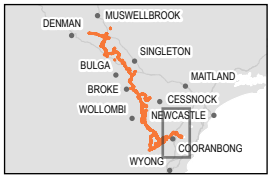

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Kilometres

Coordinate system: GDA2020 MGA Zone 56
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4.2.3.2 Mapped key fish habitat

The KFH and associated sensitivity classification scheme is demonstrated in Table 1 of the *Policy and Guidelines for Fish Habitat Conservation and Management* (NSW DPI, 2013). Under this scheme any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act is defined as "type 1 – highly sensitive key fish habitat". Nineteen named watercourses and 55 unnamed watercourse crossings within the project impact area are mapped as being KFH and of these 4 were mapped to be key habitat for the Southern purple spotted gudgeon.

According to the Fisheries NSW Spatial Data Portal, the biodiversity study area contains mapped habitat for Southern purple spotted gudgeon, which is listed as endangered under the FM Act. The mapped habitat occurs throughout various tributaries of the Hunter River including areas within Black Creek, Monkey Place Creek, Congewai Creek and Wollombi Brook, which intersect with the HTP corridor (see Figure 4.3).

An assessment of the likelihood of occurrence of aquatic species identified was undertaken to determine the potential for these species to occur within the HTP (see Table 4.3). It was determined that one species is highly likely, and one is moderately likely to inhabit the identified watercourses within the HTP.

Neither the Darling River hardyhead nor Southern purple spotted gudgeon are currently listed under the EPBC Act.

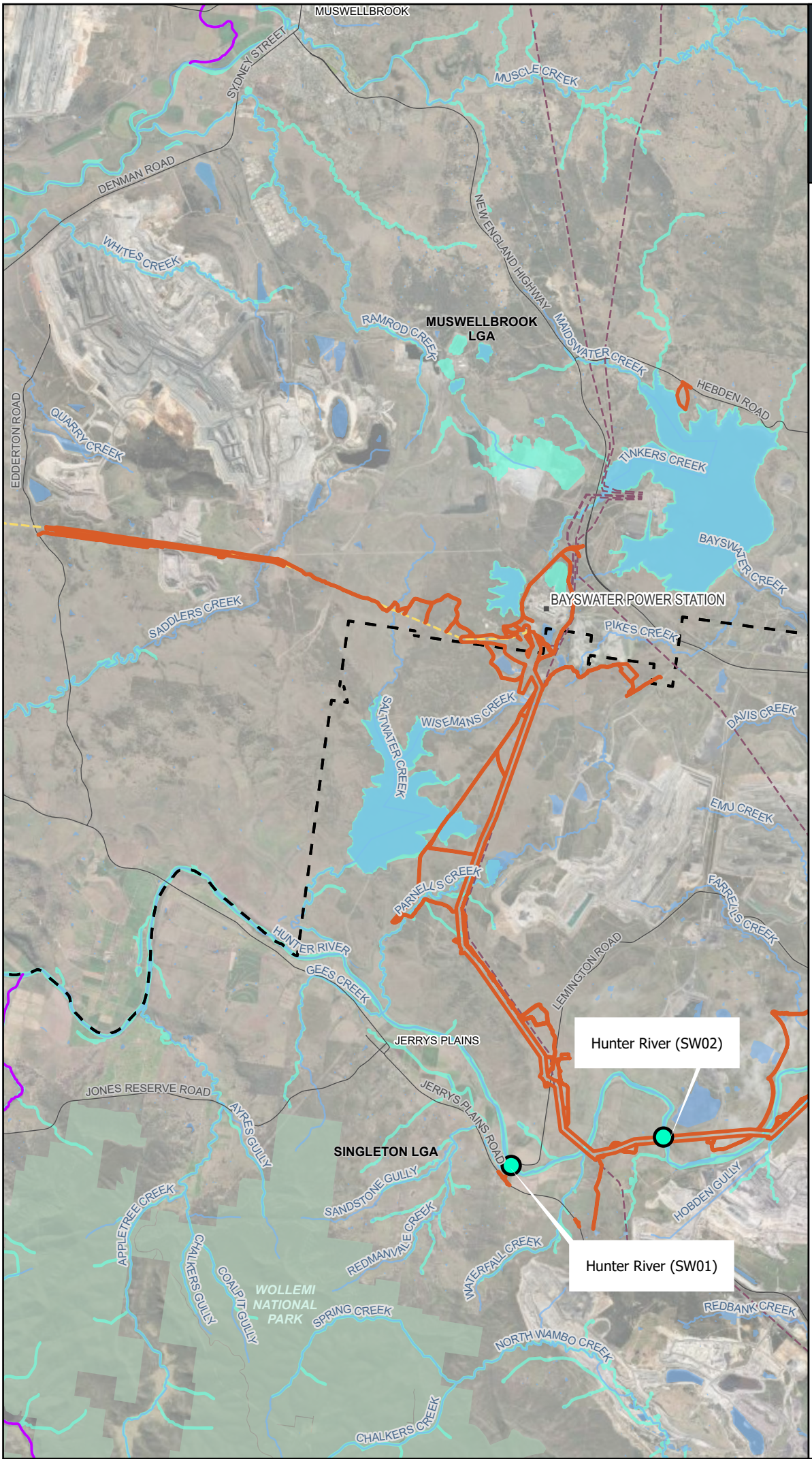
4.2.3.3 Threatened aquatic species

A desktop search of the biodiversity study area was conducted in April and September 2024 using the protective matters search tool (PMST), Fisheries NSW Spatial Data Portal (DCCEEW, 2024) and Atlas of Living Australia. The search results yielded that a total of 2 threatened fish species may inhabit the biodiversity study area. Both species, Southern purple spotted gudgeon and Darling River hardyhead are listed as endangered under the FM Act and the Darling River hardyhead is listed as an endangered population under the FM Act (see Table 4.3).

Table 4.3 Threatened aquatic species identified within 5-kilometre the HTP

Common name	Scientific name	EPBC Act	FM Act	Habitat description	Likelihood of occurrence
Craterocephalus amniculus	Darling River hardyhead (Hunter River catchment population)	–	EP	The Darling River hardyhead is found in the upper tributaries of the Darling River near the Queensland and New South Wales border. The Hunter River population is the only known occurrence of the species in an eastward flowing river. They are usually found in slow flowing, clear, shallow waters or in aquatic vegetation at the edge of such waters. The species has also been recorded from the edge of fast flowing habitats such as the runs at the head of pools.	Moderate – recorded within Bowman creek (tributary to Hunter River) in 1976
Mogurnda adspersa	Southern purple spotted gudgeon	–	E	The Southern purple spotted gudgeon occurs in the Murray-Darling basin as well as parts of coastal northern NSW and Queensland. The species can be found in a variety of habitats such as rivers, creeks, and billabongs with slow-flowing or still waters. Cover in the form of aquatic vegetation, overhanging vegetation from riverbanks, leaf litter, rocks or snags are important for the species.	High – mapped habitat located within the project impact area

V = Vulnerable, E = Endangered, CE= Critically Endangered M = Migratory, EP = Endangered Population



Hunter Transmission Project Biodiversity Development Assessment Report

Figure 4.3
Mapped Key Fish Habitat

Legend

- Biodiversity study area

Existing environment

- Road
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- 500 kV transmission line
- Named watercourse
- Waterbody
- NPWS reserve
- State forest
- Local government area
- Southern Purple Spotted Gudgeon Indicative Distribution
- Key fish habitat
- Assessed watercourse

0 1 2
Kilometres

Coordinate system: GDA2020 MGA Zone 56
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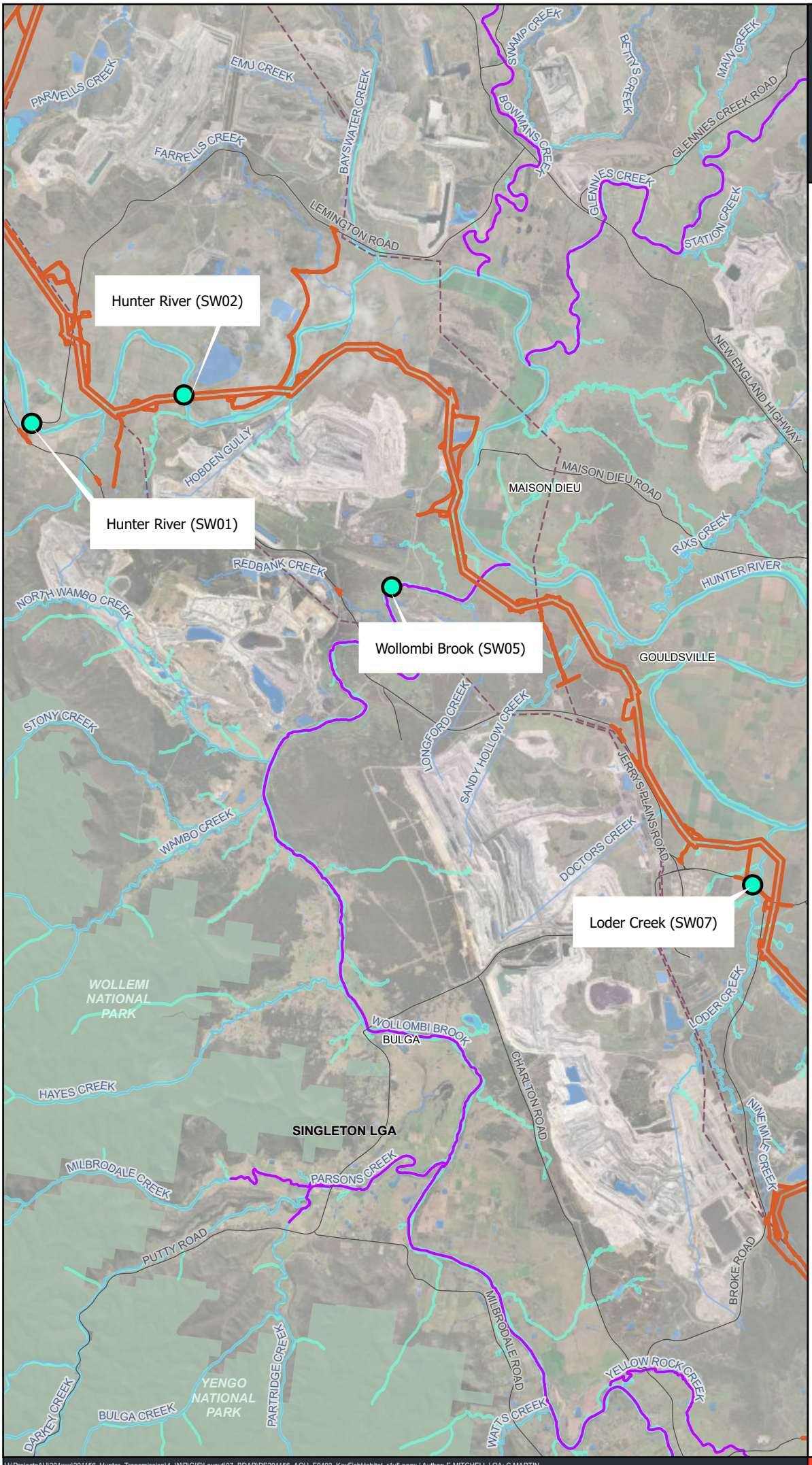

Hunter Transmission Project Biodiversity Development Assessment Report

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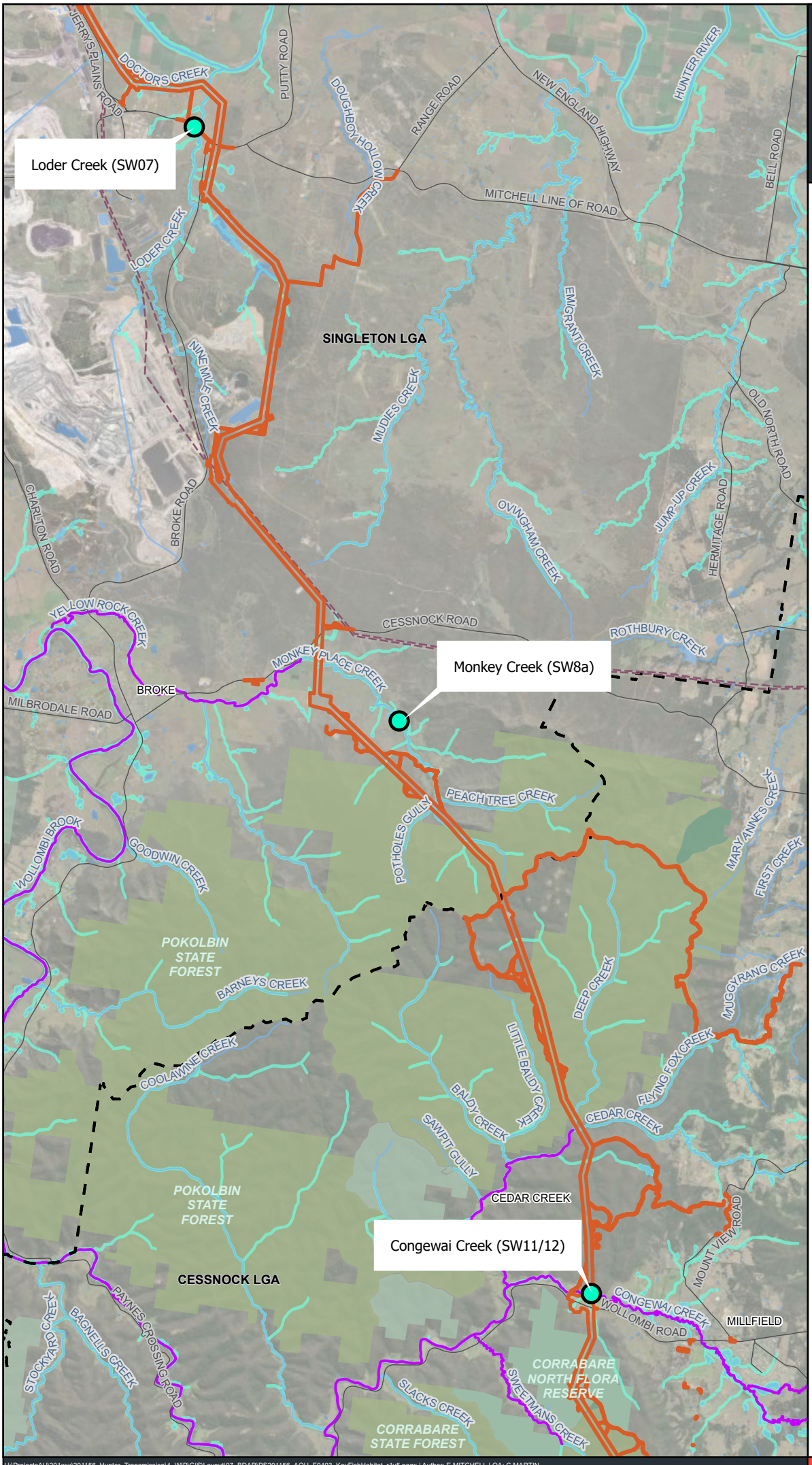

Hunter Transmission Project Biodiversity Development Assessment Report

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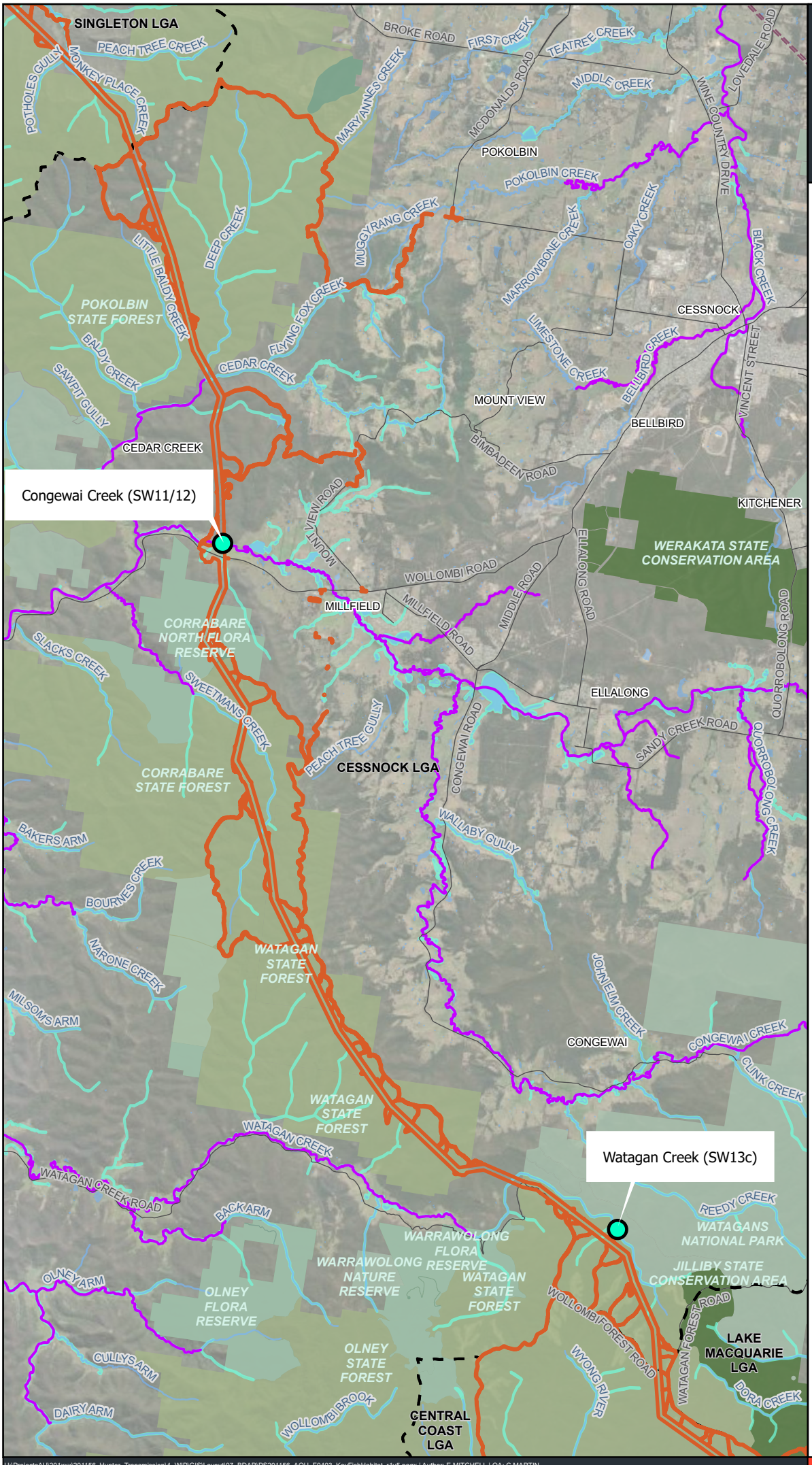

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Biodiversity Development Assessment Report

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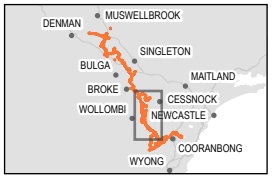

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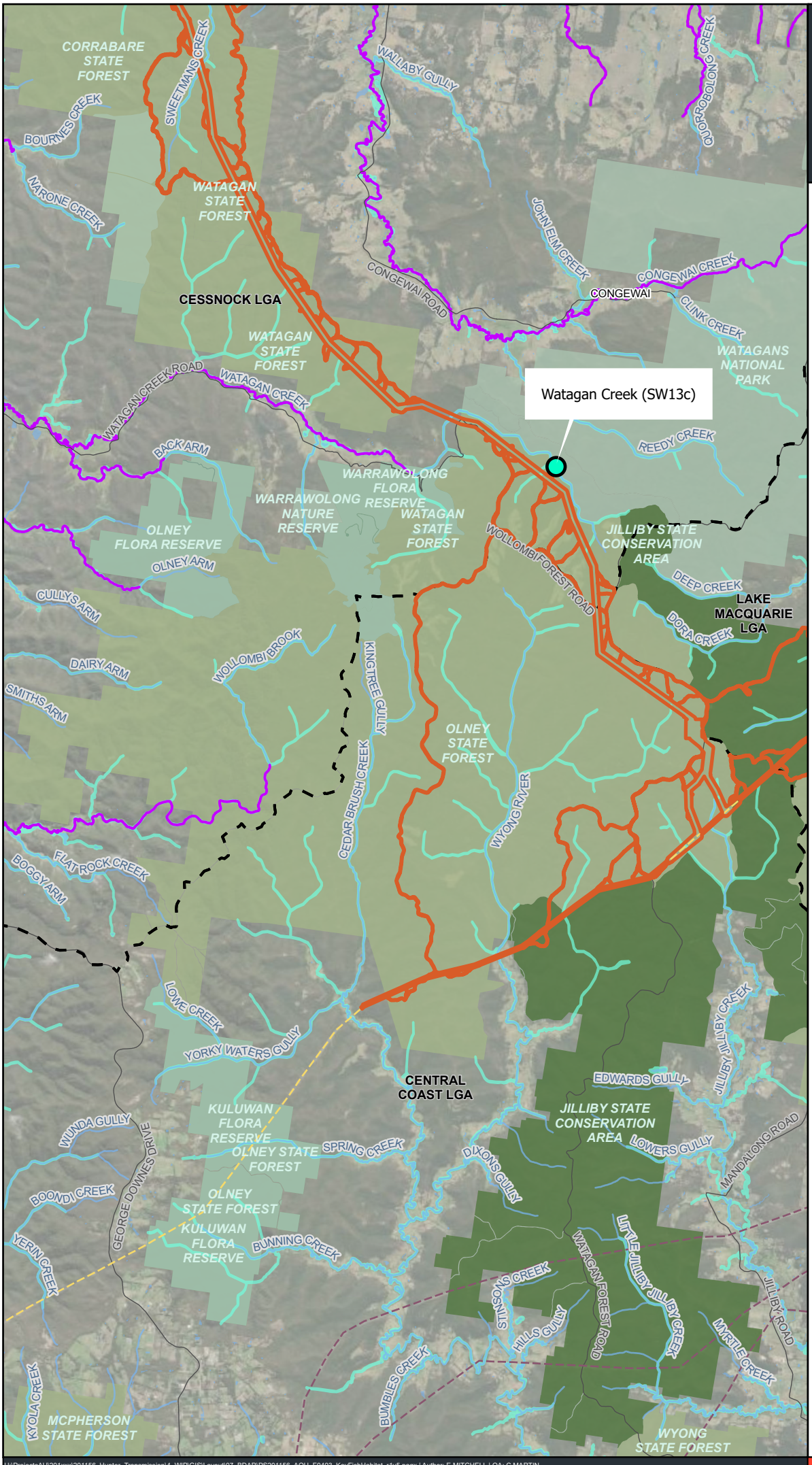

Hunter Transmission Project
Biodiversity Development Assessment Report

Figure 4.3
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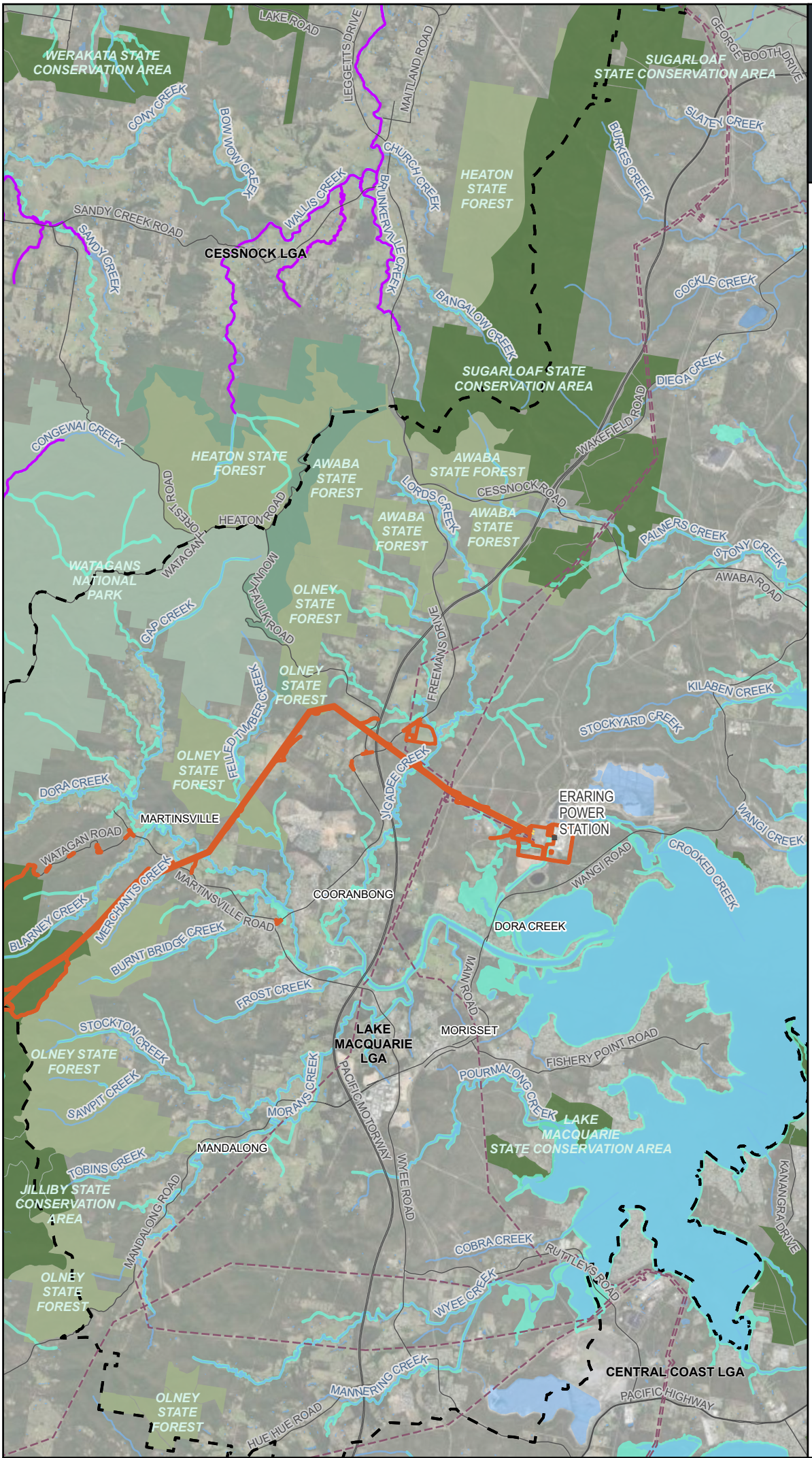

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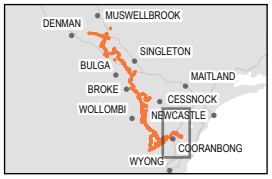

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4.3 Field survey results

Figure 4.4 shows the location of assessed watercourses with accompanying photo plates.

4.3.1 Hunter River

The Hunter River is a permanent watercourse that begins in the Mount Royal ranges in the Barrington Tops and extends 460 kilometres to where it drains into the Pacific Ocean at Newcastle (NSW Government , 2024). The Hunter River supports various types of aquatic habitats along its footprint, and it is known to contain important species of fish and their associated habitat. During the field survey, fish were observed leaping out of the water at both SW01 and the SW02 and an unidentified species of freshwater turtle was observed at SW01 (likely eastern long-necked turtle).

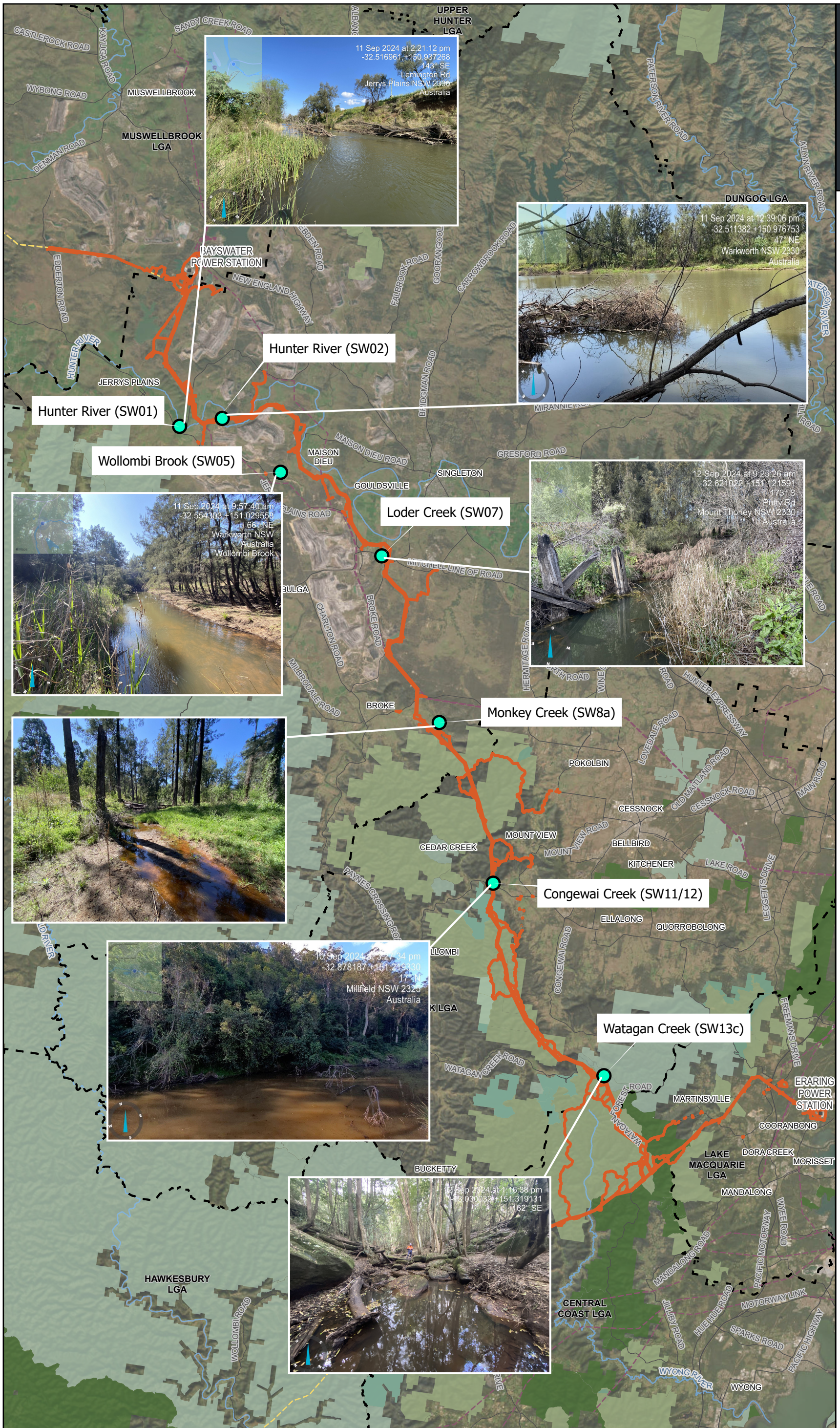
4.3.2 Hunter River (SW01)

4.3.2.1 Habitat characterisation

This survey location is at the Lemington Road crossing (see Figure 4.4). This reach of the Hunter River (about 400 metres) exhibited a sinuous channel morphology, where the flow appears to slightly favour the right bank with a 0.83 m/s flow. This reach exhibited a 1% gradient giving rise to the upstream (about 50 metres) and downstream (about 100 metres) riffle habitat structure (Photo 4.5). Photos 4.1–4.4 picture the run – pool structure that followed the upstream and preceded the downstream habitat structure. The substrate within the watercourse was determined to be comprised of around 70% sand, 20% cobble and 10% gravel. Note that a sediment sample was unable to obtained from the main channel within the watercourse due to safety reasons. Instead, a sample was obtained around 1 metre off the bank and consequently may not represent the true substrate composition of this reach. Stream cover observed at this reach primarily consisted of woody debris (10%), instream vegetation (2%) and overhanging vegetation (2%) which fish can use as a refuge area. This reach of the Hunter River remains highly connected and had no immediate signs of fish passage obstructions.

The right bank was steep and, in some areas, transitioned to be vertical or undercut. The steep area of the right bank was highly vegetated and consisted of mainly grasses and exotic plant species. Where the right bank was vegetated, the soil appeared to be stable, however, in the areas the bank was undercut and/or vertical the bank did not appear to be stable and during high flow is likely to be subjected to erosion and to potentially collapse. In contrast the left bank was highly vegetated, gently sloped and very stable. Both banks contained native and exotic vegetation. The native vegetation was dominated by various grasses, shrubs and trees (she-oaks) and constituted 50% of the total riparian area and exotic species such as tobacco bush (*Solanum mauritianum*) and fireweed (*Senecio madagascariensis*) constituted 30% of the total riparian area.

At the time of the survey, the wetted width within the reach ranged from 16.8 metres – 18.5 metres whereas the bank full width was estimated to be between 28.0 metres – 31.0 metres. However, there is evidence that at this reach the river breaches the left bank and flows into the surrounding floodplain during periods of high flows. The floodplain located on the left bank displays evidence of woody debris, health impacts to vegetation and evidence of cobble deposits, which would have been deposited during a flooding event. The scarring on the right bank suggests that during time of high flow, the river exhibited very high velocity. These characteristics are shown in Photos 4.1 to 4.6.



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Hunter Transmission Project
Figure 4.4

Location of Field Survey Sites

Legend

- Field survey sites
- Biodiversity study area

Existing environment

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- Local government area
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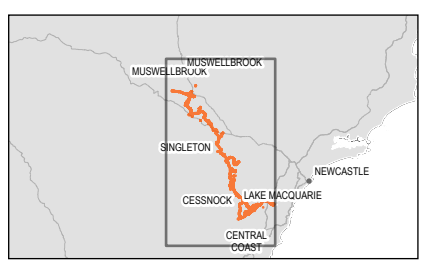

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Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A3

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GDA 2020

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Photo 4.1 Facing upstream

Photo 4.2 Facing downstream

Photo 4.3 Facing left bank

Photo 4.4 Facing right bank

Photo 4.5 Upstream riffle structure

Photo 4.6 Floodplain on left bank

4.3.2.2 Water quality

In situ water samples were taken at the survey area (see Table 4.4). Visually, the water appeared to be slightly turbid, however, the bottom of the stream was visible during the survey. Based on the water quality measurements it can be confirmed that this reach of the Hunter River has water quality that can support fish.

Table 4.4 Water quality data for SW01

Measurement	Value	Values that can support fish	Fish supported (Y/N)
Turbidity	11.20 NTU	0–3000 NTU	Y
pH	8.23	6.5–9[+]	Y
Dissolved Oxygen	61% (5.8 mg/L[^])	>5 mg/L[*]	Y
Conductivity	883 µs/cm	–	Y
Temperature	18.8°C	–	Y

* (Bozorg-Haddad, et al., 2021); ^ converted to mg/L using: dosaturation.pdf (mostreamteam.org); + (Wurts & Durborow, 1992).

4.3.2.3 Key fish habitat

The findings during the site survey were assessed against the sensitivity and class ratings outlined in Table 3.3 and Table 3.4 to determine the final watercourse type and class. The assessment of findings is outlined in Table 4.5 and Table 4.6. SW01 contained various habitat features that are commonly used as fish refuge which included large woody debris (snags) that exceeded 3.0 metres in length and 300 millimetre in width, instream vegetation and areas containing gravel beds. These habitat structures are habitat characteristic of a type 1 watercourse. Based on the information collected from the survey, it was determined that SW01 is rated as a type 1 and class 1 watercourse.

Table 4.5 Fish habitat sensitivity rating for SW01

Freshwater KFH characteristics	Present or Absent
TYPE 1	
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in 2 dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants	Present
Any known or expected protected or threatened species habitat or area of declared ‘critical habitat’ under the FM Act	Absent
TYPE 2	
Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in type 1	Present
Weir pools and dams up to full supply level where the weir or dam is across a natural watercourse	Absent
TYPE 3	
Unstable or unvegetated sand or mud substrate	Present
Freshwater habitats not included in types 1 or 2	Absent
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Final Determination	**TYPE 1**

Table 4.6 Classification of watercourse for SW01

Freshwater KFH characteristics	Present or Absent
Class 1 – Major KFH	Present
Class 2 – Moderate KFH	Absent
Class 3 – Minimal KFH	Absent
Class 4 – Unlikely KFH	Absent
Final Determination	**CLASS 1**

4.3.3 Hunter River (SW02)

4.3.3.1 Habitat characterisation

This survey location is within private property around 5 kilometres east of SW01 (see Figure 4.4). This reach of the Hunter River (about 400 metres) exhibited a straight to sinuous channel morphology with a 1% gradient, where the flow appears to slightly favour the middle of the watercourse. Neither the depth nor the flow of the watercourse were measured during the survey. The substrate within the watercourse was determined to be comprised of around 70% silt and 30% sand. A sediment sample was unable to be obtained from the main channel within the watercourse due to safety reasons, instead a sample was obtained around 0.5 metres off the bank and consequently may not represent the true substrate composition of this reach. Stream cover observed at this reach primarily consisted of woody debris (5%), instream vegetation (<0.1%) and overhanging vegetation (0.1%) which fish can use as a refuge area. This reach of the Hunter River remains highly connected and had no immediate signs of fish passage obstruction.

The right bank was steep and highly vegetated and consisted of mainly grasses, shrubs trees and exotic plant species. Although the right bank was highly vegetated, it did not appear to be completely stable as there was evidence of erosion of the bank. The vegetation on this bank was in poor to fine condition exhibiting signs of stress (i.e. falling limbs, highly exposed roots, exposed limbs) and was inundated with exotic species such as tobacco bush and fireweed making up 40% of the vegetation composition. Due to access issues, the left bank was unable to be accessed therefore, a visual assessment was completed from the right bank. The left bank was highly vegetated, moderately sloped and appeared to be very stable. Due to the distance from the left bank, it was hard to observe the vegetation composition, however, it appeared to be more intact, of healthier condition and less inundated by exotic species. These characteristics are shown in Photos 4.7 to 4.10.

At the time of the survey, the wetted width within the reach was around 48.0 metres, whereas the bank full width was estimated to be between 65.0 metres – 89.0 metres There is potential that at this reach the river breaches the left bank and flows into the surrounding floodplain during periods of high flows, however, this was not confirmed during the survey.

Photo 4.7 Facing upstream

Photo 4.8 Facing downstream

Photo 4.9 Facing left bank

Photo 4.10 Facing right bank

4.3.3.2 Water quality

In situ water samples were taken at the survey area (see Table 4.7). Visually, the water appeared to be very turbid, and the bottom of the stream was not visible during the survey. Based on the water quality measurements it can be confirmed that this reach of the Hunter River has water quality that can support fish.

Table 4.7 Water quality data for SW02

Measurement	Value	Values that can support fish	Fish supported (Y/N)
Turbidity	13.79 NTU	0–3000 NTU	Y
pH	8.18	6.5–9^{+}	Y
Dissolved Oxygen	61.4% (6.1 mg/L^)	>5 mg/L*	Y
Conductivity	867 µs/cm	–	Y
Temperature	18.1°C	–	Y

* (Bozorg-Haddad, et al., 2021); ^ converted to mg/L using: dosaturation.pdf (mostreamteam.org) ; + (Wurts & Durborow, 1992).

4.3.3.3 Key fish habitat

The findings during the site survey were assessed against the sensitivity and class ratings outlined in Table 3.3 and Table 3.4 to determine the final watercourse type and class. The assessment of findings is outlined in Table 4.8 and Table 4.9. SW02 contained various habitat features that are commonly used as fish refuge which included large woody – debris (snags) that exceeded 3.0 metres in length and 300 millimetre in width and instream vegetation. These habitat structures are habitat characteristic of a type 1 watercourse. Due to the inability to collect sediment samples it cannot be confirmed or discounted that this reach of the Hunter River contains gravel beds. Based on the information collected from the survey, it was determined that SW01 is rated at a type 1 and class 1 watercourse.

Table 4.8 Fish habitat sensitivity rating for SW02

Freshwater KFH characteristics	Present or Absent
TYPE 1	
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in 2 dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants	Present
Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act	Absent
TYPE 2	
Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in type 1	Present
Weir pools and dams up to full supply level where the weir or dam is across a natural watercourse	Absent
TYPE 3	
Unstable or unvegetated sand or mud substrate	Present
Freshwater habitats not included in types 1 or 2	Absent
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Final Determination	**TYPE 1**

Table 4.9 Classification of watercourse for SW02

Freshwater KFH characteristics	Present or Absent
Class 1 – Major KFH	Present
Class 2 – Moderate KFH	Absent
Class 3 – Minimal KFH	Absent
Class 4 – Unlikely KFH	Absent
Final Determination	**CLASS 1**

4.3.4 *Wollombi Brook (SW05)*

Wollombi Brook is a permanent tributary of the Hunter River. It is a highly productive watercourse and provides KFH for Southern purple spotted gudgeon and has a high GDE potential. The survey at Wollombi Brook was conducted on 11 September 2024. No aquatic fauna was observed during the survey.

4.3.4.1 Habitat characterisation

This reach of the Wollombi Brook (about 400 metres) exhibited a braided channel morphology near a culvert crossing and a meandering morphology upstream and downstream of the culvert crossing. It can be assumed that the installation of the culverts resulted in the local morphological change to Wollombi Brook as it would have naturally been a single channel. The flow appears to slightly favour the right bank with a 0.04 m/s flow and a 0.1% gradient. The substrate within the watercourse was determined to be comprised of around 70% sand, 10% cobble and 20% gravel. Stream cover observed at this reach primarily consisted of woody debris (5%), instream vegetation (2%) and overhanging vegetation (5%) which fish can use as a refuge area.

This reach of the Wollombi Brook remains highly connected and had no immediate signs of fish passage obstruction. However, if the culverts at the road crossing become blocked or perched (result of erosion), this would result in fish passage obstruction.

The banks of Wollombi Brook directly downstream of the culverts can be defined as having a main channel comprising a defined bank ("channel" bank) and a separately defined larger channel that would identify the bank full width of the watercourse ("bank full" bank). The "channel" bank is defined as a channel where the water flows most of the time (this bank is defined by distinct scour marks along the banks), whereas the "bank full" bank is defined as the bank during high flow. Both will collectively be discussed as the "banks".

The left banks are mainly vegetated with native grasses, shrubs and trees (she-oaks) which all appear to be in fair to good condition. The right banks were less vegetated than the left bank and mostly contained medium to large she-oaks and grasses with their condition being poor to fair. Although these banks are vegetated, the soil is extremely sandy, and is prone to erosion, especially during high volume and velocity flows. Exotic species such as Willows (*Salix* spp.*)* and fireweed were observed throughout Wollombi Brook. Many Willows were within the watercourse and along the stream edge, as this species is tolerant to being waterlogged for long periods of time. Overall, native vegetation constituted 70% of the total riparian area and exotic species constituted 15% of the total riparian area.

At the time of the survey, the wetted width within the reach ranged from 9.2 metres – 31.0 metres whereas the bank full width was estimated to be between 64.0 metres – 75.0 metres. Directly downstream of the culverts, Wollombi Brook appears to breach the right "channel" bank (Photo 4.14) but remains contained to a channel by the right "bank full" bank (Photo 4.15). During the survey it was observed that there were areas between the "channel" bank and the "wetted" bank that have been heavily disturbed, deposited woody debris and cobble substrate and where upland vegetation has been unable to establish, suggesting that water levels of Wollombi Brook often exceed the "channel" bank. This is further vindicated as the upstream and downstream wetted width is closer to the "bank full" width of the reach. As suggested above this discrepancy likely results from the anthropogenic changes (culvert) at the road crossing. These characteristics are shown in Photos 4.11 to 4.16.

Photo 4.11 Facing upstream

Photo 4.12 Facing downstream

Photo 4.13 Facing left bank

Photo 4.14 Facing “channel” right bank

Photo 4.15 Facing “bank full” right bank

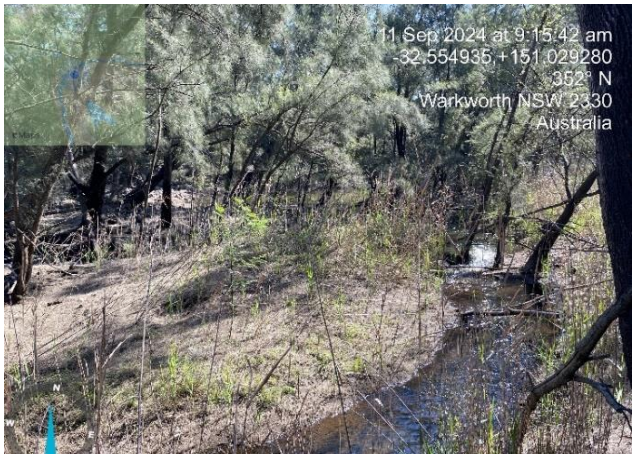

Photo 4.16 Braided channel near culvert

4.3.4.2 Water quality

In situ water samples were taken at the survey area (see Table 4.10). Visually, the water appeared to be clear, and the bottom of the watercourse was clearly visible during the survey. Based on the water quality measurements it can be confirmed that Wollombi Brook has water quality that can support fish.

Table 4.10 Water quality data for Wollombi Brook

Measurement	Value	Values that can support fish	Fish supported (Y/N)
Turbidity	9.0 NTU	0–3000 NTU	Y
pH	7.25	6.5–9[+]	Y
Dissolved Oxygen	62% (6.1 mg/L[^])	>5 mg/L[*]	Y
Conductivity	505 µs/cm	–	Y
Temperature	15.7°C	–	Y

* (Bozorg-Haddad, et al., 2021); ^ converted to mg/L using: dosaturation.pdf (mostreamteam.org) ; + (Wurts & Durborow, 1992).

4.3.4.3 Key fish habitat

The findings during the site survey were assessed against the sensitivity and class ratings outlined in Table 3.3 and Table 3.4 to determine the final watercourse type and class. The assessment of findings is outlined in Table 4.11 and Table 4.12. Wollombi Brook contained various habitat features that are commonly used as fish refuge which included large woody-debris (snags) that exceeded 3.0 metres in length and 300 millimetre in width and instream vegetation. These habitat structures are habitat characteristic of a type 1 watercourse. Additionally, Wollombi Brook is mapped habitat for Southern purple spotted gudgeon. Based on the information collected from the survey it was determined that Wollombi Brook is rated as a type 1 and class 1 watercourse.

Table 4.11 Fish habitat sensitivity rating for Wollombi Brook

Freshwater KFH characteristics	Present or Absent
TYPE 1	
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in 2 dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants	Present
Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act	Present
TYPE 2	
Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in type 1	Present
Weir pools and dams up to full supply level where the weir or dam is across a natural watercourse	Absent
TYPE 3	
Unstable or unvegetated sand or mud substrate	Present
Freshwater habitats not included in types 1 or 2	Absent
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Final Determination	**TYPE 1**

Table 4.12 Classification of watercourse for Wollombi Brook

Freshwater KFH characteristics	Present or Absent
Class 1 – Major KFH	Present
Class 2 – Moderate KFH	Absent
Class 3 – Minimal KFH	Absent
Class 4 – Unlikely KFH	Absent
Final Determination	**CLASS 1**

4.3.5 Loder Creek (SW07)

Loder Creek appears to be a permanent to semi – permanent (during drought portions of the watercourse may "dry up") tributary of the Hunter River. Loader Creek has been mapped as KFH (NSW DPI, 2013). The survey at Loder Creek was conducted on 12 September 2024 but due to access issues, areas upstream and downstream of the survey point could not be assessed.

No aquatic fauna was observed during the survey.

4.3.5.1 Habitat characterization

This reach of Loder Creek (about 10 metres) exhibited a meandering channel morphology, where the water is nearly stagnant with a gradient of <0.1%. The substrate within the watercourse was determined to be comprised of around 25% sand, 20% clay and 5% silt. Stream cover observed at this reach primarily consisted of woody debris (2%), instream vegetation (10%) and overhanging vegetation (2%) which fish can use as a refuge area. In addition, algae was observed on the surface of the watercourse covering 10% of the surface. This reach of Loder Creek appears to be relatively connected and had no immediate signs of fish passage obstruction, however, downstream of the bridge was low flowing and may dry in the summer months, resulting in the temporary fragmentation of the watercourse.

The right bank was a steeply sloped, stable and was highly vegetated whereas the left bank was moderately sloped and highly vegetated, and very stable. Both banks contained native and exotic vegetation that were in poor to good condition. The native vegetation was dominated by various grasses and shrubs and constituted 15–25% of the total riparian area and exotic species such as tobacco bush and fireweed constituted 65% of the total riparian area. Upstream and downstream of the survey point the banks contained larger trees (she-oaks) and appeared to be less inundated with exotic plant species. Instream vegetation was observed during the site survey which included native aquatic grasses and exotic species such as Horsetail (*Equisetum* spp.*)*. The banks were littered with branches as woody debris that was likely deposited there during periods of high flow.

At the time of the survey, the wetted width was 5.5 metres, whereas the bank full width was estimated to be 17.0 metres The watercourse appears to be relatively confined with flows breaching the bank being uncommon. These characteristics are shown in Photos 4.17 to 4.20.

Photo 4.17 Facing upstream

Photo 4.18 Facing downstream

Photo 4.19 Facing left bank

Photo 4.20 Facing right bank

4.3.5.2 Water quality

In situ water samples were taken at the survey area (see Table 4.13). Visually, the water appeared to be clear, and the bottom of the stream was visible during the survey. Based on the water quality measurements it can be confirmed that this reach of Loder Creek has water quality that can support fish. However, the conductivity is higher than expected which could result in osmotic stress to fish although the exact responses that freshwater fish have to conductivity remain relatively unclear (Zhang, et al., 2019).

Table 4.13 Water quality data for Loder Creek

Measurement	Value	Values that can support fish	Fish supported (Y/N)
Turbidity	5.6 NTU	0–3000 NTU	Y
pH	7.76	6.5–9 +	Y
Dissolved Oxygen	58.5% (6 mg/L^)	>5 mg/L*	Y
Conductivity	7330 µs/cm	–	Y
invasive fish species hunter Temperature	13.8°C	–	Y

* (Bozorg-Haddad, et al., 2021); ^ converted to mg/L using: dosaturation.pdf (mostreamteam.org); + (Wurts & Durborow, 1992).

4.3.5.3 Key fish habitat

The findings during the site survey were assessed against the sensitivity and class ratings outlined in Table 3.3 and Table 3.4 to determine the final watercourse type and class. The assessment of findings is outlined in Table 4.14 and Table 4.15. At the survey point, Loder Creek did not contain any fish habitat listed in type 1; however, it did contain alternative habitats such as woody debris (snags), instream exotic vegetation, and a deep pool. All these habitat features can be used by fish as a refuge follow the habitat requirements of a type 2 watercourse. Based on the information collected from the survey it was determined that Loder Creek is rated as a type 2 and class 2 watercourse.

Table 4.14 Fish habitat sensitivity rating for Loder Creek

Freshwater KFH characteristics	Present or Absent
TYPE 1	
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in 2 dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants	Absent
Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act	Absent
TYPE 2	
Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in type 1	Present
Weir pools and dams up to full supply level where the weir or dam is across a natural watercourse	Absent
TYPE 3	
Unstable or unvegetated sand or mud substrate,	Present
Freshwater habitats not included in types 1 or 2	Absent
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Final Determination	**TYPE 2**

Table 4.15 Classification of watercourse for Loder Creek

Freshwater KFH characteristics	Present or Absent
Class 1 – Major KFH	Absent
Class 2 – Moderate KFH	Present
Class 3 – Minimal KFH	Absent
Class 4 – Unlikely KFH	Absent
Final Determination	**CLASS 1**

4.3.6 Monkey Place Creek (SW08a)

Monkey Place Creek is a semi-permanent watercourse that is a tributary of Yellow Rock Creek and Wollombi Brook. Monkey Place Creek has been mapped as KFH (NSW DPI, 2013). The survey at Monkey Place Creek was conducted on 10 September 2024. Note that downstream of the sample point was dry and contained no water.

Around 20 tadpoles (species unidentified) were observed during the survey.

4.3.6.1 Habitat characterization

This reach of the Monkey Place Creek (about 400 metres) exhibited a meandering channel morphology, where the flow appears to slightly favour the left bank with a 0.01 m/s flow with a 0.25% gradient. Monkey Place Creek does not appear to be permanently wetted, as the areas assessed downstream of the survey point did not contain water nor exhibit a defined channel.

The substrate within the watercourse was determined to be comprised of around 70% sand, 10% cobble,10% gravel and 10% silt. Stream cover observed at this reach primarily consisted of large woody debris (1%), anthropogenic debris (2%) and overhanging vegetation (2%) which fish can use as a refuge area. Roughly 20 metres downstream from the survey location there was a vehicle crossing where the substrate has been slightly raised (Photo 4.25). This vehicle crossing, along with the semipermanence of this watercourse, result in fragmentation and likely create fish passage obstruction.

The right bank was gently sloped, stable and was highly vegetated whereas the left bank was moderately to steeply sloped and highly vegetated, and very stable. Both banks contained native and exotic vegetation that were in poor to good condition. The native vegetation was dominated by various grasses, shrubs and trees (predominately she-oaks) which constituted 75% of the total riparian area and exotic species constituted 20% of the total riparian area.

At the time of the survey, the wetted width within the reach ranged from 1.5 metres – 1.8 metres, whereas the bank full width was estimated to be between 4.5 metres – 8.1 metres The channel of the watercourse was defined upstream of the survey point and extended 150 metres downstream of the survey location. Further downstream the channel became undefined and expanded into a floodplain (Photo 4.26). Vegetation was established within the “channel” and there was no debris (i.e. woody debris, cobbles or boulders) visible which suggests this reach of Monkey Place Creek experienced long durations of being dry. These characteristics are shown in Photos 4.21 to 4.26.

Photo 4.21 Facing upstream

Photo 4.22 Facing downstream

Photo 4.23 Facing left bank

Photo 4.24 Facing right bank

Photo 4.25 Vehicle crossing

Photo 4.26 200 metres downstream of survey point

4.3.6.2 Water quality

In situ water samples were taken at the survey area (see Table 4.16). Visually, the water appeared to be very clear, and the bottom of the stream was visible during the survey. Based on the water quality measurements it can be confirmed that while Monkey Place Creek has many water quality characteristics that can support fish, the pH measurement is slightly outside of the range known to comfortably support fish. Fish blood has a pH of 7.4, and due to the close contact fish blood has with the water via the blood vessel of the gills, the surrounding water should be close to this pH to limit physiological stress to the fish (Wurts & Durborow, 1992). Although not ideal, studies have indicated that fish can live in the pH range of 4.0–6.5, therefore, it is still possible fish could inhabit this reach of Monkey Place Creek (Wurts & Durborow, 1992).

Table 4.16 Water quality data for Monkey Place Creek

Measurement	Value	Values that can support fish	Fish supported (Y/N)
Turbidity	2.3 NTU	0–3000 NTU	Y
pH	6.38	6.5–9+	Possible
Dissolved Oxygen	63% (6.3 mg/L^)	>5 mg/L*	Y
Conductivity	496 µs/cm	–	Y
Temperature	14.8°C	–	Y

* (Bozorg-Haddad, et al., 2021); ^ converted to mg/L using: dosaturation.pdf (mostreamteam.org) ; + (Wurts & Durborow, 1992).

4.3.6.3 Key fish habitat

The findings during the site survey were assessed against the sensitivity and class ratings outlined in Table 3.3 and Table 3.4 to determine the final watercourse type and class. The assessment of findings is outlined in Table 4.17 and Table 4.18. Monkey Place Creek contained various habitat features that are commonly used as fish refuge which included large woody debris (snags) that exceeded 3.0 metres in length and 300 millimetre in width and instream vegetation. These habitat structures are habitat characteristic of a type 1 watercourse. Based on the information collected from the survey it was determined that Monkey Place Creek is rated as a type 1 and class 2 watercourse.

Table 4.17 Fish habitat sensitivity rating for Monkey Place Creek

Freshwater KFH characteristics	Present or Absent
TYPE 1	
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in 2 dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants	Present
Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act	Absent
TYPE 2	
Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in type 1	Present
Weir pools and dams up to full supply level where the weir or dam is across a natural watercourse	Absent
TYPE 3	
Unstable or unvegetated sand or mud substrate,	Present
Freshwater habitats not included in types 1 or 2	Absent
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Final Determination	**TYPE 1**

Table 4.18 Classification of watercourse for Monkey Place Creek

Freshwater KFH characteristics	Present or Absent
Class 1 – Major KFH	Absent
Class 2 – Moderate KFH	Present
Class 3 – Minimal KFH	Absent
Class 4 – Unlikely KFH	Absent
Final Determination	**CLASS 2**

4.3.7 *Congewai Creek (SW 11/12)*

Congewai Creek is a permanent watercourse that is a tributary of Wollombi Brook, which eventually connects to the Hunter River. It is also mapped as Southern purple spotted gudgeon habitat and KFH. The survey at Congewai Creek was conducted on 10 September 2024.

Around 5 tadpoles (species unidentified) and 10 Eastern Water Dragons (*Physignathus lesueurii*) were observed during the survey.

4.3.7.1 Habitat characterisation

This reach of Congewai Creek (about 300 metres) exhibited a sinuous channel morphology with a 0.05 m/s flow and a 0.1% gradient. The substrate within the watercourse was determined to be comprised of around 80% sand, 15% silt and 5% organics. Note that a sediment sample and flow measurement was unable to be obtained from the main channel of the watercourse due to safety reasons. Instead, a sample was obtained around 0.5 metres off the bank and consequently may not represent the true substrate composition of this reach. Stream cover observed at this reach primarily consisted of leaf litter (15%), woody debris (5%), instream vegetation (5%) and overhanging vegetation (2%) which fish can use as a refuge area. This reach of the Congewai Creek remains highly connected and had no immediate signs of fish passage obstruction.

Due to access issues the right bank was unable to be accessed for a detailed assessment. The right bank was steeply sloped and highly vegetation and appeared to be moderately stable with minimal signs of erosion. The left bank was steeply sloped and, in some areas, transitioned to be vertically sloped or undercut. The highly sloped area of the left bank was sparsely vegetated and consisted of mainly grasses, shrubs and exotic plant species. The exposed soil on the left bank appeared to be less stable and during high flow is likely to be subjected to erosion and a potential collapse in some areas where the bank is extremely undercut. Vegetation inhabiting the right bank appeared to be good condition, and from a distance appeared to be mostly native (80%), with some exotic species present (i.e. fireweed and willows). The left bank was sparsely vegetated, and the top of bank was located on agricultural land. A large majority of the vegetation of the left bank was exotic grasses and shrubs. Being a water-tolerant species, Willows were established within the watercourse and along the stream edges. Overall, the native vegetation of the left bank constituted 35% of the total riparian area and exotic species constituted 15% of the total riparian area.

At the time of the survey, the wetted width within the reach ranged from 14.8 metres – 24.4 metres, whereas the bank full width was estimated to be between 21.2 metres – 36.6 metres This watercourse is confined to a single channel surrounded by tall (7.0 metres – > 10.0 metres) steep banks, and it is unlikely that water will breach the banks during a typical high flow event. These characteristics are shown in Photos 4.27 to 4.30.

Photo 4.27 Facing upstream

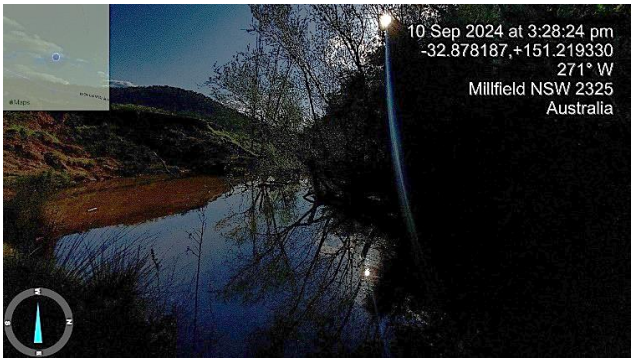

Photo 4.28 Facing downstream

Photo 4.29 Facing left bank

Photo 4.30 Facing right bank

4.3.7.2 Water quality

In situ water samples were taken at the survey area (see Table 4.19). Visually, the water appeared to be very turbid, and the bottom of the stream was not visible during the survey. Based on the water quality measurements it can be confirmed that this reach of Congewai Creek has water quality that can support fish.

Table 4.19 Water quality data for Congewai Creek

Measurement	Value	Values that can support fish	Fish supported (Y/N)
Turbidity	26.0 NTU	0–3000 NTU	Y
pH	6.75	6.5–9+	Y
Dissolved Oxygen	63% (6.2 mg/L^)	>5 mg/L*	Y
Conductivity	536 µs/cm	–	Y
Temperature	15.6°C	–	Y

* (Bozorg-Haddad, et al., 2021); ^ converted to mg/L using: dosaturation.pdf (mostreamteam.org) ; + (Wurts & Durborow, 1992).

4.3.7.3 Key fish habitat

The findings during the site survey were assessed against the sensitivity and class ratings outlined Table 3.3 and Table 3.4 to determine the final watercourse type and class. The assessment of findings is outlined in Table 4.20 and Table 4.21. Congewai Creek contained various habitat features that are commonly used as fish refuge which included large woody-debris (snags) that exceeded 3.0 metres in length and 300 millimetre in width and instream vegetation. These habitat structures are habitat characteristic of a type 1 watercourse. Due to the inability to collect sediment samples it cannot be confirmed or discounted that this reach of Congewai Creek contains gravel beds. Based on the information collected from the survey it was determined that Congewai Creek is rated as a type 1 and class 1 watercourse.

Table 4.20 Fish habitat sensitivity rating for Congewai Creek

Freshwater KFH characteristics	Present or Absent
TYPE 1	
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in 2 dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants	Present
Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act	Present
TYPE 2	
Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in type 1	Present
Weir pools and dams up to full supply level where the weir or dam is across a natural watercourse	Absent
TYPE 3	
Unstable or unvegetated sand or mud substrate,	Present
Freshwater habitats not included in types 1 or 2	Absent
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Final Determination	**TYPE 1**

Table 4.21 Classification of watercourse for Congewai Creek

Freshwater KFH characteristics	Present or Absent
Class 1 – Major KFH	Present
Class 2 – Moderate KFH	Absent
Class 3 – Minimal KFH	Absent
Class 4 – Unlikely KFH	Absent
Final Determination	**CLASS 1**

4.3.8 Watagan Creek (SW13c)

This reach of Watagan Creek is a semi-permanent watercourse and is a tributary to Wollombi Brook, that is mapped as KFH. Around 5 kilometres downstream of the survey area, Watagan Creek contains mapped Southern purple spotted gudgeon habitat. The survey at Watagan Creek was conducted on 12 September 2024.

No aquatic fauna was observed during the survey.

4.3.8.1 Habitat characterisation

This reach of Watagan Creek (about 400 metres) exhibited a meandering channel morphology with a 2.8% gradient. At the time of the survey Watagan Creek was not flowing, however, exhibited many pools (0.25 metres – 1.0 metres in depth) along the stream bed, suggesting this watercourse is semi-permanent. The substrate within the watercourse was determined to be comprised of around 30% sand, 30% gravel, 20% cobble, 15% boulder and 5% organics. Stream cover observed at this reach primarily consisted of woody debris (10%), boulder (15%) and leaf litter (40%) which fish can use as a refuge area.

Both right and left bank ranged from moderately sloped and, in some areas, transitioned to be vertically sloped or undercut. Both banks appeared to be quite stable as they primarily consisted of large boulders or soil that was well established by large trees. The riparian vegetation remained in good condition and relatively intact as minimal exotic species were recorded.

At the time of the assessment, the wetted width within the reach ranged from 4.2 metres – 7.1 metres, whereas the bank full width was estimated to be between 7.2 metres – 22.4 metres. This watercourse is confined to a single channel surrounded by tall (4.4 metres – 7.0 metres) steep banks, and it is unlikely that water will breach the banks during a typical high flow event. These characteristics are shown in Photos 4.31 to 4.34.

Photo 4.31 Facing upstream

Photo 4.32 Facing downstream

Photo 4.33 Facing left bank

Photo 4.34 Facing right bank

4.3.8.2 Water quality

In situ water samples were taken at the survey area (see Table 4.22). Visually, the water appeared to be slightly turbid, however, the bottom of the stream was visible during the survey. Based on the water quality measurements it can be confirmed that this reach of Watagan Creek exhibits water quality characteristics that can support fish. However, the pH measurement is slightly outside of the range know to comfortably support fish. Fish blood has a pH of 7.4, and due to the close contact fish blood has with the water via the blood vessel of the gills, the surrounding water should be close to this pH to limit physiological stress to the fish (Wurts & Durborow, 1992). Although not ideal, studies have indicated that fish can live in the pH range of 4.0–6.5, therefore, it is still possible fish could inhabit Watagan Creek (Wurts & Durborow, 1992)

Table 4.22 Water quality data for Watagan Creek

Measurement	Value	Values that can support fish	Fish supported (Y/N)
Turbidity	13.13 NTU	0–3000 NTU	Y
pH	6.02	6.5–9+	Possible
Dissolved Oxygen	57% (6.1 mg/L^)	>5 mg/L*	Y
Conductivity	223 µs/cm	–	Y
Temperature	12.3°C	–	Y

* (Bozorg-Haddad, et al., 2021); ^ converted to mg/L using: dosaturation.pdf (mostreamteam.org) ; + (Wurts & Durborow, 1992).

4.3.8.3 Key fish habitat

The findings during the site survey were assessed against the sensitivity and class ratings outlined in Table 3.3 and Table 3.4 to determine the final watercourse type and class. The assessment of findings is outlined in Table 4.23 and Table 4.24. Watagan Creek contained various habitat features that are commonly used as fish refuge which included large woody-debris (snags) that exceeded 3.0 metres in length and 300 millimetre in width, boulders greater than 500 millimetre in 2 dimensions and gravel beds. These habitat structures are habitat characteristic of a type 1 watercourse. Based on the information collected from the survey, it was determined that Watagan Creek is rated as a type 1 and class 2 watercourse.

Table 4.23 Fish habitat sensitivity rating for Watagan Creek

Freshwater KFH characteristics	Present or Absent
TYPE 1	
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Freshwater habitats that contain in-stream gravel beds, rocks greater than 500 mm in 2 dimensions, snags greater than 300 mm in diameter or 3 m in length, or native aquatic plants	Present
Any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act	Absent
TYPE 2	
Freshwater habitats and brackish wetlands, lakes and lagoons other than those defined in type 1	Present
Weir pools and dams up to full supply level where the weir or dam is across a natural watercourse	Absent
TYPE 3	
Unstable or unvegetated sand or mud substrate,	Present
Freshwater habitats not included in types 1 or 2	Absent
Wetlands recognised under international agreements wetlands listed in the Directory of Important Wetlands of Australia	Absent
Final Determination	**TYPE 1**

Table 4.24 Classification of watercourse for Watagan Creek

Freshwater KFH characteristics	Present or Absent
Class 1 – Major KFH	Absent
Class 2 – Moderate KFH	Present
Class 3 – Minimal KFH	Absent
Class 4 – Unlikely KFH	Absent
Final Determination	**CLASS 2**

5 Assessment of impacts

5.1 Assessment of potential construction impacts

The construction of the HTP is not expected to directly impact any aquatic receptors, as no instream works or removal of riparian vegetation is anticipated. All vegetation removal is expected to occur above the top of bank. If any vegetation removal within the riparian area is required, it will be limited to canopy vegetation. While this may reduce localised shade cover over the watercourse, it is not expected to cause long-term impacts on aquatic habitat or receivers.

During certain construction activities (i.e. stringing conductors across watercourses, constructing transmission towers near riparian zones, refuelling/leakage of equipment, etc.) there is potential for indirect impacts on aquatic receivers. The aquatic receivers that may be potentially impacted include:

- key fish habitat (KFH)
- aquatic invertebrates
- water quality
- aquatic vertebrates
- native plants inhabiting the riparian zone (i.e. removal or introduction of invasives).

Although HTP will interact with 19 named watercourses and cross 55 unnamed watercourses that are deemed to contain KFH, the project is unlikely to result in harmful alteration, disruption and destruction to fish habitat. However, potential indirect impacts to fish and KFH from the project are possible and may include:

- introduction of invasive species
- removal of riparian vegetation
- riparian vegetation die-off as a result of tree removal or pruning during line transmission line installation
- change in sediment concentrations into the stream from clearing, grubbing, excavation and equipment and vehicles near the watercourse and or connecting drainages
- an increase in total suspended solids (TSS) may occur from construction activities as a result of sedimentation and run-off
- a change in food supply resulting from the increase of organic debris (i.e. leaves entering water from pruning and or tree disturbance) entering the watercourse during transmission line installation
- generation of dust and run-off from stockpiles
- change in nutrient concentrations from application of fertilizers during revegetation of areas near watercourses and or drainages
- breach of water quality requirements because of run-off from laydown areas, construction areas and construction support sites
- contamination and interaction with groundwater and surface water during construction
- change in contaminant concentration from deleterious substances that may enter the stream such as oil, gas, or other fluids from construction vehicles and equipment
- direct impact to watercourse banks and streambeds vehicle or equipment entering the watercourse (either accidentally or intentionally)
- fluctuations in water levels resulting from water extraction for project use (i.e. watercarts)
- inappropriate disposal of waste (including grey water, and potable water) into drainages and excavations that interact with groundwater)
- inappropriate disposal of household and industrial waste during construction that may eventually enter nearby watercourses.

5.1.1 Threatened species likelihood of occurrence assessment

The project impact area contains mapped habitat for one FM Act listed endangered species, the Southern purple spotted gudgeon (*Mogurnda adspersa*) (see section 4.2.3). The lowest extent of mapped habitat for the FM Act listed endangered Hunter River population of Darling River hardyhead (*Craterocephalus amniculus*) is slightly upstream of the project impact area, and the HTP's interaction with the Hunter River and associated tributaries is generally below the lowest extent of known habitat for the Hunter population of Darling River hardyhead. Despite being outside of its known distribution, this species is considered further in this assessment on a precautionary basis as potential habitats that can support this species were identified during the field survey.

The likelihood of occurrence assessment completed for threatened fish species under the FM Act determined that the Southern purple spotted gudgeon had a 'high' likelihood of occurrence, while the Darling River hardyhead had a 'moderate' likelihood of occurrence (see Appendix B). To assess what impacts the project may have on these 2 species a test of significance for the Southern purple spotted gudgeon and the Darling River hardyhead was conducted (see Appendix A).

The test of significance determined that the likelihood of impacts to these species will be minimised through restriction of direct impacts to the watercourses that contain mapped and potential species habitat. The implementation of the project mitigation and management measures (see Chapter 6) would prevent any direct or indirect impacts to these watercourses and their habitats. It is considered unlikely that temporary impacts associated with the construction of the project would result in any long-term degradation of mapped KFH areas. Existing watercourse crossings would be prioritised for use during construction. If additional watercourse crossings are required, they would be designed in accordance with all relevant guidelines (see section 3.3.4).

Both species are sensitive to water quality changes associated with fluctuation in water levels, sedimentation, nutrient run-off and loss of native riparian habitat. Not much is known about the instream habitat preferences of Darling River hardyhead as studies have noted this species inhabit a large range of habitats from slow-flowing, shallow, clear waterways to large, turbid fast-flowing waterways (Fisheries Scientific Committee, 2014). Similar to Darling River hardyhead, Southern purple spotted gudgeon inhabits a variety of watercourse types, however, this species is known to be dependent on complex instream habitat features including, overhanging vegetation, leaf litter, rocks or woody debris (NSW DPI, n.d.). Due to both species inhabiting a wide range of watercourse types, all watercourses containing instream features should be treated as if these species have the potential to inhabit them, especially if it is in, or close to KFH. Table 5.1 outlines the impacts that may occur at each watercourse that was surveyed.

Table 5.1 HTP impacts on threatened aquatic species

Watercourse	Southern purple spotted gudgeon habitat present	Darling River hardyhead habitat present	Impact the project may have on threatened fish species
Hunter River	Yes	Yes	**Habitat destruction** — Establishment of invasive aquatic or riparian vegetation — Destabilization of banks as a result of vegetation removal from top of bank — Pruning of overhanging tree canopies — Removal of instream features (i.e. woody debris). **Impacts to water quality** — Soil erosion resulting from vegetation removal will result in increased turbidity of the water — Breach of water quality requirements because of run-off, contamination and bank disruption — Change in sediment concentrations into the stream from clearing, grubbing, excavation and equipment and vehicles near the watercourse and or connecting drainages. **Impacts to fish passage** — Fluctuations in water levels resulting from water extraction for project use (i.e. watercarts) — Establishment of inappropriate access roads (i.e. ford crossing) for the type and class of watercourse (NSW DPI, 2013).
Hunter River	Yes	Yes	
Wollombi Brook	Yes	Yes	
Loder Creek	Yes	Yes	
Monkey Place Creek	Yes	Yes	
Congewai Creek	Yes	Yes	
Watagan Creek	Yes	Yes	

The most likely impact the project will have on Darling River hardyhead and Southern purple spotted gudgeon could be a temporary disruption of water quality, removal of vegetation near top of bank and establishment of invasive species. With the implementation of appropriate management measures, the extent of impact to waterbodies, water quality, and hydrological processes is expected to be minor.

The riparian area is to be protected by limiting vegetation removal and installing sediment and erosion measure, implement management plans to avoid weed establishment and nutrient leaching. As a result, the risk of impacts on aquatic threatened species is considered minor and there is no need for targeted threatened aquatic species surveys or further standalone assessment as part of the EIS.

5.2 Assessment of potential operational impacts

Operational activities, including maintenance of the project infrastructure, are not expected to interact with the aquatic environment and/or riparian vegetation along the HTP corridor therefore direct impacts are not expected. Operational activities will require minimal works near watercourses, however, indirect impacts to aquatic receivers are possible. Potential indirect effects to fish and fish habitat from operational activities include:

- introduction of invasive species via vehicle movements during transmission tower inspections and maintenance
- change in sediment concentrations into the stream from permanent access tracks
- change in contaminant concentration from deleterious substances that may enter the stream such as oil, gas, or other fluids from operational maintenance vehicles and equipment
- riparian vegetation die-off as a result of tree removal or pruning during maintenance.

With the implementation of the mitigation measures, these impacts are considered unlikely to occur.

5.3 Residual risk assessment

This aquatic risk assessment was completed to identify potential risks to species listed on the FM Act and their habitat, assess their intensity, likelihood, consequence, and ultimately their overall significance. This assessment is performed considering potential impacts before and after the implementation of appropriate mitigation measures. The initial step is to identify a list of environmental aspects and impacts, a corresponding mitigation strategy, and risk ranking for each activity (see Table 5.2).

The potential impacts associated with the construction activities were evaluated and ranked based on a consideration of the consequence and likelihood of each impact, before and after the application of operational controls (i.e. mitigation measures). Table 5.3 outlines the results of this project risk assessment. It is important to note that instream works in habitat that supports threatened species, along with the disturbance and /or removal of riparian vegetation are not expected, therefore the impacts are likely to be indirect and minimal.

Table 5.2 Risk assessment matrix

	Consequence				
	Catastrophic	**Major**	**Moderate**	**Minor**	**Insignificant**
Almost certain	Extreme	Extreme	Extreme	High	High
Likely	Extreme	Extreme	High	High	Medium
Possible	Extreme	High	High	Medium	Low
Unlikely	High	High	Medium	Medium	Low
Rare	High	Medium	Low	Low	Low
Consequence	**Degree of environmental impact**				
Catastrophic	Very serious environmental effects. Long term widespread effects on significant environment.				
Major	Serious environmental effects. Relatively widespread, medium-long term impacts.				
Moderate	Moderate effects. Short-medium term, widespread impacts.				
Minor	Minor effects. Short-medium term damage to small area of limited significance.				
Insignificant	Limited damage to minimal area of low significance.				

Likelihood	Frequency of event occurring
Almost certain	Consequence is expected to occur in most circumstances.
Likely	Consequence will probably occur in most circumstances.
Possible	Consequence should occur at some time.
Unlikely	Consequence could occur at some time.
Rare	Consequence may only occur in exceptional circumstances.
Category	**Risk ranking**
	Extreme
	High
	Medium
	Low

Table 5.3 Risk ratings (before and after the implementation of mitigation measures)

Impacts from the project	Receiver impacted (RED IS IMPACTED)					Initial impact	Proposed avoidance/mitigation measure	Implementation of mitigation measures
	Key fish habitat	Aquatic invertebrate	Aquatic vertebrates	Water quality	Riparian vegetation			
Increased rubbish in the area						Medium	— Ensure all rubbish is properly disposed of and ample waste disposal facilities are available on-site.	Low
Sedimentation from erosion and run-off of disturbed soils						High	— Establishment of erosion and sediment control (ESC) measures — Aim to complete works during dry periods.	Low
Pollution of surface and groundwater from chemical spills						Medium	— Refuel equipment and store chemicals 100 m from any watercourse or drainage — Store chemicals in a secondary containment that is at least 130% the total volume of spillable volume.	Low
Generation of dust and run-off from stockpiles						Medium	— Cover stockpiles during rain and high wind events — Establish ESC measures.	Low
Introduction of invasive species						High	— Ensure vehicles and personal protective gear (PPE) is clean and free of weeds — Ensure all seeds obtained for rehabilitation efforts are of the native variety and free of weed — Ensure all fill is weed free — Do not release invasive aquatic species into watercourses or drainages.	Medium
Removal of riparian vegetation						Low	— Erect ‘No-Go Zones’ around the riparian zone when working in proximity of watercourses.	Low
Interaction with groundwater via excavation						Medium	— If interaction with groundwater occurs stop works immediately.	Low
Contamination of groundwater						Medium	— Ensure contaminated groundwater is removed and disposed.	Low
Disturbance of watercourse banks and streambeds						Low	— Under no circumstance is a vehicle or equipment allowed to enter the watercourse.	Low
Inappropriate disposal of waste (including grey water, and potable water) into drainages and excavations that interact with groundwater.						Low	— Appropriately dispose of wastes and do not intentionally dispose of waste in any drainages.	Low

6 Mitigation measures

As outlined in BDAR mitigation measure B12, a Riparian Vegetation Management Plan (RVMP) will be developed and implemented for the project to manage activities within vegetated riparian zones to minimise impacts to aquatic environments. The plan will be prepared prior to and implemented during any disturbance to a riparian area. This will be the primary aquatic mitigation measure.

The plan will identify the measures to be implemented to minimise impacts from construction activities (such as temporary and permanent waterway crossings) within riparian and aquatic environments. A schedule of works will be stipulated within the approved RVMP. Riparian areas subject to disturbance will be progressively stabilised and rehabilitated.

BDAR mitigation measure B4 also requires micro-siting of associated works and access tracks to minimise vegetation clearing and disturbance of watercourses within the biodiversity study corridor which will include:

- prioritising areas of low biodiversity value
- utilising existing access tracks, where feasible
- locating waterway crossings at narrow width locations
- minimising the quantity of cut and fill activities.

BDAR mitigation measure B16 relates to water quality, watercourse geomorphology and aquatic habitat and states that any watercourse crossings will be designed to minimise disturbance and harm within riparian corridors and rehabilitate aquatic habitat to achieve a 'no net loss' of habitat within the affected area and catchment as a whole, in accordance with the following guidelines:

- *Guidelines for controlled activities on waterfront land (NRA, 2018)*
- *Why do fish need to cross the road? Fish passage requirements for waterway crossings (Fairfull & Witheridge, 2003)*
- *Policy and guidelines for fish habitat conservation and management (DPI, 2013).*

Although no direct impacts to the surrounding aquatic environments (i.e. instream works, works within riparian area) are expected, there is still a risk that indirect impacts from construction of the project may impact local watercourses. To ensure that the surrounding aquatic habitats remain intact and healthy during the project works the following recommendations should be implemented:

- ongoing visual assessments at watercourse crossings to ensure no adverse impacts are observed during construction
- implementation of the Network Operator’s construction contractor’s Environmental Management Strategy (EMS), or the Network Operator’s operational environmental management framework (or similar system).

Overall, with the implementation of the proposed mitigation measures, the project is not expected to result in adverse impacts on aquatic environments, ecological communities and species.

If any instream works are to be performed, appropriate approvals and permits are to be obtained under the FM Act and the WM Act.

7 Conclusion

7.1 Summary of results

The desktop assessment determined that the HTP will cross 25 named watercourses as well as many unnamed lower order watercourses (88% being Strahler Order <2). Of these, 19 named watercourses and 55 unnamed watercourses were mapped to contain KFH. Of these, 4 were determined to contain mapped habitat for Southern purple spotted gudgeon. Of these identified watercourses, 7 were selected for field survey as they were determined to contain mapped aquatic habitat for Southern purple spotted gudgeon or determined to be potentially impacted as a result of construction activities (i.e. tree pruning, removal of vegetation from top of bank result in sedimentation, step banks etc.). All watercourses within the HTP must be protected as there is potential for aquatic organisms to utilise all watercourses within the project impact area.

All 7 survey locations are mapped as KFH, which was confirmed during the survey. Six of the 7 survey areas were deemed to be a type 1 watercourse and 4 of the 7 were deemed to be a class 1 watercourse. One watercourse, Loder Creek, was deemed to be a type 2 watercourse as it lacked type 1 habitat features. Three of the 7 watercourses (Loder Creek, Monkey Place Creek and Watagan Creek) were deemed to be class 2, as they lack a permanency flow (Table 7.1). Watercourse type and class ratings are used to assess the impacts of certain activities on fish habitats in and to identify management recommendations to minimise impacts on different fish habitats such as watercourse crossing types. The class 1 watercourses require a bridge, arch structure or tunnel whereas class 2 requires a bridge, arch structure, culvert or ford. If crossings are required at any of the surveyed locations, bridge crossings will be the preferred crossing structure.

Table 7.1 Assessment summary

Watercourse	Watercourse type	Watercourse class	Final determination
Hunter River (SW01)	1	1	Highly sensitive and major key fish habitat
Hunter River (SW02)	1	1	Highly sensitive and major key fish habitat
Wollombi Brook	1	1	Highly sensitive and major key fish habitat
Loder Creek	2	2	Moderate sensitive and moderate key fish habitat
Monkey Place Creek	1	2	Highly sensitive and moderate key fish habitat
Congewai Creek	1	1	Highly sensitive and major key fish habitat
Watagan Creek	1	2	Highly sensitive and moderate key fish habitat

With the recommended mitigation and management measures, it is not expected that any fish habitat in the assessed watercourse will be impacted during construction or operation of the HTP. The riparian area and watercourse features would remain intact and would not be directly impacted. There are potential indirect impacts that could adversely impact aquatic environments (see section 5.1). The proposed mitigation and avoidance measures would reduce the overall risk of impact.

Although no direct impacts to the surrounding aquatic environments (i.e. instream works, works within riparian area) are expected, there is still a risk that indirect impacts from construction of the project may impact local watercourses. To ensure that the surrounding aquatic habitats remain intact and healthy during the project works the following recommendations should be implemented:

- visual assessments at watercourse crossings to ensure no adverse impacts are observed
- implementation of a project Environmental Management Strategy.

If any instream works are to be performed, appropriate approvals and permits are to be obtained under the FM Act and the WM Act. The project has been determined as being unlikely to result a significant impact on listed aquatic threatened species, populations or ecological communities listed under the FM Act.

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9 References

ALA, 2025. [Online]
Available at: https://www.ala.org.au/

ALA, 2025. *Euastacus armatus (von Martens, 1866).* [Online]
Available at: https://www.ala.org.au/

Atlas of Living Australia, 2024. [Online]
Available at: https://www.ala.org.au/

Bozorg-Haddad, O., Delpasand, M. & Loaiciga, H. A., 2021. Water quality, hygiene, and health. *Economical, Political, and Social Issues in Water Resources,* pp. 217-257.

Bureau of Meteorology , 2024. *Groundwater Dependent Ecosystems Atlas.* [Online]
Available at: http://www.bom.gov.au/water/groundwater/gde/map.shtml

DCCEEW, 2024. *Protected Matters Seach Tool [Online].* [Online]
Available at: Available: http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf [Accessed].

Department of Climate Change, Energy, the Environment and Water, 2024a. *Conservation Advice for Bidyanus bidyanus (silver perch),* Canberra: Australian Government.

DPI, 2024. *Fisheries NSW Spacial Data Portal.* [Online]
Available at: https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal

Fairfull , S. & Witheridge, G., 2003. *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings.,* Cronulla, 16pp: NSW Fisheries.

Fisheries Scientific Committee, 2014. *Craterocephalus amniculus – Darling River Hardyhead population in the Hunter River ,* s.l.: NSW Department of Primary Industries.

Fishes of Australia , 2025. *Murray Hardyhead, Craterocephalus fluviatilis.* [Online]
Available at: https://fishesofaustralia.net.au/home/species/1384#moreinfo

Fishes of Australia, 2025. *Murray Cod, Maccullochella peelii (Mitchell 1838).* [Online]
Available at: https://fishesofaustralia.net.au/home/species/4655#moreinfo

Hatton , T. & Evans, R., 1998. Dependence of Ecosystems on Groundwater and its Significance to Australia. *LWRRDC Occasional Paper No 12/98..*

NSW DCCEEW, 2022. *Sharing and Enabling Environmental Data in NSW.* [Online]
Available at: https://datasets.seed.nsw.gov.au/dataset/streambanks-3rd-order-strahler-and-above-cessnock-lga
[Accessed 09 2024].

NSW Department of Planning, 2003. *Aquatic Ecology in Environmental Impact Assessment,* s.l.: s.n.

NSW Department of Primary Industries and Regional Development, 2025. *Macquarie Perch.* [Online]
Available at: https://www.dpi.nsw.gov.au/fishing/threatened-species/what-current/endangered-species2/macquarie-perch

NSW Department of Primary Industries, 2014. *Flathead Galaxias – Galaxias rostratus.* [Online]
Available at: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0020/635123/flathead-galaxias-rostratus.pdf

NSW DPI, 2006. *Reducing the impact of road crossing on aquatic habitat in coastal waterways – Hunter / Central,* Fleminton, NSW: New South Wales Environmental Trust.

NSW DPI, 2013. *Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (2013 update),* Wollongbar: Fisheries NSW.

NSW DPI, 2025. *APPENDIX F: Stream order and water classification.* [Online]
Available at: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/634621/9.-Appendices-F-to-J.pdf

NSW DPI, n.d. *Southern Purple Spotted Gudgeon.* [Online]
Available at: https://www.dpi.nsw.gov.au/fishing/threatened-species/what-current/endangered-species2/purple-spotted-gudgeon#:~:text=The%20species%20can%20be%20found%20in%20a%20variety,rocks%20or%20snags%20are%20important%20for%20the%20species.
[Accessed 10 February 2025].

NSW DPIRD, n.d. *Hunter / Central Rivers catchment.* [Online]
Available at: https://www.dpi.nsw.gov.au/fishing/habitat/your-catchment/hunter-central-rivers#:~:text=The%20Hunter-

Central%20Rivers%20catchment%20is%20an%20area%20of,Stephens%2C%20Lake%20Macquarie%2C%20Tuggerah%20Lakes%20and%20Brisbane%20Waters.
[Accessed 31 January 2025].
NSW Government , 2024. *About the Hunter catchment.* [Online]
Available at: https://water.dpie.nsw.gov.au/about-us/learn-about-water/basins-and-catchments/catchments/hunter
Strahler, A. N., 1952. Hypsometric (Area-Altitude) Analysis of Erosional Topography. *GSA Bulletin ,* p. 63 (11): 1117–1142..
Threatened Species Scientific Committe, 2016. *Threatened Species Scientific Committee (2016). Conservation Advice Galaxias rostratus flathead galaxias.,* Canberra: Department of the Environment.
Trout Cod Recovery Team, 2008. *National Recovery Plan for the Trout Cod Maccullochella ,* Melbourne: Department of Sustainability and Environment.
WSP Australia Pty. , 2024 . *Desktop Aquatic Assessment Report ,* Newcastle : s.n.
Wurts, W. A. & Durborow, R. M., 1992. Interactions of pH, Carbon Dioxide, Alkalinity and Hardness in Fish Ponds. *SRAC Publication,* pp. 1-4.
Zhang, Y., Zhao, Q. & Ding, S., 2019. The responses of stream fish to the gradient of conductivity: A case study from the Taizi River, China. *Aquatic Ecosystem Health & Management ,* pp. Vol 22 (2) pp 171-182.

Appendix A

Test of significance

Test of significance for southern spotted purple gudgeon & Darling River hardyhead (as per Part 7. Division 1, Section 7.3 of the *Biodiversity Act 2016*)

The following is to be considered for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

a) *In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.*

The only likely impact to occur in an area of key fish habitat (KFH) will be the removal or trimming of tree canopy on the creek banks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey will be retained in-situ adjoining the creek banks. All potential indirect impacts associated with erosion and sedimentation impacts will be managed so they do not impact the riparian areas.

At most, any impact to water quality will be temporary and negligible. Each riparian area will continue to function as it currently performs. It is considered unlikely that temporary impacts would result in any long-term degradation of mapped KFH areas.

Southern purple spotted gudgeon

The project is not likely to have an adverse effect on the life cycle of the Southern purple spotted gudgeon such that a viable local population of the species is likely to be placed at risk of extinction.

Southern purple spotted gudgeon is threatened by:

- predation and competition with introduced fish such as eastern gambusia (*Gambusia holbrooki*) and redfin perch (*Perca fluviatilis*)
- habitat disturbance by common carp (*Cyprinus carpio*)
- fluctuations in water levels and flow due to river regulation
- increased turbidity and damage of stream banks by livestock access
- decreased water quality due to agricultural runoff and siltation
- extreme weather events, such as drought and bushfires
- local extinctions may not be naturally recolonised because of the species' inability to disperse the long distances required.

The project will have a limited impact on these factors that threaten Southern purple spotted gudgeon.

Importantly, watercourse crossings will be designed in accordance with *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Watercourse Crossings* (Fairfull and Witheridge, 2003) and *Policy & Guidelines for Fish Habitat Conservation & Management (2013 update)* (DPI, 2013). The extent of impact to waterbodies, water quality and hydrological processes is expected to be minor throughout the project, subsequently reducing the risk of impacts on threatened species within the subject land. Breeding and other lifecycle activities are expected to continue.

Darling River hardyhead

The Darling River hardyhead is threatened due to:

- the habitat of the Darling River hardyhead has been degraded through soil erosion, land clearing and livestock damage to riverbanks
- thermal pollution (changes in water temperature)
- the presence of competing species, including alien goldfish (*Carassius auratus*), eastern gambusia (*Gambusa holbrooki*) and common carp (*Cyprinus carpio*) may be causing significant declines of the Darling River hardyhead in the Hunter River catchment. It is also likely that gambusia feed on the eggs and larvae of the Darling River hardyhead
- water extraction from smaller tributary streams during droughts may put additional pressure on remnant populations.

The current known distribution of Darling River hardyhead is located outside of the HTP area, however, historically this species was located within the project impact area with the most recent record being in 1976. Due to the lack of presence of this species and limited instream impacts of the project, it is unlikely the project will have on Darling River hardyhead.

Additionally, the project footprint does not cross any mapped Darling River hardyhead habitat, however, there is a low likelihood this species may be present.

b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

- **i** *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
- **ii** *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.*

Not applicable.

c) In relation to the habitat of a threatened species or ecological community:

- **i** *the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and*
- **ii** *whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and*
- **iii** *the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.*

Degradation of riparian zones can impact both aquatic and terrestrial biodiversity that are affiliated with the habitat. Consequently, in the event of any disturbance to riparian areas, only the vegetation of the tree-stratum will be cleared (with tree trunks to be retained) in order to protect the understory in such areas. Any riparian areas subject to disturbance would be stabilised and rehabilitated, using endemic vegetation, to restore the area to pre-existing conditions as far as reasonably practicable. As the project is unlikely to impact core riparian zones, no direct impacts are expected to occur to these aquatic values of reliant threatened aquatic species.

Habitat connectivity will be maintained through avoiding the construction of additional watercourse barriers within watercourses. The project`s preference will be to utilise existing watercourse crossings (i.e., bridges, culverts) for construction and operation, to avoid the need to construct additional watercourse barriers. In the event new crossings are required, they will be designed in accordance with the *'Why Do Fish Need to Cross the Road?'* (Fairfull and Witheridge, 2003), and the *Policy & Guidelines for Fish Habitat Conservation & Management* (DPI, 2013), to ensure impacts on fish passage and habitat connectivity are minimised.

d) Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

The project will not impact on any declared area of outstanding biodiversity value.

e) Whether the proposed development or activity is consistent with a Priorities Action Statement

The NSW DPI Priorities Action Statements outline recovery actions for these species. The actions include:

- advice to consent and determining authorities
- collate and review existing information
- community and stakeholder liaison, awareness and education
- compliance/enforcement
- enhance, modify or implement NRM planning processes to minimize adverse impacts on threatened species
- habitat rehabilitation
- pest eradication and control

- research/monitoring
- stocking/translocation
- survey/mapping.

The project does not interfere with any of the recovery actions for these species.

f) Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A Key Threatening Process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, population, or ecological community. Key threatening processes are listed under the BC Act and at the present there are currently 39 listed KTP's. Of the 38 listed KTP's under the BC Act, 2 are applicable to the threatened fish species subject to this assessment (Table A.1). However, minimisation of impacts to 'core' riparian areas, and preference for utilisation of existing watercourse crossings will reduce or avoid the impact of both KTP's.

Table A.1 Key threatening processes relevant to the project (BC Act)

Key threatening process	Relevance to the project
Alteration to the natural flow regimes of rivers, streams, floodplains & wetlands	Yes. The project will prioritise utilisation of existing watercourse crossings for construction and operation, and in the event additional watercourse crossings are required by the project, they will be designed in accordance with the *'Why Do Fish Need to Cross the Road?'* booklet (Fairfull and Witheridge, 2003), and the *Policy & Guidelines for Fish Habitat Conservation & Management (2013 update)* (DPI, 2013).
Clearing of native vegetation	Yes. The Project will require clearing of native vegetation. However, impacts to riparian vegetation will be avoided or minimised where possible.

There are also KTP's specific to native fish and marine vegetation listed under the FM Act. Of the 8 listed KTP's under the FM Act, 5 are applicable to the threatened fish species subject to this assessment (Table A.2). However, minimisation of impacts to 'core' riparian areas, preference for utilisation of existing watercourse crossings, and the Project's support of renewable energy zones in the Hunter region, will reduce or avoid the impact of all KTP's.

Table A.2 Key threatening processes relevant to the project (FM Act)

Key threatening process	Relevance to the project
Degradation of native riparian vegetation along New South Wales water courses	Yes. The project may require temporary degradation of native riparian vegetation; however, this is limited to the trimming of tree canopy's to facilitate the construction and operation of the transmission line spanning each riparian area. It is expected that trunk bases and understorey will be retained in-situ, however, this is yet to be confirmed. Additionally, any riparian areas subject to disturbance will be stabilised and rehabilitated, using endemic vegetation, to restore the area to pre-existing conditions as far as reasonably practicable.
Human-caused climate change	Yes. The project is likely to generate temporary emissions during construction. However, the purpose of the project is to facilitate development of renewable energy zones in the Hunter region, Central-West Orana and New England, which will strive to reduce climate change impacts associated with energy production.
Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams	Yes. The project will prioritise utilisation of existing watercourse crossings for construction and operation, and in the event additional watercourse crossings are required by the project, they will be designed in accordance with the *'Why Do Fish Need to Cross the Road?'* booklet (Fairfull and Witheridge, 2003), and the *Policy & Guidelines for Fish Habitat Conservation & Management (2013 update)* (DPI, 2013).

Key threatening process	Relevance to the project
Removal of large woody debris from New South Wales rivers and streams	Yes. The project may require the removal of large woody debris to facilitate construction of watercourse crossings, if required. Preference will be to utilise existing watercourse crossings.

Conclusion

While there are several KTP's applicable to the threatened species subject to this assessment, and all of which are relevant to the project, management and mitigation measures are sufficient to reduce or avoid impacts from the KTP's. Anticipated impacts (direct or indirect) from the project to the habitat of both the southern spotted purple gudgeon and Darling River hardyhead are likely to only be temporary in nature and will be minimised through design and landscaping initiatives where possible. Consequently, the project is unlikely to have a significant impact on the applicable threatened species or their habitat.

Appendix B

Likelihood of occurrence

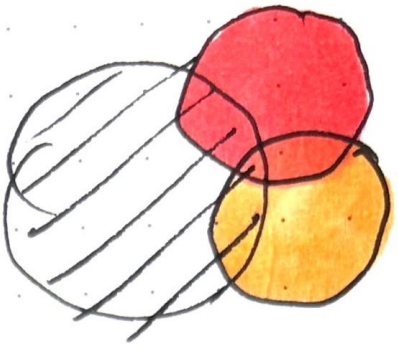
Table B.1 Likelihood of occurrence

Scientific name	Common name	BC Act[1]	FM Act[3]	EPBC Act[2]	Habitat	Likelihood of occurrence
Craterocephalus amniculus	Darling River hardyhead (Hunter River catchment population)	–	EP	–	The Darling River hardyhead is found in the upper tributaries of the Darling River near the Queensland and New South Wales border. The Hunter River population is the only known occurrence of the species in an eastward flowing river. They are usually found in slow flowing, clear, shallow waters or in aquatic vegetation at the edge of such waters. The species has also been recorded from the edge of fast flowing habitats such as the runs at the head of pools.	Moderate
Mogurnda adspersa	Southern purple spotted gudgeon	–	E	–	The Southern purple spotted gudgeon occurs in the Murray-Darling basin as well as parts of coastal northern NSW and Queensland. The species can be found in a variety of habitats such as rivers, creeks, watercourse and billabongs with slow-flowing or still waters. Cover in the form of aquatic vegetation, overhanging vegetation from riverbanks, leaf litter, rocks or snags are important for the species.	High

(1) V = Vulnerable, E = Endangered, CE = Critically Endangered, EX = Presumed Extinct under the BC Act

(2) V = Vulnerable, E = Endangered, M = Migratory under the Commonwealth EPBC Act.

(3) V = Vulnerable, E = Endangered, EP = Endangered Population, CE = Critically Endangered, EX = Presumed Extinct under the Fisheries Management Act 1994



Appendix M

Evidence to support and to justify the quantum of partial loss applied to disturbance area B and HZ

Our ref: PS201156-NCL-ECO-LTR-001 RevB-Appendix-M

By email
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30 January 2026

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Dear Naomi

HTP Partial Impacts evidence base

1. Introduction to project

This letter has been prepared by WSP Australia Pty Ltd on behalf of Energy Corporation of NSW (Energy Co) for the proposed Hunter Transmission project (HTP) (the project).

WSP Australia Pty Ltd has prepared a Biodiversity Development Assessment Report (BDAR) for the HTP in accordance with NSW Biodiversity Assessment Method 2020 (BAM).

A key component of the project assessment was consideration of partial impacts on native vegetation within the electrical transmission line (ETL) during construction and ongoing operational maintenance and how these partial impacts are assessed under the BAM.

Following ongoing consultation with the NSW Conservation Programs, Heritage and Regulation (CPHR) (formerly Biodiversity Conservation & Science (CPHR)) a range of assessment approaches to partial impacts and key considerations were identified, with a particular focus on providing a project specific and evidence-based approach.

This memo presents the finding of the evidence-based approach to partial impacts developed for the project. It also builds on the information previously presented in consultative workshop with CPHR on the 9th May 2023 and submitted as part of the approved Central-West Orana Renewable Energy Zone (CWO REZ) transmission infrastructure project.

It also provides the proposed raw attribute values representative of the post clearing partial impact outcome to be used within the BAM-C assessment of partial impacts for the project.

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WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

WSP Australia Pty Limited ABN 80 078 004 798

1.1 Project description

The project is critical State significant infrastructure (CSSI). It must be built by the end of 2029 to protect energy security in NSW as the remaining coal-fired power stations close.

The project includes:

- a new overhead 500 kilovolt (kV) double circuit transmission line of around 100 kilometres (the HTP corridor)
- 2 new switching stations (Bayswater South and Olney)
- upgrades to the existing Bayswater and Eraring substations
- adjustments to existing transmission lines
- ancillary works including road upgrades, access tracks, and temporary construction facilities such as laydown areas, stringing sites, and construction support sites (some with temporary workers accommodation).

The new transmission line would transport electricity generated in the Central-West Orana and New England Renewable Energy Zones (REZs). It would connect the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring. This would strengthen the State's core electricity grid and supply clean and reliable energy to NSW consumers for generations to come.

The project disturbance area is identified based on realistic project component locations and areas however it is indicative at this stage. The area would be confirmed during finalisation of design and construction methodology and would be developed as part of the consideration of avoidance and impact minimisation. Disturbance area has the same meaning as 'Development site' as defined in the BAM.

The disturbance area would have varying degrees of physical disturbance along the transmission line alignment to reflect construction and operational requirements, and these have been applied to the biodiversity assessment. For the purpose of this BDAR, disturbance area has been divided into the following areas consisting of:

- **Disturbance area A** – assumed for complete removal of vegetation.
- **Disturbance area B** – assumed to have no ground disturbance except in circumstances associated with the operational requirements for vegetation maintenance to meet the vegetation clearance heights. The assumed partial vegetation clearing is restricted to clearance of vegetation with growth height potential of 2 metres or above.
- **Disturbance area HZ** – a hazard tree zone where there would be impacts to selected trees that are within the risk category height range 20–30 m and have poor structural stability posing a risk of falling.

The width of the disturbance areas A, B and HZ areas for transmission line components vary based on their vegetation clearing requirements and construction methodologies. Figure 1.1 provides an indicative overview of these disturbance types.

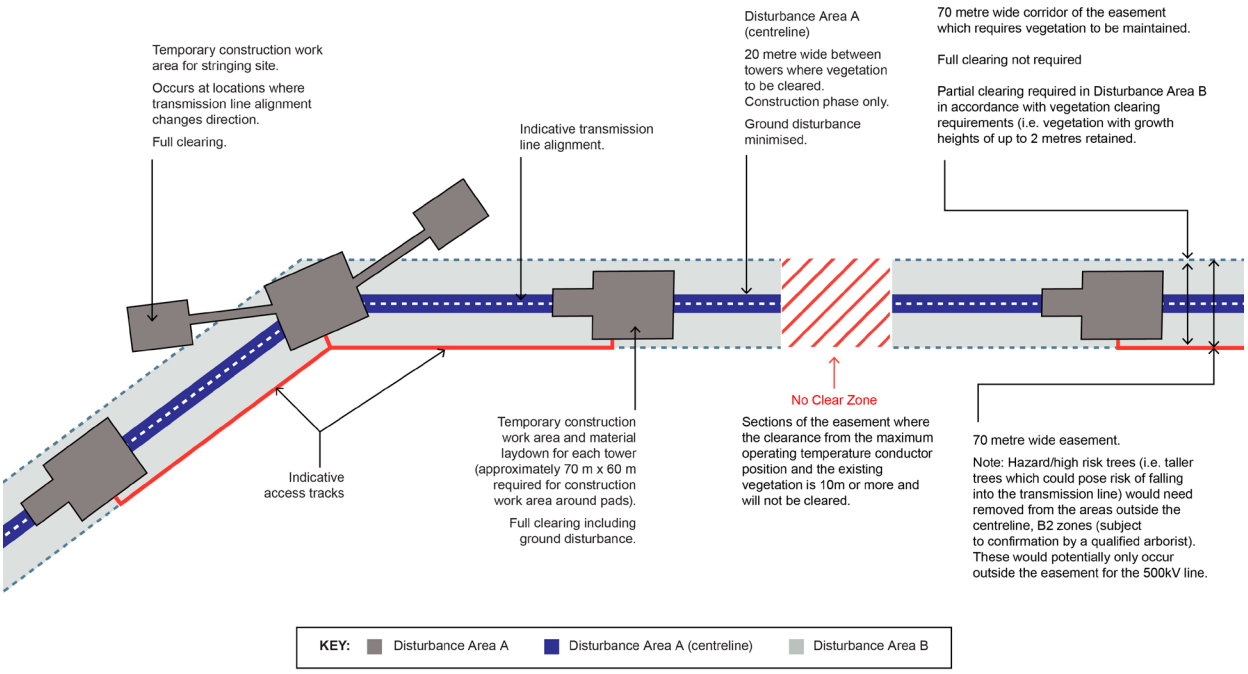


Figure 1.1 Indicative disturbance area definition for a typical 500 kV transmission line

2. Background to partial impacts in ETLs

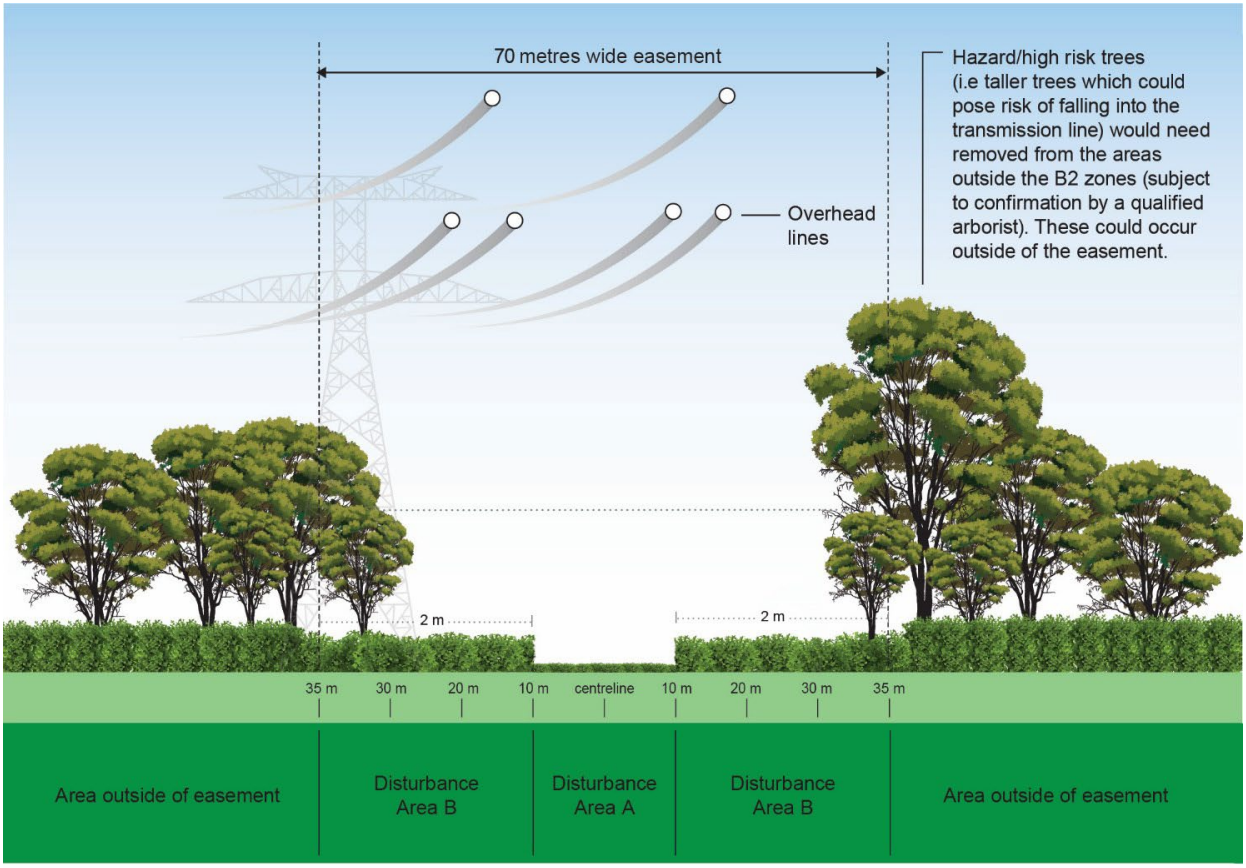
The project has identified partial impacts are applicable to two disturbance zones:

- **Disturbance area B** – assumed to have no ground disturbance except in circumstances associated with the operational requirements for vegetation maintenance to meet the vegetation clearance heights. The assumed partial vegetation clearing is restricted to clearance of vegetation with growth height potential of 2 metres or above.
- **Disturbance area HZ** – a hazard tree zone where there would be impacts to selected trees that are within the risk category height range 20–30 m and have poor structural stability posing a risk of falling.

These zones are associated with areas of the ETL corridor not subject to permanent construction footprints but rather areas of vegetation maintenance.

ETL corridor management traditionally focuses on the complete removal of vegetation using short rotation times with the aim to reduce the perceived fire hazard associated with transmission line corridor vegetation.

The project has taken a different approach where the maintenance zone underneath the transmission line will be managed through the removal of vegetation with specific growth height levels in accordance with vegetation clearing requirements (i.e. down to a growth height of 2 metres) leaving the midstory and ground layers intact (Figure 2.1).



Vegetation in the easement to be maintained to achieved minimum clearance requirements (based on growth heights). (Assessed as up to 2 metres growth heights).

Figure 2.1 Conceptual layout of transmission line project

This partial clearing of the ETL easement forms part of the measures taken to minimise impacts to biodiversity values. Maintaining a proportion of the understorey layer will help avoid total loss of species richness, encourage native species and limit colonisation opportunities of introduced species (see Clarke and White, 2008).

2.1.1 Key partial impacts to be considered

The maintenance of vegetation will still require the need to trim, spray or otherwise continually supress woody vegetation under powerlines. These impacts require quantification, with the key attributes assessed by the BAM as likely to be affected being:

- tree composition and structure
- shrub composition and structure
- litter cover function
- coarse woody debris function
- stem size class function
- regeneration function.

Following consultation with CPHR, the following impacts were specifically identified for potential removal and continual suppression of the tree and shrub growth forms also has the potential to expose all other growth forms to indirect impacts including, but not limited to:

- disturbance facilitating penetration of the vegetation assemblage by exotic weed species
- a localised reduction/loss of the stored aerial and soil seed bank through the removal and disturbance of topsoil and the loss of serotinous flora species
- a localised change in the microclimate of the vegetation assemblage and habitat i.e. changes in temperature, wind, light and humidity as a result of the loss of canopy cover in the assemblage
- a localised change in the hydrology of the vegetation assemblage and habitat i.e. changes in surface water flows as a result of the loss of structural features capturing surface water
- a localised change in the soil conditions of the vegetation assemblage and habitat i.e. increased sedimentation and nutrient availability as a result of direct impact to the soil profile and the removal of stabilising vegetation
- a localised change in species interactions such as pollination and seed dispersal.

2.2 Literature based theory on partial impacts for ETL

ETL partial clearing develops into novel habitats over time (see Eldridge, Eyitayo et al., 2017) and species and functional composition have been shown to be different between sites with control and thinned canopy treatments with proportionally more individuals of grasses and forbs in thinned plots (see Tsai et al., 2018). Where structural elements such as the canopy tree layer is removed from existing ETL easements across NSW, shrubby mid storey layer, or derived shrub land and grassland vegetation structure may develop.

Canopy opening disturbance has immediate and substantive effects on understory microclimate and therefore the establishment and growth of understory plants (Tsai et al., 2018). Where shrub and ground stratum cover increases it has been documented that composition or species richness may decrease through species being out competed by more dominant species. Studies show a general shift to early successional shade intolerant species and those species that reproduce through clonal growth (see Luken, et al., 1992; Eldridge, Eyitayo et al. 2017; Walker & Koen, 1995).

Specifically, for the project, most Dry Sclerophyll Forest PCTs have existing woody shrub layers will likely see changes in the future shrub and ground layers cover scores, while for those PCTs with greater grassy understorey components (e.g. Grassy Woodlands) similar future increase in vegetation cover for grass and grass like, forb, fern and other species cover attributes is likely (Nobel, 1997; Both et al. 1996).

2.3 Approach to partial impacts within BAM-C

To facilitate these partial impact scenarios the BAM allows for circumstances where partial clearing of vegetation is proposed and remaining vegetation will be maintained (i.e. not degraded further over time). The consideration of these partial impacts within the BAM-C is applied through the adjustment of future value of the relevant vegetation integrity (VI) attributes. In assessing direct impacts on native vegetation, future VI scores were calculated in the BAM-C for each disturbance area subset and associated vegetation zone as follows:

- For disturbance area A, the future VI score was calculated as zero (assuming total loss of native vegetation).
- For disturbance area B (partial clearing of the transmission line easement) future VI scores have been calculated through changes to mean average scores in attributes associated with composition condition, structure condition, and function condition.
- For disturbance area HZ (Hazard High Risk Trees) future VI scores have been calculated through changes to tree species composition and structure.

2.3.1 BAM-C limitations in ability to measure partial impacts.

The BAM-C has a number of limitations when assessing partial impact, particularly the inflexibility in the input functions to calculate future VI scores and specifically in that attributes can only be decreased from the recorded mean average.

This limitation means the composition, structure and function attributes cannot adjusted to reflect increases in attributes observed or considered likely from existing powerline easements (e.g. increased shrub cover due to tree removal).

These deficiencies in the BAM-C generates overlapping conservatism in the final measurement of change predicted for the partial impact of the project on VI.

A summary of the key limitations of BAM-C is provided below:

- Only measures reductions in attributes values do not gain (e.g increased shrub or grass cover or diversity are not measured).
- VI changes are limited by benchmark data and seasonal influences (changes that are still above benchmark values indicate no change in VI). For example an observed decrease in forb diversity in a high condition PCT with substantially higher diversity than benchmark values will only generate a change in the VI scores if it fall below the upper benchmark value.

2.3.2 Previously approved approach to partial impacts

Previously approved ETL infrastructure projects assessment of partial impact in accordance with BAM have adopted conservative, literature-based changes in VI scores. Specifically, for project Energy Connect West and East a negotiated partial assessment that adopted the following reductions in VI values:

- all canopy attributes to zero
- 30% reduction in composition of understory shrub, grass & grass like, forb, fern and other species
- 30% reduction in of understory structure
- 25% reduction in leaf litter and fallen timber.

These approved changes in BAM-C VI partial impact for Grassy Woodlands formations for PEC East resulted in VI reductions ranging for individual PCTs from -43.1 to -58 VI scores.

The Central-West Orana Renewable Energy Zone (CWO REZ) transmission infrastructure project adopted an evidence base approach supported by field survey of existing easements to builds on and refines the previous literature-based assumptions in assessing partial impact. A total of 22 BAM plots across 11 separate sites and 10 PCTs (6 Grassy Woodland, 4 Dry Sclerophyll Shrubby) were used to derive the following manual adjustment to VI values within the BAM-C (refer to Table 2.1).

Table 2.1 Proposed adjustment to BAMC VI scores for partial impacts within the ETL by formation

Attribute	Vegetation layer	Previously approved	Proposed GW	Proposed DSF
Composition	Canopy	Complete removal	Complete removal	Complete removal
	Shrub	30%	10% reduction	10% reduction
	Understory	30%	10% reduction	10% reduction
Structure	Canopy	Complete removal	Complete removal	Complete removal
	Shrub	30%	0%	20% reduction
	Understory	30%	0%	0%
Function	Canopy	Complete removal		
	Understory	30% Reduction in LL and Fallen Timber		

3. Methodology for HTP evidence-based approach

3.1 Overview

EnergyCo have built on the previous approach of these approved methods to develop a project specific and field-based evidence approach to partial impacts. The following sections outline the methodology, results and proposed outcomes supporting the partial impact approach adopted within the BDAR.

To increase our current understanding of the partial impacts within maintenance areas of ETLs, a range of field validated data across accessible ETLs within the project or same PCTs/ IBRA Subregions were collected.

For HTP a total of 36 BAM plots across 19 separate sites and 7 PCTs were sampled (4 Wet Sclerophyll Shrubby, 5 We Sclerophyll Grassy, 1 Grassy Woodland, 6 Dry Sclerophyll (Shrub/Grass) and 3 Dry Sclerophyll (Shrubby)PCTs) (refer to Tabel 3.1 and Figure 3.1). This assessment builds on the previously sampled 10 PCTs for the CWO REZ project (6 Grassy Woodland, 4 Dry Sclerophyll) (refer to Table 3.1).

Table 3.1 PCTs subject to field survey.

PCT Number	PCT	IBRA Subregion
Grassy Woodlands		
76	Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Inland Slopes
80	Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Lower Slopes
266	White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	Inland Slopes
281	Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	Kerrabee
461	Tumbledown Gum woodland on hills in the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion	Inland Slopes
618	White Box x Grey Box - red gum - Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley	Kerrabee
3315	Central Hunter Ironbark-Spotted Gum Forest	Hunter
Wet Sclerophyll Forests (Grassy sub-formation)		
3230	Central Coast Escarpment Moist Forest (Mod-good condition)	Wyong
3263	Watagan Range Turpentine-Mahogany Grassy Forest (Mod-good condition)	Wyong
Wet Sclerophyll Forests (Shrubby sub-formation)		
3150	Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)	Wyong
Dry Sclerophyll Forests (Shrub/grass sub-formation)		
3444	Lower Hunter Spotted Gum-Ironbark Forest (Mod-good condition)	Hunter
3431	Central Hunter Ironbark Grassy Woodland	Hunter

PCT Number	PCT	IBRA Subregion
Dry Sclerophyll Forests (Shrubby sub-formation)		
477	Inland Scribbly Gum - Red Stringybark - Black Cypress Pine - Red Ironbark open forest on sandstone hills in the southern Brigalow Belt South Bioregion and northern NSW South Western Slopes Bioregion	Inland Slopes
479	Narrow-leaved Ironbark- Black Cypress Pine - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion	Inland Slopes
1606	White Box - Narrow-leaved Ironbark - Blakely's Red Gum shrubby open forest of the central and upper Hunter	Kerrabee
1674	Red Ironbark - Brown Bloodwood - Black Pine heathy open forest on sandstone ranges of the Sydney Basin	Inland Slopes

TC22 (PCT 3431)

TC23 (PCT 3431)

MUSWELLBROOK LGA
SINGLETON LGA

Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix M
Partial Impact Survey Locations
Dry Sclerophyll Forests (Shrub/grass sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- Local government area
- BAM quadrat

Plant Community Types

- PCT0 - Not classified
- PCT3314 - Central Hunter Slopes Grey Box Forest (Thinned condition)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Disturbed Grassland)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Poor condition)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Thinned condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 28/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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TC21 (PCT 3431)

TC20 (PCT 3431)

Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix M
Partial Impact Survey Locations
Dry Sclerophyll Forests (Shrub/grass sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- Local government area
- BAM quadrat

Plant Community Types

- PCT0 - Not classified
- PCT3314 - Central Hunter Slopes Grey Box Forest (Disturbed Grassland)
- PCT3314 - Central Hunter Slopes Grey Box Forest (Poor condition)
- PCT3314 - Central Hunter Slopes Grey Box Forest (Thinned condition)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Disturbed Grassland)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Poor condition)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Thinned condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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TC32 (PCT 3431)

TC33 (PCT 3431)

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Biodiversity Development Assessment Report

Appendix M
Partial Impact Survey Locations
Dry Sclerophyll Forests (Shrub/grass sub-formation)

Legend

- Local government area
- BAM quadrat

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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Appendix M
Partial Impact Survey Locations
Dry Sclerophyll Forests (Shrub/grass sub-formation)

Legend

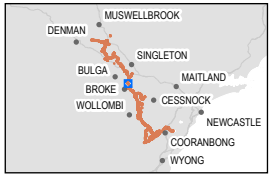
- Biodiversity study area

Existing environment

- 330 kV transmission line
- Local government area

Plant Community Types

- PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Derived condition)
- PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Mod-good condition)



0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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Hunter Transmission Project
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Appendix M
Partial Impact Survey Locations
Dry Sclerophyll Forests (Shrub/grass sub-formation)

Legend

- Biodiversity study area

Existing environment

- 330 kV transmission line
- Local government area

Plant Community Types

- PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Derived condition)
- PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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Appendix M
Partial Impact Survey Locations
Dry Sclerophyll Forests (Shrub/grass sub-formation)

Legend

- Biodiversity study area

Existing environment

- 330 kV transmission line
- Local government area

Plant Community Types

- PCT3431 - Central Hunter Ironbark Grassy Woodland (Thinned condition)
- PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Derived condition)
- PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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CESSNOCK ROAD

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Appendix M
Partial Impact Survey Locations
Grassy woodlands

Legend

- Biodiversity study area

Existing environment

- 330 kV transmission line
- Road
- Local government area

Plant Community Types

- PCT0 - Not classified
- PCT3314 - Central Hunter Slopes Grey Box Forest (Thinned condition)
- PCT3315 - Central Hunter Ironbark-Spotted Gum Forest (Thinned condition)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Thinned condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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OLNEY STATE FOREST

JILLIBY STATE CONSERVATION AREA

Hunter Transmission Project Biodiversity Development Assessment Report

Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- State conservation area
- State forest
- Local government area

Plant Community Types

- PCT0 - Not classified
- PCT3029 - Lower North Wet Gully Palm Rainforest (Mod-good condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Derived condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- State conservation area
- State forest
- Local government area

Plant Community Types

- PCT0 - Not classified
- PCT3029 - Lower North Wet Gully Palm Rainforest (Mod-good condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Derived condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- State forest
- Local government area

Plant Community Types

- PCT0 - Not classified
- PCT3029 - Lower North Wet Gully Palm Rainforest (Mod-good condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Derived condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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GDA 2020

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Hunter Transmission Project
Biodiversity Development
Assessment Report

Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Shrubby sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- State forest
- Local government area

Plant Community Types

- PCT0 - Not classified
- PCT3029 - Lower North Wet Gully Palm Rainforest (Mod-good condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Derived condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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OLNEY STATE FOREST

JILLIBY STATE CONSERVATION AREA

wsp

Hunter Transmission Project
Biodiversity Development Assessment Report

Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- State conservation area
- State forest
- Local government area

Plant Community Types

- PCT3029 - Lower North Wet Gully Palm Rainforest (Mod-good condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Derived condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)
- PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- State conservation area
- State forest
- Local government area

Plant Community Types

- PCT3029 - Lower North Wet Gully Palm Rainforest (Mod-good condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Derived condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)
- PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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OLNEY STATE FOREST

JILLIBY STATE CONSERVATION AREA

STATE CONSERVATION AREA

ROAD

Hunter Transmission Project
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Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- Road
- State conservation area
- State forest
- Local government area

Plant Community Types

- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)
- PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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WATAGAN FOREST ROAD

JILLIBY STATE CONSERVATION AREA

Hunter Transmission Project Biodiversity Development Assessment Report

Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- Road
- State conservation area
- State forest
- Local government area

Plant Community Types

- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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WATAGAN FOREST ROAD

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Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- Road
- State conservation area
- State forest
- Local government area

Plant Community Types

- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)
- PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Derived condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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JILLIBY STATE CONSERVATION AREA

Hunter Transmission Project
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Appendix M
Partial Impact Survey Locations
Wet Sclerophyll Forests (Grassy sub-formation)

Legend

- Biodiversity study area

Existing environment

- 500 kV transmission line
- State conservation area
- State forest
- Local government area

Plant Community Types

- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Derived condition)
- PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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3.2 Survey methodology

3.2.1 Survey location

To ensure the analysis and assessment of partial impacts are suitably conservative, with limited variability, the following rule set was developed for all sample locations:

- only sampled ETLs with a minimum of 40 m wide management easement (typically of 330 kV or greater kV)
- remnant reference sites are PCTs in moderate-good condition (VI >50).
- all paired sample sites were in the same PCT
- all paired sample sites were generally located <100m apart to avoid microclimate variability.
- all paired sample sites were subject to same existing management regimes and disturbances (land use).

3.2.2 VI plot – method

VI plots were completed in accordance with section 4.3.3 of the BAM. A schematic diagram illustrating the layout of each VI plot is provided in Figure 3.2.

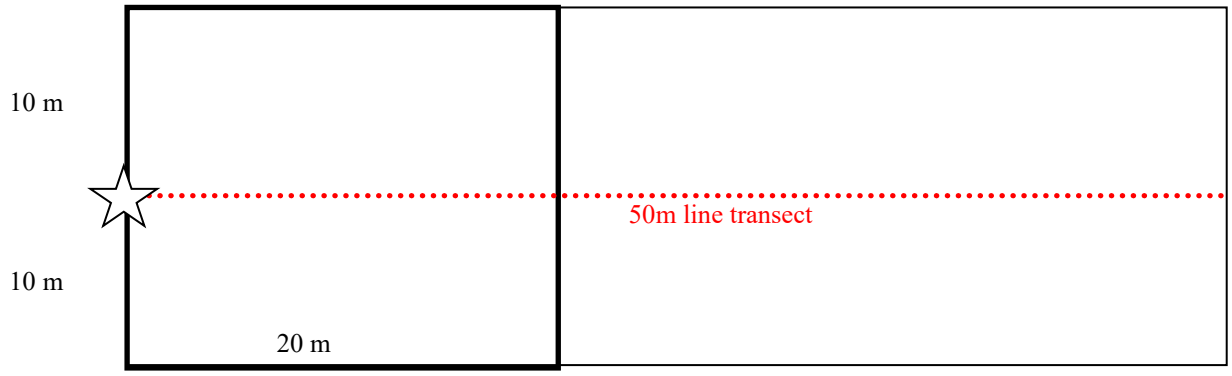


Figure 3.2 VI plot layout

The following site attributes were recorded at each VI plot location:

- **Location:** (easting – northing grid type MGA 94, Zone 54 & 55).
- **Vegetation structure and dominant species and vegetation condition:** Vegetation structure was recorded through estimates of percentage foliage cover, average height and height range for each vegetation layer.
- **Native and exotic species richness** (within a 400-metre squared quadrat): This consisted of recording all species by systematically walking through each 20 metre x 20 metre plot. The cover and abundance (percentage of area of quadrat covered) of each species was estimated. The growth form, stratum/layer and whether each species was native/exotic/high threat weed was also recorded.
- **Number of trees with hollows** (1,000 metre squared quadrat): This was the frequency of hollows within living and dead trees within each 50 metre x 20 metre plot. A hollow was only recorded if (a) the entrance could be seen: (b) the estimated entrance width was at least five centimetres across: (c) the hollow appeared to have depth: (d) the hollow was at least one metre above the ground and the centre of the tree was located within the sampled quadrat.

- **Number of large trees and stem size diversity** (1,000 metre squared quadrat): tree stem size diversity was calculated by measuring the diameter at breast height (DBH) (i.e. 1.3 metre from the ground) of all living trees (greater than five centimetre DBH) within each 50 metre x 20 metre plot. For multi-stemmed living trees, only the largest stem was included in the count. Number of large trees was determined by comparing living tree stem DBH against the PCTs benchmarks.
- **Total length of fallen logs** (1,000 metre squared quadrat): This was the cumulative total of logs within each 50 metre x 20 metre plot with a diameter of at least 10 centimetres and a length of at least 0.5 metre.
- **Litter cover:** This comprised estimating the average percentage groundcover of litter (i.e. leaves, seeds, twigs, branchlets and branches with a diameter less than 10 centimetre which is detached from a living plant) from within five 1 metre x 1 metre sub-plots spaced evenly either side of the 50-metre central transect.
- **Evaluation of regeneration:** This was estimated as the presence/absence of overstorey species present at the site that was regenerating (i.e. saplings with a diameter at breast height less than or equal to five centimetres).

Prior to establishing plot survey locations, vegetation stratification was undertaken to provide a representative vegetation zone for sampling. Stratification involved marking waypoints and bearings randomly to provide a representative assessment of the VI of the vegetation zone in the subject land and establishing the required number of plots at some of these waypoints.

Where a regularly sized 50 x 20 m plot could not be fit into vegetation due to size constraints (e.g. narrow roadside strip of vegetation, or narrow riparian zone) the plot size and shape was modified in shape keeping the required area of the quadrats (1,000 metre squared quadrat and nested 400-metre squared quadrat) intact. This was only done where the shape of the vegetation would not allow the use of a 50 x 20 m plot.

3.2.3 VI score calculations

As outlined in BAM Section 4.3.3, VI (VI) is a metric-based assessment used to measure the condition of native vegetation against a benchmark, based on survey data collected by the assessor. Within each vegetation zone in the subject land, a quantitative measure of the composition, structure and function attributes is obtained from the survey. The composition, structure and relevant function attributes for each vegetation zone are then assessed against the benchmark data for the relevant PCT. The default benchmarks for PCTs held within the BAM-C were not modified.

The plot survey data was used to determine the VI scores for a vegetation zone. Equations 16–24 from Appendix H of the BAM (housed within the BAM-C) were used to determine the current VI score for each vegetation zone within the partial impact and adjoining remnant control.

To further account for the influences of external variables on VI, the assessment compared VI scores within the ETLs with adjoining control sites (paired plots).

The VI loss was calculated as the difference between the VI of the two paired condition states.

3.2.4 Survey and data limitations

Survey of existing ETLs face a number of challenges, principally associated with access restrictions. Existing ETL easements are under management and access agreements between Transgrid and the landowner and not EnergyCo. Therefore, the partial impact surveys were restricted to ETLs associated with the current project and where available relevant ETLs for previous EnergyCo/Transgrid projects (CWO).

The condition of ETLs significantly influences the measurable change to PCT condition. Where existing disturbances are high, interpreting changes in attribute data is limited (pasture improvement, substantial grazing with high weed cover low native diversity).

Therefore, to provide a conservative assessment of the partial impacts, all sample sites were identified in moderate to good condition with VI scores of >50.

Where existing management regimes (grazing) were observed and could not be avoided, sample sites were located in areas under the same level of management to ensure any observed VI changes were representative of The ETL easement management.

4. Field results

4.1 Grassy Woodlands

The summary data of the eight paired BAM plots for each of the PCTs within the Grassy Woodlands formation is provided below in Table 4.1. A comparative analysis of observed differences in sampled cover and composition attributes between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.1 and 4.2. A summary of the quantum of the actual change in average VI values is provided in Figure 4.3.

Table 4.1 Summary average composition and structure data of sampled PCTs within the Grassy Woodlands formation within the ETL and adjoining remnant areas

Grassy Woodlands	Composition data - Species Richness									Structure data - Percentage Cover								
	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed
PCT 3315																		
Average Remnant	38	7	14	10	5	1	1	4	3	133	19.8	18.9	91.8	1.4	1	0.1	0.4	2.3
Average Partial Impact	22	3	4	11	3	1	0	2	2	69.6	5.4	42.3	9.7	2.2	10	0	0.3	0.7
PCT 80																		
Average Remnant	21	2	2	10	7	0	0	11	2	60.3	8	6	31.8	14.5	0	0	10.9	2
Average Partial Impact	17	1	0	8	7	0	1	15	3	38.3	2	0	27.1	9.1	0	0.1	22.6	15.1
PCT 76																		
Average Remnant	19	1	2	9	6	1	0	10	1	85.5	15	5.8	57.6	7	0.1	0	2.2	0.3
Average Partial Impact	16	0	2	11	3	0	0	11	1	75.5	0	11	60.1	4.4	0	0	5.7	3

Grassy Woodlands	Composition data - Species Richness									Structure data - Percentage Cover								
	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed
PCT 461																		
Average Remnant	38	5	9	9	13	1	1	3	0	68	18	15.9	15.6	17.8	0.5	0.2	0.3	0
Average Partial Impact	41	4	11	12	11	1	2	5	0	66.3	2.6	27.4	24	11.8	0.1	0.4	1.2	0
PCT 618																		
Average Remnant	21	1	2	9	8	0	1	8	1	70.1	10	1.1	55.2	3.7	0	0.1	1.4	0.4
Average Partial Impact	19	1	0	9	9	0	0	6	1	43.8	0.1	0	38.3	5.4	0	0	3.8	5
PCT 281																		
Average Remnant	34	3	3.5	17.5	8	1	1	4.5	1	87.9	13.7	9.9	62.1	1.6	0.55	0.2	1.8	0.1
Average Partial Impact	23.0	1.0	2.5	15.0	3.5	1.0	0.0	7.0	2.0	57.1	0.6	3.1	52.7	0.4	0.4	0.0	17.5	0.3
ALL PCT Remnant	**28.5**	**3.1**	**4.5**	**11.4**	**7.9**	**0.8**	**0.9**	**6.9**	**1.3**	**86.2**	**19.1**	**8.5**	**50.6**	**7.5**	**0.5**	**0.1**	**4.4**	**2.5**
ALL PCT Partial	**23.1**	**1.8**	**3.0**	**11.1**	**6.3**	**0.6**	**0.4**	**7.6**	**1.5**	**62.9**	**2.0**	**11.2**	**38.9**	**9.1**	**1.6**	**0.1**	**10.6**	**4.9**

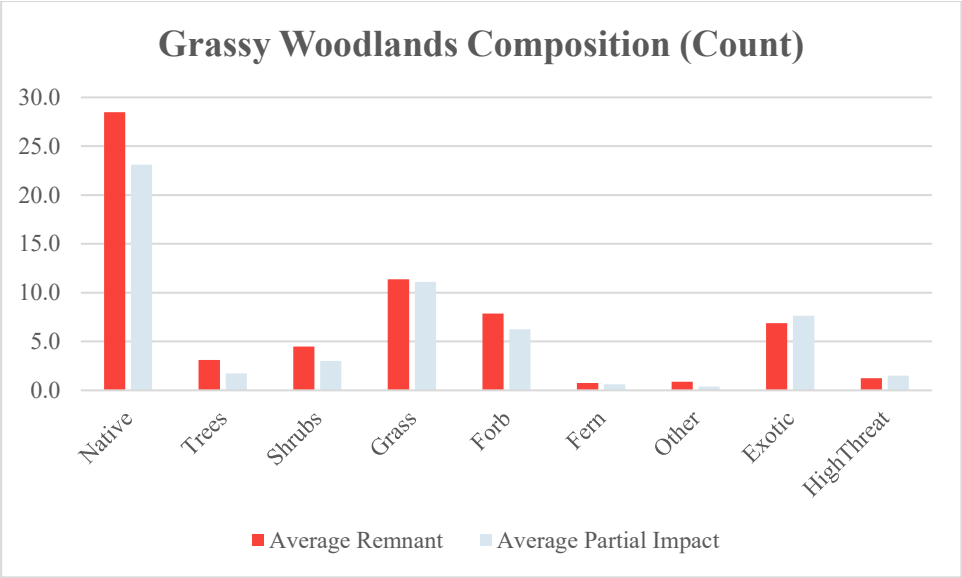


Figure 4.1 Grassy woodlands average composition data within the ETL, adjoining remnant vegetation

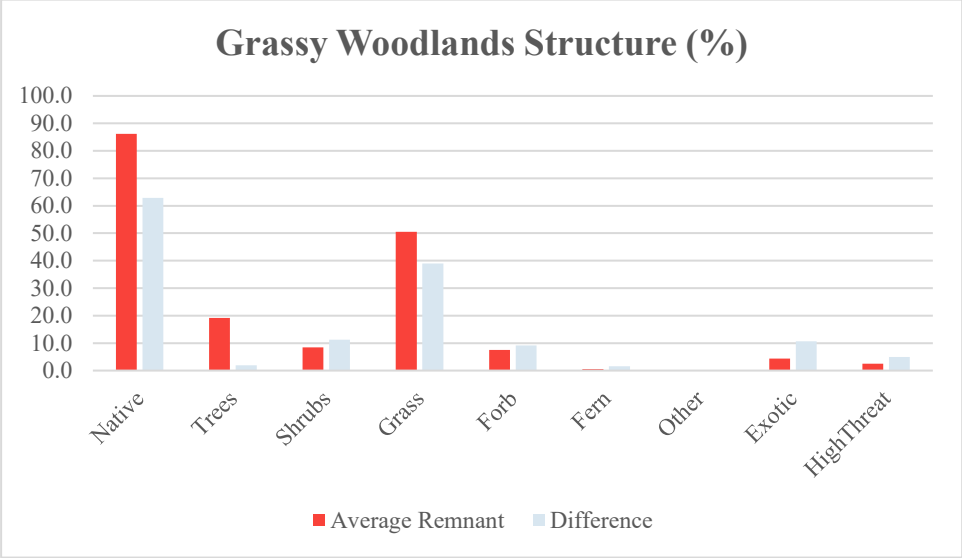


Figure 4.2 Grassy woodlands average structure data within the ETL, adjoining remnant vegetation

4.2 Key trends and findings for Grassy woodlands attribute scores

Following analysis of the data the following general trends were observed for the Grassy Woodland Formation sample sites between the management of ETL and adjoining remnant vegetation areas:

- greatest change was associated with loss in canopy cover/composition (~20%)
- ETL resulted in some increased weed cover and composition.
- the understory values for shrubs, grass, and other showed no or limited change in values
- very minor decreased in forb composition was observed combined with an increased in cover.

4.3 Changes in VI for Grassy Woodland

The summary VI data of each of the PCTs within the Grassy Woodlands formation following BAM-C calculation is provided below in Table 4.2. A comparative analysis of observed differences in VI between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.3.

Table 4.2 Summary VI data of the sampled PCTs within the Grassy Woodlands formation within the ETL, adjoining remnant vegetation.

Keith Vegetation Formation	Condition	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Change in VI %
Grassy Woodlands	Average Remnant	75.3	71.4	74.5	73.0	
	Average Partial impact	62.8	37.0	22.9	36.2	
VI Loss					36.8	50.41

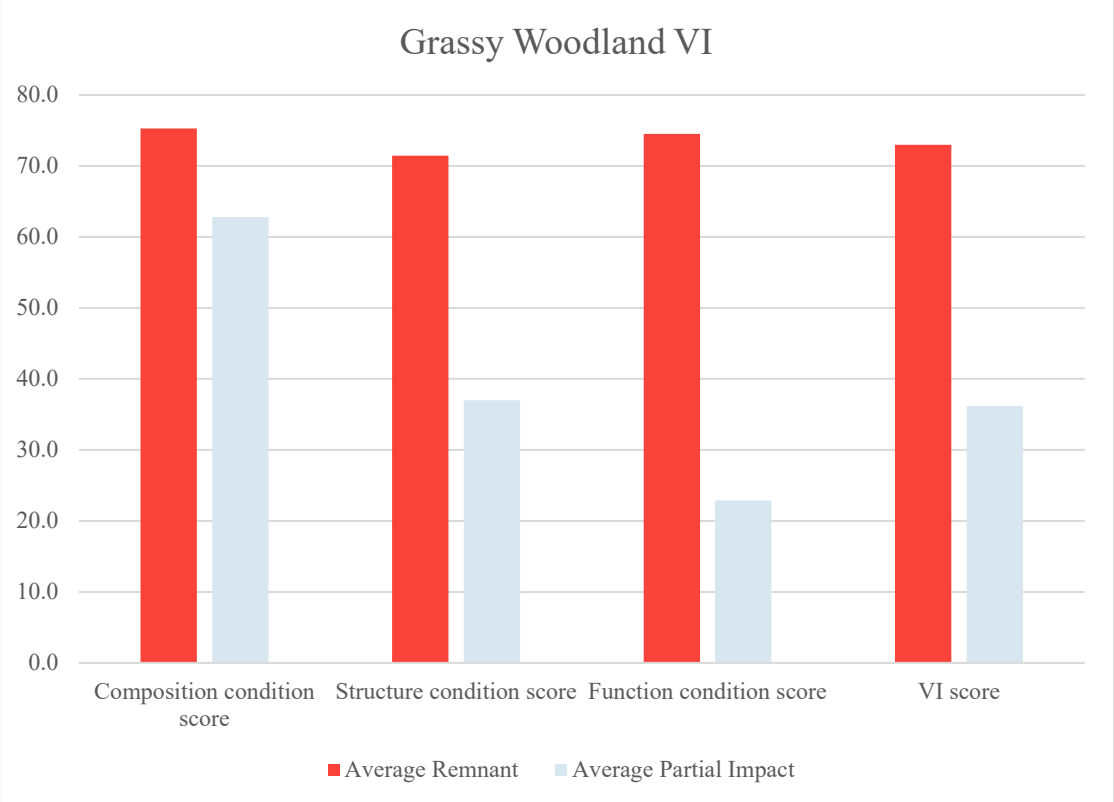


Figure 4.3 Grassy woodlands average change in VI values within the ETL (partial), adjoining (remnant) vegetation.

4.4 Key trends and findings for Grassy woodlands VI (VI)

Following analysis of the data the following general trends were observed for the Grassy Woodland Formation sample sites between the management of ETL and adjoining remnant vegetation areas;

- the average changes composition component to VI is minimal <10% decrease with some PCTs actually increasing in native diversity
- greatest change to VI is attributed to the decreases in structure (50%) and function (70%) scores
- VI changes vary for PCTs based on benchmarks with range of decreases from -4.5 to -41 (Average of -36 GW)
- the total average VI loss for Grassy Woodland 36.8 or 50% decrease in VI score

4.5 Dry Sclerophyll Forest (Shrub/Grass)

The summary data of the paired BAM plots for each of the PCTs within the Dry Sclerophyll Forest formation is provided below in Table 4.3. A comparative analysis of observed differences in sampled cover and composition attributes between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.4. A summary of the quantum of the actual change in average VI values is provided in Figure 4.5.

Table 4.3 Summary data of the sampled PCTs within the Dry Sclerophyll Forest formation within the ETL, adjoining remnant vegetation.

Dry Sclerophyll Forest formation	Composition data - Species Richness									Structure data - Percentage Cover								
	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed
PCT 477																		
Average Remnant	34	3	10	15	4	1	1	1	0	66.1	14	27.8	23	1.1	0.1	0.1	0.1	0
Average Partial Impact	28	2	11	9	3	1	2	0	0	53.1	2.5	42.3	5.9	2.1	0.1	0.2	0	0
PCT 479																		
Average Remnant	47	5	14	16	9	1	2	1	0	132.3	80	23.4	26.5	2	0.1	0.3	0.1	0
Average Partial Impact	43	2	11	19	9	1	1	6	0	137	2	9.5	98.3	22.1	5	0.1	5.5	0
PCT 1606																		
Average Remnant	24	3	9	6	5	1	0	1	0	65.1	15.1	46.3	2.6	1	0.1	0	0.1	0
Average Partial Impact	23	0	5	13	4	1	0	4	1	69.1	0	13	55.5	0.4	0.2	0	6.6	2

Dry Sclerophyll Forest formation	Composition data - Species Richness									Structure data - Percentage Cover								
	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed
PCT 1674																		
Average Remnant	19	1	6	9	2	0	1	2	0	57.4	25	21	8.1	0.3	0	3	0.2	0
Average Partial Impact	20	1	9	6	2	1	1	0	0	45.1	2	30.2	12.3	0.4	0.1	0.1	0	0
ALL PCT Remnant	**31**	**3**	**9.8**	**11.5**	**5**	**0.8**	**1**	**1.3**	**0**	**80.2**	**33.5**	**29.6**	**15.1**	**1.1**	**0.1**	**0.9**	**0.1**	**0**
ALL PCT Partial	**28.5**	**1.3**	**9.0**	**11.8**	**4.5**	**1.0**	**1.0**	**2.5**	**0.3**	**76.1**	**1.6**	**23.8**	**43.0**	**6.3**	**1.4**	**0.1**	**3.0**	**0.5**

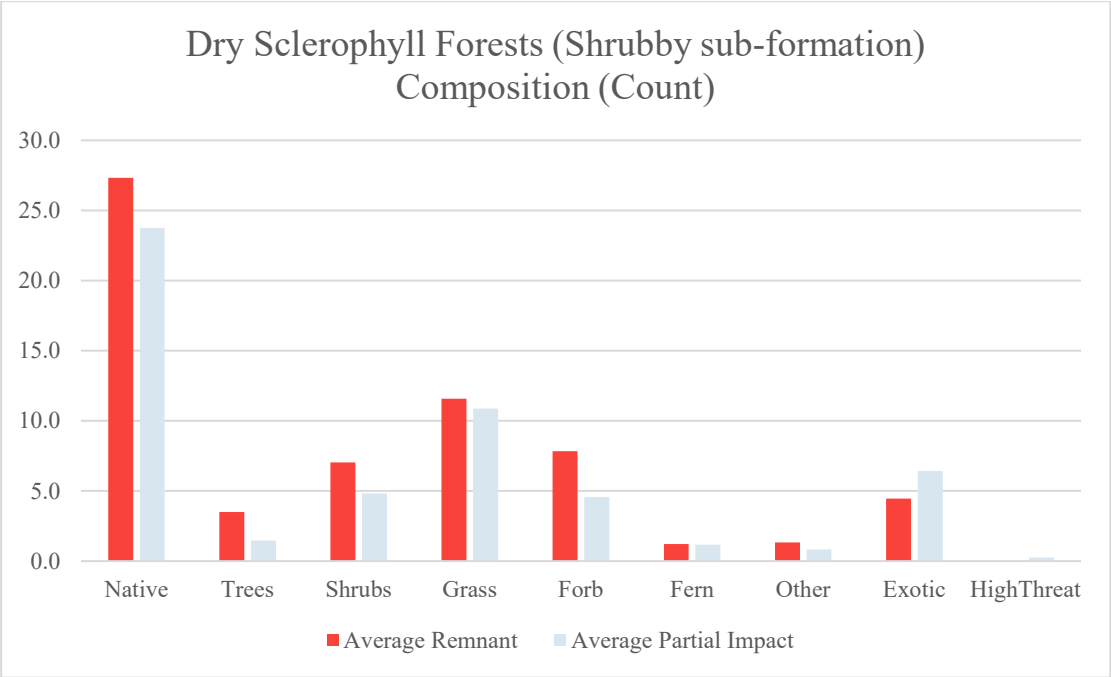


Figure 4.4 Dry Sclerophyll Forest average composition data within the ETL, adjoining remnant vegetation

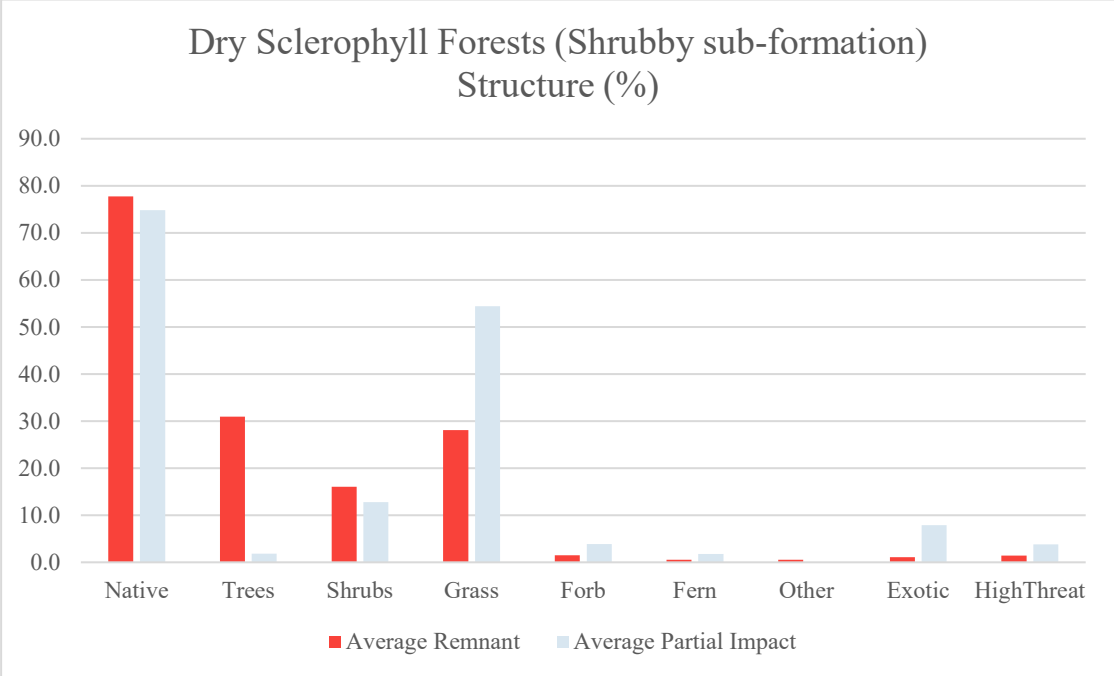


Figure 4.5 Dry Sclerophyll Forest average structure data within the ETL, adjoining remnant vegetation

4.6 Key trends and findings for Dry Sclerophyll Forest attribute scores

Following analysis of the data the following general trends were observed for the Dry Sclerophyll Forest formation between the management of ETL and adjoining remnant vegetation areas:

- the greatest change was associated with loss in canopy cover/composition
- there was an inverse relationship within the ETL for increased grass/forb and to a lesser extent decrease shrub cover for some PCTs - however not consistent
- only a marginal increase in weed cover and composition (<5%)
- no significant change in composition or total native cover.

4.7 Changes in VI for Dry Sclerophyll Forest

The summary VI data of each of the PCTs within the Dry Sclerophyll Forest formation following BAM-C calculation is provided below in Table 4.4. A comparative analysis of observed differences in VI values within the ETL (Field), adjoining remnant vegetation and corresponding literature based 30% reduction is provided in Figure 4.6.

Table 4.4 Summary VI data of the sampled PCTs within the Dry Sclerophyll Forest formation within the ETL, adjoining remnant vegetation.

Keith Vegetation Formation	Condition	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Change in VI %
Dry Sclerophyll Forest	Average Remnant	72.8	50.3	83.1	65.8	
	Average Partial impact	55.9	31.2	17.3	30.6	
BAMC VI Loss					35.2	53.4

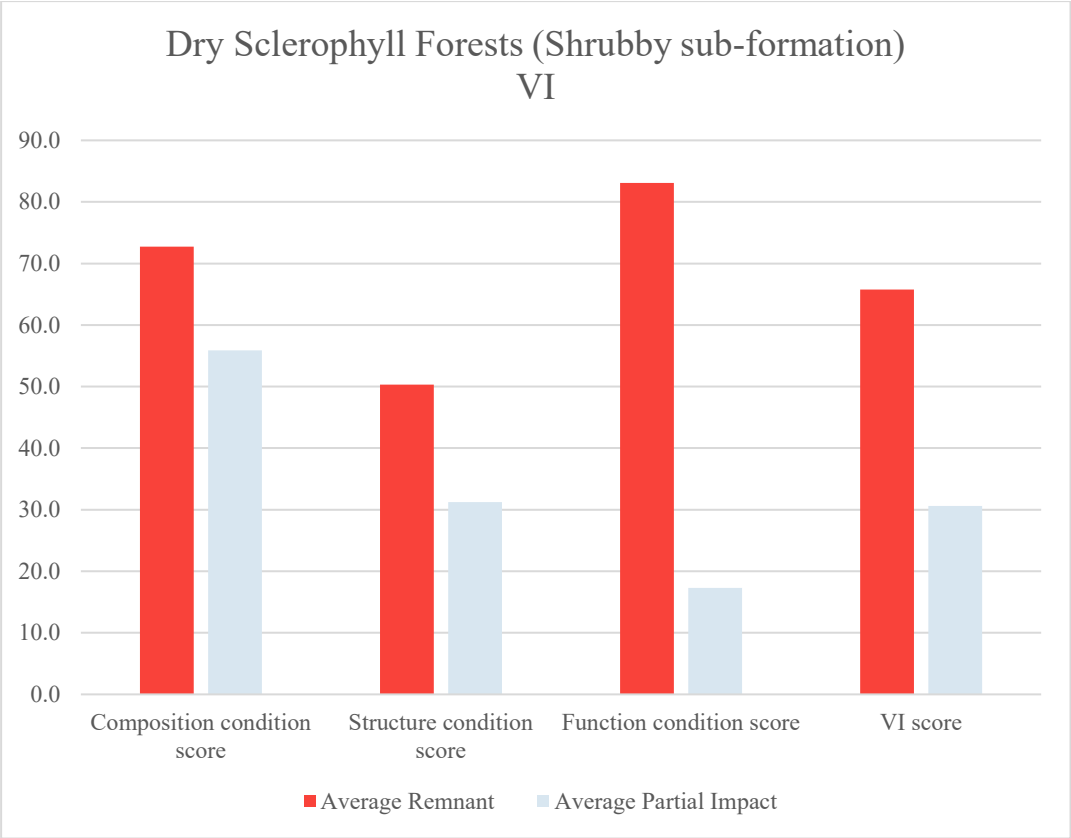


Figure 4.6 Dry Sclerophyll Forest average change in VI values within the ETL (Field), adjoining remnant vegetation.

4.8 Key trends and findings for Dry Sclerophyll Forest VI

Following analysis of the data the following general trends were observed for the Dry Sclerophyll Forest Formation sample sites between the management of ETL and adjoining remnant vegetation areas:

- the average changes composition component to VI is minimal <10% decrease with some PCTs actually increasing in native diversity
- the greatest change to VI is attributed to the decreases in structure (20%) and function (50%) scores
- VI changes vary for PCTs based on benchmarks with range of decreases from -23.7 to -61 (Average of -35.2)
- the total average VI change was 53 % decrease

4.9 Dry Sclerophyll Forest (Shrub/Grassy)

The summary data of the paired BAM plots for each of the PCTs within the Dry Sclerophyll Forest (Shrub Grassy) formation is provided below in Table 4.5. A comparative analysis of observed differences in sampled cover and composition attributes between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.7 and Figure 4.8. A summary of the quantum of the actual change in average VI values is provided in Figure 4.9.

Table 4.5 Summary data of the sampled PCTs within the Dry Sclerophyll Forest formation within the ETL, adjoining remnant vegetation.

Dry Sclerophyll Forest formation	Composition data - Species Richness									Structure data - Percentage Cover								
	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed
PCT 3444 Lower Hunter Spotted Gum Ironbark Forest (Mod-good condition)																		
Average Remnant	32.0	3.3	5.3	8.3	12.7	1.0	1.3	4.0	2.0	79.8	42.1	2.6	9.6	25.0	0.2	0.3	1.7	1.5
Average Partial Impact	27.7	2.3	3.0	7.7	12.0	1.0	1.7	6.3	2.3	41.7	6.5	1.4	27.9	5.5	0.2	0.2	4.2	22.0
PCT 3431																		
Average Remnant	35.7	7.0	13.0	5.7	5.7	1.0	3.3	0.3	1.0	93.0	40.5	27.4	16.1	8.3	0.2	0.5	0.0	0.1
Average Partial Impact	32.0	3.3	8.0	11.0	7.0	1.0	1.7	3.7	2.3	78.5	1.8	28.7	28.7	18.2	0.9	0.2	1.1	0.6
ALL PCT Remnant	**33.8**	**5.2**	**9.2**	**7.0**	**9.2**	**1.0**	**2.3**	**2.2**	**1.5**	**86.4**	**41.3**	**15.0**	**12.9**	**16.6**	**0.2**	**0.4**	**0.9**	**0.8**
ALL PCT Partial	**29.8**	**2.8**	**5.5**	**9.3**	**9.5**	**1.0**	**1.7**	**5.0**	**2.3**	**60.1**	**4.1**	**15.0**	**28.3**	**11.9**	**0.6**	**0.2**	**2.6**	**11.3**

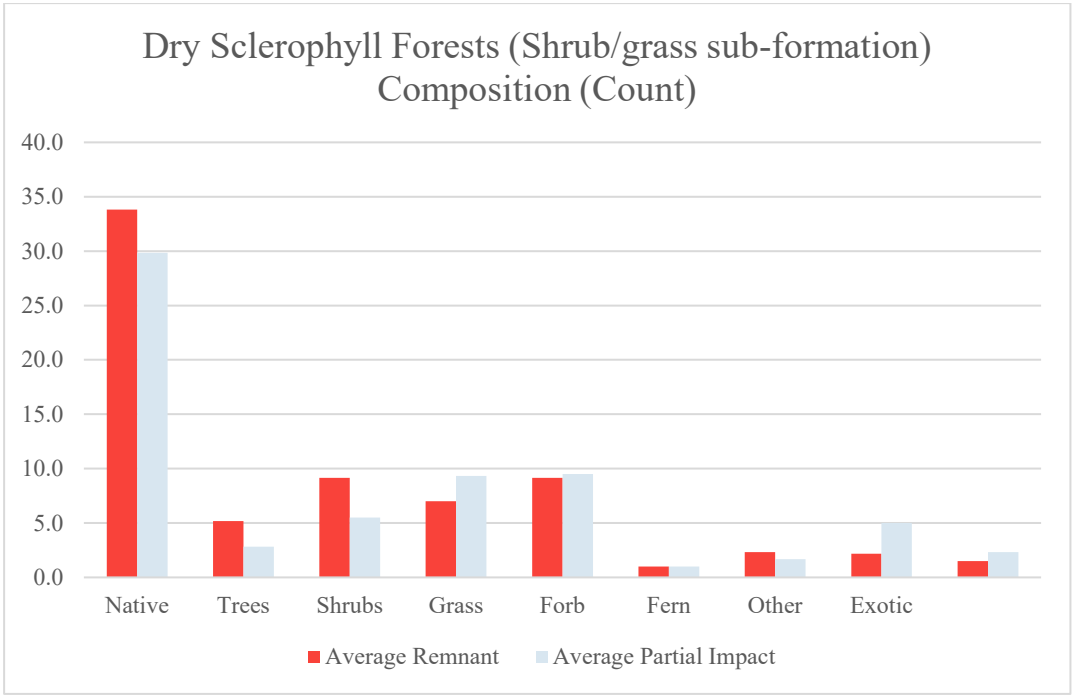


Figure 4.7 Dry Sclerophyll Forest average composition data within the ETL, adjoining remnant vegetation

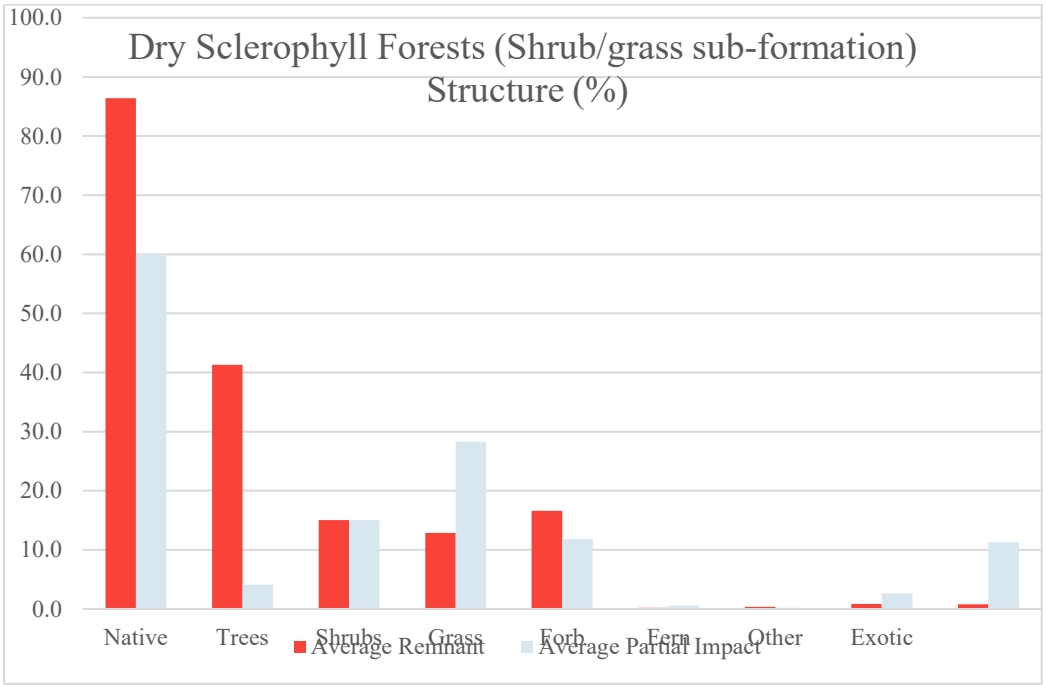


Figure 4.8 Dry Sclerophyll Forest average structure data within the ETL, adjoining remnant vegetation

4.10 Key trends and findings for Dry Sclerophyll Forest attribute scores

Following analysis of the data the following general trends were observed for the Dry Sclerophyll Forest Formation sample sites between the management of ETL and adjoining remnant vegetation areas:

- the greatest change was associated with loss in canopy cover/composition
- there was an inverse relationship within the ETL for decrease in canopy and an increased grass/forb and to a lesser extent decrease shrub cover for some PCTs
- An increase in exotic and high threat weeds composition and native cover.

4.11 Changes in VI for Dry Sclerophyll Forest

The summary VI data of each of the PCTs within the Dry Sclerophyll Forest formation following BAM-C calculation is provided below in Table 4.6. A comparative analysis of observed differences in VI values within the ETL (Field), adjoining remnant vegetation and corresponding literature based 30% reduction is provided in Figure 4.9.

Table 4.6 Summary VI data of the sampled PCTs within the Dry Sclerophyll Forest formation within the ETL, adjoining remnant vegetation.

Keith Vegetation Formation	Condition	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Change in %
Dry Sclerophyll Forests (Shrub/grass sub-formation)	Average Remnant	75.3	48.2	68.2	62.5	
	Field sampled TL	70.8	32.85	19.55	35.15	
VI Loss					27.3	43.7

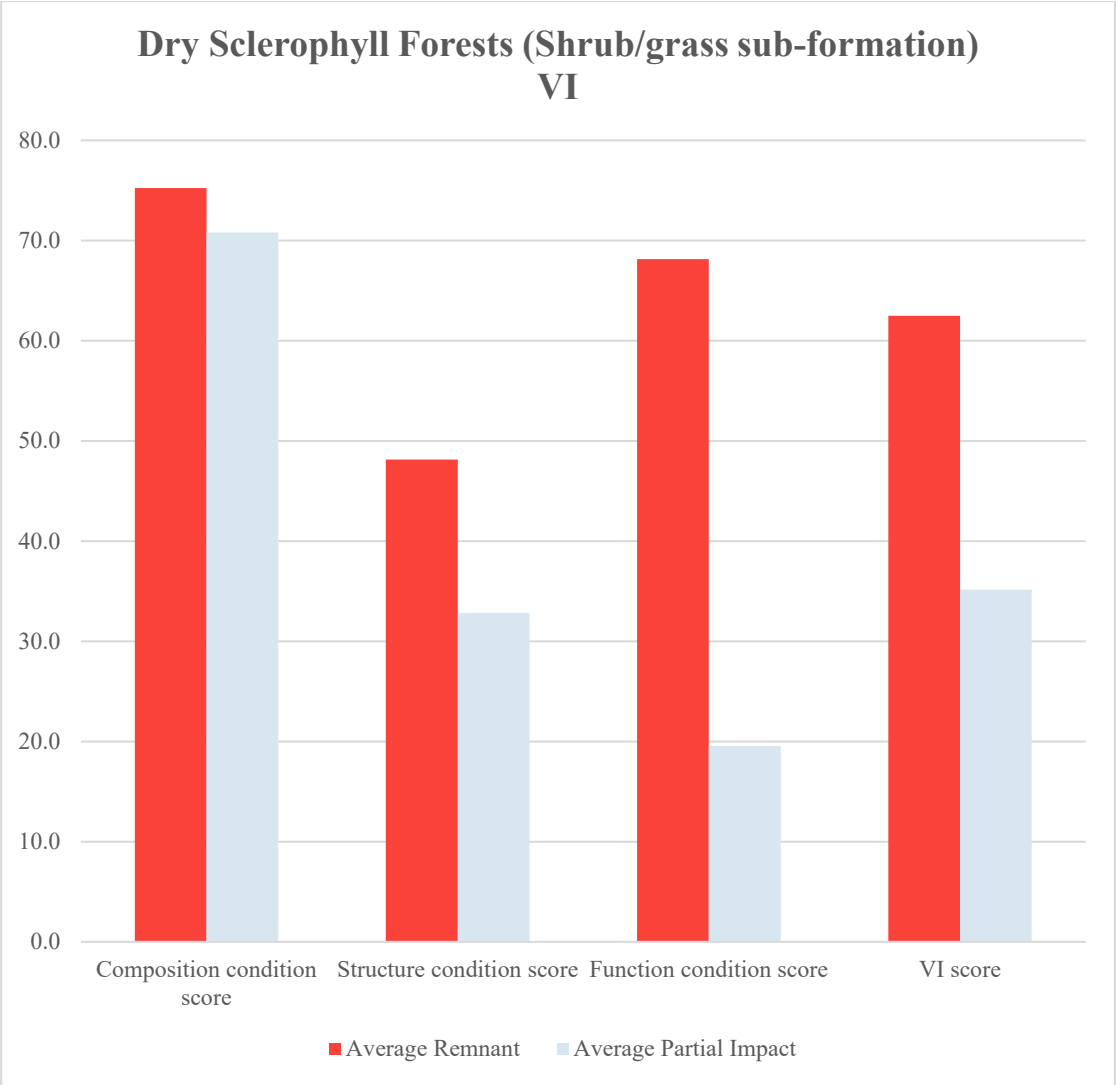


Figure 4.9 Dry Sclerophyll Forest average change in VI values within the ETL (Field), adjoining remnant vegetation.

4.12 Key trends and findings for Dry Sclerophyll Forest VI

Following analysis of the data the following general trends were observed for the Dry Sclerophyll Forest Formation sample sites between the management of ETL and adjoining remnant vegetation areas:

- the average changes composition component to VI is minimal <10% decrease
- the greatest change to VI is attributed to the decreases in function (~70%) scores
- VI changes vary for PCTs based on benchmarks with Average of -25
- the total average VI change was 43 % decrease

4.13 Wet Sclerophyll Forests (Grassy sub-formation)

The summary data of the seven paired BAM plots for each of the PCTs within the Wet Sclerophyll Forests (Grassy sub-formation) is provided below in Table 4.7. A comparative analysis of observed differences in sampled cover and composition attributes between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.10 and Figure 4.11.

Table 4.7 Summary data of the sampled PCTs within the Wet Sclerophyll Forests (Grassy sub-formation) within the ETL, adjoining remnant vegetation.

Wet Sclerophyll Forests (Grassy sub-formation)	Benchmark / condition	Composition data – Species Richness									Structure data – Percentage Cover								
		Native	Trees	Shrub	Grass	Forb	Fern	Other	Exotic	High Threat	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	High Threat
PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)																			
Average Remnant		45	6	15	6	4	1	13	0	0	59.3	47.6	4	3.6	0.5	0.1	3.5	0	0
Average Partial Impact		52	7	16	11	9	1	8	1	2	106.4	4.2	5	93.6	1.6	1	1	0.1	0.3
PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Mod-good condition)																			
Average Remnant		34	5	10	5	1	2	11	0	39	63.1	47	6.4	8.2	0.1	0.3	1.1	0	0
Average Partial Impact		50	3	18	6	3	5	15	0	1	113.2	35.1	54.1	13	2.3	1.8	6.9	0	0.5
Formation Average Remnant		**36.2**	**6.8**	**9.8**	**5.2**	**2.6**	**1.8**	**10**	**0**	**22.4**	**72.16**	**48.86**	**8.08**	**8.98**	**0.36**	**0.98**	**4.9**	**0**	**0**
Formation Average Partial Impact		**39.2**	**4**	**13**	**7**	**5.2**	**2.2**	**7.8**	**0.4**	**15**	**91.5**	**8.3**	**19.48**	**51.72**	**1.44**	**6.6**	**3.96**	**4.02**	**4.18**

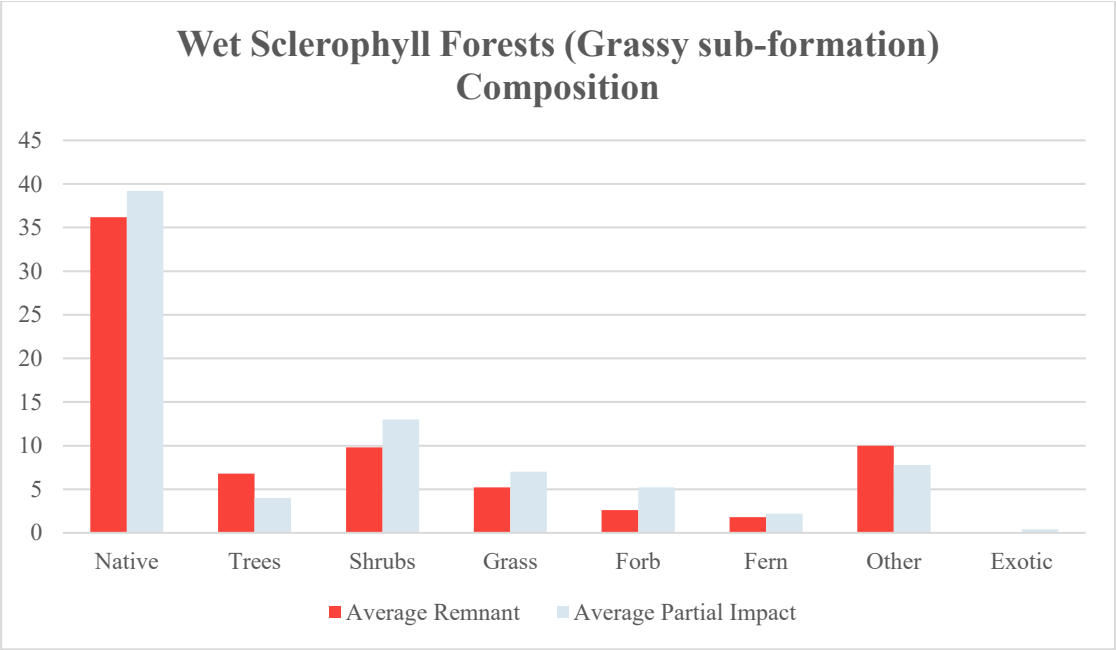


Figure 4.10 Wet Sclerophyll Forest average composition data within the ETL, adjoining remnant vegetation

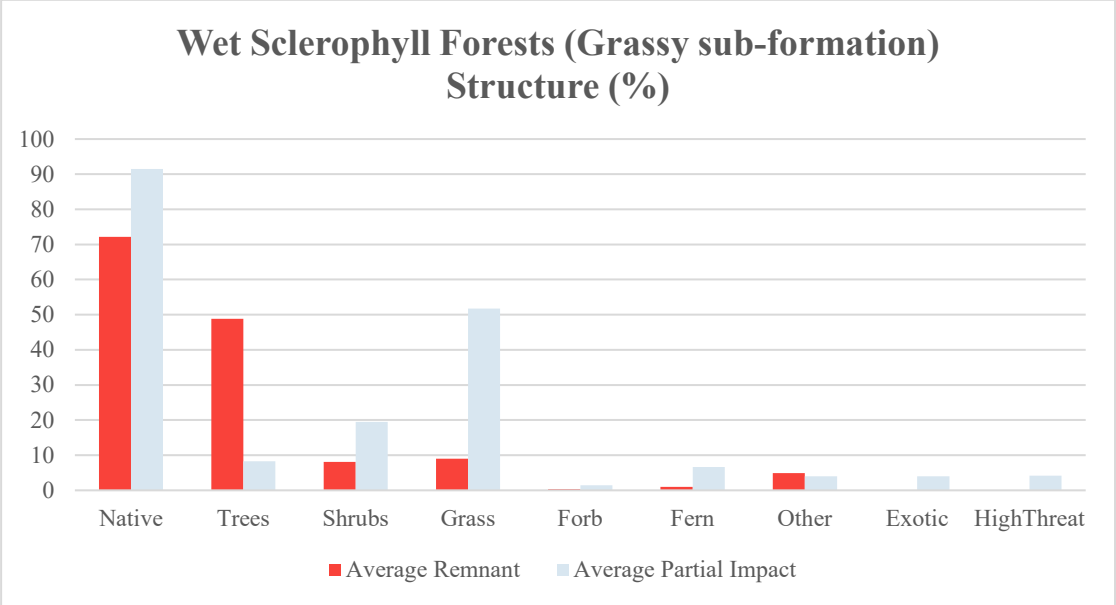


Figure 4.11 Wet Sclerophyll Forests (Grassy sub-formation) Structure data within the ETL, adjoining remnant vegetation

4.14 Key trends and findings for Wet Sclerophyll Forests (Grassy sub-formation) attribute scores

The following general trends were observed for the Wet Sclerophyll Forests (Grassy sub-formation) sample sites with a partial impact resulting from management of ETL and adjoining remnant vegetation areas:

- greatest change was associated with loss in canopy cover/composition (~20%)
- partial impacts areas resulted in some increased weed cover and composition.
- the understory values for shrubs, grass, and other showed increase in composition values
- significant increases in grass and shrub cover at the expense of canopy cover

4.15 Changes in VI for Wet Sclerophyll Forests (Grassy sub-formation)

The summary VI data of each of the PCTs within the Wet Sclerophyll Forests (Grassy sub-formation) formation following BAM-C calculation is provided below in Table 4.8. A comparative analysis of observed differences in sampled cover and composition attributes between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.12.

Table 4.8 Summary VI data of the sampled PCTs within the Wet Sclerophyll Forests (Grassy sub-formation) formation within the ETL.

Formation	Condition	Composition condition score	Structure condition score	Function condition score	VI score	Change (%)
Wet Sclerophyll Forests (Grassy sub-formation)	**Average Remnant**	69.6	53.95	64.9	62.25	
	Average Partial Impact	78.85	45.75	38.95	51.3	
VI Loss					10.95	17.59

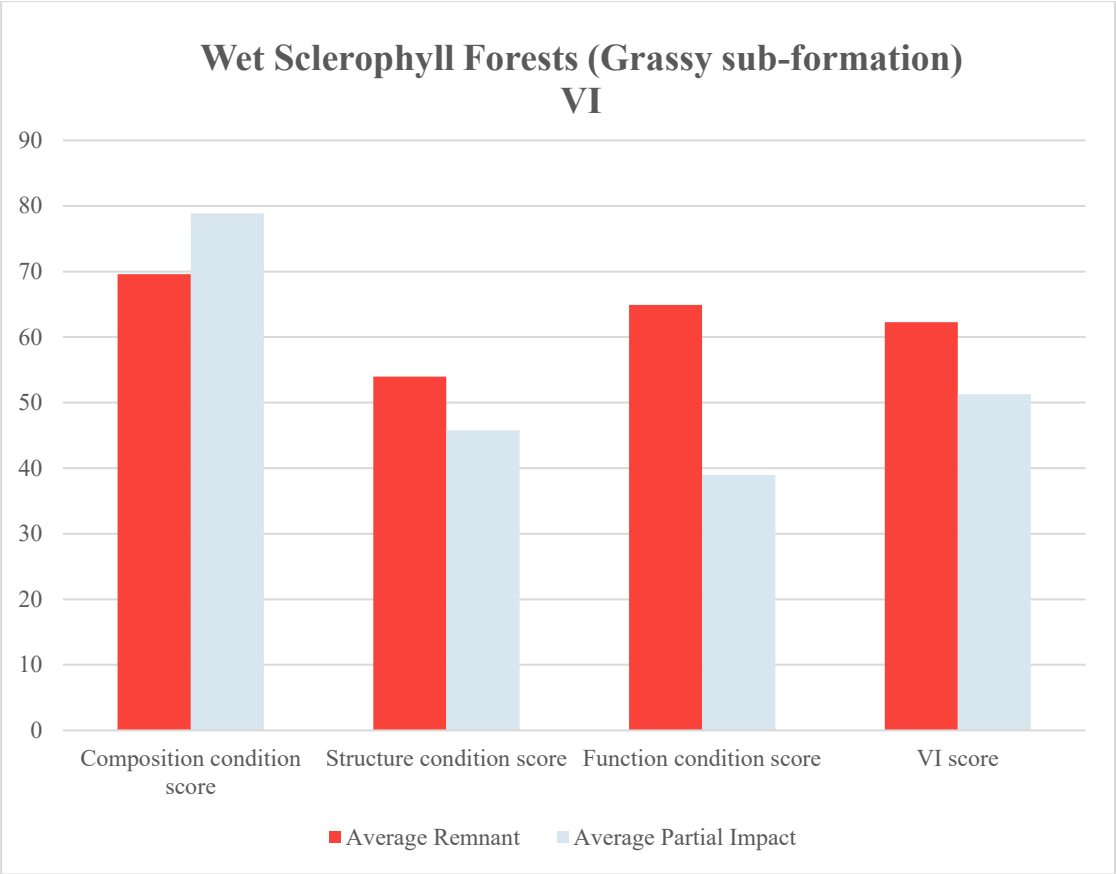


Figure 4.12 Wet Sclerophyll Forests (Grassy sub-formation) average change in VI values within the ETL (DNG), adjoining (Remnant) vegetation.

4.16 Key trends and findings for Wet Sclerophyll Forests (Grassy sub-formation) VI

Following analysis of the data the following general trends were observed for the Grassy Woodland Formation sample sites between the management of ETL and adjoining remnant vegetation areas;

- the average changes composition component to VI is minimal ~10% decrease with some PCTs actually increasing in native diversity
- greatest change to VI is attributed to the decreases in function (25%) scores
- VI changes vary for PCTs based on benchmarks with range of decreases from +1.3 to -23
- VI Composition attributes increase in diversity with canopy removal

4.17 Wet Sclerophyll Forests (Shrubby sub-formation)

The summary data of the seven paired BAM plots for each of the PCTs within the Wet Sclerophyll Forests (Shrubby sub-formation) is provided below in Table 4.9. A comparative analysis of observed differences in sampled cover and composition attributes between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.13 and Figure 4.14.

Table 4.9 Summary data of the sampled PCTs within the Wet Sclerophyll Forests (Shrubby sub-formation) within the ETL, adjoining remnant vegetation.

Wet Sclerophyll Forests (Shrubby sub-formation)	Benchmark / condition	Composition									Structure								
		Native	Trees	Shrub	Grass	Forb	Fern	Other	Exotic	High Threat	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	High Threat
PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)																			
Average Remnant		43.75	8.75	12.25	4.25	4.75	1.5	12.25	0	7	119.325	73.15	13.875	6.55	1.925	0.425	23.4	0	0
Average Partial Impact		35.5	4	12.5	2.75	4	2.75	9.5	0.75	7.25	97.225	11.425	24.05	36.1	0.975	5.5	19.175	20.15	0.125

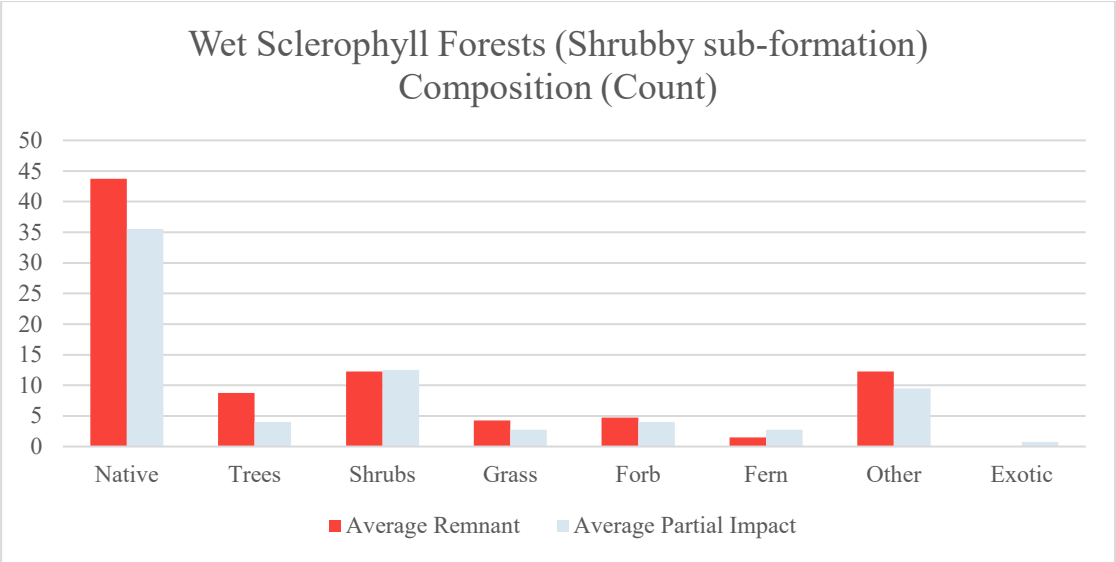


Figure 4.13 Wet Sclerophyll Forest average composition data within the ETL, adjoining remnant vegetation

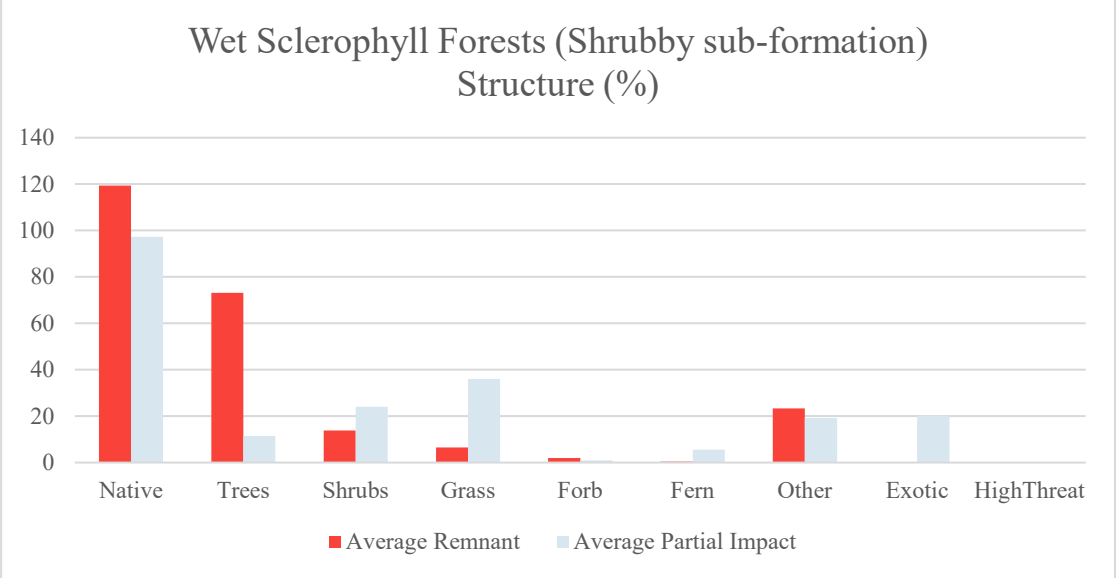


Figure 4.14 Wet Sclerophyll Forests (Shrubby sub-formation) structure data within the ETL, adjoining remnant vegetation

4.18 Key trends and findings for Wet Sclerophyll Forests (Shrubby sub-formation) attribute scores

Following analysis of the data the following general trends were observed for the Wet Sclerophyll Forests (Shrubby sub-formation) sample sites between the management of ETL and adjoining remnant vegetation areas:

- greatest change was associated with loss in canopy cover/composition (~20)
- ETL resulted in some increased weed cover and composition.
- the understory composition values for shrubs, grass, ferns and other showed no or limited change in values
- the understory structure values for shrubs, grass, ferns increased following canopy removal

4.19 Changes in VI for Wet Sclerophyll Forests (Shrubby sub-formation)

The summary VI data of each of the PCTs within the Wet Sclerophyll Forests (Shrubby sub-formation) following BAM-C calculation is provided below in Table 4.10. A comparative analysis of observed differences in sampled cover and composition attributes between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.15.

Table 4.10 Summary VI data of the sampled PCTs within the Wet Sclerophyll Forests (Shrubby sub-formation) within the ETL, adjoining remnant vegetation.

Formation	Condition	Composition condition score	Structure condition score	Function condition score	VI score	Change (%)
Wet Sclerophyll Forests (Shrubby sub-formation)	**Average Remnant**	86.8	65.3	66.9	72.4	
	Average Partial Impact	75.2	39.1	52.2	53.5	
VI Loss					18.9	26.1

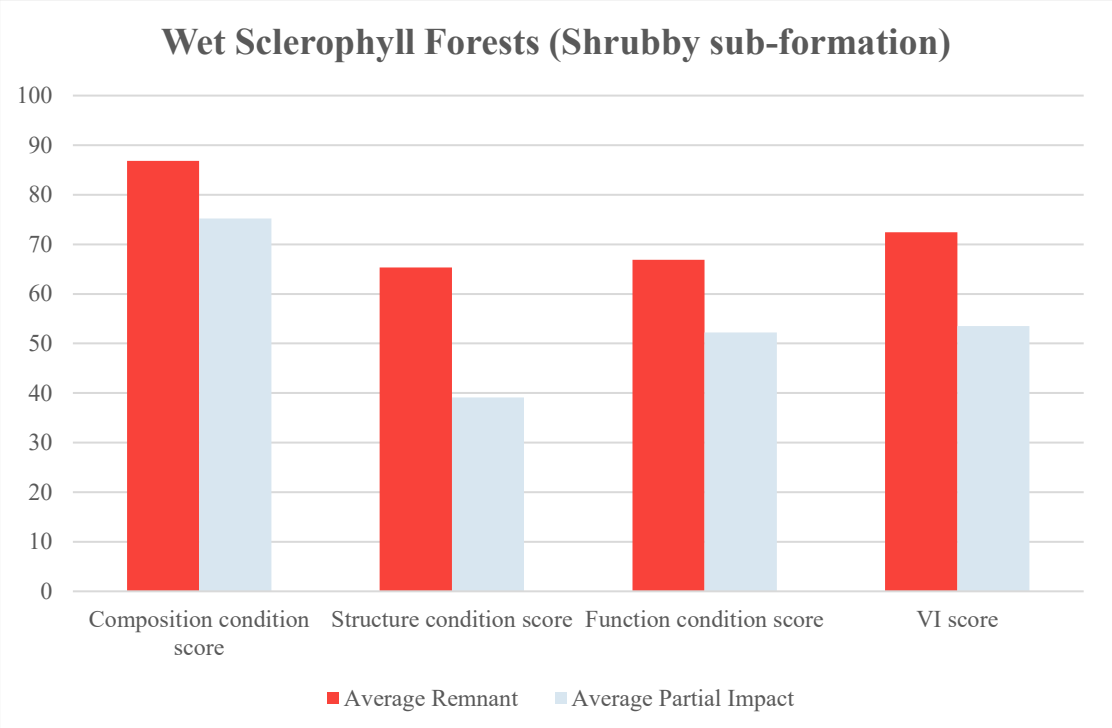


Figure 4.15 Wet Sclerophyll Forests (Shrubby sub-formation) average change in VI values within the ETL (DNG), adjoining (remnant) vegetation.

4.20 Key trends and findings for Wet Sclerophyll Forests (Shrubby sub-formation) VI

Following analysis of the data the following general trends were observed for the Wet Sclerophyll Forests (Shrubby sub-formation) sample sites between the management of ETL and adjoining remnant vegetation areas;

- the average changes composition component to VI is minimal <20% decrease
- greatest change to VI is attributed to the decreases in structure (40%) and function (20%) scores
- VI changes decreases (Average of -18.9)

5. Conclusion

EnergyCo have undertaken an evidence-based approach to informing the potential partial impacts associated with ongoing maintenance of ETLs.

This approach provides the results of field-based sampling of ETL partial impacts specific for the project.

A summary of the VI values determined from the field survey and assessed within the BAM-C for five formations Grassy Woodlands, Dry Sclerophyll (Shrub/Grassy), Dry Sclerophyll (Grassy), Wet Sclerophyll Forest (Grassy) and Wet Sclerophyll Forest (Shrub/Grassy) vegetation formations is provided in Table 5.1.

Table 5.1 Summary VI scores and loss from sampled formations within existing ETLs relevant to the project

Keith Vegetation Formation	VI Score	VI Loss	VI Change %
Grassy woodlands	36.2	36.8	36.8
Dry Sclerophyll Forests (Shrubby sub-formation)	35.2	27.4	44.8
Dry Sclerophyll Forests (Shrub/grass sub-formation)	38.2	50.7	25.0
Wet Sclerophyll Forest (Grass Sub-formation)	51.3	11	17.6
Wet Sclerophyll Forest (Shrubby Sub-formation)	53.5	18.9	26.1

The assessment of the field results has confirmed:

- ETLs maintain biodiversity values within easements subject to partial loss with VI scores of between 35 and 53 across the five formations sampled.
- The impacts of ETL partial impacts reduce VI scores by between 17.6 and 44.8%.
- The field based evidence form ETLs confirm the retention of biodiversity values, significantly more than the potential full loss scenario.

5.1 Review of observed reduction in attribute values

Following consultation with CPHR it was agreed the translation of the observed partial impact within the ETL to the projects assessment within the BAMC would require raw attribute values representative of the post clearing partial impact outcome.

The average attribute scores have been provided from the ETL easement data at a vegetation classes level to reflect the BAM-C assessment of vegetation integrity against benchmark values set at the vegetation class.

Two vegetation class types (Sydney Hinterland Dry Sclerophyll Forests and Northern Warm Temperate Rainforests) have no existing easement data to inform evidence base. These communities use attribute values from closest representative class or formation with minor adjustment following consideration of the benchmark values. A summary of the average attribute scores is provided below in Table 5.1.

Given these attributes scores will form the base of post approval verification of the project partial impacts a precautionary approach was adopted to apply further reduction in some attribute scores considered to possibly be more reflective of regeneration post clearing in the existing easement evidence base. These include a further 25% reduction in the attribute scores for Shrub composition, Shrub Structure and Grass structure and Leaf Litter/ Fallen timber scores.

Based on the above key findings, the projects partial impact within ETL management zone (Disturbance Area B) adopted the following manual adjustment to VI attribute values within the BAM-C (refer to Table 5.2).

Table 5.2 Observed average BAMC attribute scores for partial impacts within the ETL by vegetation class

Class	PCTs	Composition						Structure						Function		
		Trees	Shrubs	Grass	Forb	Fern	Other	Trees	Shrubs	Grass	Forb	Fern	Other	Litter Cover	Fallen Logs	All other values
Coastal Valley Grassy Woodlands	3314, 3315, 3328	0.0	2.5	7.0	4.5	1.0	0.5	2.7	21.3	5.6	1.8	5.1	0.1	9.7	0.0	0.0
Hunter-Macleay Dry Sclerophyll Forests	3431, 3433, 3436, 3438, 3444, 3446, 3489	0.0	5.7	9.0	9.0	1.0	1.4	3.6	19.8	30.0	10.3	0.5	0.2	8.0	0.9	0.0
Sydney Coastal Dry Sclerophyll Forests	3581, 3582, 3583	2.3	15.2	14.0	8.8	1.5	1.5	1.3	27.4	52.1	3.6	0.6	0.6	5.6	0.3	0.0
Sydney Hinterland Dry Sclerophyll Forests[1]	3599, 3605, 3617, 3621	2.3	15.2	14.0	8.8	1.5	1.5	1.3	27.4	52.1	3.6	0.6	0.6	5.6	0.3	0.0
Northern Hinterland Wet Sclerophyll Forests	3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3258, 3263	3.8	12.3	7.2	5.3	2.2	7.2	7.2	21.6	50.2	1.4	5.7	3.6	52.5	42.8	0.0
North Coast Wet Sclerophyll Forests	3087,3150	4.0	12.5	2.8	4.0	2.8	9.5	11.4	24.1	36.1	1.0	5.5	19.2	80.5	102.3	0.0
Northern Warm Temperate Rainforests[1]	3029	4.0	10.0	2.8	4.0	2.8	9.5	11.4	24.1	36.1	1.0	5.5	19.2	80.5	102.3	0.0
Coastal Floodplain Wetlands	4042 4044, 4039, 4015	1.0	7.0	8.5	7.5	2.5	4.5	24.1	40.4	69.6	13.1	13.2	4.0	2.9	0	0
Eastern Riverine Forests[1]	4072	1.0	7.0	8.5	7.5	2.5	4.5	24.1	40.4	69.6	13.1	13.2	4.0	2.9	0	0
Inland Riverine Forests[1]	4089	1.0	7.0	8.5	7.5	2.5	4.5	24.1	40.4	69.6	13.1	13.2	4.0	2.9	0	0
Dry Rainforests1	3086, 3151	4.0	10.0	2.8	4.0	2.8	9.5	11.4	24.1	36.1	1.0	5.5	19.2	80.5	102.3	0.0

Notes 1 = Vegetation class with no existing easement to inform evidence base. These communities use attribute values from closest representative class or formation with easement data modified with consideration of benchmark values.

Table 5.3 Proposed adjustment to BAMC attribute scores for partial impacts within the ETL by vegetation class.

Class	PCTs	Composition[2]						Structure[2]						Function[2]		
		Trees	Shrubs	Grass	Forb	Fern	Other	Trees	Shrubs	Grass	Forb	Fern	Other	Litter Cover	Fallen Logs	All other values
Coastal Valley Grassy Woodlands	3314, 3315, 3328	0	3	7	5	1	1	0	16	6	2	5	0	10	0	0.0
Hunter-Macleay Dry Sclerophyll Forests	3431, 3433, 3436, 3438, 3444, 3446, 3489	0	6	9	9	1	1	0	15	30	10	1	0	8	1	0.0
Sydney Coastal Dry Sclerophyll Forests	3581, 3582, 3583	0	11	14	9	2	2	0	20	39	4	1	1	6	1	0
Sydney Hinterland Dry Sclerophyll Forests[1]	3599, 3605, 3617, 3621	0	11	14	9	2	2	0	20	39	4	1	1	6	1	0
Northern Hinterland Wet Sclerophyll Forests	3152, 3230, 3237, 3238, 3239, 3241, 3242, 3244, 3250, 3258, 3263	0	9	7	5	5	2	0	16	38	1	6	4	39	32	0
North Coast Wet Sclerophyll Forests	3087,3150	0	9	3	4	3	10	0	18	27	1	6	19	60	77	0
Northern Warm Temperate Rainforests[1]	3029	0	9	3	4	2	7	0	18	1	1	6	4	39	32	0
Coastal Floodplain Wetlands	4042 4044, 4039, 4015	0	7	9	8	3	5	0	30	52	13	13	4	3	0	0
Eastern Riverine Forests[1]	4072															
Inland Riverine Forests[1]	4089		7	9	8	3	5	0	30	52	13	13	4	3	0	0
Dry Rainforests1	3086, 3151		7	9	8	3	5	0	30	52	13	13	4	3	0	0

1 = Vegetation class with no existing easement to inform evidence base. These communities use attribute values from closest representative class or formation with easement data modified with consideration of benchmark values.
2= Shaded cells represent where a 25% reduction in the recorded attribute scores have been made reflective possible regeneration in the existing easement evidence base.

We would appreciate the opportunity to meet and discuss this application and potential timing for any determination.

Yours sincerely

Alex Cockerill
National Executive - Ecology

List of attachments

Attachment A 31BData sheets for Partial Impact

Attachment A

Data sheets for Partial Impact

A.1.1 3230 – Central Coast Escarpment Moist Forest

A.1.1.1 HTP-MS-61 – Easement

Date	26/06/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-62		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230-mod-good		50	50	9	10	10	4	4	13	0	0	
Paired With	HTP-MS-61		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	108.2	108.2	50.3	7	31.7	0.8	3.9	14.5	0	0	
Acacia maidenii	0.1	1	TG		0.1								
Acrotriche divaricata	5	40	SG			5							
Adiantum aethiopicum	0.4	20	EG						0.4				
Allocasuarina torulosa	8	20	TG		8								
Alphitonia excelsa	0.1	1	TG		0.1								
Amyema miquelii	0.1	1	OG							0.1			
Angophora floribunda	1	1	TG		1								
Archontophoenix cunninghamiana	0.1	5	OG							0.1			
Billardiera scandens	0.2	10	OG							0.2			
Breynia oblongifolia	0.1	2	SG			0.1							
Calanthe triplicata	0.1	1	FG					0.1					
Calochlaena dubia	5	50	OG							5			
Cissus hypoglauca	1	1	OG							1			
Cordyline stricta	1	30	OG							1			
Dianella caerulea	0.4	10	FG					0.4					
Doodia australis	0.4	10	EG						0.4				
Elaeocarpus reticulatus	0.1	1	SG			0.1							
Entolasia marginata	1	20	GG				1						
Entolasia stricta	5	80	GG				5						
Eucalyptus pilularis	24	8	TG		24								
Gahnia sieberiana	20	80	GG				20						
Glochidion ferdinandi	1	2	TG		1								
Guioa semiglauca	0.1	1	TG		0.1								
Hibbertia dentata	5	100	OG							5			
Hibbertia scandens	0.4	5	OG							0.4			
Imperata cylindrica	2	50	GG				2						
Lasiopetalum ferrugineum var. cordatum	0.4	5	SG			0.4							
Lepidosperma laterale	0.4	10	GG				0.4						
Leucopogon lanceolatus	0.1	3	SG			0.1							
Lindsaea microphylla	0.1	5	EG						0.1				

Easting	347055
Northing	6335771
Orientation	8
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	7
30-49	10
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	36
BAM Attributes 1x1 plot (%)	69
Litter (%)	75
	85
	65
	75
	45

Lomandra confertifolia	0.4	5	GG				0.4								
Lomandra longifolia	2	30	GG				2								
Microlaena stipoides var. stipoides	0.1	5	GG				0.1								
Opercularia varia	0.1	5	FG					0.1							
Oplismenus imbecillis	0.6	20	GG				0.6								
Pandorea pandorana subsp. pandorana	0.4	5	OG							0.4					
Parsonsia straminea	0.1	3	OG							0.1					
Persoonia linearis	0.2	1	SG			0.2									
Polyscias sambucifolia	0.4	3	SG			0.4									
Pseuderanthemum variabile	0.2	30	FG					0.2							
Psychotria loniceroides	0.1	1	SG			0.1									
Pteridium esculentum	3	50	EG						3						
Rubus moluccanus var. trilobus	0.2	5	SG			0.2									
Rubus nebulosus	0.1	1	OG							0.1					
Schoenus melanostachys	0.2	3	GG				0.2								
Smilax australis	1	20	OG							1					
Smilax glyciphylla	0.1	3	OG							0.1					
Syncarpia glomulifera subsp. glomulifera	15	20	TG		15										
Synoum glandulosum subsp. glandulosur	0.4	5	SG			0.4									
Trochocarpa laurina	1	3	TG		1										

A.1.1.2 HTP-MS-62 – Mod-good

Date	26/06/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	HTP-MS-61		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3230 - easement		36	35	6	12	6	4	1	6	0	1	
Paired With	HTP-MS-62		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	100	99.9	0.8	20.7	63	0.4	5	10	0	0.1	
Acacia maidenii	0.1	2	TG		0.1								
Acacia ulicifolia	0.6	2	SG			0.6							
Acrotriche divaricata	5	50	SG			5							
Allocasuarina torulosa	0.1	1	TG		0.1								
Astrotricha latifolia	0.4	5	SG			0.4							
Billardiera scandens	0.1	3	OG							0.1			
Breynia oblongifolia	1	30	SG			1							
Calochlaena dubia	0.4	10	OG							0.4			
Centella asiatica	0.1	10	FG					0.1					
Daviesia ulicifolia	0.1	1	SG			0.1							
Denhamia silvestris	0.1	5	SG			0.1							
Drosera spp.	0.1	5	FG					0.1					
Elaeocarpus reticulatus	0.6	5	SG			0.6							
Entolasia stricta	1	40	GG				1						
Eucalyptus pilularis	0.1	4	TG		0.1								
Gahnia sieberiana	2	20	GG				2						
Glochidion ferdinandi	0.2	5	TG		0.2								
Gonocarpus teucrioides	0.1	5	FG					0.1					
Hibbertia dentata	8	100	OG							8			
Hibbertia scandens	0.4	5	OG							0.4			
Imperata cylindrica	55	500	GG				55						
Lantana camara	0.1	1	HT									0.1	
Lepidosperma laterale	1	30	GG				1						
Lomandra longifolia	1	15	GG				1						
Oxalis spp.	0.1	1	FG					0.1					
Persoonia linearis	2	15	SG			2							
Phyllanthus hirtellus	0.1	5	SG			0.1							
Platysace lanceolata	0.4	10	SG			0.4							
Polyscias sambucifolia	0.4	3	SG			0.4							
Pomaderris ferruginea	10	60	SG			10							
Pteridium esculentum	5	100	EG						5				
Schizomeria ovata	0.1	3	TG		0.1								
Schoenus melanostachys	3	20	GG				3						
Smilax australis	1	20	OG							1			
Smilax glyciphylla	0.1	1	OG							0.1			
Trochocarpa laurina	0.2	1	TG		0.2								

Easting	357088
Northing	6335709
Orientation	231
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	no
10-19	no
5-9	no
<5	yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	12
Litter (%)	15
	5
	5
	25
	10

A.1.1.3 LCED_HTP1 – Easement

Date	9/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP1		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3230 - easement		55	52	7	16	11	9	1	8	1	2
Paired With	LCEB_HTP2		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	106.8	106.4	4.2	5	93.6	1.6	1	1	0.1	0.3
Eucalyptus pilularis	3	25	TG		3							
Angophora floribunda	0.1	1	TG		0.1							
Syncarpia glomulifera	0.5	1	TG		0.5							
Glochidion ferdinandi	0.2	1	TG		0.2							
Acrotriche divaricata	2	20	SG			2						
Leucopogon juniperinus	0.1	1	SG			0.1						
Acacia maidenii	0.1	1	TG		0.1							
Ozothamnus diosmifolius	0.2	2	SG			0.2						
Allocasuarina torulosa	0.1	2	TG		0.1							
Daviesia ulicifolia	0.3	5	SG			0.3						
Astrotricha latifolia	0.1	1	SG			0.1						
Trochocarpa laurina	0.2	2	TG		0.2							
Breynia oblongifolia	0.1	1	SG			0.1						
Platysace lanceolata	1	20	SG			1						
Persoonia linearis	0.1	1	SG			0.1						
Comesperma ericinum	0.1	1	SG			0.1						
Leucopogon lanceolatus	0.1	1	SG			0.1						
Pomaderris ferruginea	0.1	1	SG			0.1						
Elaeocarpus reticulatus	0.4	4	SG			0.4						
Polyscias sambucifolia	0.1	1	SG			0.1						
Acacia elongata	0.1	1	SG			0.1						
Denhamia silvestris	0.1	1	SG			0.1						
Lantana camara	0.1	1	HT									0.1
Callicoma serratifolia	0.1	1	SG			0.1						
Billardiera scandens	0.2	20	OG							0.2		
Hibbertia dentata	0.2	1	OG							0.2		
Hibbertia scandens	0.1	1	OG							0.1		
Lobelia purpurascens	0.2	20	FG					0.2				
Imperata cylindrica	80	5000	GG				80					
Pomax umbellata	0.2	50	FG					0.2				
Cymbopogon refractus	1	100	GG				1					
Lomandra longifolia	0.2	10	GG				0.2					
Entolasia stricta	1	100	GG				1					

Easting	346485
Northing	6335149
Orientation	313
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	7
BAM Attributes 1x1 plot (%)	66

Kennedia rubicunda	0.1	5	OG									0.1					
Grona varians	0.1	10	OG									0.1					
Pteridium esculentum	1	10	EG								1						
Gahnia clarkei	0.5	2	GG							0.5							
Glycine clandestina	0.1	10	OG									0.1					
Oxalis perennans	0.1	10	FG								0.1						
Lomandra filiformis subsp. filiformis	0.1	5	GG							0.1							
Aristida vagans	0.1	10	GG							0.1							
Lepidosperma laterale	10	100	GG							10							
Digitaria spp.	0.1	10	GG							0.1							
Viola hederacea	0.5	100	FG								0.5						
Gonocarpus tetragynus	0.2	25	FG								0.2						
Eragrostis spp.	0.1	10	GG							0.1							
Themeda triandra	0.5	20	GG							0.5							
Andropogon virginicus	0.2	20	HT												0.2		
Goodenia heterophylla subsp. heterophylla	0.1	1	FG								0.1						
Cassytha glabella	0.1	1	OG									0.1					
Conyza bonariensis	0.1	2	EX										0.1				
Pandorea pandorana	0.1	1	OG									0.1					
Solenogyne bellioides	0.1	1	FG								0.1						
Pseuderanthemum variabile	0.1	3	FG								0.1						
Dianella caerulea	0.1	1	FG								0.1						

A.1.1.4 LCED_HTP2 – Mod-good

Date	10/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP2		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3230		45	45	6	15	6	4	1	13	0	0
Paired With	LCEB_HTP1		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	59.3	59.3	47.6	4	3.6	0.5	0.1	3.5	0	0
Eucalyptus pilularis	30	25	TG		30							
Angophora floribunda	2	2	TG		2							
Syncarpia glomulifera	10	20	TG		10							
Allocasuarina torulosa	5	11	TG		5							
Leucopogon juniperinus	0.3	2	SG			0.3						
Psychotria loniceroides	0.1	1	SG			0.1						
Synoum glandulosum subsp. glandulosum	1	5	SG			1						
Elaeocarpus reticulatus	0.1	1	SG			0.1						
Cordyline stricta	1	10	OG							1		
Breynia oblongifolia	0.5	10	SG			0.5						
Persoonia linearis	0.5	5	SG			0.5						
Trochocarpa laurina	0.5	2	TG		0.5							
Acrotriche divaricata	0.1	1	SG			0.1						
Leucopogon lanceolatus	0.5	5	SG			0.5						
Acacia elongata	0.1	1	SG			0.1						
Guioa semiglauca	0.1	1	TG		0.1							
Myrsine variabilis	0.3	1	SG			0.3						
Denhamia cunninghamii	0.1	1	SG			0.1						
Pomaderris ferruginea	0.1	1	SG			0.1						
Daviesia ulicifolia	0.1	1	SG			0.1						
Polyscias sambucifolia	0.1	1	SG			0.1						
Grona varians	0.1	20	OG							0.1		
Dianella caerulea	0.2	10	FG					0.2				
Geitonoplesium cymosum	0.2	10	OG							0.2		
Hibbertia dentata	0.1	1	OG							0.1		
Lomandra longifolia	0.5	10	GG				0.5					
Entolasia stricta	0.5	25	GG				0.5					
Glycine clandestina	0.1	10	OG							0.1		
Pandorea pandorana	0.1		OG							0.1		
Smilax australis	0.1	1	OG							0.1		
Calochlaena dubia	0.1	1	OG							0.1		
Pseuderanthemum variabile	0.1	5	FG					0.1				
Dioscorea transversa	0.5	10	OG							0.5		
Parsonsia straminea	0.5	5	OG							0.5		
Glycine tabacina	0.1	1	OG							0.1		
Cymbopogon refractus	0.5	10	GG				0.5					
Passiflora herbertiana	0.1	1	OG							0.1		
Lobelia purpurascens	0.1	5	FG					0.1				
Imperata cylindrica	1	100	GG				1					
Cheilanthes sieberi	0.1	10	EG						0.1			
Cassytha glabella	0.5	2	OG							0.5		
Oplismenus imbecillis	0.1	5	GG				0.1					
Rubus parvifolius	0.1	1	SG			0.1						
Gahnia clarkei	1	1	GG				1					
Dichondra repens	0.1	1	FG					0.1				

Easting	346499
Northing	6335127
Orientation	#N/A
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	6
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	111
BAM Attributes 1x1 plot (%)	92

A.1.1.5 LCED_HTP3 – Mod-good

Date	10/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP3		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3150		43	43	9	8	3	8	3	12	0	0
Paired With	LCEB_HTP4		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	101.8	101.8	72.4	6.3	2.5	2.1	1.2	17.3	0	0
Eucalyptus pilularis	30	6	TG		30							
Syncarpia glomulifera	10	5	TG		10							
Allocasuarina torulosa	5	5	TG		5							
Angophora floribunda	1	2	TG		1							
Synoum glandulosum subsp. glandulosum	5	15	SG			5						
Archontophoenix cunninghamiana	1	15	OG							1		
Cryptocarya glaucescens	20	25	TG		20							
Trochocarpa laurina	1	10	TG		1							
Cordyline stricta	2	25	OG							2		
Cyathea australis	0.5	1	OG							0.5		
Breynia oblongifolia	0.1	1	SG			0.1						
Rhodamnia rubescens	0.3	2	SG			0.3						
Acacia elongata	0.1	1	SG			0.1						
Commersonia fraseri	0.1	1	SG			0.1						
Psychotria loniceroides	0.1	5	SG			0.1						
Elaeocarpus reticulatus	0.5	1	SG			0.5						
Guioa semiglauca	5	2	TG		5							
Schizomeria ovata	0.3	1	TG		0.3							
Diploglottis australis	0.1	1	TG		0.1							
Dioscorea transversa	1	100	OG							1		
Calochlaena dubia	10	500	OG							10		
Pseuderanthemum variabile	1	1000	FG					1				
Geitonoplesium cymosum	0.1	10	OG							0.1		
Doodia Aspera	1	1000	EG						1			
Alpinia caerulea	0.5	2	FG					0.5				
Gahnia clarkei	2	20	GG				2					
Hibbertia dentata	0.5	20	OG							0.5		
Hibbertia scandens	0.5	20	OG							0.5		
Smilax australis	0.1	1	OG							0.1		
Oxalis perennans	0.1	10	FG					0.1				
Pandorea pandorana	0.1	1	OG							0.1		
Schelhammera undulata	0.1	10	FG					0.1				
Oplismenus imbecillis	0.1	10	GG				0.1					
Viola silicestris	0.1	5	FG					0.1				
Rubus moluccanus	0.1	1	SG			0.1						
Parsonsia straminea	0.5	1	OG							0.5		
Cissus hypoglauca	1	1	OG							1		
Lobelia purpurascens	0.1	10	FG					0.1				
Acianthus fornicatus	0.1	1	FG					0.1				
Dianella caerulea	0.1	5	FG					0.1				
Lomandra longifolia	0.4	4	GG				0.4					
Adiantum formosum	0.1	5	EG						0.1			
Blechnum cartilagineum	0.1	2	EG						0.1			

Easting	346438
Northing	6335076
Orientation	119
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	2
50-79	5
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	215
BAM Attributes 1x1 plot (%)	90

A.1.1.6 LCED_HTP4 – Easement

Date	10/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP4		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3150 - easement		43	42	7	10	3	5	3	14	0	1
Paired With	LCEB_HTP3		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	94.4	94.1	37.3	16.5	2.6	2.1	0.5	35.1	0	0.3
Archontophoenix cunninghamiana	2	5	OG							2		
Acacia implexa	2	10	SG			2						
Ficus coronata	2	1	SG			2						
Synoum glandulosum subsp. glandulosum	10	50	SG			10						
Cryptocarya microneura	25	50	TG		25							
Cyathea australis	5	20	OG							5		
Cordyline stricta	10	50	OG							10		
Sloanea australis	1	10	TG		1							
Cryptocarya glaucescens	10	20	TG		10							
Trochocarpa laurina	0.1	1	TG		0.1							
Lantana camara	0.3	1	HT									0.3
Schizomeria ovata	0.3	1	TG		0.3							
Breynia oblongifolia	0.1	1	SG			0.1						
Pittosporum multiflorum	1	20	SG			1						
Acmena smithii	0.5	1	TG		0.5							
Wilkiea huegeliana	0.3	1	SG			0.3						
Psychotria loniceroides	0.1	1	SG			0.1						
Elaeocarpus reticulatus	0.4	1	SG			0.4						
Syncarpia glomulifera	0.4	1	TG		0.4							
Tasmannia insipida	0.1	1	SG			0.1						
Calochlaena dubia	1	50	OG							1		
Dioscorea transversa	0.5	50	OG							0.5		
Pteridium esculentum	0.1	1	EG						0.1			
Viola silicestris	0.1	20	FG					0.1				
Oplismenus imbecillis	0.1	20	GG				0.1					
Grona varians	0.1	10	OG							0.1		
Cyathochaeta diandra	0.5	5	GG				0.5					
Hibbertia dentata	1	100	OG							1		
Cissus hypoglauca	10	50	OG							10		
Schelhammera undulata	1	1000	FG					1				
Pseuderanthemum variabile	0.5	100	FG					0.5				
Smilax australis	5	50	OG							5		
Hydrocotyle sibthorpioides	0.1	10	FG					0.1				
Gahnia clarkei	2	20	GG				2					
Adiantum aethiopicum	0.1	10	EG						0.1			
Rubus rosifolius	0.5	10	SG			0.5						
Alpinia caerulea	0.4	2	FG					0.4				
Doodia Aspera	0.3	30	EG						0.3			
Gynochthodes jasminoides	0.1	1	OG							0.1		
Cayratia clematidea	0.1	1	OG							0.1		
Hibbertia scandens	0.1	1	OG							0.1		
Geitonoplesium cymosum	0.1	1	OG							0.1		
Tetrastigma nitens	0.1	1	OG							0.1		

Easting	346410
Northing	6335099
Orientation	310
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	317
BAM Attributes 1x1 plot (%)	90

A.1.1.7 LCED_HTP5 – Easement

Date	10/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP5		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3230 - easement		33	32	3	9	8	6	2	4	0	1
Paired With	LCEB_HTP6		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	110	80	1.6	32.1	42.7	1	1.1	1.5	0	30
Allocasuarina torulosa	1	5	TG		1							
Daviesia ulicifolia	15	25	SG			15						
Leptospermum polygalifolium	15	60	SG			15						
Acacia ulicifolia	1	10	SG			1						
Ozothamnus diosmifolius	0.1	1	SG			0.1						
Platysace lanceolata	0.1	1	SG			0.1						
Acrotriche divaricata	0.5	10	SG			0.5						
Persoonia linearis	0.1	1	SG			0.1						
Breynia oblongifolia	0.1	1	SG			0.1						
Trochocarpa laurina	0.5	2	TG		0.5							
Cordyline stricta	0.3	3	OG							0.3		
Elaeocarpus reticulatus	0.2	1	SG			0.2						
Eucalyptus pilularis	0.1	1	TG		0.1							
Andropogon virginicus	30	1000	HT									30
Pteridium esculentum	1	50	EG						1			
Lomandra longifolia	5	50	GG				5					
Lepidosperma laterale	1	10	GG				1					
Hibbertia dentata	1	100	OG							1		
Pomax umbellata	0.5	50	FG					0.5				
Pterostylis spp.	0.1	10	FG					0.1				
Hypericum gramineum	0.1	20	FG					0.1				
Cheilanthes sieberi	0.1	20	EG						0.1			
Solenogyne bellioides	0.1	10	FG					0.1				
Oxalis perennans	0.1	1	FG					0.1				
Gahnia clarkei	1	10	GG				1					
Hibbertia scandens	0.1	1	OG							0.1		
Calochlaena dubia	0.1	1	OG							0.1		
Imperata cylindrica	25	2000	GG				25					
Schoenus melanostachys	0.5	1	GG				0.5					
Gonocarpus tetragynus	0.1	10	FG					0.1				
Panicum simile	0.1	1	GG				0.1					
Echinopogon caespitosus	0.1	10	GG				0.1					
Entolasia stricta	10	1000	GG				10					

Easting	347230
Northing	6335844
Orientation	214
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	0

A.1.1.8 LCED_HTP6 – Mod-good

Date	10/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP6		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3230		34	34	3	12	3	5	2	9	0	0
Paired With	LCEB_HTP5		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	90.1	90.1	20.3	13	40.3	0.5	5.1	10.9	0	0
Eucalyptus pilularis	15	15	TG		15							
Allocasuarina torulosa	5	11	TG		5							
Persoonia linearis	2	20	SG			2						
Podolobium ilicifolium	5	50	SG			5						
Acrotriche divaricata	1	10	SG			1						
Rubus moluccanus	0.1	1	SG			0.1						
Schizomeria ovata	0.3	1	TG		0.3							
Pomaderris ferruginea	0.2	1	SG			0.2						
Acacia ulicifolia	1	10	SG			1						
Platysace lanceolata	1	50	SG			1						
Ozothamnus diosmifolius	0.1	1	SG			0.1						
Acacia floribunda	0.2	1	SG			0.2						
Polyscias sambucifolia	0.2	5	SG			0.2						
Elaeocarpus reticulatus	2	5	SG			2						
Leucopogon lanceolatus	0.2	1	SG			0.2						
Cordyline stricta	0.2	2	OG							0.2		
Pteridium esculentum	5	50	EG						5			
Imperata cylindrica	25	2000	GG				25					
Hibbertia dentata	5	1000	OG							5		
Lindsaea linearis	0.1	10	EG						0.1			
Lomandra longifolia	0.3	5	GG				0.3					
Glycine clandestina	0.1	10	OG							0.1		
Grona varians	0.1	5	OG							0.1		
Parsonsia straminea	0.1	1	OG							0.1		
Kennedia rubicunda	0.2	10	OG							0.2		
Billardiera scandens	0.1	5	OG							0.1		
Patersonia spp.	0.1	5	FG					0.1				
Oxalis perennans	0.1	10	FG					0.1				
Calochlaena dubia	5	500	OG							5		
Entolasia stricta	15	1000	GG				15					
Dianella caerulea	0.1	5	FG					0.1				
Viola betonicifolia	0.1	1	FG					0.1				
Pseuderanthemum variabile	0.1	2	FG					0.1				
Hibbertia scandens	0.1	5	OG							0.1		

Easting	347225
Northing	6335901
Orientation	329
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	174
BAM Attributes 1x1 plot (%)	85

A.1.2 3263 – Watagan Range Turpentine-Mahogany Grassy Forest

A.1.2.1 LCED_HTP7 – Easement

Date	11/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP7		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3263 - easement		51	50	3	18	6	3	5	15	0	1
Paired With	LCEB_HTP8		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	113.7	113.2	35.1	54.1	13	2.3	1.8	6.9	0	0.5
Syncarpia glomulifera	30	25	TG		30							
Eucalyptus pilularis	5	2	TG		5							
Acacia schinoides	10	10	SG			10						
Commersonia fraseri	40	100	SG			40						
Astrotricha latifolia	1	10	SG			1						
Lantana camara	0.5	10	HT									0.5
Leucopogon juniperinus	0.1	5	SG			0.1						
Allocasuarina torulosa	0.1	1	TG		0.1							
Rhodamnia rubescens	0.2	1	SG			0.2						
Cordyline stricta	0.5	5	OG							0.5		
Psychotria loniceroides	0.1	1	SG			0.1						
Breynia oblongifolia	0.2	1	SG			0.2						
Persoonia linearis	0.5	2	SG			0.5						
Ozothamnus diosmifolius	0.1	1	SG			0.1						
Pomaderris ligustrina	1	10	SG			1						
Zieria pilosa	0.1	1	SG			0.1						
Denhamia silvestris	0.1	1	SG			0.1						
Archontophoenix cunninghamiana	0.1	1	OG							0.1		
Synoum glandulosum subsp. glandulosum	0.1	1	SG			0.1						
Olearia nernstii	0.1	1	SG			0.1						
Daviesia ulicifolia	0.1	1	SG			0.1						
Howittia trilocularis	0.2	1	SG			0.2						
Platycerium bifurcatum	0.1	1	EG						0.1			
Oplismenus imbecillis	5	3000	GG				5					
Adiantum aethiopicum	0.1	10	EG						0.1			
Entolasia stricta	5	500	GG				5					
Hibbertia dentata	2	200	OG							2		
Calochlaena dubia	1	100	OG							1		
Geitonoplesium cymosum	0.1	10	OG							0.1		
Lobelia purpurascens	2	2000	FG					2				
Gahnia clarkei	1	10	GG				1					
Stephania japonica	0.1	1	OG							0.1		
Pteridium esculentum	0.5	50	EG						0.5			
Doodia Aspera	1	100	EG						1			
Hibbertia scandens	0.1	1	OG							0.1		
Cissus antarctica	1	20	OG							1		
Pseuderanthemum variabile	0.2	20	FG					0.2				
Cassytha glabella	1	100	OG							1		
Lomandra longifolia	0.5	5	GG				0.5					
Sarcopetalum harveyanum	0.5	10	OG							0.5		
Imperata cylindrica	1	100	GG				1					
Grona varians	0.1	1	OG							0.1		
Oxalis perennans	0.1	10	FG					0.1				
Lepidosperma laterale	0.5	5	GG				0.5					
Cheilanthes sieberi	0.1	10	EG						0.1			
Goodenia ovata	0.1	1	SG			0.1						
Rubus moluccanus	0.1	1	SG			0.1						
Kennedia rubicunda	0.1	1	OG							0.1		
Eustrephus latifolius	0.1	1	OG							0.1		
Smilax australis	0.1	1	OG							0.1		
Tetrastigma nitens	0.1	1	OG							0.1		

Easting	345951
Northing	6334749
Orientation	104
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	144
BAM Attributes 1x1 plot (%)	67

A.1.2.2 LCED_HTP8 – Mod-good

Date	11/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP8		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3263		34	34	5	10	5	1	2	11	0	0
Paired With	LCEB_HTP7		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	63.1	63.1	47	6.4	8.2	0.1	0.3	1.1	0	0
Syncarpia glomulifera	30	100	TG		30							
Allocasuarina torulosa	1	10	TG		1							
Eucalyptus pilularis	10	10	TG		10							
Eucalyptus deanei	1	1	TG		1							
Persoonia linearis	0.2	1	SG			0.2						
Pultenaea spinosa	2	15	SG			2						
Astrotricha latifolia	0.3	2	SG			0.3						
Pomaderris ligustrina	1	5	SG			1						
Acacia prominens	5	3	TG		5							
Acacia floribunda	0.1	1	SG			0.1						
Acacia schinoides	2	10	SG			2						
Psychotria loniceroides	0.1	1	SG			0.1						
Breynia oblongifolia	0.1	1	SG			0.1						
Myrsine variabilis	0.1	1	SG			0.1						
Elaeocarpus reticulatus	0.5	1	SG			0.5						
Lomandra longifolia	1	10	GG				1					
Gahnia clarkei	2	20	GG				2					
Entolasia stricta	5	1000	GG				5					
Calochlaena dubia	0.1	1	OG							0.1		
Smilax australis	0.1	1	OG							0.1		
Dianella caerulea	0.1	10	FG					0.1				
Gynochthodes jasminoides	0.1	1	OG							0.1		
Pandorea pandorana	0.1	1	OG							0.1		
Parsonsia straminea	0.1	1	OG							0.1		
Geitonoplesium cymosum	0.1	1	OG							0.1		
Pteridium esculentum	0.2	5	EG						0.2			
Oplismenus imbecillis	0.1	10	GG				0.1					
Hibbertia dentata	0.1	2	OG							0.1		
Lepidosperma laterale	0.1	2	GG				0.1					
Eustrephus latifolius	0.1	1	OG							0.1		
Lindsaea linearis	0.1	1	EG						0.1			
Cissus antarctica	0.1	10	OG							0.1		
Archontophoenix cunninghamiana	0.1	1	OG							0.1		
Clematis glycinoides	0.1	1	OG							0.1		

Easting	345935
Northing	6334766
Orientation	236
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	173
BAM Attributes 1x1 plot (%)	97

A.1.2.3 LCED_HTP9 – Easement

Date	11/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP9		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3263 - easement		33	32	2	10	7	7	2	4	0	1
Paired With	LCEB_HTP10		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	108.4	88.4	1.1	7.2	73	1.6	5.1	0.4	0	20
Seringia arborescens	5	50	SG			5						
Commersonia fraseri	0.1	1	SG			0.1						
Astrotricha latifolia	0.5	5	SG			0.5						
Leucopogon juniperinus	1	20	SG			1						
Pomaderris intermedia	0.1	1	SG			0.1						
Daviesia ulicifolia	0.1	1	SG			0.1						
Pomaderris eriocephala	0.1	1	SG			0.1						
Pultenaea spinosa	0.1	1	SG			0.1						
Allocasuarina torulosa	0.1	1	TG		0.1							
Eucalyptus punctata	1	10	TG		1							
Persoonia linearis	0.1	1	SG			0.1						
Pomax umbellata	1	1000	FG					1				
Imperata cylindrica	10	1000	GG				10					
Andropogon virginicus	20	2000	HT									20
Lepidosperma laterale	5	50	GG				5					
Cymbopogon refractus	30	2000	GG				30					
Pteridium esculentum	5	200	EG						5			
Lomandra longifolia	5	500	GG				5					
Cheilanthes sieberi	0.1	15	EG						0.1			
Hibbertia dentata	0.1	10	OG							0.1		
Calochilus robertsonii	0.1	1	FG					0.1				
Dianella revoluta	0.1	10	FG					0.1				
Aristida vagans	2	1000	GG				2					
Cissus antarctica	0.1	1	OG							0.1		
Geitonoplesium cymosum	0.1	1	OG							0.1		
Lobelia purpurascens	0.1	20	FG					0.1				
Billardiera scandens	0.1	1	OG							0.1		
Gonocarpus tetragynus	0.1	20	FG					0.1				
Gahnia clarkei	1	10	GG				1					
Pterostylis spp.	0.1	5	FG					0.1				
Digitaria spp.	20	2000	GG				20					
Oxalis perennans	0.1	5	FG					0.1				
Pimelea latifolia subsp. elliptifoli	0.1	1	SG			0.1						

Easting	345870
Northing	6334662
Orientation	205
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	53
BAM Attributes 1x1 plot (%)	75

A.1.2.4 LCED_HTP10 – Mod-good

Date	11/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP10		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3263		21	21	5	4	4	2	1	5	0	0
Paired With	LCEB_HTP9		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	54.7	54.7	50.1	2.1	1.3	0.2	0.5	0.5	0	0
Eucalyptus pilularis	10	3	TG		10							
Syncarpia glomulifera	20	15	TG		20							
Eucalyptus acmenoides	10	10	TG		10							
Allocasuarina torulosa	10	25	TG		10							
Persoonia linearis	1	10	SG			1						
Glochidion ferdinandi	0.1	1	TG		0.1							
Daviesia ulicifolia	0.5	5	SG			0.5						
Acacia schinoides	0.5	5	SG			0.5						
Denhamia silvestris	0.1	2	SG			0.1						
Parsonsia straminea	0.1	1	OG							0.1		
Pteridium esculentum	0.5	50	EG						0.5			
Pandorea pandorana	0.1	1	OG							0.1		
Hibbertia scandens	0.1	5	OG							0.1		
Pseuderanthemum variabile	0.1	10	FG					0.1				
Entolasia stricta	1	100	GG				1					
Dianella caerulea	0.1	1	FG					0.1				
Lomandra longifolia	0.1	1	GG				0.1					
Lepidosperma laterale	0.1	1	GG				0.1					
Imperata cylindrica	0.1	10	GG				0.1					
Smilax australis	0.1	1	OG							0.1		
Tylophora spp.	0.1	1	OG							0.1		

Easting	345827
Northing	6334672
Orientation	230
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	5
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	140
BAM Attributes 1x1 plot (%)	98

A.1.2.5 LCED_HTP11 – Easement

Date	11/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP11		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3263 - easement		28	27	2	9	5	3	2	6	1	0
Paired With	LCEB_HTP12		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	69.6	49.6	0.3	10.4	16	1.3	20.1	1.5	20	0
Astrotricha latifolia	5	25	SG			5						
Daviesia ulicifolia	2	20	SG			2						
Leucopogon juniperinus	2	25	SG			2						
Acacia floribunda	0.5	3	SG			0.5						
Allocasuarina torulosa	0.2	1	TG		0.2							
Persoonia linearis	0.2	1	SG			0.2						
Leucopogon lanceolatus	0.1	1	SG			0.1						
Acacia schinoides	0.1	1	SG			0.1						
Elaeocarpus reticulatus	0.3	3	SG			0.3						
Acrotriche divaricata	0.2	2	SG			0.2						
Eucalyptus pilularis	0.1	1	TG		0.1							
Pteridium esculentum	20	200	EG						20			
Setaria parviflora	20	200	EX								20	
Hibbertia dentata	1	100	OG							1		
Lepidosperma laterale	2	200	GG				2					
Lobelia purpurascens	1	100	FG					1				
Entolasia stricta	2	200	GG				2					
Gonocarpus tetragynus	0.2	50	FG					0.2				
Smilax australis	0.1	1	OG							0.1		
Aristida vagans	1	100	GG				1					
Hibbertia scandens	0.1	1	OG							0.1		
Pomax umbellata	0.1	10	FG					0.1				
Lomandra longifolia	1	100	GG				1					
Billardiera scandens	0.1	1	OG							0.1		
Digitaria spp.	10	1000	GG				10					
Glycine clandestina	0.1	2	OG							0.1		
Lindsaea linearis	0.1	1	EG						0.1			
Kennedia rubicunda	0.1	1	OG							0.1		

Easting	345510
Northing	6334336
Orientation	42
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	53
BAM Attributes 1x1 plot (%)	75

A.1.2.6 LCED_HTP12 – Mod-good

Date	11/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP12		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3263		31	31	9	10	1	2	1	8	0	0
Paired With	LCEB_HTP11		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	75.5	75.5	49.3	20.9	0.1	0.2	0.1	4.9	0	0
Eucalyptus pilularis	40	20	TG		40							
Allocasuarina torulosa	2	10	TG		2							
Syncarpia glomulifera	5	5	TG		5							
Acacia schinoides	10	100	SG			10						
Persoonia linearis	2	10	SG			2						
Pomaderris intermedia	0.1	1	SG			0.1						
Synoum glandulosum subsp. glandulosum	1	10	SG			1						
Psychotria loniceroides	2	50	SG			2						
Astrotricha latifolia	5	20	SG			5						
Cryptocarya glaucescens	1	2	TG		1							
Schizomeria ovata	0.1	1	TG		0.1							
Cordyline stricta	1	10	OG							1		
Trochocarpa laurina	0.5	1	TG		0.5							
Clerodendrum tomentosum	0.1	1	TG		0.1							
Acacia floribunda	0.1	1	SG			0.1						
Leucopogon lanceolatus	0.1	1	SG			0.1						
Guioa semiglauca	0.5	5	TG		0.5							
Callicoma serratifolia	0.5	1	SG			0.5						
Cryptocarya microneura	0.1	1	TG		0.1							
Rhodomyrtus psidioides	0.1	1	SG			0.1						
Blechnum cartilagineum	0.1	1	EG						0.1			
Calochlaena dubia	2	20	OG							2		
Hibbertia dentata	1	50	OG							1		
Smilax australis	0.1	1	OG							0.1		
Dianella caerulea	0.1	1	FG					0.1				
Smilax australis	0.5	10	OG							0.5		
Lomandra longifolia	0.1	1	GG				0.1					
Pseuderanthemum variabile	0.1	10	FG					0.1				
Hibbertia scandens	0.1	1	OG							0.1		
Archontophoenix cunninghamiana	0.1	1	OG							0.1		
Parsonsia straminea	0.1	1	OG							0.1		

Easting	345476
Northing	6334401
Orientation	232
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	13
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	83
BAM Attributes 1x1 plot (%)	94

A.1.2.7 LCED_HTP13 – Easement

Date	12/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP13		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3263 - easement		35	33	4	14	2	2	2	9	1	1
Paired With	LCEB_HTP14		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	115.1	114.4	1.8	15.2	80.5	0.2	5.1	11.6	0.5	0.2
Astrotricha latifolia	10	40	SG			10						
Syncarpia glomulifera	0.5	1	TG		0.5							
Allocasuarina torulosa	1	3	TG		1							
Seringia arborescens	0.4	1	SG			0.4						
Ozothamnus diosmifolius	0.5	5	SG			0.5						
Cordyline stricta	0.2	2	OG							0.2		
Persoonia linearis	1	5	SG			1						
Acacia irrorata	2	3	SG			2						
Acacia implexa	0.1	1	SG			0.1						
Myrsine variabilis	0.1	1	SG			0.1						
Breynia oblongifolia	0.3	2	SG			0.3						
Rhodamnia rubescens	0.2	2	SG			0.2						
Commersonia fraseri	0.1	1	SG			0.1						
Lantana camara	0.2	1	HT									0.2
Melicope micrococca	0.2	2	SG			0.2						
Glochidion ferdinandi	0.2	1	TG		0.2							
Eucalyptus pilularis	0.1	1	TG		0.1							
Leucopogon juniperinus	0.1	1	SG			0.1						
Denhamia silvestris	0.1	1	SG			0.1						
Imperata cylindrica	80	5000	GG				80					
Lepidosperma laterale	0.5	5	GG				0.5					
Stephania japonica	0.2	5	OG							0.2		
Hibbertia dentata	10	2000	OG							10		
Calochlaena dubia	0.2	2	OG							0.2		
Pteridium esculentum	5	50	EG						5			
Smilax australis	0.2	2	OG							0.2		
Coronidium elatum	0.1	2	SG			0.1						
Hibbertia scandens	0.5	1	OG							0.5		
Geitonoplesium cymosum	0.1	1	OG							0.1		
Sarcopetalum harveyanum	0.1	1	OG							0.1		
Clematis glycinoides	0.1	1	OG							0.1		
Oxalis perennans	0.1	10	FG					0.1				
Pseuderanthemum variabile	0.1	1	FG					0.1				
Cheilanthes sieberi	0.1	10	EG						0.1			
Setaria parviflora	0.5	3	EX								0.5	

Easting	345302
Northing	6334183
Orientation	112
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	22
BAM Attributes 1x1 plot (%)	90

A.1.2.8 LCED_HTP14 – Mod-good

Date	12/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP14		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3263		45	45	9	12	5	5	1	13	0	0
Paired With	LCEB_HTP13		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	93.9	93.9	53.5	18.3	2.6	2.3	0.2	17	0	0
Eucalyptus deanei	15	4	TG		15							
Eucalyptus pilularis	20	10	TG		20							
Eucalyptus acmenoides	10	6	TG		10							
Allocasuarina torulosa	5	10	TG		5							
Eucalyptus paniculata	1	2	TG		1							
Syncarpia glomulifera	1	1	TG		1							
Astrotricha latifolia	5	20	SG			5						
Persoonia linearis	1	5	SG			1						
Breynia oblongifolia	1	10	SG			1						
Cordyline stricta	2	20	OG							2		
Claoxylon australe	0.4	1	SG			0.4						
Seringia arborescens	10	15	SG			10						
Clerodendrum tomentosum	0.4	1	TG		0.4							
Leucopogon juniperinus	0.1	1	SG			0.1						
Synoum glandulosum subsp. glandulosum	0.1	1	SG			0.1						
Cryptocarya glaucescens	1	2	TG		1							
Psychotria loniceroides	0.1	1	SG			0.1						
Acacia schinoides	0.3	1	SG			0.3						
Solanum stelligerum	0.1	2	SG			0.1						
Acacia floribunda	0.1	1	SG			0.1						
Melicope micrococca	0.1	1	SG			0.1						
Cryptocarya microneura	0.1	1	TG		0.1							
Lomandra longifolia	0.2	2	GG				0.2					
Gahnia clarkei	2	20	GG				2					
Gymnostachys anceps	1	10	FG					1				
Stephania japonica	2	20	OG							2		
Cissus hypoglauca	10	100	OG							10		
Cissus antarctica	1	10	OG							1		
Dioscorea transversa	1	100	OG							1		
Geitonoplesium cymosum	0.1	10	OG							0.1		
Alpinia caerulea	1	10	FG					1				
Clematis glycinoides	0.1	1	OG							0.1		
Pseuderanthemum variabile	0.1	10	FG					0.1				
Smilax australis	0.2	3	OG							0.2		
Parsonsia straminea	0.1	1	OG							0.1		
Doodia Aspera	0.2	25	EG						0.2			
Hibbertia dentata	0.2	20	OG							0.2		
Oplismenus imbecillis	0.2	20	GG				0.2					
Hydrocotyle sibthorpioides	0.1	1	FG					0.1				
Marsdenia rostrata	0.1	1	OG							0.1		
Sarcopetalum harveyanum	0.1	1	OG							0.1		
Lepidosperma laterale	0.1	1	GG				0.1					
Dianella caerulea	0.1	1	FG					0.1				
Entolasia stricta	0.1	10	GG				0.1					
Gynochthodes jasminoides	0.1	1	OG							0.1		

Easting	345248
Northing	6334225
Orientation	324
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	244
BAM Attributes 1x1 plot (%)	82

A.1.2.9 LCED_HTP15 – Easement

Date	12/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP15		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	- easement		37	37	3	15	5	3	3	8	0	0
Paired With	LCEB_HTP16		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	163.2	163.2	5.5	60.2	61.1	0.6	11.2	24.6	0	0
Acacia schinoides	10	20	SG			10						
Syncarpia glomulifera	5	5	TG		5							
Astrotricha latifolia	20	50	SG			20						
Seringia arborescens	10	20	SG			10						
Melicope micrococca	2	20	SG			2						
Ozothamnus diosmifolius	0.2	1	SG			0.2						
Elaeocarpus reticulatus	10	50	SG			10						
Breynia oblongifolia	5	50	SG			5						
Rubus rosifolius	0.5	5	SG			0.5						
Trochocarpa laurina	0.3	2	TG		0.3							
Cordyline stricta	1	10	OG							1		
Rhodamnia rubescens	0.2	1	SG			0.2						
Asterolasia correifolia	0.2	2	SG			0.2						
Rubus moluccanus	1	50	SG			1						
Persoonia linearis	0.2	1	SG			0.2						
Stenocarpus salignus	0.5	1	SG			0.5						
Schizomeria ovata	0.2	1	TG		0.2							
Polyscias sambucifolia	0.1	1	SG			0.1						
Acacia irrorata	0.3	1	SG			0.3						
Lomandra longifolia	0.3	5	GG				0.3					
Entolasia stricta	20	2000	GG				20					
Lepidosperma laterale	0.3	3	GG				0.3					
Hydrocotyle sibthorpioides	0.2	20	FG					0.2				
Hibbertia dentata	20	1000	OG							20		
Calochlaena dubia	2	25	OG							2		
Cheilanthes sieberi	0.2	50	EG						0.2			
Pteridium esculentum	10	100	EG						10			
Stephania japonica	0.2	5	OG							0.2		
Hibbertia scandens	0.2	2	OG							0.2		
Blechnum cartilagineum	1	20	EG						1			
Smilax australis	1	20	OG							1		
Gahnia clarkei	0.5	5	GG				0.5					
Gynochthodes jasminoides	0.1	1	OG							0.1		
Dioscorea transversa	0.1	5	OG							0.1		
Lepidosperma spp.	40	500	GG				40					
Gonocarpus tetragynus	0.2	20	FG					0.2				
Lobelia purpurascens	0.2	20	FG					0.2				

Easting	344867
Northing	6334064
Orientation	168
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	67
BAM Attributes 1x1 plot (%)	62

A.1.2.10 LCED_HTP16 – Mod-good

Date	12/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP16		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT			47	47	10	14	6	3	2	12	0	0
Paired With	LCEB_HTP15		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	120.1	120.1	98.6	8	6	2.1	0.3	5.1	0	0
Syncarpia glomulifera	20	20	TG		20							
Eucalyptus acmenoides	25	15	TG		25							
Allocasuarina torulosa	2	2	TG		2							
Cymbidium suave	0.1	5	OG							0.1		
Elaeocarpus reticulatus	2	10	SG			2						
Acmena smithii	10	20	TG		10							
Cryptocarya glaucescens	15	100	TG		15							
Cryptocarya microneura	10	20	TG		10							
Psychotria loniceroides	0.5	10	SG			0.5						
Cordyline stricta	1	10	OG							1		
Clerodendrum tomentosum	0.5	1	TG		0.5							
Synoum glandulosum subsp. glandulosum	2	20	SG			2						
Acacia irrorata	2	5	SG			2						
Wilkiea huegeliana	0.1	1	SG			0.1						
Trochocarpa laurina	1	10	TG		1							
Astrotricha latifolia	0.5	5	SG			0.5						
Schizomeria ovata	15	50	TG		15							
Livistona australis	0.2	1	OG							0.2		
Melicope micrococca	0.1	1	SG			0.1						
Persoonia linearis	0.1	1	SG			0.1						
Syzygium spp.	0.2	1	SG			0.2						
Rhodamnia rubescens	0.1	1	SG			0.1						
Myrsine variabilis	0.1	1	SG			0.1						
Asterolasia correifolia	0.1	1	SG			0.1						
Neolitsea dealbata	0.1	1	TG		0.1							
Archontophoenix cunninghamiana	0.1	1	OG							0.1		
Pittosporum spinescens	0.1	1	SG			0.1						
Breynia oblongifolia	0.1	1	SG			0.1						
Lomandra longifolia	0.5	5	GG				0.5					
Smilax australis	1	100	OG							1		
Entolasia stricta	5	1000	GG				5					
Gynochthodes jasminoides	1	100	OG							1		
Pseuderanthemum variabile	1	1000	FG					1				
Marsdenia suaveolens	0.1	1	OG							0.1		
Dioscorea transversa	1	100	OG							1		
Pandorea pandorana	0.1	1	OG							0.1		
Parsonsia straminea	0.2	1	OG							0.2		
Doodia Aspera	0.2	10	EG						0.2			
Calochlaena dubia	0.2	5	OG							0.2		
Gahnia melanocarpa	0.1	1	GG				0.1					
Alpinia caerulea	1	20	FG					1				
Tetrastigma nitens	0.1	1	OG							0.1		
Gahnia clarkei	0.2	6	GG				0.2					
Oplismenus imbecillis	0.1	1	GG				0.1					
Lepidosperma laterale	0.1	1	GG				0.1					
Blechnum cartilagineum	0.1	3	EG						0.1			
Viola silicestris	0.1	5	FG					0.1				

Easting	344856
Northing	6334112
Orientation	351
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	5
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	1
Length logs (m)	525
BAM Attributes 1x1 plot (%)	89

A.1.2.11 LCED_HTP17 – Easement

Date	12/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	- easement		32	30	2	11	1	6	3	7	2	0
Paired With	LCEB_HTP18		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	97.3	17.2	1.1	4.3	0.2	1	5.2	5.4	80.1	0
Syncarpia glomulifera	0.1	1	TG		0.1							
Eucalyptus agglomerata	1	6	TG		1							
Astrotricha latifolia	2	20	SG			2						
Persoonia linearis	0.1	1	SG			0.1						
Cordyline stricta	4	40	OG							4		
Zieria pilosa	0.5	3	SG			0.5						
Leucopogon juniperinus	0.1	1	SG			0.1						
Breynia oblongifolia	1	10	SG			1						
Ozothamnus diosmifolius	0.1	1	SG			0.1						
Melicope micrococca	0.1	1	SG			0.1						
Pomaderris ligustrina	0.1	1	SG			0.1						
Seringia arborescens	0.1	1	SG			0.1						
Claoxylon australe	0.1	1	SG			0.1						
Rhodamnia rubescens	0.1	1	SG			0.1						
Setaria parviflora	80	2000	EX								80	
Pteridium esculentum	5	50	EG						5			
Smilax australis	0.5	20	OG							0.5		
Lomandra longifolia	0.2	3	GG				0.2					
Hibbertia dentata	0.5	50	OG							0.5		
Lobelia purpurascens	0.1	10	FG					0.1				
Clematis glycinoides	0.1	1	OG							0.1		
Senecio minimus	0.5	5	FG					0.5				
Cayratia clematidea	0.1	1	OG							0.1		
Sarcopetalum harveyanum	0.1	1	OG							0.1		
Lysimachia arvensis	0.1	1	EX								0.1	
Cheilanthes sieberi	0.1	10	EG						0.1			
Veronica plebeia	0.1	20	FG					0.1				
Doodia Aspera	0.1	5	EG						0.1			
Eustrephus latifolius	0.1	1	OG							0.1		
Viola silicestris	0.1	5	FG					0.1				
Oxalis perennans	0.1	1	FG					0.1				
Caladenia catenata	0.1	1	FG					0.1				

Easting	344355
Northing	6333937
Orientation	205
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	3
BAM Attributes 1x1 plot (%)	80

A.1.2.12 LCED_HTP18 – Mod-good

Date	12/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	LCEB_HTP18		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT			41	41	7	15	3	4	0	12	0	0
Paired With	LCEB_HTP17		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	161.6	161.6	68.1	22.9	15.1	1.3	0	54.2	0	0
Eucalyptus agglomerata	30	10	TG		30							
Eucalyptus deanei	10	3	TG		10							
Syncarpia glomulifera	5	5	TG		5							
Allocasuarina torulosa	3	3	TG		3							
Rhodamnia rubescens	0.5	5	SG			0.5						
Melicope micrococca	1	10	SG			1						
Breynia oblongifolia	2	25	SG			2						
Synoum glandulosum subsp. glandulosum	10	50	SG			10						
Astrotricha latifolia	1	10	SG			1						
Diospyros australis	5	20	SG			5						
Seringia arborescens	0.4	1	SG			0.4						
Cordyline stricta	5	50	OG							5		
Myrsine variabilis	0.1	1	SG			0.1						
Schizomeria ovata	0.1	1	TG		0.1							
Claoxylon australe	0.1	2	SG			0.1						
Pittosporum revolutum	2	10	SG			2						
Persoonia linearis	0.2	1	SG			0.2						
Cryptocarya glaucescens	10	20	TG		10							
Pomaderris ligustrina	0.3	1	SG			0.3						
Cryptocarya microneura	10	50	TG		10							
Leucopogon juniperinus	0.1	1	SG			0.1						
Parsonsia straminea	0.5	5	OG							0.5		
Hibbertia dentata	5	50	OG							5		
Gymnostachys anceps	1	10	FG					1				
Gahnia melanocarpa	5	50	GG				5					
Lepidosperma laterale	10	100	GG				10					
Clematis glycinoides	0.1	10	OG							0.1		
Dioscorea transversa	1	100	OG							1		
Calochlaena dubia	10	1000	OG							10		
Smilax australis	10	100	OG							10		
Rubus moluccanus	0.1	2	SG			0.1						
Rubus rosifolius	0.1	1	SG			0.1						
Cissus hypoglauca	20	200	OG							20		
Stephania japonica	0.2	2	OG							0.2		
Geitonoplesium cymosum	0.4	20	OG							0.4		
Gynochthodes jasminoides	1	50	OG							1		
Pseuderanthemum variabile	0.1	10	FG					0.1				
Tetrastigma nitens	1	10	OG							1		
Oplismenus imbecillis	0.1	10	GG				0.1					
Dianella caerulea	0.1	10	FG					0.1				
Lobelia purpurascens	0.1	10	FG					0.1				

Easting	344343
Northing	6333976
Orientation	291
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	6
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	180
BAM Attributes 1x1 plot (%)	82

A.1.3 3314 – Central Hunter Slopes Grey Box Forest

A.1.3.1 HTP-MS-89– Poor

Date	13/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	HTP-MS-88		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3314 - poor		41	26	3	4	9	9	0	1	12	3
Paired With	HTP-MS-89		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	67.9	35.6	15.2	1.6	15.7	3	0	0.1	19.3	13
Eucalyptus moluccana	15	5	TG		15							
Sida rhombifolia	10	500	EX								10	
Senecio madagascariensis	5	100	HT									5
Heliotropium amplexicaule	5	100	HT									5
Galenia pubescens	3	40	HT									3
Bidens subalternans	2	50	EX								2	
Austrostipa verticillata	0.1	2	GG				0.1					
Aristida ramosa	10	100	GG				10					
Dichondra repens	1	50	FG					1				
Hybanthus vernonii	0.4	20	FG					0.4				
Calotis lappulacea	0.2	10	FG					0.2				
Eremophila debilis	0.4	10	SG			0.4						
Lomandra confertifolia	1	50	GG				1					
Microlaena stipoides var. stipoides	1	40	GG				1					
Anthosachne scabra	1	30	GG				1					
Bidens pilosa	2	100	EX								2	
Gomphocarpus fruticosus	0.4	10	EX								0.4	
Einadia nutans subsp. linifolia	0.1	5	FG					0.1				
Stackhousia viminea	0.1	5	FG					0.1				
Brunoniella australis	0.2	10	FG					0.2				
Glycine tabacina	0.1	5	OG							0.1		
Acacia salicina	0.1	1	TG		0.1							
Teucrium junceum	0.4	3	SG			0.4						
Cymbopogon refractus	0.4	5	GG				0.4					
Lomandra multiflora subsp. multiflora	0.1	1	GG				0.1					
Conyza bonariensis	1	20	EX								1	
Cynosurus echinatus	1	40	EX								1	
Sida corrugata	0.1	5	FG					0.1				
Enchylaena tomentosa	0.4	10	SG			0.4						
Myoporum montanum	0.4	2	SG			0.4						
Austrostipa scabra	2	50	GG				2					
Vittadinia cuneata	0.8	50	FG					0.8				
Opuntia stricta	0.8	5	EX								0.8	
Chrysocephalum semipapposum	0.1	5	FG					0.1				
Sisymbrium orientale	0.4	10	EX								0.4	
Verbena bonariensis	0.2	5	EX								0.2	
Notelaea microcarpa	0.1	1	TG		0.1							
Passiflora caerulea	0.1	1	EX								0.1	
Plantago lanceolata	1	50	EX								1	
Richardia humistrata	0.4	10	EX								0.4	
Juncus usitatus	0.1	1	GG				0.1					

Easting	306622
Northing	6413048
Orientation	265
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	4
BAM Attributes 1x1 plot (%)	47

A.1.3.2 HTP-MS-88 – Easement

Date	13/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	HTP-MS-89		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3314 - easement		32	12	0	1	3	6	1	1	16	4
Paired With	HTP-MS-88		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	112.8	3.3	0	0.2	1.5	1.4	0.1	0.1	33.5	76
Hyparrhenia rufa subsp. altissima	65	1000	HT									65
Gomphocarpus fruticosus	5	100	EX								5	
Acacia saligna	5	20	EX								5	
Sida rhombifolia	10	200	EX								10	
Senecio madagascariensis	5	100	HT									5
Cirsium vulgare	0.8	50	EX								0.8	
Plantago lanceolata	5	100	EX								5	
Chloris gayana	5	50	HT									5
Oxalis corniculata	0.4	20	EX								0.4	
Conyza parva	1	50	EX								1	
Dichondra repens	0.8	20	FG					0.8				
Bidens pilosa	3	100	EX								3	
Linum marginale	0.1	5	FG					0.1				
Lomandra confertifolia	0.1	5	GG				0.1					
Brunoniella australis	0.1	10	FG					0.1				
Verbena officinalis	0.4	10	EX								0.4	
Phyllanthus virgatus	0.1	5	FG					0.1				
Cyclospermum leptophyllum	0.4	20	EX								0.4	
Conyza sumatrensis	0.8	20	EX								0.8	
Eremophila debilis	0.2	10	SG			0.2						
Cynosurus echinatus	0.4	10	EX								0.4	
Aristida ramosa	1	50	GG				1					
Glycine clandestina	0.1	5	OG							0.1		
Hybanthus vernonii	0.1	10	FG					0.1				
Galenia pubescens	1	10	HT									1
Centaurium tenuiflorum	0.4	20	EX								0.4	
Cheilanthes sieberi	0.1	5	EG						0.1			
Verbena bonariensis	0.4	5	EX								0.4	
Chrysocephalum semipapposum	0.2	20	FG					0.2				
Cymbopogon refractus	0.4	10	GG				0.4					
Opuntia stricta	0.1	1	EX								0.1	
Gamochaeta purpurea	0.4	20	EX								0.4	

Easting	306556
Northing	6412993
Orientation	310
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	7.4

A.1.4 3315 – Central Hunter Ironbark-Spotted Gum Forest

A.1.4.1 TC24 – Easement

Date	26/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC24		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3315	Easement	26	22	3	4	11	3	1	0	2	2
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	70.6	69.6	5.4	42.3	9.7	2.2	10	0	0.3	0.7
Eucalyptus crebra	5	24	TG		5							
Grevillea montana	40	240	SG			40						
Callistemon linearis	0.2	1	SG			0.2						
Persoonia linearis	0.1	1	SG			0.1						
Acacia parvipinnula	2	11	SG			2						
Corymbia maculata	0.2	2	TG		0.2							
Allocasuarina torulosa	0.2	6	TG		0.2							
Cheilanthes sieberi	10	500	EG						10			
Cymbopogon refractus	0.5	10	GG				0.5					
Chrysocephalum apiculatum	2	50	FG					2				
Oxalis perennans	0.1	10	FG					0.1				
Eragrostis curvula	0.5	3	HT									0.5
Gahnia aspera	4	50	GG				4					
Cynodon dactylon	4	30	GG				4					
Panicum queenslandicum	0.2	20	GG				0.2					
Senecio madagascariensis	0.2	20	HT									0.2
Taraxacum officinale	0.2	40	EX								0.2	
Lomandra multiflora subsp. multiflora	0.2	5	GG				0.2					
Laxmannia compacta	0.1	5	FG					0.1				
Eragrostis brownii	0.1	6	GG				0.1					
Richardia humistrata	0.1	2	EX								0.1	
Microlaena stipoides	0.2	20	GG				0.2					
Aristida vagans	0.1	10	GG				0.1					
Eragrostis brownii	0.2	25	GG				0.2					
Digitaria spp.	0.1	15	GG				0.1					
Austrostipa scabra	0.1	20	GG				0.1					

Easting	327334
Northing	6377132
Orientation	125
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	12

A.1.4.2 TC25 – Mod-good

Date	26/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC25		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3315	Mod-good	45	38	7	14	10	5	1	1	4	3
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	135.7	133	19.8	18.9	91.8	1.4	1	0.1	0.4	2.3
Allocasuarina luehmannii	2	3	TG		2							
Eucalyptus crebra	6	4	TG		6							
Corymbia maculata	1	3	TG		1							
Eucalyptus moluccana	10	10	TG		10							
Callitris endlicheri	0.2	2	TG		0.2							
Allocasuarina torulosa	0.4	2	TG		0.4							
Dodonaea viscosa	4	60	SG			4						
Grevillea montana	6	30	SG			6						
Callistemon linearis	1	6	SG			1						
Olea europaea subsp. cuspidata	0.2	3	HT									0.2
Persoonia linearis	1	5	SG			1						
Correa reflexa	0.2	2	SG			0.2						
Exocarpos strictus	2	11	SG			2						
Acacia parvipinnula	3	10	SG			3						
Breynia oblongifolia	0.5	4	SG			0.5						
Solanum stelligerum	0.2	6	SG			0.2						
Solanum cinereum	0.1	2	SG			0.1						
Notelaea longifolia	0.2	1	TG		0.2							
Melaleuca nodosa	0.4	1	SG			0.4						
Denhamia silvestris	0.2	4	SG			0.2						
Euryomyrtus ramosissima	0.2	4	SG			0.2						
Gahnia aspera	70	200	GG				70					
Lobelia purpurascens	1	150	FG					1				
Juncus usitatus	1	15	GG				1					
Cymbopogon refractus	0.2	6	GG				0.2					
Eragrostis curvula	2	7	HT									2
Microlaena stipoides	10	200	GG				10					
Cheilanthes sieberi	1	50	EG						1			
Cynodon dactylon	10	40	GG				10					
Oxalis perennans	0.1	5	FG					0.1				
Taraxacum officinale	0.1	10	EX								0.1	
Eragrostis brownii	0.2	20	GG				0.2					
Hydrocotyle spp.	0.1	3	FG					0.1				
Opuntia stricta	0.1	1	EX								0.1	
Sigesbeckia spp.	0.1	1	FG					0.1				
Grona varians	0.1	1	OG							0.1		
Senecio madagascariensis	0.1	3	HT									0.1
Conyza spp.	0.1	6	EX								0.1	
Eremophila debilis	0.1	1	SG			0.1						
Dianella caerulea	0.1	2	FG					0.1				
Richardia humistrata	0.1	4	EX								0.1	
Lomandra multiflora subsp. multiflora	0.1	1	GG				0.1					
Entolasia stricta	0.1	1	GG				0.1					
Echinopogon ovatus	0.1	1	GG				0.1					
Chloris spp.	0.1	1	GG				0.1					

Easting	327313
Northing	6377109
Orientation	127
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	9
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	17
BAM Attributes 1x1 plot (%)	40

A.1.5 3431 – Central Hunter Ironbark Grassy Woodland

A.1.5.1 TC20 – Easement

Date	25/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC20		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3431	Easement	40	32	2	4	8	13	1	4	6	2
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	31.3	28.7	1.1	2.7	20.9	3.3	0.2	0.5	1	1.6
Brachychiton populneus subsp. populneus	0.1	1	TG		0.1							
Eucalyptus moluccana	1	13	TG		1							
Cheilanthes sieberi	0.2	15	EG						0.2			
Lomandra multiflora subsp. multiflora	10	50	GG				10					
Cassinia quinquefaria	2	27	SG			2						
Hyparrhenia hirta	1.5	25	HT									1.5
Bursaria spinosa	0.5	7	SG			0.5						
Cymbopogon refractus	1.5	30	GG				1.5					
Eremophila debilis	0.1	2	SG			0.1						
Verbena rigida var. rigida	0.5	17	EX								0.5	
Stackhousia viminea	0.1	10	FG					0.1				
Opuntia stricta	0.1	1	EX								0.1	
Hybanthus vernonii	0.1	2	FG					0.1				
Senecio madagascariensis	0.1	5	HT									0.1
Hardenbergia violacea	0.2	8	OG							0.2		
Enteropogon ramosus	0.1	3	GG				0.1					
Rhytidosporum spp.	0.1	3	SG			0.1						
Chrysocephalum apiculatum	0.3	120	FG					0.3				
Brunoniella australis	1	50	FG					1				
Sida corrugata	0.1	2	FG					0.1				
Wahlenbergia communis	0.1	6	FG					0.1				
Tricoryne elatior	0.1	1	FG					0.1				
Dichelachne crinita	1	20	GG				1					
Dichondra sp. Inglewood	0.1	10	FG					0.1				
Richardia humistrata	0.1	3	EX								0.1	
Oxalis perennans	0.1	1	FG					0.1				
Tylophora spp.	0.1	2	OG							0.1		
Convolvulus erubescens	0.1	1	OG							0.1		
Glycine clandestina	0.1	3	OG							0.1		
Fimbristylis dichotoma	0.1	5	GG				0.1					
Acacia saligna	0.1	1	EX								0.1	
Vernonia cinerea	0.1	3	FG					0.1				
Taraxacum officinale	0.1	1	EX								0.1	
Dianella revoluta	1	12	FG					1				
Sida rhombifolia	0.1	1	EX								0.1	
Lomandra filiformis	8	30	GG				8					
Cynodon dactylon	0.1	5	GG				0.1					
Euphorbia drummondii	0.1	8	FG					0.1				
Eragrostis brownii	0.1	4	GG				0.1					
Calotis lappulacea	0.1	10	FG					0.1				

Easting	305544
Northing	6413183
Orientation	228
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	9

A.1.5.2 TC21 – Thinned

Date	25/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC21		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3431	Thinned	43	36	2	7	8	16	1	2	4	3
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	137.5	131.5	55.5	3	5.3	67	0.1	0.6	3.7	2.3
Eucalyptus moluccana	55	23	TG		55							
Acacia saligna	1.5	6	EX								1.5	
Notelaea microcarpa var. microcarpa	0.5	4	TG		0.5							
Olearia elliptica	0.2	1	SG			0.2						
Solanum brownii	0.5	20	SG			0.5						
Teucrium junceum	0.2	1	SG			0.2						
Amyema spp.	0.5	4	OG							0.5		
Bursaria spinosa	0.2	10	SG			0.2						
Acacia falcata	1	5	SG			1						
Dichondra sp. Inglewood	50	1.5	FG					50				
Euphorbia drummondii	0.1	20	FG					0.1				
Sida corrugata	15	0.2	FG					15				
Senecio madagascariensis	0.2	15	HT									0.2
Wahlenbergia communis	0.1	5	FG					0.1				
Cymbopogon refractus	0.4	15	GG				0.4					
Opuntia stricta	2	45	EX								2	
Hyparrhenia hirta	2	25	HT									2
Verbena rigida var. rigida	0.1	10	EX								0.1	
Hybanthus vernonii	0.1	10	FG					0.1				
Stackhousia viminea	0.1	5	FG					0.1				
Oxytes brachypoda	0.5	33	FG					0.5				
Dichelachne crinita	1	12	GG				1					
Einadia nutans	0.1	3	FG					0.1				
Glycine clandestina	0.1	5	OG							0.1		
Glossocardia bidens	0.1	10	FG					0.1				
Conyza spp.	0.1	3	EX								0.1	
Aristida ramosa	0.2	10	GG				0.2					
Brunoniella australis	0.1	5	FG					0.1				
Dianella revoluta	0.1	1	FG					0.1				
Eremophila debilis	0.8	18	SG			0.8						
Solanum cinereum	0.1	1	SG			0.1						
Lomandra filiformis	3	35	GG				3					
Lomandra multiflora subsp. multiflora	0.3	10	GG				0.3					
Oxalis perennans	0.1	3	FG					0.1				
Panicum queenslandicum	0.1	4	GG				0.1					
Chrysocephalum apiculatum	0.2	25	FG					0.2				
Commelina cyanea	0.1	3	FG					0.1				
Austrostipa spp.	0.2	7	GG				0.2					
Arthropodium spp.	0.1	2	FG					0.1				
Rytidosperma erianthum	0.1	5	GG				0.1					
Cheilanthes sieberi	0.1	10	EG						0.1			
Galenia pubescens	0.1	3	HT									0.1
Vittadinia spp.	0.2	10	FG					0.2				

Easting	305549
Northing	6413220
Orientation	259
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	8
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	17
BAM Attributes 1x1 plot (%)	40

A.1.5.3 TC22 – Easement

Date	25/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC22		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3431	Easement	24	18	3	1	6	6	1	1	4	2
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	87.5	31.9	10	0.1	20.8	0.7	0.2	0.1	0.5	55.1
Allocasuarina luehmannii	2	7	TG		2							
Eucalyptus crebra	3	14	TG		3							
Eucalyptus moluccana	5	33	TG		5							
Acacia saligna	0.2	2	EX								0.2	
Hyparrhenia hirta	55	200	HT									55
Senecio madagascariensis	0.1	15	HT									0.1
Dichondra sp. Inglewood	0.1	10	FG					0.1				
Cheilanthes sieberi	0.2	20	EG						0.2			
Stackhousia viminea	0.1	2	FG					0.1				
Lomandra confertifolia	20	50	GG				20					
Brunoniella australis	0.1	3	FG					0.1				
Aristida ramosa	0.1	2	GG				0.1					
Wahlenbergia communis	0.1	3	FG					0.1				
Eragrostis brownii	0.2	12	GG				0.2					
Sida rhombifolia	0.1	6	EX								0.1	
Conyza spp.	0.1	1	EX								0.1	
Glycine tabacina	0.1	2	OG							0.1		
Richardia humistrata	0.1	3	EX								0.1	
Euphorbia drummondii	0.1	5	FG					0.1				
Panicum queenslandicum	0.3	20	GG				0.3					
Eremophila debilis	0.1	3	SG			0.1						
Cynodon dactylon	0.1	2	GG				0.1					
Lomandra multiflora subsp. multiflora	0.1	2	GG				0.1					
Dianella revoluta	0.2	5	FG					0.2				

Easting	305341
Northing	6413148
Orientation	81
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	5
BAM Attributes 1x1 plot (%)	8

A.1.5.4 TC23 – Thinned

Date	25/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC23		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3431	Thinned	32	26	5	1	10	8	1	1	5	1
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	48.7	48.1	29.4	0.1	17.1	1.1	0.3	0.1	0.5	0.1
Eucalyptus moluccana	10	20	TG		10							
Allocasuarina luehmannii	15	22	TG		15							
Eucalyptus blakelyi	2	3	TG		2							
Eucalyptus crebra	2	7	TG		2							
Casuarina glauca	0.4	5	TG		0.4							
Eragrostis brownii	0.2	20	GG				0.2					
Austrostipa scabra	0.5	10	GG				0.5					
Cheilanthes sieberi	0.3	30	EG						0.3			
Panicum queenslandicum	0.1	5	GG				0.1					
Cymbopogon refractus	0.5	15	GG				0.5					
Lomandra confertifolia	15	50	GG				15					
Cynodon dactylon	0.2	6	GG				0.2					
Stackhousia viminea	0.1	5	FG					0.1				
Dichondra sp. Inglewood	0.2	10	FG					0.2				
Glycine tabacina	0.1	3	OG							0.1		
Eremophila debilis	0.1	4	SG			0.1						
Sida rhombifolia	0.1	3	EX								0.1	
Sida corrugata	0.2	12	FG					0.2				
Verbena rigida var. rigida	0.1	2	EX								0.1	
Hybanthus vernonii	0.1	3	FG					0.1				
Brunoniella australis	0.2	8	FG					0.2				
Einadia nutans	0.1	2	FG					0.1				
Senecio madagascariensis	0.1	10	HT									0.1
Plantago lanceolata	0.1	1	EX								0.1	
Lomandra multiflora subsp. multiflora	0.2	3	GG				0.2					
Opuntia stricta	0.1	3	EX								0.1	
Dianella revoluta	0.1	2	FG					0.1				
Commelina cyanea	0.1	3	FG					0.1				
Bothriochloa biloba	0.1	2	GG				0.1					
Chloris truncata	0.2	6	GG				0.2					
Taraxacum officinale	0.1	2	EX								0.1	
Aristida ramosa	0.1	1	GG				0.1					

Easting	305358
Northing	6413117
Orientation	74
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	4
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	9
BAM Attributes 1x1 plot (%)	46

A.1.5.5 TC32 – Easement

Date	28/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC32		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3431	Easement	45	33	2	4	9	17	1	0	9	3
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	84.7	64.4	8.3	1.4	41.9	12.6	0.2	0	11	9.3
Allocasuarina luehmannii	8	35	TG		8							
Bursaria spinosa	0.2	2	SG			0.2						
Acacia amblygona	0.2	3	SG			0.2						
Acacia salicina	0.3	1	TG		0.3							
Gomphocarpus fruticosus	1	56	EX								1	
Pimelea linifolia	0.9	5	SG			0.9						
Scaevola ramosissima	6	43	FG					6				
Themeda triandra	26	73	GG				26					
Senecio madagascariensis	2	40	HT									2
Cymbopogon refractus	12	24	GG				12					
Hyparrhenia hirta	7	27	HT									7
Verbena rigida var. rigida	8	40	EX								8	
Cheilanthes sieberi	0.2	15	EG						0.2			
Hypericum gramineum	0.2	15	FG					0.2				
Dichondra sp. Inglewood	1	40	FG					1				
Conyza spp.	0.3	15	EX								0.3	
Plantago turrifera	0.2	15	FG					0.2				
Oxalis perennans	0.3	15	FG					0.3				
Bothriochloa spp.	0.6	15	GG				0.6					
Linum marginale	1	25	FG					1				
Wahlenbergia communis	0.1	3	FG					0.1				
Brachyscome dentata	0.1	2	FG					0.1				
Taraxacum officinale	0.1	2	EX								0.1	
Brunoniella australis	0.1	1	FG					0.1				
Pomax umbellata	1	60	FG					1				
Stackhousia viminea	0.2	15	FG					0.2				
Goodenia bellidifolia subsp. bellidifoli	0.1	1	FG					0.1				
Sporobolus creber	1.5	30	GG				1.5					
Verbena bonariensis	0.4	3	EX								0.4	
Panicum spp.	0.6	30	GG				0.6					
Paspalum dilatatum	0.3	4	HT									0.3
Dianella revoluta	0.8	13	FG					0.8				
Gamochaeta purpurea	0.7	50	EX								0.7	
Euphorbia drummondii	0.1	2	FG					0.1				
Carex inversa	0.4	10	GG				0.4					
Eremophila debilis	0.1	1	SG			0.1						
Chrysocephalum apiculatum	0.2	10	FG					0.2				
Sida rhombifolia	0.2	3	EX								0.2	
Bothriochloa spp.	0.1	1	GG				0.1					
Richardia humistrata	0.2	6	EX								0.2	
Aristida spp.	0.5	12	GG				0.5					
Centaurium tenuiflorum	0.1	6	EX								0.1	
Calotis lappulacea	1	15	FG					1				
Sida corrugata	0.2	3	FG					0.2				
Fimbristylis dichotoma	0.2	10	GG				0.2					

Easting	304440
Northing	6406077
Orientation	225
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	1
BAM Attributes 1x1 plot (%)	4

A.1.5.6 TC33 – Thinned

Date	28/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC33		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3431	Thinned	39	34	3	8	7	14	1	1	3	2
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	62.6	59.7	41.4	4.7	6.5	6.9	0.1	0.1	0.8	2.1
Allocasuarina luehmannii	40	94	TG		40							
Acacia implexa	0.6	5	SG			0.6						
Acacia amblygona	2	13	SG			2						
Acacia saligna	0.4	2	EX								0.4	
Acacia decora	1	19	SG			1						
Bursaria spinosa	0.4	8	SG			0.4						
Notelaea microcarpa	0.8	1	TG		0.8							
Geijera salicifolia	0.6	3	TG		0.6							
Teucrium junceum	0.2	2	SG			0.2						
Solanum prinophyllum	0.1	1	FG					0.1				
Poa sieberiana	0.3	8	GG				0.3					
Pimelea linifolia	0.1	2	SG			0.1						
Senecio madagascariensis	2	300	HT									2
Lepidium africanum	0.3	25	EX								0.3	
Hybanthus vernonii	0.1	15	FG					0.1				
Phyllanthus gunnii	0.1	8	SG			0.1						
Einadia nutans	3	60	FG					3				
Cymbopogon refractus	0.7	10	GG				0.7					
Cyperus gracilis	2	100	GG				2					
Galenia pubescens	0.1	1	HT									0.1
Entolasia stricta	1	25	GG				1					
Eremophila debilis	0.3	8	SG			0.3						
Lomandra multiflora subsp. multiflora	0.3	6	GG				0.3					
Brunoniella australis	0.2	8	FG					0.2				
Dichondra sp. Inglewood	0.2	10	FG					0.2				
Sida hackettiana	0.1	2	FG					0.1				
Glossocardia bidens	0.1	5	FG					0.1				
Sida corrugata	0.2	5	FG					0.2				
Stackhousia viminea	0.1	4	FG					0.1				
Lomandra confertifolia	0.2	3	GG				0.2					
Glycine clandestina	0.1	3	OG							0.1		
Themeda triandra	2	11	GG				2					
Goodenia bellidifolia subsp. bellidifoli	0.1	3	FG					0.1				
Scaevola ramosissima	2	53	FG					2				
Chrysocephalum apiculatum	0.2	10	FG					0.2				
Calotis lappulacea	0.4	23	FG					0.4				
Wahlenbergia communis	0.1	1	FG					0.1				
Cheilanthes sieberi	0.1	5	EG						0.1			
Opuntia stricta	0.1	1	EX								0.1	

Easting	304506
Northing	6406054
Orientation	225
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	2
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	8
BAM Attributes 1x1 plot (%)	36

A.1.6 PCT 3444 – Lower Hunter Spotted Gum-Ironbark Forest

A.1.6.1 DL_44 – Mod-good

Date	29/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	56
Plot Name	DL_44		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	3444 - mod-good		37	35	7	10	9	5	1	3	2	0	
Paired With	TC07		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	118.8	118.6	71.5	34.3	9.7	2.2	0.1	0.8	0.2	0	
Eucalyptus fibrosa	10	3	TG		10								
Corymbia maculata	20	14	TG		20								
Eucalyptus punctata	25	5	TG		25								
Eucalyptus moluccana	5	4	TG		5								
Callitris glaucophylla	10	25	TG		10								
Notelaea longifolia	0.5	2	TG		0.5								
Dodonaea sinuolata	25	80	SG			25							
Exocarpos strictus	5	20	SG			5							
Olearia elliptica	1	10	SG			1							
Grevillea montana	0.2	2	SG			0.2							
Acacia parramattensis	1	3	TG		1								
Styphelia triflora	0.5	3	SG			0.5							
Bursaria spinosa	1	3	SG			1							
Persoonia linearis	0.1	2	SG			0.1							
Acacia amblygona	0.2	3	SG			0.2							
Solanum cinereum	0.3	3	SG			0.3							
Lepidosperma cf. laterale	1	20	GG				1						
Gahnia aspera	0.6	4	GG				0.6						
Rytidosperma fulvum	0.2	5	GG				0.2						
Glycine tabacina	0.1	5	OG							0.1			
Entolasia stricta	5	50	GG				5						
Pseuderanthemum variabile	0.3	100	FG					0.3					
Monotoca scoparia	1	6	SG			1							
Stylidium graminifolium	0.2	5	FG					0.2					
Eragrostis leptostachya	0.5	10	GG				0.5						
Glycine microphylla	0.1	2	OG							0.1			
Conyza bonariensis	0.1	2	EX								0.1		
Aristida vagans	0.4	6	GG				0.4						
Lomandra filiformis subsp. filiform	0.9	40	GG				0.9						
Lomandra multiflora subsp. multifl	1	30	GG				1						
Brunoniella australis	1	100	FG					1					
Goodenia rotundifolia	0.1	4	FG					0.1					
Lobelia purpurascens	0.6	100	FG					0.6					
Macrozamia communis	0.6	1	OG							0.6			
Cheilanthes sieberi	0.1	30	EG						0.1				
Richardia stellaris	0.1	10	EX								0.1		
Rytidosperma spp.	0.1	1	GG				0.1						

Easting	326231
Northing	6378182
Orientation	312
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	y
10-19	y
5-9	y
<5	y
Regen	
Hollows	0
Length logs (m)	21
BAM Attributes 1x1 plot (%)	61
Litter (%)	

A.1.6.2 TC07 – Easement

Date	10/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC-07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3444 - easement		27	23	2	7	7	6	1	0	3	1
Paired With	DL_44		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	90.1	89.6	0.3	48.2	40.4	0.6	0.1	0	0.4	0.1
Eucalyptus moluccana	0.2	2	TG		0.2							
Acacia elongata	35	60	SG			35						
Casuarina glauca	0.1	1	TG		0.1							
Grevillea montana	1	10	SG			1						
Dodonaea sinuolata	10	20	SG			10						
Lobelia purpurascens	0.1	30	FG					0.1				
Acacia falcata	1	10	SG			1						
Dichondra repens	0.1	15	FG					0.1				
Cheilanthes sieberi	0.1	30	EG						0.1			
Senecio madagascariensis	0.1	10	HT									0.1
Callistemon linearis	1	5	SG			1						
Lysimachia arvensis	0.2	30	EX								0.2	
Wahlenbergia communis	0.1	5	FG					0.1				
Lomandra multiflora subsp. multiflora	3	20	GG				3					
Melichrus urceolatus	0.1	1	SG			0.1						
Gahnia aspera	15	40	GG				15					
Eragrostis brownii	0.1	20	GG				0.1					
Lepidosperma gunnii	7	30	GG				7					
Cymbopogon refractus	0.3	30	GG				0.3					
Conyza bilbaoana	0.1	10	EX								0.1	
Cyperus gracilis	7	60	GG				7					
Digitaria diffusa	8	40	GG				8					
Cyclospermum leptophyllum	0.1	10	EX								0.1	
Oxalis perennans	0.1	5	FG					0.1				
Centella asiatica	0.1	10	FG					0.1				
Chorizema parviflorum	0.1	2	SG			0.1						
Laxmannia gracilis	0.1	5	FG					0.1				

Easting	326388
Northing	6378325
Orientation	120
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	19

A.1.6.3 TC26 – Easement

Date	26/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC26		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3444	Easement	36	29	4	6	9	8	1	1	5	2
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	117.7	116.7	3.6	10.8	50.8	50.9	0.5	0.1	0.8	0.2
Eucalyptus crebra	3	13	TG		3							
Corymbia maculata	0.2	1	TG		0.2							
Eucalyptus moluccana	0.2	1	TG		0.2							
Allocasuarina luehmannii	0.2	2	TG		0.2							
Grevillea montana	10	70	SG			10						
Acacia falcata	0.2	3	SG			0.2						
Callistemon linearis	0.2	2	SG			0.2						
Dodonaea viscosa	0.1	3	SG			0.1						
Acacia ulicifolia	0.1	2	SG			0.1						
Micromyrtus ciliata	0.2	1	SG			0.2						
Cymbopogon refractus	15	60	GG				15					
Lomandra confertifolia	30	100	GG				30					
Dianella revoluta	50	4	FG					50				
Cynodon dactylon	1	30	GG				1					
Gahnia aspera	2	40	GG				2					
Cheilanthes sieberi	0.5	40	EG						0.5			
Laxmannia compacta	0.3	30	FG					0.3				
Verbena bonariensis	0.1	1	EX								0.1	
Verbena rigida var. rigida	0.2	6	EX								0.2	
Taraxacum officinale	0.2	15	EX								0.2	
Oxalis perennans	0.1	3	FG					0.1				
Hypericum gramineum	0.1	1	FG					0.1				
Daucus spp.	0.1	1	FG					0.1				
Richardia humistrata	0.2	6	EX								0.2	
Conyza spp.	0.1	2	EX								0.1	
Glycine clandestina	0.1	3	OG							0.1		
Lobelia purpurascens	0.1	3	FG					0.1				
Eragrostis curvula	0.1	1	HT									0.1
Lomandra multiflora subsp. multiflora	2	20	GG				2					
Sphaeromorphaea australis	0.1	1	FG					0.1				
Senecio madagascariensis	0.1	1	HT									0.1
Stackhousia viminea	0.1	5	FG					0.1				
Digitaria diffusa	0.2	20	GG				0.2					
Sporobolus creber	0.2	15	GG				0.2					
Eragrostis elongata	0.1	10	GG				0.1					
Aristida vagans	0.3	30	GG				0.3					

Easting	327060
Northing	6377523
Orientation	330
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	8

A.1.6.4 TC27 – Mod-good

Date	26/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC27		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3444	Mod-good	42	39	8	10	8	9	1	3	1	2
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	120.6	120.2	59.2	37.1	2.4	21	0.2	0.3	0.1	0.3
Corymbia maculata	15	12	TG		15							
Eucalyptus moluccana	35	9	TG		35							
Allocasuarina luehmannii	2	7	TG		2							
Eucalyptus crebra	1	3	TG		1							
Eucalyptus fibrosa	3	2	TG		3							
Melaleuca nodosa	16	32	SG			16						
Eucalyptus punctata	1	1	TG		1							
Olearia elliptica	3	80	SG			3						
Dodonaea viscosa	3	30	SG			3						
Breynia oblongifolia	0.1	1	SG			0.1						
Exocarpos strictus	12	40	SG			12						
Denhamia silvestris	2	16	SG			2						
Acacia amblygona	0.2	3	SG			0.2						
Acacia parramattensis	2	5	TG		2							
Acacia linearifolia	0.2	1	TG		0.2							
Callistemon linearis	0.5	1	SG			0.5						
Monotoca scoparia	0.2	6	SG			0.2						
Cymbopogon refractus	0.5	25	GG				0.5					
Lobelia purpurascens	0.2	10	FG					0.2				
Arthropodium milleflorum	0.1	1	FG					0.1				
Parsonsia straminea	0.1	2	OG							0.1		
Lepidosperma laterale	1	12	GG				1					
Dichondra sp. Inglewood	20	0.2	FG					20				
Grona varians	0.1	5	OG							0.1		
Goodenia rotundifolia	0.1	4	FG					0.1				
Lomandra multiflora subsp. multiflora	0.2	4	GG				0.2					
Plantago debilis	0.1	5	FG					0.1				
Cheilanthes sieberi	0.2	20	EG						0.2			
Eremophila debilis	0.1	1	SG			0.1						
Dianella revoluta	0.1	2	FG					0.1				
Senecio madagascariensis	0.1	2	HT									0.1
Aristida ramosa	0.1	8	GG				0.1					
Euphorbia drummondii	0.1	5	FG					0.1				
Rytidosperma fulvum	0.2	15	GG				0.2					
Entolasia stricta	0.2	16	GG				0.2					
Microlaena stipoides	0.1	5	GG				0.1					
Echinopogon ovatus	0.1	8	GG				0.1					
Brunoniella australis	0.2	10	FG					0.2				
Richardia humistrata	0.1	3	EX								0.1	
Ehrharta erecta	0.2	10	HT									0.2
Commelina cyanea	0.1	1	FG					0.1				
Cassytha glabella	0.1	1	OG							0.1		

Easting	326997
Northing	6377471
Orientation	315
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	11
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	10
BAM Attributes 1x1 plot (%)	76

A.1.6.5 TC28 – Easement

Date	27/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC28		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3444	Easement	40	34	3	7	14	7	1	2	3	3
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	64.3	62.4	0.9	49.8	7.3	2.1	2	0.3	1.3	0.6
Eucalyptus moluccana	0.2	1	TG		0.2							
Eucalyptus crebra	0.3	2	TG		0.3							
Callistemon linearis	45	98	SG			45						
Grevillea montana	2	33	SG			2						
Breynia oblongifolia	2	24	SG			2						
Denhamia silvestris	0.2	5	SG			0.2						
Acacia parramattensis	0.4	8	TG		0.4							
Bursaria spinosa	0.2	5	SG			0.2						
Macrozamia communis	0.2	2	OG							0.2		
Monotoca scoparia	0.1	1	SG			0.1						
Dodonaea viscosa	0.3	7	SG			0.3						
Cymbopogon refractus	1	30	GG				1					
Gahnia aspera	1	20	GG				1					
Cheilanthes sieberi	2	200	EG						2			
Richardia humistrata	0.5	20	EX								0.5	
Senecio madagascariensis	0.2	15	HT									0.2
Verbena rigida var. rigida	0.5	30	EX								0.5	
Eragrostis elongata	0.2	8	GG				0.2					
Pomax umbellata	0.2	15	FG					0.2				
Lobelia purpurascens	0.3	30	FG					0.3				
Daucus spp.	0.1	10	FG					0.1				
Paspalum dilatatum	0.1	1	HT									0.1
Eragrostis brownii	0.1	12	GG				0.1					
Sphaeromorphaea australis	0.8	45	FG					0.8				
Aristida ramosa	0.1	8	GG				0.1					
Conyza spp.	0.1	3	GG				0.1					
Imperata cylindrica	2	35	GG				2					
Sigesbeckia orientalis subsp. orientalis	0.1	2	FG					0.1				
Cynodon dactylon	0.3	9	GG				0.3					
Eragrostis curvula	0.3	4	HT									0.3
Echinopogon ovatus	0.1	2	GG				0.1					
Glossocardia bidens	0.3	30	FG					0.3				
Laxmannia compacta	0.3	30	FG					0.3				
Aristida vagans	1	20	GG				1					
Bothriochloa macra	0.2	7	GG				0.2					
Sporobolus creber	0.1	4	GG				0.1					
Lomandra multiflora subsp. multiflora	1	23	GG				1					
Tragus australianus	0.1	3	GG				0.1					
Gamochaeta purpurea	0.3	22	EX								0.3	
Grona varians	0.1	1	OG							0.1		

Easting	325118
Northing	6379803
Orientation	315
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	5

A.1.6.6 TC29 – Mod-good

Date	27/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC29		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3444	Mod-good	41	40	7	16	7	5	1	4	0	1
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	80.7	80.6	32	20.7	25.8	1.4	0.2	0.5	0	0.1
Corymbia maculata	15	14	TG		15							
Eucalyptus fibrosa	12	3	TG		12							
Eucalyptus crebra	4	3	TG		4							
Allocasuarina torulosa	0.2	1	TG		0.2							
Brachychiton populneus	0.1	1	TG		0.1							
Acacia parramattensis	0.3	2	TG		0.3							
Bursaria spinosa	1	5	SG			1						
Breynia oblongifolia	2	10	SG			2						
Dodonaea viscosa	2	32	SG			2						
Exocarpos strictus	2	38	SG			2						
Dillwynia retorta	0.3	5	SG			0.3						
Lissanthe strigosa	0.3	4	SG			0.3						
Notelaea longifolia	0.4	1	TG		0.4							
Pimelea linifolia	0.2	3	SG			0.2						
Olearia elliptica	6	41	SG			6						
Monotoca scoparia	0.6	8	SG			0.6						
Pultenaea spinosa	3	13	SG			3						
Macrozamia communis	0.2	2	OG							0.2		
Grevillea montana	0.5	5	SG			0.5						
Denhamia silvestris	0.3	7	SG			0.3						
Pultenaea euchila	2	30	SG			2						
Acacia amblygona	0.1	1	SG			0.1						
Melichrus urceolatus	0.2	2	SG			0.2						
Daviesia genistifolia	0.2	1	SG			0.2						
Goodenia paniculata	0.1	1	FG					0.1				
Lepidosperma laterale	15	65	GG				15					
Cassytha glabella	0.1	3	OG							0.1		
Poa sieberiana	6	12	GG				6					
Entolasia stricta	2	18	GG				2					
Lomandra multiflora subsp. multiflora	0.5	8	GG				0.5					
Sphaeromorphaea australis	1	30	FG					1				
Brunoniella australis	0.1	5	FG					0.1				
Vernonia cinerea	0.1	2	FG					0.1				
Aristida vagans	0.2	10	GG				0.2					
Senecio madagascariensis	0.1	1	HT									0.1
Gahnia aspera	2	10	GG				2					
Rytidosperma fulvum	0.1	4	GG				0.1					
Cheilanthes sieberi	0.2	20	EG						0.2			
Glycine clandestina	0.1	5	OG							0.1		
Clematis glycinoides	0.1	1	OG							0.1		
Pomax umbellata	0.1	6	FG					0.1				

Easting	325072
Northing	6379741
Orientation	308
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	4
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	1
Length logs (m)	13
BAM Attributes 1x1 plot (%)	66

A.1.6.7 TC30 – Easement

Date	27/03/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	TC30		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3444	Easement	38	33	3	11	10	6	1	2	3	2
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	58.5	56.4	0.8	25.4	28	1.6	0.3	0.3	1.2	0.9
Corymbia maculata	0.1	1	TG		0.1							
Allocasuarina torulosa	0.5	4	TG		0.5							
Grevillea montana	9	35	SG			9						
Callistemon linearis	12	19	SG			12						
Macrozamia communis	0.2	1	OG							0.2		
Dodonaea viscosa	1.5	15	SG			1.5						
Denhamia silvestris	0.3	5	SG			0.3						
Acacia parramattensis	0.2	5	TG		0.2							
Acacia amblygona	0.2	2	SG			0.2						
Acacia falcata	0.8	4	SG			0.8						
Dillwynia retorta	0.4	4	SG			0.4						
Euryomyrtus ramosissima	0.4	3	SG			0.4						
Phyllanthus hirtellus	0.2	2	SG			0.2						
Lantana camara	0.1	1	HT									0.1
Lasiopetalum ferrugineum var. cordatum	0.5	12	SG			0.5						
Lepidosperma laterale	8	116	GG				8					
Cheilanthes sieberi	0.3	40	EG						0.3			
Senecio madagascariensis	0.8	40	HT									0.8
Gahnia aspera	14	119	GG				14					
Goodenia paniculata	0.6	40	FG					0.6				
Cymbopogon refractus	4	50	GG				4					
Eragrostis brownii	0.2	15	GG				0.2					
Cynodon dactylon	1	20	GG				1					
Gamochaeta purpurea	0.3	10	EX								0.3	
Richardia humistrata	0.8	30	EX								0.8	
Pomax umbellata	0.1	4	FG					0.1				
Aristida vagans	0.2	6	GG				0.2					
Glycine clandestina	0.1	1	OG							0.1		
Chloris ventricosa	0.1	2	GG				0.1					
Eragrostis leptostachya	0.2	10	GG				0.2					
Sphaeromorphaea australis	0.3	12	FG					0.3				
Euphorbia drummondii	0.2	6	FG					0.2				
Lobelia purpurascens	0.3	20	FG					0.3				
Conyza spp.	0.1	3	EX								0.1	
Eremophila debilis	0.1	1	SG			0.1						
Lomandra multiflora subsp. multiflora	0.2	3	GG				0.2					
Oxalis perennans	0.1	2	FG					0.1				
Entolasia stricta	0.1	1	GG				0.1					

Easting	326087
Northing	6378670
Orientation	315
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	N
10-19	N
5-9	N
<5	Y
Regen	Y
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	3

A.1.6.8 TC31 – Mod-good

Plot Name	TC31		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	3444	Mod-good	28	28	6	13	2	3	1	3	0	0
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	78.2	78.2	30.3	24.5	20	2.4	0.3	0.7	0	0
Corymbia maculata	10	17	TG		10							
Eucalyptus fibrosa	18	45	TG		18							
Callitris endlicheri	1	1	TG		1							
Allocasuarina torulosa	0.5	4	TG		0.5							
Eucalyptus punctata	0.5	1	TG		0.5							
Persoonia linearis	0.3	1	SG			0.3						
Olearia elliptica	2	34	SG			2						
Pultenaea spinosa	16	54	SG			16						
Lissanthe strigosa	2	12	SG			2						
Acacia amblygona	0.8	16	SG			0.8						
Phyllanthus hirtellus	0.3	8	SG			0.3						
Exocarpos strictus	2	14	SG			2						
Acacia parramattensis	0.3	3	TG		0.3							
Denhamia silvestris	0.2	6	SG			0.2						
Macrozamia communis	0.5	2	OG							0.5		
Acacia falcata	0.1	1	SG			0.1						
Macrozamia flexuosa	0.1	1	OG							0.1		
Grevillea montana	0.3	3	SG			0.3						
Ozothamnus diosmifolius	0.1	2	SG			0.1						
Dodonaea viscosa	0.1	2	SG			0.1						
Lepidosperma laterale	18	103	GG				18					
Cheilanthes sieberi	0.3	20	EG						0.3			
Dianella revoluta	2	35	FG					2				
Marsdenia spp.	0.1	3	OG							0.1		
Entolasia stricta	2	40	GG				2					
Phyllanthus spp.	0.3	10	SG			0.3						
Pomax umbellata	0.2	8	FG					0.2				
Sphaeromorphaea australis	0.2	8	FG					0.2				

Northing	6378626
Orientation	320
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	3
20-29	Y
10-19	Y
5-9	Y
<5	Y
Regen	Y
Hollows	0
Length logs (m)	21
BAM Attributes 1x1 plot (%)	84

PEC			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 80	Veg Zone ID: remnant		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 17/01/23			32	21	2	2	10	7	0	0	11	2
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			71.2	60.3	8	6	31.8	14.5	0	0	10.9	2
Alternanthera denticulata	0.5	100	FG					0.5				
Atriplex semibaccata	1	10	SG			1						
Austrostipa scabra subsp. falcata	2	200	GG				2					
Avena sp.	1	20	EX								1	
Boerhavia coccinea	2	100	FG					2				
Carex inversa	2	50	GG				2					
Chloris truncata	0.8	20	GG				0.8					
Cirsium vulgare	0.3	5	EX								0.3	
Conyza sp.	0.3	20	EX								0.3	
Dianella revoluta	0.9	10	FG					0.9				
Digitaria divaricatissima	1	20	GG				1					
Ehrharta calycina	1	100	HT									1
Einadia nutans	5	20	FG					5				
Eleocharis sp.	1	100	GG				1					
Elymus scaber	1	20	GG				1					
Enchylaena tomentosa	5	20	SG			5						
Enteropogon sp.	10	100	GG				10					
Eriochloa pseudoacrotricha	5	200	GG				5					
Eucalyptus blakelyi	1	1	TG		1							
Eucalyptus microcarpa	7	2	TG		7							
Juncus sp.	1	20	GG				1					
Lactuca serriola	2	100	EX								2	
Lepidium africanum	2	50	EX								2	
Marrubium vulgare	1	1	EX								1	
Paspalum dilatatum	1	10	HT									1
Rumex crispus	1	20	EX								1	
Rytidosperma caespitosum	8	200	GG				8					
Sida corrugata	2	100	FG					2				
Solanum esuriale	4	100	FG					4				
Trifolium arvense	1	20	EX								1	
Trifolium campestre	0.3	20	EX								0.3	
Vittadinia sp.	0.1	10	FG					0.1				

Easting	448089
Northing	6143266
Orientation	207
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Y
10-19	Y
5-9	Y
<5	N
Hollows	0
Length logs (m)	1
Attributes 1x1 plot (%)	
Litter (%)	49
	36.75

PEC			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 80	0		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 17/01/23			32	17	1	0	8	7	0	1	15	3
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			60.9	**38.3**	2	0	27.1	9.1	0	0.1	**22.6**	15.1
Alternanthera denticulata	2	500	FG					2				
Avena sp.	2	50	EX								2	
Boerhavia coccinea	0.8	30	FG					0.8				
Carex inversa	3	100	GG				3					
Chloris truncata	0.1	10	GG				0.1					
Cirsium vulgare	1	20	EX								1	
Convolvulus sp.	0.1	10	OG							0.1		
Dianella revoluta	1	10	FG					1				
Echium plantagineum	0.1	20	EX								0.1	
Ehrharta calycina	5	500	HT									5
Einadia nutans	1	10	FG					1				
Eleocharis sp.	2	200	GG				2					
Elymus scaber	1	20	GG				1					
Enteropogon sp.	6	200	GG				6					
Eucalyptus microcarpa	2	11	TG		2							
Euphorbia drummondii	0.1	10	FG					0.1				
Hypericum perforatum	0.1	10	HT									0.1
Juncus sp.	3	100	GG				3					
Lactuca serriola	0.8	20	EX								0.8	
Modiola caroliniana	1	200	EX								1	
Panicum decompositum	7	100	GG				7					
Paspalum dilatatum	10	100	HT									10
Rumex crispus	1	20	EX								1	
Rytidosperma penicillatum	5	100	GG				5					
Sida corrugata	0.2	10	FG					0.2				
Solanum esuriale	4	100	FG					4				
Solanum nigrum	0.1	10	EX								0.1	
Sonchus oleraceus	0.1	10	EX								0.1	
Trifolium arvense	0.1	10	EX								0.1	
Trifolium campestre	0.1	10	EX								0.1	
Verbascum thapsus	1	10	EX								1	
Zinnia peruviana	0.2	10	EX								0.2	

Easting	448119
Northing	6143283
Orientation	332
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	N
20-29	N
10-19	N
5-9	Y
<5	Y
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	60

PEC			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 76	Veg Zone ID: remnant		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 21/01/23			29	19	1	2	9	6	1	0	10	1
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			87.7	85.5	15	5.8	57.6	7	0.1	0	2.2	0.3
Atriplex semibaccata	5	20	SG			5						
Austrostipa bigeniculata	40	200	GG				40					
Austrostipa elegantissima	0.8	20	GG				0.8					
Austrostipa scabra subsp. Falcata	5	20	GG				5					
Avena sp.	0.1	1	EX								0.1	
Bromus catharticus	0.1	10	EX								0.1	
Calotis cuneifolia	5	100	FG					5				
Centaurea solstitialis	0.8	10	EX								0.8	
Cheilanthes sieberi	0.1	1	EG						0.1			
Chloris truncata	0.1	10	GG				0.1					
Conyza sp.	0.1	1	EX								0.1	
Einadia nutans	0.4	2	FG					0.4				
Elymus scaber	0.1	5	GG				0.1					
Enteropogon acicularis	0.8	10	GG				0.8					
Eucalyptus microcarpa	15	3	TG		15							
Hypericum perforatum	0.3	2	HT									0.3
Lactuca serriola	0.1	1	EX								0.1	
Lomandra multiflora	0.8	5	GG				0.8					
Maireana enchylaenoides	0.1	1	FG					0.1				
Oxalis perennans	0.1	10	FG					0.1				
Plantago lanceolata	0.1	1	EX								0.1	
Romulea sp.	0.1	20	EX								0.1	
Rytidosperma laeve	6	200	GG				6					
Rytidosperma setaceum	4	100	GG				4					
Sclerolaena muricata var. semiglabra	0.8	1	SG			0.8						
Sida corrugata	1	20	FG					1				
Sonchus oleraceus	0.1	1	EX								0.1	
Trifolium striatum	0.4	20	EX								0.4	
Vittadinia cuneata var. hirsuta	0.4	10	FG					0.4				

Easting	
Northing	6106914
Orientation	250
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	3
50-79	1
30-49	N
20-29	Y
10-19	N
5-9	N
<5	N
Hollows	2
Length logs (m)	2
	1.5
Attributes 1x1 plot (%)	
Litter (%)	63
	47.25

			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 76	Veg Zone ID: DNG		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 21/01/23			27	16	0	2	11	3	0	0	11	1
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			81.2	75.5	0	11	60.1	4.4	0	0	5.7	3
Atriplex semibaccata	10	100	SG			10						
Austrostipa bigeniculata	20	100	GG				20					
Austrostipa scabra subsp. Falcata	15	200	GG				15					
Avena sp.	0.4	30	EX								0.4	
Centaurea solstitialis	0.4	20	EX								0.4	
Centaurea solstitialis (branched thing with semi clasp)	0.1	1	ex								0.1	
Chloris truncata	10	200	GG				10					
Conyza sp.	0.1	20	EX								0.1	
Cyperus eragrostis	3	30	HT									3
Eleocharis sp.	3	100	GG				3					
Enteropogon acicularis	1	50	GG				1					
Eriochloa pseudoacrotricha	4	200	GG				4					
Hordeum sp.	0.4	20	EX								0.4	
Juncus usitatus	2	100	GG				2					
Cenchrus clandestinus	0.3	20	EX								0.3	
Linum marginale	0.3	100	FG					0.3				
Oxalis perennans	0.1	20	FG					0.1				
Panicum effusum	0.1	10	GG				0.1					
Rumex crispus	0.1	1	EX								0.1	
Rytidosperma caespitosum	3	100	GG				3					
Rytidosperma penicillatum	1	20	GG				1					
Rytidosperma setaceum	1	20	GG				1					
Sclerolaena muricata var. semiglabra	1	3	SG			1						
Sida corrugata	4	200	FG					4				
Sonchus oleraceus	0.1	1	EX								0.1	
Trifolium striatum	0.1	20	EX								0.1	
Vulpia myuros	0.7	100	EX								0.7	

Easting	521371
Northing	6106936
Orientation	80
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	N
20-29	N
10-19	N
5-9	N
<5	N
Hollows	0
Length logs (m)	12
Attributes 1x1 plot (%)	
Litter (%)	34

PEC			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 266	Veg Zone ID: remnant		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 21/01/23			33	23	3	0	9	8	1	2	10	1
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			113.1	97	55	0	28.3	12.5	1	0.2	16.1	15
Acacia pycnantha	10	30	TG		10							
Arthropodium sp.	0.1	10	FG					0.1				
Austrostipa bigeniculata	5	200	GG				5					
Austrostipa elegantissima	0.1	1	GG				0.1					
Austrostipa scabra subsp. falcata	15	400	GG				15					
Brachychiton populneus	10	30	TG		10							
Briza maxima	0.1	10	EX								0.1	
Bromus catharticus	0.3	10	EX								0.3	
Cheilanthes sieberi	1	100	EG						1			
Cirsium vulgare	0.1	1	EX								0.1	
Conyza sp.	0.1	1	EX								0.1	
Desmodium sp.	0.1	10	OG							0.1		
Dianella revoluta	0.8	10	FG					0.8				
Dichelachne crinita	2	50	GG				2					
Einadia nutans	0.3	20	FG					0.3				
Elymus scaber	0.3	20	GG				0.3					
Eucalyptus albens	35	20	TG		35							
Glycine tabacina	0.1	10	OG							0.1		
Gonocarpus elatus	0.1	10	FG					0.1				
Hypericum perforatum	15	300	HT									15
Hypochaeris radicata	0.1	1	EX								0.1	
Lomandra filiformis subsp. Filiformis	0.1	1	GG				0.1					
Marrubium vulgare	0.1	1	EX								0.1	
Oxalis perennans	0.1	10	FG					0.1				
Petrorhagia nanteuilii	0.1	10	EX								0.1	
Rytidosperma bipartitum	0.5	20	GG				0.5					
Rytidosperma caespitosum	5	200	GG				5					
Sida corrugata	1	100	FG					1				
Sonchus oleraceus	0.1	5	EX								0.1	
Sporobolus creber	0.3	5	GG				0.3					
Trifolium arvense	0.1	10	EX								0.1	
Vittadinia cuneata var. hirsuta	0.1	10	FG					0.1				
Xerochrysum viscosum	10	300	FG					10				

Easting	528367
Northing	6111268
Orientation	20
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	2
50-79	3
30-49	Y
20-29	Y
10-19	Y
5-9	Y
<5	Y
Hollows	5
Length logs (m)	53
	39.75
Attributes 1x1 plot (%)	
Litter (%)	74
	55.5

PEC			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 266	Veg Zone ID: DNG		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 21/01/23			32	24	3	2	8	10	1	0	8	1
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			112	95.7	4.3	3	47	39.4	2	0	16.3	15
Acacia baileyana	1	4	SG			1						
Acacia pycnantha	0.5	1	TG		0.5							
Acacia spectabilis	2	2	SG			2						
Aristida ramosa	35	200	GG				35					
Austrostipa bigeniculata	0.8	10	GG				0.8					
Austrostipa scabra subsp. falcata	3	100	GG				3					
Avena sp.	0.1	10	EX								0.1	
Briza maxima	0.7	20	EX								0.7	
Briza minor	0.1	10	EX								0.1	
Callitris glaucophylla	0.8	1	TG		0.8							
Calotis cuneata	1	50	FG					1				
Calotis lappulacea	0.1	1	FG					0.1				
Centaurium tenuiflorum	0.1	1	EX								0.1	
Cheilanthes sieberi	2	100	EG						2			
Chrysocephalum apiculatum	1	20	FG					1				
Conyza sp.	0.1	10	EX								0.1	
Dianella longifolia	0.5	2	FG					0.5				
Dianella revoluta	1	20	FG					1				
Dichelachne crinita	5	200	GG				5					
Digitaria divaricatissima	0.1	5	GG				0.1					
Elymus scaber	0.3	20	GG				0.3					
Eucalyptus albens	3		TG		3							
Euchiton sphaericus	0.1	5	FG					0.1				
Gonocarpus elatus	0.5	50	FG					0.5				
Hypericum perforatum	15	200	HT									15
Lomandra filiformis subsp. filiformis	0.8	20	GG				0.8					
Microtis sp.	0.1	10	FG					0.1				
Romulea sp.	0.1	20	EX								0.1	
Rytidosperma caespitosum	2	100	GG				2					
Sonchus oleraceus	0.1	10	EX								0.1	
Tricoryne elatior	0.1	20	FG					0.1				
Xerochrysum viscosum	35	500	FG					35				

Easting	528357
Northing	611122
Orientation	265
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	N
20-29	N
10-19	N
5-9	N
<5	Y
Hollows	0
Length logs (m)	10
Attributes 1x1 plot (%)	
Litter (%)	54

Date	5/2/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_636		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	281		34	25	4	1	14	5	1	0	7	2
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	94.7	92.1	10.3	4	77.2	0.5	0.1	0	2.4	0.2
Angophora floribunda	8	2	TG		8							
Callitris endlicheri	2	1	TG		2							
Cassinia sifton	4	20	SG			4						
Themeda triandra	0.5	10	GG				0.5					
Calotis lappulacea	0.1	5	FG					0.1				
Petrorhagia nanteuilii	0.1	5	EX								0.1	
Hypochaeris radicata	1	40	EX								1	
Wahlenbergia spp.	0.1	10	FG					0.1				
Sporobolus creber	20	200	GG				20					
Lomandra longifolia	1	5	GG				1					
Conyza bonariensis	0.1	5	EX								0.1	
Plantago lanceolata	0.5	20	EX								0.5	
Microlaena stipoides	5	100	GG				5					
Echinopogon caespitosus	0.1	10	GG				0.1					
Gahnia aspera	3	5	GG				3					
Casuarina cunninghamiana sul	0.2	3	TG		0.2							
Paspalum dilatatum	0.1	5	HT									0.1
Podolepis omissa	0.1	5	FG					0.1				
Aristida ramosa	20	200	GG				20					
Bothriochloa macra	0.1	5	GG				0.1					
Verbena bonariensis	0.1	10	EX								0.1	
Panicum effusum	0.2	10	GG				0.2					
Cheilanthes sieberi	0.1	10	EG						0.1			
Setaria parviflora	0.5	20	EX								0.5	
Austrostipa scabra	20	200	GG				20					
Dichelachne micrantha	2	30	GG				2					
Fimbristylis dichotoma	0.1	20	GG				0.1					
Hypericum perforatum	0.1	10	HT									0.1
Aristida vagans	5	50	GG				5					
Eragrostis leptostachya	0.2	20	GG				0.2					
Veronica plebeia	0.1	5	FG					0.1				
Laxmannia gracilis	0.1	5	FG					0.1				
Trifolium arvense	0.1	5	EX								0.1	
Eucalyptus blakelyi	0.1	1	TG		0.1							

Easting	767801
Northing	6422810
Orientation	300
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	4
20-29	yes
10-19	yes
5-9	no
<5	yes
Hollows	0
Length logs (m)	8
Attributes 1x1 plo	32
Litter (%)	45
	15
	40
	55
	5

Date	5/2/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_637		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	281 DNG		30	25	1	3	15	5	1	0	4	1
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	71.8	65.4	1	6	57.7	0.5	0.2	0	6.2	0.2
Sporobolus creber	30	300	GG				30					
Hypochaeris radicata	5	200	EX								5	
Melaleuca spp.	1	5	SG			1						
Austrostipa scabra	1	20	GG				1					
Eragrostis elongata	3	200	GG				3					
Fimbristylis dichotoma	0.1	10	GG				0.1					
Cheilanthes sieberi	0.2	50	EG						0.2			
Microtis spp.	0.1	5	FG					0.1				
Digitaria ramularis	1	100	GG				1					
Setaria parviflora	1	20	EX								1	
Aristida ramosa	20	100	GG				20					
Arundinella nepalensis	0.2	2	GG				0.2					
Cassinia sifton	1	5	SG			1						
Plantago lanceolata	0.1	10	EX								0.1	
Panicum effusum	0.1	10	GG				0.1					
Kunzea parvifolia	4	10	SG			4						
Themeda triandra	0.5	10	GG				0.5					
Chrysocephalum apicu	0.1	10	FG					0.1				
Angophora floribunda	1	5	TG		1							
Gahnia aspera	1	2	GG				1					
Calotis cuneifolia	0.1	10	FG					0.1				
Verbena bonariensis	0.1	20	EX								0.1	
Lomandra multiflora s	0.1	1	GG				0.1					
Paspalum dilatatum	0.2	5	HT									0.2
Stackhousia viminea	0.1	5	FG					0.1				
Laxmannia gracilis	0.1	5	FG					0.1				
Juncus flavidus	0.1	5	GG				0.1					
Carex appressa	0.2	5	GG				0.2					
Aristida vagans	0.2	10	GG				0.2					
Lomandra filiformis su	0.2	1	GG				0.2					

Easting	767733
Northing	6422767
Orientation	140
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	no
10-19	no
5-9	no
<5	yes
Hollows	0
Length logs (m)	0
Attributes 1x1 plo	9
Litter (%)	5
	10
	5
	15
	10

CWO			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	756385
PCT 461	Veg Zone ID: remnant		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6425691
Date: 29/03/23			41	38	5	9	9	13	1	1	3	0		Orientation	315
Species	Cover	Abundance	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			68.3	68	18	15.9	15.6	17.8	0.5	0.2	0.3	0		Attributes 20x50m plot	
Angophora floribunda	10	5	TG		10									Stem classes	
Callitris endlicheri	5	20	TG		5									80+	1
Allocasuarina verticillata	2	10	TG		2									50-79	0
Exocarpos strictus	0.5	5	SG			0.5								30-49	Yes
Cassinia sifton	10	20	SG			10								20-29	Yes
Gonocarpus elatus	15	200	FG					15						10-19	Yes
Cheilanthes sieberi	0.5	100	EG						0.5					5-9	No
Austrostipa scabra	5	200	GG				5							<5	Yes
Hypericum gramineum	0.5	20	FG					0.5						Hollows	0
Hibbertia obtusifolia	0.1	5	SG			0.1								Length logs (m)	23
Dichondra repens	0.1	20	FG					0.1							17.25
Persoonia linearis	2	10	SG			2								Attributes 1x1 plc	\
Dichelachne crinita	3	50	GG				3							Litter (%)	39
Melichrus urceolatus	1	10	SG			1									29.25
Rytidosperma caespitosum	0.8	20	GG				0.8								
Fimbristylis dichotoma	0.1	20	GG				0.1								
Aristida ramosa	5	100	GG				5								
Cymbopogon refractus	1	10	GG				1								
Astroloma humifusum	1	20	SG			1									
Solanum sp.	0.2	5	FG					0.2							
Panicum effusum	0.5	10	GG				0.5								
Eragrostis brownii	0.1	5	GG				0.1								
Euphorbia drummondii	0.1	5	FG					0.1							
Vittadinia cuneata	0.2	20	FG					0.2							
Grevillea triternata	0.1	5	SG			0.1									
Dianella caerulea	0.1	5	FG					0.1							
Acacia linearifolia	0.2	1	TG		0.2										
Goodenia hederacea	0.2	30	FG					0.2							
Styphelia triflora	1	20	SG			1									
Stypandra glauca	0.8	20	FG					0.8							
Eucalyptus dealbata	0.8	5	TG		0.8										
Podolepis omissa	0.1	5	FG					0.1							
Conyza sp.	0.1	5	EX								0.1				
Xerochrysum viscosum	0.1	5	FG					0.1							
Verbascum thapsus	0.1	1	EX								0.1				
Opuntia stricta	0.1	1	EX								0.1				
Hardenbergia violacea	0.2	1	OG							0.2					
Pomax umbellata	0.3	50	FG					0.3							
Lomandra filiformis subsp. filiformis	0.1	5	GG				0.1								
Cassinia quinquefaria	0.2	5	SG			0.2									
Dichondra sp. Inglewood	0.1	20	FG					0.1							

CWO			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
PCT 461	Veg Zone ID: DNG		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
Date: 29/03/23			46	41	4	11	12	11	1	2	5	0	
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
			67.5	66.3	2.6	27.4	24	11.8	0.1	0.4	1.2	0	
Persoonia linearis	2	10	SG			2							
Angophora floribunda	1	5	TG		1								
Callitris endlicheri	1	5	TG		1								
Cassinia sifton	20	100	SG			20							
Xerochrysum viscosum	10	100	FG					10					
Gonocarpus elatus	0.8	50	FG					0.8					
Cymbopogon refractus	5	50	GG				5						
Cheilanthes sieberi	0.1	20	EG						0.1				
Goodenia hederacea	0.1	20	FG					0.1					
Centaurium tenuiflorum	0.1	5	EX								0.1		
Austrostipa scabra	5	50	GG				5						
Digitaria ramularis	0.8	20	GG				0.8						
Astroloma humifusum	1	10	SG			1							
Dichondra repens	0.1	20	FG					0.1					
Melichrus urceolatus	0.8	10	SG			0.8							
Panicum effusum	0.1	10	GG				0.1						
Echinopogon caespitosus	1	20	GG				1						
Hypericum hypericoides	0.5	20	EX								0.5		
Acacia linearifolia	0.2	1	TG		0.2								
Hibbertia obtusifolia	0.2	20	SG			0.2							
Tricoryne elatior	0.1	10	FG					0.1					
Entolasia stricta	0.1	10	GG				0.1						
Vittadinia cuneata	0.1	10	FG					0.1					
Styphelia triflora	1	10	SG			1							
Exocarpos strictus	1	20	SG			1							
Aristida ramosa	10	100	GG				10						
Grevillea triternata	0.1	1	SG			0.1							
Bidens subalternans	0.1	10	EX								0.1		
Rytidosperma caespitosum	0.2	20	GG				0.2						
Austrostipa densiflora	1	20	GG				1						
Fimbristylis dichotoma	0.1	20	GG				0.1						
Themeda triandra	0.5	5	GG				0.5						
Pomax umbellata	0.1	10	FG					0.1					
Acacia penninervis	0.2	1	SG			0.2							
Allocasuarina verticillata	0.4	5	TG		0.4								
Calotis lappulacea	0.2	5	FG					0.2					
Cassinia laevis	0.6	3	SG			0.6							
Lomandra longifolia	0.2	1	GG				0.2						
Verbascum thapsus	0.1	1	EX								0.1		
Hardenbergia violacea	0.3	1	OG							0.3			
Solanum sp.	0.1	5	FG					0.1					
Wahlenbergia sp.	0.1	10	FG					0.1					
Podolepis omissa	0.1	10	FG					0.1					
Glycine clandestina	0.1	5	OG							0.1			
Opuntia stricta	0.4	1	EX								0.4		
Acacia implexa	0.5	3	SG			0.5							

Easting	756446
Northing	6425717
Orientation	305
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	No
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	125
Attributes 1x1 plot (%)	
Litter (%)	25

Date	5/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_628		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	618		30	21	1	2	9	8	0	1	8	1
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	71.9	70.1	10	1.1	55.2	3.7	0	0.1	1.4	0.4
Eucalyptus albens	10	3	TG		10							
Austrostipa verticillata	40	100	GG				40					
Austrostipa scabra	10	100	GG				10					
Digitaria diffusa	1	20	GG				1					
Calotis lappulacea	1	20	FG					1				
Aristida ramosa	2	30	GG				2					
Carex inversa	0.5	20	GG				0.5					
Eragrostis brownii	0.2	10	GG				0.2					
Einadia hastata	2	20	FG					2				
Dodonaea viscosa	0.1	1	SG			0.1						
Conyza bonariensis	0.1	10	EX								0.1	
Crassula sieberiana	0.1	30	FG					0.1				
Sporobolus creber	0.4	30	GG				0.4					
Chloris ventricosa	0.8	20	GG				0.8					
Hypochaeris radicata	0.1	5	EX								0.1	
Glycine clandestina	0.1	5	OG							0.1		
Dichondra repens	0.2	100	FG					0.2				
Hypericum perforatum	0.4	20	HT									0.4
Acacia falcata	1	2	SG			1						
Rumex brownii	0.1	1	FG					0.1				
Cirsium vulgare	0.2	2	EX								0.2	
Solanum nigrum	0.1	5	EX								0.1	
Geranium solanderi	0.1	5	FG					0.1				
Sida corrugata	0.1	1	FG					0.1				
Modiola caroliniana	0.1	5	EX								0.1	
Sida rhombifolia	0.4	5	EX								0.4	
Centaurea solstitialis	0.2	2	EX								0.2	
Oxalis perennans	0.1	1	FG					0.1				
Bidens subalternans	0.2	5	EX								0.2	
Panicum effusum	0.3	10	GG				0.3					

Easting	775265
Northing	6414614
Orientation	180
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	6
30-49	0
20-29	no
10-19	no
5-9	no
<5	yes
Hollows	1
Length logs (m)	28
Attributes 1x1 plo	46
Litter (%)	40
	30
	45
	55
	60

Date	5/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_629		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	618 DNG -Powerline		26	19	1	0	9	9	0	0	6	1
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	52.6	43.8	0.1	0	38.3	5.4	0	0	3.8	5
Eucalyptus albens	0.1	1	TG		0.1							
Austrostipa verticillata	20	100	GG				20					
Mentha satureioides	1	100	FG					1				
Einadia hastata	3	40	FG					3				
Chloris ventricosa	5	100	GG				5					
Sporobolus creber	5	100	GG				5					
Rumex brownii	0.1	1	FG					0.1				
Hypericum perforatum	5	20	HT									5
Modiola caroliniana	0.4	20	EX								0.4	
Dichondra sp. Inglewood	0.1	20	FG					0.1				
Carex inversa	2	100	GG				2					
Digitaria ramularis	1	50	GG				1					
Hypochaeris radicata	0.1	5	EX								0.1	
Cyperus gracilis	1	100	GG				1					
Calotis lappulacea	0.3	20	FG					0.3				
Oxalis perennans	0.2	100	FG					0.2				
Marrubium vulgare	1	20	EX								1	
Chondrilla juncea	0.1	1	EX								0.1	
Wahlenbergia spp.	0.1	5	FG					0.1				
Hydrocotyle spp.	0.5	50	FG					0.5				
Aristida ramosa	2	50	GG				2					
Bothriochloa macra	2	50	GG				2					
Euphorbia drummondii	0.1	5	FG					0.1				
Gahnia aspera	0.3	1	GG				0.3					
Verbena bonariensis	0.2	10	EX								0.2	
Opuntia stricta	2	5	EX								2	

Easting	775103
Northing	6414515
Orientation	165
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	no
10-19	no
5-9	no
<5	yes
Hollows	0
Length logs (m)	0
Attributes 1x1 plo	10
Litter (%)	10
	5
	5
	10
	20

Date	5/3/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_644		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT- 618?	Blue Sping Rd		34	32	3	10	12	6	0	1	2	0
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	57.2	56.6	25	16.9	14	0.6	0	0.1	0.6	0
Eucalyptus fibrosa	10	5	TG		10							
Eucalyptus moluccana	10	8	TG		10							
Eucalyptus blakelyi	5	1	TG		5							
Cassinia sifton	10	50	SG			10						
Melaleuca thymifolia	1	1	SG			1						
Cassytha spp.	0.1	5	OG							0.1		
Sannantha cunninghamii	5	50	SG			5						
Juncus planifolius	1	50	GG				1					
Juncus flavidus	5	50	GG				5					
Eragrostis leptostachya	0.8	20	GG				0.8					
Tricoryne elatior	0.1	10	FG					0.1				
Goodenia hederacea	0.1	20	FG					0.1				
Dichelachne micrantha	1	20	GG				1					
Rytidosperma spp.	1	30	GG				1					
Carex appressa	3	20	GG				3					
Setaria parviflora	0.5	20	EX								0.5	
Gahnia aspera	0.3	1	GG				0.3					
Dianella revoluta	0.1	10	FG					0.1				
Lachnagrostis filiformis	0.4	20	GG				0.4					
Acacia buxifolia	0.3	3	SG			0.3						
Senecio spp.	0.1	1	FG					0.1				
Styphelia triflora	0.1	2	SG			0.1						
Acacia spp.	0.1	1	SG			0.1						
Hibbertia spp.	0.1	5	SG			0.1						
Phyllanthus hirtellus	0.1	10	SG			0.1						
Aristida ramosa	0.8	20	GG				0.8					
Hypochaeris radicata	0.1	10	EX								0.1	
Eragrostis brownii	0.1	10	GG				0.1					
Pultenaea retusa	0.1	1	SG			0.1						
Astroloma humifusum	0.1	1	SG			0.1						
Echinopogon caespitosus	0.5	20	GG				0.5					
Lomandra filiformis subsp. filiformis	0.1	5	GG				0.1					
Gonocarpus elatus	0.1	10	FG					0.1				
Goodenia gracilis	0.1	20	FG					0.1				

Easting	746039
Northing	6428102
Orientation	90
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	4
20-29	yes
10-19	yes
5-9	no
<5	yes
Hollows	2
Length logs (m)	48
Attributes 1x1 plo	47
Litter (%)	75
	60
	30
	55
	15

Date	5/3/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_645		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT -618?	Blue Sping Rd		46	37	1	7	17	10	1	1	8	1
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	68.5	51.9	0.1	15.2	29.7	6.5	0.3	0.1	11.6	5
Eucalyptus blakelyi	0.1	2	TG		0.1							
Sannantha cunninghamii	5	40	SG			5						
Melaleuca thymifolia	0.2	1	SG			0.2						
Juncus flavidus	5	50	GG				5					
Juncus usitatus	3	50	GG				3					
Carex appressa	10	50	GG				10					
Setaria parviflora	10	1000	EX								10	
Cassytha spp.	0.1	5	OG							0.1		
Dichelachne micrantha	1	20	GG				1					
Eragrostis brownii	0.1	20	GG				0.1					
Opercularia diphylla	0.2	20	FG					0.2				
Panicum effusum	0.5	10	GG				0.5					
Dianella revoluta	5	100	FG					5				
Aristida ramosa	1	50	GG				1					
Sporobolus creber	5	100	GG				5					
Hypochaeris radicata	0.5	40	EX								0.5	
Cheilanthes sieberi	0.3	50	EG						0.3			
Eragrostis leptostachya	0.2	20	GG				0.2					
Aristida vagans	0.5	20	GG				0.5					
Fimbristylis dichotoma	0.1	20	GG				0.1					
Verbena bonariensis	0.2	10	EX								0.2	
Microlaena stipoides	1	100	GG				1					
Lissanthe strigosa	2	20	SG			2						
Acacia decora	3	5	SG			3						
Lachnagrostis filiformis	1	50	GG				1					
Calotis cuneifolia	0.1	10	FG					0.1				
Cassinia sifton	2	30	SG			2						
Acacia buxifolia	2	5	SG			2						
Styphelia triflora	1	5	SG			1						
Paspalum dilatatum	5	50	HT									5
Goodenia gracilis	0.2	50	FG					0.2				
Eriochilus cucullatus	0.1	5	FG					0.1				
Laxmannia gracilis	0.5	30	FG					0.5				
Echinopogon caespitosus	1	30	GG				1					
Wahlenbergia gracilis	0.1	5	FG					0.1				
Conyza bonariensis	0.1	5	EX								0.1	
Digitaria ramularis	0.1	5	GG				0.1					
Senecio spp.	0.1	5	FG					0.1				
Cirsium vulgare	0.1	5	EX								0.1	
Veronica plebeia	0.1	5	FG					0.1				
Plantago lanceolata	0.1	10	EX								0.1	
Haloragis heterophylla	0.1	10	FG					0.1				
Lysimachia arvensis	0.5	20	EX								0.5	
Sonchus oleraceus	0.1	5	EX								0.1	
Rytidosperma caespitosum	0.1	10	GG				0.1					
Paspalidium constrictum	0.1	5	GG				0.1					

Easting	746025
Northing	6428067
Orientation	100
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	no
10-19	no
5-9	no
<5	yes
Hollows	0
Length logs (m)	61
Attributes 1x1 plo	13
Litter (%)	10
	5
	10
	25
	15

Date	5/3/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_638		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	477_mod-good		35	34	3	10	15	4	1	1	1	0
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	66.2	66.1	14	27.8	23	1.1	0.1	0.1	0.1	0
Eucalyptus rossii	10	6	TG		10							
Eucalyptus crebra	2	1	TG		2							
Eucalyptus blakelyi	2	1	TG		2							
Cassinia sifton	15	50	SG			15						
Poa sieberiana	5	20	GG				5					
Dianella revoluta	0.1	5	FG					0.1				
Lomandra filiformis subsp. f	0.5	20	GG				0.5					
Gonocarpus elatus	0.5	20	FG					0.5				
Aristida vagans	1	40	GG				1					
Hypochaeris radicata	0.1	10	EX								0.1	
Pultenaea foliolosa	2	10	SG			2						
Cheilanthes sieberi subsp. si	0.1	10	EG						0.1			
Entolasia stricta	0.6	30	GG				0.6					
Grevillea sericea	2	10	SG			2						
Laxmannia gracilis	0.4	20	FG					0.4				
Sannantha cunninghamii	5	20	SG			5						
Cyperus gracilis	0.1	5	GG				0.1					
Hibbertia spp.	0.1	1	SG			0.1						
Cassytha spp.	0.1	5	OG							0.1		
Dichelachne micrantha	1	30	GG				1					
Aristida ramosa	5	100	GG				5					
Arundinella nepalensis	1	20	GG				1					
Lepidosperma laterale	5	20	GG				5					
Lissanthe strigosa	1	10	SG			1						
Euphorbia drummondii	0.1	1	FG					0.1				
Juncus flavidus	0.1	5	GG				0.1					
Acacia hakeoides	0.2	1	SG			0.2						
Pimelea spp.	1	20	SG			1						
Acacia spp.	0.5	1	SG			0.5						
Lomandra multiflora subsp.	1	20	GG				1					
Lomandra confertifolia subs	2	20	GG				2					
Lomandra filiformis subsp. c	0.1	10	GG				0.1					
Melaleuca thymifolia	1	1	SG			1						
Gahnia aspera	0.5	2	GG				0.5					
Rytidosperma caespitosum	0.1	5	GG				0.1					

Easting	751185
Northing	6424963
Orientation	225
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	8
30-49	4
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	3
Length logs (m)	36
Attributes 1x1 plo	61
Litter (%)	50
	65
	80
	40
	70

CWO			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 479	Veg Zone ID: remnant		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 28/02/2023			48	47	5	14	16	9	1	2	1	0
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			132.4	132.3	80	23.4	26.5	2	0.1	0.3	0.1	0
Angophora floribunda	40	40	TG		40							
Eucalyptus rossii	5	2	TG		5							
Eucalyptus tereticornis	5	3	TG		5							
Eucalyptus macrorhyncha	10	3	TG		10							
Callitris endlicheri	20	30	TG		20							
Acacia ausfeldii	0.5	5	SG			0.5						
Exocarpos strictus	3	30	SG			3						
Cassinia sifton	5	50	SG			5						
Styphelia triflora	1	10	SG			1						
Leucopogon sp.	0.1	1	SG			0.1						
Lissanthe strigosa	5	50	SG			5						
Acacia implexa	1	5	SG			1						
Dianella longifolia	0.3	25	FG					0.3				
Sannantha cunninghamii	1	100	SG			1						
Gonocarpus elatus	0.1	1	FG					0.1				
Persoonia linearis	1	20	SG			1						
Hibbertia sp. riparia?	0.1	10	SG			0.1						
Brunoniella australis	0.1	10	FG					0.1				
Astroloma humifusum	5	500	SG			5						
Schoenus apogon	0.5	1000	GG				0.5					
Wahlenbergia gracilis	0.1	10	FG					0.1				
Laxmannia gracilis	0.1	25	FG					0.1				
Austrostipa densiflora	10	200	GG				10					
Lomandra gracilis	0.1	1	GG				0.1					
Lomandra multiflora	0.1	2	GG				0.1					
Aristida ramosa	10	200	GG				10					
Eragrostis sp.	1	25	GG				1					
Rytidosperma caespitosum	1	100	GG				1					
Juncus usitatus	0.1	1	GG				0.1					
Microtis sp.	0.1	1	FG					0.1				
Arundinella nepalensis	1	10	GG				1					
Echinopogon ovatus	0.2	25	GG				0.2					
Pomax umbellata	1	100	FG					1				
Conyza sp.	0.1	1	EX								0.1	
Hibbertia obtusifolia	0.5	50	SG			0.5						
Cheilanthes sieberi	0.1	10	EG						0.1			
Rytidosperma setaceum	0.1	10	GG				0.1					
Rytidosperma setaceum	0.1	10	GG				0.1					
Goodenia heterophylla	0.1	10	FG					0.1				
Clematis sp.	0.1	1	OG							0.1		
Macrozamia reducta	0.2	2	OG							0.2		
Chrysocephalum apiculatum	0.1	10	FG					0.1				
Brachyloma daphnoides	0.1	1	SG			0.1						
Acacia decora	0.1	1	SG			0.1						
Themeda triandra	2	25	GG				2					
Lachnagrostis filiformis	0.1	1	GG				0.1					
Panicum effusum	0.1	10	GG				0.1					
Fimbristylis dichotoma	0.1	1	GG				0.1					

55

Easting	754723
Northing	6426846
Orientation	182
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3 large trees
30-49	Yes
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	86
Attributes 1x1 plot (%)	
Litter (%)	70

Date	5/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_631		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	1606 mod good		25	24	3	9	6	5	1	0	1	0
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	65.2	65.1	15.1	46.3	2.6	1	0.1	0	0.1	0
Eucalyptus crebra	10	5	TG		10							
Eucalyptus albens	5	6	TG		5							
Cassinia sifton	35	100	SG			35						
Acacia spp.	2	10	SG			2						
Dodonaea viscosa	2	20	SG			2						
Cassinia quinquefaria	3	50	SG			3						
Dichelachne micrantha	0.2	10	GG				0.2					
Calotis cuneifolia	0.1	5	FG					0.1				
Eremophila debilis	0.1	1	SG			0.1						
Rytidosperma spp.	0.2	10	GG				0.2					
Solanum spp.	0.2	2	FG					0.2				
Dichondra repens	0.1	10	FG					0.1				
Euchiton sphaericus	0.1	10	FG					0.1				
Calotis lappulacea	0.5	20	FG					0.5				
Gahnia aspera	1	10	GG				1					
Eragrostis leptostachya	0.1	5	GG				0.1					
Opuntia stricta	0.1	1	EX								0.1	
Austrostipa scabra	1	30	GG				1					
Goodenia ovata	0.1	2	SG			0.1						
Cheilanthes sieberi	0.1	10	EG						0.1			
Lissanthe strigosa	0.1	2	SG			0.1						
Allocasuarina verticillata	0.1	2	TG		0.1							
Acacia spp.	2	10	SG			2						
Lomandra filiformis	0.1	5	GG				0.1					
Acacia spp.	2	10	SG			2						

Easting	774968
Northing	6414997
Orientation	350
Plot size	20 X20 X50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	0
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	14
Attributes 1x1 pl	36
Litter (%)	15
	10
	40
	55
	60

Date	5/1/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_632		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	1606 - powerline		28	23	0	5	13	4	1	0	4	1
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	77.7	69.1	0	13	55.5	0.4	0.2	0	6.6	2
Acacia spp.	2	10	SG			2						
Acacia spp.	2	10	SG			2						
Hypericum perforatum	2	20	HT									2
Dichelachne micrantha	1	20	GG				1					
Gahnia aspera	1	5	GG				1					
Dichondra repens	0.1	10	FG					0.1				
Hypochaeris radicata	0.1	10	EX								0.1	
Euphorbia drummondii	0.1	10	FG					0.1				
Cheilanthes sieberi	0.2	50	EG						0.2			
Sporobolus creber	5	100	GG				5					
Mentha satureioides	0.1	10	FG					0.1				
Chloris ventricosa	2	50	GG				2					
Aristida ramosa	15	500	GG				15					
Cassinia sifton	5	20	SG			5						
Cirsium vulgare	0.5	5	EX								0.5	
Juncus usitatus	0.1	10	GG				0.1					
Themeda triandra	1	20	GG				1					
Geranium solanderi	0.1	5	FG					0.1				
Dodonaea viscosa	2	10	SG			2						
Microlaena stipoides	10	500	GG				10					
Acacia spp.	2	10	SG			2						
Bidens subalternans	1	20	EX								1	
Lomandra filiformis	0.1	10	GG				0.1					
Setaria parviflora	5	100	EX								5	
Austrostipa verticillata	3	30	GG				3					
Eragrostis spp.	0.3	10	GG				0.3					
Austrostipa scabra	2	100	GG				2					
Aristida ramosa	15	500	GG				15					

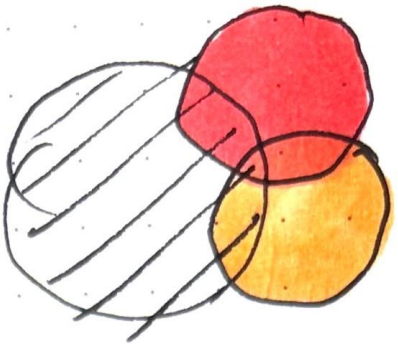
Easting	774902
Northing	6414986
Orientation	155
Plot size	20 X20 X50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	no
10-19	no
5-9	no
<5	yes
Hollows	0
Length logs (m)	0
Attributes 1x1 pl	11
Litter (%)	5
	10
	15
	5
	20

Date	5/3/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_640		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	1674_mod-good		21	19	1	6	9	2	0	1	2	0
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	57.6	57.4	25	21	8.1	0.3	0	3	0.2	0
Eucalyptus sideroxylon	25	25	TG		25							
Cassinia sifton	5	20	SG			5						
Pultenaea foliolosa	5	40	SG			5						
Lomandra multiflora subsp	0.1	5	GG				0.1					
Lomandra filiformis subsp.	0.1	10	GG				0.1					
Aristida ramosa	3	40	GG				3					
Entolasia stricta	2	200	GG				2					
Acacia spectabilis	2	2	SG			2						
Lissanthe strigosa	5	30	SG			5						
Gonocarpus elatus	0.2	20	FG					0.2				
Laxmannia gracilis	0.1	20	FG					0.1				
Grevillea sericea	3	20	SG			3						
Rytidosperma caespitosum	0.3	30	GG				0.3					
Gahnia aspera	1	3	GG				1					
Conyza bonariensis	0.1	5	EX								0.1	
Amyema miquelii	3	3	OG							3		
Hypochaeris radicata	0.1	5	EX								0.1	
Poa sieberiana var. sieberia	1	2	GG				1					
Lomandra confertifolia sub	0.1	5	GG				0.1					
Lepidosperma laterale	0.5	1	GG				0.5					
Melaleuca erubescens	1	1	SG			1						

Easting	751756
Northing	6424990
Orientation	250
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	5
20-29	yes
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	6
Attributes 1x1 plo	56
Litter (%)	30
	40
	65
	85
	60

Date	5/3/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_641		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	1674_DNG		20	20	1	9	6	2	1	1	0	0
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	45.1	45.1	2	30.2	12.3	0.4	0.1	0.1	0	0
Eucalyptus sideroxylon	2	5	TG		2							
Cassinia sifton	5	50	SG			5						
Pultenaea foliolosa	5	30	SG			5						
Cassytha spp.	0.1	5	OG							0.1		
Aristida ramosa	10	100	GG				10					
Acacia hakeoides	1	20	SG			1						
Grevillea sericea	5	50	SG			5						
Lomandra multiflora subsp	0.1	10	GG				0.1					
Entolasia stricta	1	50	GG				1					
Cheilanthes sieberi	0.1	10	EG						0.1			
Melaleuca thymifolia	10	30	SG			10						
Laxmannia gracilis	0.3	20	FG					0.3				
Lomandra filiformis subsp.	0.1	5	GG				0.1					
Lissanthe strigosa	2	20	SG			2						
Gahnia aspera	1	5	GG				1					
Sannantha cunninghamii	2	30	SG			2						
Goodenia hederacea	0.1	5	FG					0.1				
Daviesia genistifolia	0.1	1	SG			0.1						
Rytidosperma spp.	0.1	10	GG				0.1					
Hakea spp.	0.1	1	SG			0.1						

Easting	751764
Northing	6425017
Orientation	250
Plot size	20 X20 X50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	no
10-19	no
5-9	yes
<5	yes
Hollows	0
Length logs (m)	3
Attributes 1x1 pl	9.6
Litter (%)	5
	3
	10
	20
	10



Appendix N

Cumulative biodiversity impact assessment

N1 Determination of excluded impacts

N1.1 Approach to cumulative impact assessment

The study area for the biodiversity cumulative impact assessment consists of the combined footprint of the relevant future projects considered to have potential for cumulative biodiversity impacts in combination with the Hunter Transmission Project (HTP, this project). Public road works have not been included in the assessment as environmental assessments for these works has not yet commenced and sufficient information is not available to assess the potential cumulative biodiversity impacts with this project.

A detailed, local assessment was carried out that involved:

- reviewing the nature and scale of potential biodiversity impacts, as described in supplied or publicly available planning and biodiversity documents for the relevant future projects
- quantitatively assessing potential regional cumulative impacts on native vegetation, threatened and migratory species and threatened ecological communities of the relevant future projects in combination with the project, in a tabulated form showing known or estimated impacts for each project and the total cumulative impact
- qualitatively assessing potential regional cumulative impacts on groundwater dependent ecosystems, wildlife connectivity and habitat corridors and protected and sensitive lands by reviewing regional habitat impacts for areas directly impacted by the project
- recommending mitigation measures as required.

The assessment is limited in the variability of biodiversity assessments for other projects and assumes the accuracy and reliability of biodiversity provided by these other assessments. It also assumes that cumulative impacts can be predicted for projects that are of a different impact nature.

N2 Impact assessment

This assessment considers the impacts of this project together with other nearby development projects of a similar nature and scale. Projects considered in this cumulative assessment are identified in Table N.1.

Table N.1 Relevant future projects considered in the cumulative biodiversity impact assessment

Project	Type of assessment
Bayswater Power Station Upgrade	Quantitative
Bowmans Creek Wind Farm	Quantitative (Stage 1) Qualitative (Stage 2)
Central-West Orana REZ Transmission Project	Quantitative
Edderton Solar Project	Qualitative
Hunter Valley Operations Construction Projects (HVO North Open Cut Coal Continuation Project and HVO South Open Cut Coal Continuation Project)	Quantitative
Hunter-Central Coast REZ Transmission Project	Qualitative
Intertrade Project	Qualitative
Liddell Future Land Use and Enabling Works	Quantitative
Maison Dieu Solar Farm	Quantitative

Project	Type of assessment
Mandalong Road Upgrades	Quantitative
Muswellbrook Bypass	Quantitative
Muswellbrook Pumped Hydro Energy Storage Project	Qualitative
Muswellbrook Solar Farm	Quantitative
New England REZ Transmission Project	Qualitative
Restart of Redbank Power Station	Quantitative
Rix's Creek North Continuation Project	Qualitative

N2.1 Cumulative impacts on native vegetation, threatened and migratory species and threatened ecological communities

This section provides an assessment of those projects with potential cumulative native vegetation and threatened species impacts (see Table N.2).

Where available, the total impact to native vegetation from each project is provided along with a list of the threatened ecological communities (TECs) and threatened species that would be impacted. The total ecosystem credit and species credit requirement for each project is also provided to provide an overview of cumulative offset requirements. A broad approach has been taken due to the variance in impacts between projects and the total native vegetation impact is considered the simplest way to represent impact to threatened species.

The results from the review of available information indicate the following:

- the known or estimated cumulative native vegetation impacts equate to 3876.67 hectares
- the cumulative ecosystem credit requirement equates to 63,141 credits
- the cumulative species credit requirement equates to 344,711 credits.

Table N.2 Cumulative biodiversity assessment

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
Bayswater Power Station Upgrade	264.69	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	Central Hunter Valley eucalypt forest and woodland	*Delma impar* / Striped Legless Lizard *Myotis macropus* / Southern Myotis *Petaurus norfolkensis* / Squirrel Glider	5,117	2,102
Bowmans Creek Wind Farm	329.47 (Stage 1 known) 134.22 (Stage 2 predicted)	Lower Hunter Valley Dry Rainforest Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Central Hunter Valley eucalypt forest and woodland White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	*Chalinolobus dwyeri* / Large-eared Pied Bat *Phascogale tapoatafa* / Brush-tailed Phascogale	6,118 (Stage 1) Unknown (Stage 2)	1,263 (Stage 1) Unknown (Stage 2)
Central-West Orana REZ Transmission Project	1,227.35	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	*Acacia ausfeldii*/Ausfeld's Wattle *Anthochaera phrygia*/Regent Honeyeater *Aprasia parapulchella*/Pink-tailed Legless Lizard *Calyptorhynchus lathami lathami*/South-eastern Glossy Black-Cockatoo *Cercartetus nanus*/Eastern Pygmy-possum *Chalinolobus dwyeri*/Large-eared Pied Bat *Delma impar*/Striped Legless Lizard	23,077	50,354

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
		White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions		*Dichanthium setosum*/Bluegrass *Diuris tricolor*/Pine Donkey Orchid *Eucalyptus camaldulensis – endangered population*/Eucalyptus camaldulensis population in the Hunter catchment *Euphrasia arguta*/Euphrasia arguta *Hieraaetus morphnoides*/Little Eagle *Homoranthus darwinioides*/Fairy Bells *Hoplocephalus bitorquatus*/Pale-headed Snake *Indigofera efoliata*/Leafless Indigo *Keyacris scurra*/Key's Matchstick Grasshopper *Leucochrysum albicans subsp. tricolor*/Hoary Sunray *Myotis macropus*/Southern Myotis *Petaurus norfolcensis*/Squirrel Glider *Phascolarctos cinereus*/Koala *Polytelis swainsonii*/Superb Parrot *Pomaderris cotoneaster*/Cotoneaster Pomaderris		

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
				Pomaderris queenslandica/Scant Pomaderris *Prasophyllum petilum*/Tarengo Leek Orchid *Swainsona recta*/Small Purple-pea *Swainsona sericea*/Silky Swainson-pea *Thesium australe*/Austral Toadflax *Tylophora linearis*/Tylophora linearis *Tyto novaehollandiae*/Masked Owl *Vespadelus troughtoni*/Eastern Cave Bat *Zieria ingramii*/Keith's Zieria		
Edderton Solar Project	Unknown This project is in the 'prepare EIS' stage; limited information available	Not identified in Scoping Report	Not identified in Scoping Report	Unknown	Unknown	Unknown
Hunter Valley Operations Construction Projects (HVO North Open Cut	397	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions Hunter Floodplain Red Gum Woodland in the NSW North	Not identified in report	*Delma vescolineata* / Hunter Valley Delma *Eucalyptus camaldulensis* - endangered population / *Eucalyptus camaldulensis* population in the Hunter catchment *Myotis macropus* / Southern Myotis	4809	6130

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
Coal Continuation Project and HVO South Open Cut Coal Continuation Project)		Coast and Sydney Basin Bioregions Hunter Valley Footslopes Slaty Gum Woodland Warkworth Sands Woodland in the Sydney Basin Bioregion		*Phascogale tapoatafa* / Brush-tailed Phascogale		
Hunter-Central Coast REZ Transmission Project	Unknown This project hasn't been initiated. Limited information available	Unknown	Unknown	Unknown	Unknown	Unknown
Intertrade Project	Unknown This project is in the 'prepare EIS' stage; limited information available	Not identified in Scoping Report	Not identified in Scoping Report	Unknown	Unknown	Unknown
Liddell Future Land Use and	81.11	Central Hunter Grey Box-Ironbark Woodland in the New	Central Hunter Valley eucalypt forest and woodland	*Delma vescolineata* / Hunter Valley Delma *Myotis macropus* / Southern Myotis	452	1,135

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
Enabling Works		South Wales North Coast and Sydney Basin Bioregions Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions		*Petaurus norfolcensis*/Squirrel Glider *Phascogale tapoatafa* / Brush-tailed Phascogale		
Maison Dieu Solar Farm	75.84	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	Central Hunter Valley eucalypt forest and woodland Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community (Coastal Swamp Oak Forest)	*Delma impar* / Striped Legless Lizard *Myotis macropus* / Southern Myotis *Phascogale tapoatafa* / Brush-tailed Phascogale *Ninox strenua* / Powerful Owl	820	1490
Mandalong Road Upgrades	0.98	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	*Acacia bynoeana* / Bynoe's Wattle *Angophora inopina* / Charmhaven Apple *Caladenia tessellata* / Thick-lipped Spider-orchid *Cryptostylis hunteriana* / Leafless Tongue Orchid *Diuris praecox* / Rough Doubletail *Genoplesium insigne* / Variable Midge Orchid *Grevillea parviflora* subsp. *parviflora* / Small-flower Grevillea	Unknown	Unknown

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
				Ninox strenua / Powerful Owl *Rutidosis heterogama* / Heath Wrinklewort *Tetratheca juncea* / Black-eyed Susan *Tyto novaehollandiae* / Masked Owl *Tyto tenebricosa* / Sooty Owl		
Muswellbrook Bypass	110.07	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern	Central Hunter Valley eucalypt forest and woodland White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	*Myotis macropus* / Southern Myotis *Petaurus norfolkensis* / Squirrel Glider *Phascolarctos cinereus* / Koala	Unknown	Unknown

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
		Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions				
Muswellbrook Pumped Hydro Energy Storage Project	Unknown This project is in the 'prepare EIS' stage; limited information available	Not identified in Scoping Report	Not identified in Scoping Report	Unknown	Unknown	Unknown
Muswellbrook Solar Farm	310.7	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Central Hunter Valley eucalypt forest and woodland White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	*Chalinolobus dwyeri* / Large-eared Pied Bat *Cymbidium canaliculatum* - endangered population / *Cymbidium canaliculatum* population in the Hunter Catchment *Delma vescolineata* / Hunter Valley Delma *Diuris tricolor – endangered population* / Pine Donkey Orchid population in the Muswellbrook local government area *Myotis macropus* / Southern Myotis *Petaurus norfolkensis* / Squirrel Glider *Phascogale tapoatafa* / Brush-tailed Phascogale	1,629	2,487

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
New England REZ Transmission Project	Unknown This project is in the 'prepare EIS' stage; limited information available	Not identified in Scoping Report	Not identified in Scoping Report	Unknown	Unknown	Unknown
Restart of Redbank Power Station	None	N/A	N/A	None	0	0
Rix's Creek North Continuation Project	Unknown This project is in the 'prepare EIS' stage; limited information available	Not identified in Scoping Report	Not identified in Scoping Report	Unknown	Unknown	Unknown
Sub-totals						
Relevant future development, proposed and approved projects	2931.43	N/A	N/A	N/A	42,022	64,961

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
Hunter Transmission Project (this project)						
This project	945.24	Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney	Central Hunter Valley eucalypt forest and woodland Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	*Acacia bynoeana* / Bynoe's Wattle *Angophora inopina* / Charmhaven Apple *Anthochaera phrygia* / Regent Honeyeater *Asperula asthenes* / Trailing Woodruff *Callocephalon fimbriatum* / Gang-gang Cockatoo *Calyptorhynchus lathami lathami* / South-eastern Glossy Black-Cockatoo *Cercartetus nanus* / Eastern Pygmy-possum *Chalinolobus dwyeri* / Large-eared Pied Bat *Corybas dowlingii* / Red Helmet Orchid *Cryptostylis hunteriana* / Leafless Tongue Orchid *Cymbidium canaliculatum* - endangered population / *Cymbidium canaliculatum* population in the Hunter Catchment *Cynanchum elegans* / White-flowered Wax Plant *Delma vescolineata* / Hunter Valley Delma *Dendrobium tetragonum var. melaleucaphilum* / Spider Orchid	21,119	279,750

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
		Basin and South East Corner Bioregions Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		*Diuris tricolor* / Pine Donkey Orchid *Epacris purpurascens var. purpurascens* / Epacris purpurascens var. purpurascens *Eucalyptus camaldulensis* - endangered population / *Eucalyptus camaldulensis* population in the Hunter catchment *Eucalyptus fracta* / Broken Back Ironbark *Eucalyptus glaucina* / Slaty Red Gum *Genoplesium branwhiteorum* / Charmhaven Midge Orchid *Genoplesium insigne* / Variable Midge Orchid *Grammitis stenophylla* / Narrow-leaf Finger Fern *Grevillea parviflora* subsp. *parviflora* / Small-flower Grevillea *Heleioporus australiacus* / Giant Burrowing Frog *Hoplocephalus bitorquatus* / Pale-headed Snake *Hoplocephalus stephensii* / Stephens' Banded Snake *Lathamus discolor* / Swift Parrot		

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
				Litoria littlejohni / Littlejohn's Tree Frog *Melaleuca biconvexa* / Biconvex Paperbark *Melaleuca groveana* / Grove's Paperbark *Mixophyes balbus* / Stuttering Frog *Mixophyes iteratus* / Giant Barred Frog *Myotis macropus* / Southern Myotis *Ninox connivens* / Barking Owl *Ninox strenua* / Powerful Owl *Notamacropus parma* / Parma Wallaby *Olearia cordata* / Olearia cordata *Ozothamnus tesselatus* / Ozothamnus tesselatus *Petauroides volans* / Southern Greater Glider *Petaurus norfolkensis* / Squirrel Glider *Petrogale penicillata* / Brush-tailed Rock-wallaby *Phascogale tapoatafa* / Brush-tailed Phascogale *Phascolarctos cinereus* / Koala *Planigale maculata* / Common Planigale		

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
				Pomaderris queenslandica / Scant Pomaderris *Potorous tridactylus* / Long-nosed Potoroo *Prasophyllum petilum* / Tarengo Leek Orchid *Prasophyllum* sp. Wybong / Prasophyllum sp. Wybong *Prostanthera cineolifera* / Singleton Mint Bush *Pseudophryne australis* / Red-crowned Toadlet *Pterostylis chaetophora* / Pterostylis chaetophora *Pterostylis gibbosa* / Illawarra Greenhood *Rhizanthella slateri* / Eastern Australian Underground Orchid *Rhodamnia rubescens* / Scrub Turpentine *Rhodomyrtus psidioides* / Native Guava *Rutidosis heterogama* / Heath Wrinklewort *Senna acclinis* / Rainforest Cassia *Syzygium paniculatum* / Magenta Lilly Pilly *Tetratheca juncea* / Black-eyed Susan		

Project	Known or estimated native vegetation impacts (ha)	TECs impacted		Species credit species impacted	Native vegetation offsets (ecosystem credits) total	Threatened species offsets (species credits) total
		BC Act	EPBC Act			
				Thelymitra adorata / Wyong Sun Orchid *Tyto novaehollandiae* / Masked Owl *Tyto tenebricosa* / Sooty Owl *Velleia perfoliata* / Velleia perfoliata *Vespadelus troughtoni* / Eastern Cave Bat *Zieria involucrata* / Zieria involucrata		
Cumulative biodiversity impacts						
Cumulative totals	3876.67	N/A	N/A	N/A	63,141	344,711

N2.2 Cumulative impacts on groundwater dependent ecosystems

Table N.3 outlines the potential cumulative impacts to groundwater dependent ecosystems (GDEs). The results from the review of available information indicate the following:

- The Atlas of GDEs (Bureau of Meteorology, 2024) and relevant water sharing plans for the relevant future project identifies many potential GDEs in and around these projects.
- Some projects, including the Hunter Valley Operations Construction Project would impact, or potentially impact, GDEs.
- The remaining projects, including this project, are not anticipated to impact groundwater during construction, operation or decommissioning due to the limited amount of subsurface disturbance activities required during the installation and decommissioning of project infrastructure.

The HTP would not contribute to the cumulative impacts on GDEs.

Table N.3 Potential cumulative impacts of relevant future projects on GDEs

Project	Impacts on groundwater dependent ecosystems
Bayswater Power Station Upgrade	No potential GDE's identified within the study area boundary for Bayswater Power Station Upgrade. Some of the vegetation is considered to be opportunistically groundwater dependent.
Bowmans Creek Wind Farm	No extraction of groundwater or other hydrological processes are proposed as part of the project and therefore the project will not result in any impacts to GDEs, both within the subject land or within the band of vegetation between the subject land and Mount Royal NP.
Central-West Orana REZ Transmission Project	Impacts to groundwater associated with the project include the construction of concrete pilings, energy hubs and switching stations and blasting. These potential impacts on groundwater and subsequent GDEs is considered very low and restricted to direct impact areas. In terms of impacts, concrete pilings may intercept the local water table where the water table is close to surface. During construction concrete would be poured into the excavated pile, and water removed from the pile as it is displaced by the concrete. There is no permanent take of water, and therefore, there is no permanent change to groundwater levels and associated sensitive receivers, during the project construction or operation. Energy hubs and switching station construction are considered unlikely to lead to groundwater level decline at surrounding sensitive receivers because of any hillside excavation. If shallow groundwater is encountered, it is likely to be perched, non-permanent and localised (that is, not connected regionally). Therefore, there would be very limited to no groundwater inflow to the hillslope cuttings and no change in groundwater levels at nearby receivers. Blasting may be required for construction of some transmission line towers and for the establishment of energy hubs and switching stations in areas of shallow hard rock. The associated blasting halo is expected to be minor and not extend more than 10 metres from the origin of the blast(s), and not result in any take of groundwater, it is unlikely to result in an impact to the groundwater environment within the proposed development or adjacent sensitive receivers.

Project	Impacts on groundwater dependent ecosystems
	None of the structures or construction activities would result in any permanent groundwater take that would alter the groundwater flow outside of the direct impact areas. Given this, native vegetation assessment under the Biodiversity Assessment Method (BAM) is considered adequate to address the direct impacts on terrestrial GDE native vegetation and the proposed development is considered unlikely to result in any indirect additional impact on GDEs.
Edderton Solar Project	Impacts on GDEs not yet assessed.
Hunter Valley Operations Construction Projects (HVO North Open Cut Coal Continuation Project and HVO South Open Cut Coal Continuation Project)	Potential decline in health of river red gum stands and *Hunter Floodplain Red Gum Woodland EEC* along the Hunter River and decline in health of other GDEs in the locality. However, a significant impact is not considered likely.
Hunter-Central Coast REZ Transmission Project	Impacts on GDEs not yet assessed.
Intertrade Project	Impacts on GDEs not yet assessed.
Liddell Future Land Use and Enabling Works	No potential GDE's identified within the study area boundary.
Maison Dieu Solar Farm	No significant impacts to groundwater are expected during the construction or operational phases for the Maison Dieu Solar Farm.
Mandalong Road Upgrades	The proposal has negligible potential to directly or indirectly interact with subsurface and/or groundwater flows associated with the GDEs identified within the biodiversity study area.
Muswellbrook Bypass	The proposed modification has the potential to directly and indirectly interfere with subsurface and/or groundwater flows associated with the GDEs. These impacts would mainly occur at the four temporary water crossing locations along Muscle Creek, Sandy Creek, and their tributaries. These impacts align with those assessed in the project REF and no additional mitigation measures are proposed.
Muswellbrook Pumped Hydro Energy Storage Project	Impacts on GDEs not yet assessed, however the Scoping Report considers that changes to hydrogeological conditions arising from reservoir/dam creation and other construction activities could impact groundwater-dependent ecosystems.
Muswellbrook Solar Farm	Minimal subsurface activities are proposed and will not affect any geological features of significance, groundwater dependent plant communities and their supporting aquifers.
New England REZ Transmission Project	Impacts on GDEs not yet assessed.
Restart of Redbank Power Station	No potential GDE's identified within the study area boundary for the Restart of Redbank Power Station.
Rix's Creek North Continuation Project	Impacts on GDEs not yet assessed.

Project	Impacts on groundwater dependent ecosystems
Hunter Transmission Project	
This project	Impacts on groundwater associated with this project include the construction of concrete pilings and switching stations. These potential impacts on groundwater and subsequent GDEs are considered very low and restricted to direct impact areas. In terms of impacts, concrete pilings may intercept the local water table where the water table is close to the surface. During construction concrete would be poured into the excavated pile, and the water removed from the pile as it is displaced by the concrete. There is no permanent take of water, and therefore, there is no permanent change to groundwater levels and associated sensitive receivers, during the project construction or operation. Switching station construction are considered unlikely to lead to groundwater level decline at surrounding sensitive receivers because of any hillside excavation. If shallow groundwater is encountered, it is likely to be perched, non-permanent and localised (that is, not connected regionally). Therefore, there would be very limited to no groundwater inflow to the hillslope cuttings and no change in groundwater levels at nearby receivers. None of the structures or construction activities would result in any permanent groundwater take that would alter the groundwater flow outside of the direct impact areas. Given this, the native vegetation assessment under the NSW Biodiversity Assessment Method 2020 (BAM) as presented in this biodiversity development assessment report is considered adequate to address the direct impacts on terrestrial GDE native vegetation and this project is considered unlikely to result in any indirect additional impact on GDEs.

N2.3 Cumulative impacts on wildlife connectivity and habitat corridors

Table N.4 outlines the potential cumulative impacts to wildlife connectivity and habitat corridors. The results from the review of available information indicate the following:

- Many of the projects occur on land where the connectivity of native vegetation and habitat corridors has been previously compromised by clearing for agricultural land uses.
- The projects are likely to result in short term impacts resulting in species relocating outside of the development footprints. Once construction is completed, species are expected to move back into habitats adjacent to the relevant project. Long term impacts could include permanent breaks in connectivity due to installation of fence lines and access roads across large intact blocks of habitat.
- The projects are likely to reduce the integrity of current corridors and connectivity.

The HTP would contribute to the cumulative impacts to wildlife connectivity and habitat corridors and would potentially have one of the largest impacts to connectivity. This is due to this project bisecting large areas of native vegetation associated with Olney, Watagan, Corrabare and Pokolbin State forests and Corrabare North Flora Reserve. Areas of pre-existing transmission easements within Jilliby State Conservation Area will also be impacted. It should be noted that the project traverses a relatively disturbed landscape that contains cleared paddocks, 3 working coal mines and existing power lines that cut through areas of vegetation. Functional connectivity for bird and bat species remains despite these developments having occurred and it is likely that a similar level of functional habitat connectivity would remain after the project is built.

This HTP would result in a highly permeable structure for biodiversity and connectivity is expected to remain largely unaffected for all species. The impacts to connectivity area expected to be permanent, though minor. They are likely to

reduce over time as biodiversity acclimatises to the presence of the proposed transmission line towers and powerlines. The consequence of the impacts would be minor and non-significant due to the design development process.

Table N.4 Potential impacts of key relevant future projects on wildlife connectivity and habitat corridors

Project	Impacts on wildlife connectivity and habitat corridors
Bayswater Power Station Upgrade	The study area for the Bayswater Power Station Upgrade is not mapped as occurring within any regional corridors. On a local level the development site is situated in the vicinity of infrastructure associated with Bayswater, interspersed with land leased for grazing purposes. Some areas of intact native vegetation occur across the site, particularly in the western portions where it connects to patchy vegetation in the broader landscape. Much of the vegetation within the development site and surrounds is fragmented by roads, infrastructure (e.g. pipelines), and areas cleared for agriculture and mining.
Bowmans Creek Wind Farm	Since the disturbance area of this project lies largely within a disturbed and fragmented agricultural landscape, there is limited scope for the Project to sever movement corridors for fauna species. As the Project is linear in nature and involves relatively narrow clearance corridors, it does not result in large, consolidated areas of clearing. Due to the relatively narrow clearance corridors, the proposed clearance will not isolate or fragment areas of potential habitat for fauna. As the majority of the disturbance area occurs in cleared grasslands or open woodlands with widespread tree cover, fragmentation in terms of habitat use by fauna is likely to be minimal. Therefore, the reduction of this area of habitat is not considered to significantly impact the movement of mobile fauna species
Central-West Orana REZ Transmission Project	The project is likely to have impacts on habitat connectivity where the alignment bisects vegetation associated with Durridgere SCA east of Ulan Road. Fragmentation impacts to Squirrel Glider habitat may occur where the alignment bisects this vegetation. The project is likely to have impacts on habitat connectivity where the alignment bisects vegetation to the north of Tuckland State Forest. Habitat fragmentation impacts may also be associated with any vegetation removal associated with the Spring Ridge Road corridor and nearby riparian corridor. A number of threatened species were recorded and have habitat along these corridors including threatened woodland birds and Squirrel Glider. The project is also likely to have impacts on habitat connectivity where the project runs between vegetation in Goulburn River National Park and Cope State Forest. The alignment also runs between larger patches of woodland in the locality including Goulburn River National Park and Munghorn Gap Nature Reserve. Threatened bat species and threatened woodland birds that occur within this area have potential to be impacted by further habitat fragmentation. It should however be noted that the project traverses a relatively disturbed landscape that contains three working coal mines and existing powerlines that cut through areas of vegetation. Functional connectivity for bird and bat species remains despite these development having occurred and it is likely that a similar level of functional habitat connectivity would remain after the project is built. The project would result in a highly permeable structure for biodiversity and connectivity is expected to remain largely unaffected for all species. The impacts to connectivity area expected to be permanent, though minor. They are likely to reduce over time as biodiversity acclimatises to the presence of the towers and powerlines. The

Project	Impacts on wildlife connectivity and habitat corridors
	consequence of the impacts would be minor and non-significant as a result of the design development process.
Edderton Solar Project	Impacts to habitat connectivity not yet assessed. Project is in the 'prepare EIS' stage so there is limited information available.
Hunter Valley Operations Construction Projects (HVO North Open Cut Coal Continuation Project and HVO South Open Cut Coal Continuation Project)	The removal of native vegetation from within the development footprints associated with the Hunter Valley Operations Construction Project could affect the ability of some local fauna species to move throughout the landscape by removing patches of native vegetation that provide a fragmented 'stepping-stone' corridor in an already highly disturbed landscape. The loss of 'stepping stone' habitat areas for some species could result in an increased level of isolation of populations where species are unable or unwilling to travel across the increased distance between habitat areas. A potential fauna movement corridor occurs in highly fragmented woodland and rehabilitation between the Mitchell Pit and Carrington Pit, as well as the riparian corridor of the Hunter River to the south. A potential larger regional corridor in the locality, connecting Mt Royal/Barrington Tops World Heritage Area with the Wollemi World Heritage Area via Lake Liddell is not likely to be severed as a result of the Project.
Hunter-Central Coast REZ Transmission Project	Impacts to habitat connectivity not yet assessed.
Intertrade Project	Impacts to habitat connectivity not yet assessed. Project is in the 'prepare EIS' stage so there is limited information available.
Liddell Future Land Use and Enabling Works	The vegetation within the Development Site and broader Study Area are moderately connected to areas of native vegetation to the north and south. Connectivity between areas of native vegetation within the Study Area is variable with a number of smaller patches of native vegetation and rehabilitated forest/acacia shrubland isolated from larger patches of native vegetation and habitat. Connectivity is reduced by clearing for historical agricultural development, existing roads (inc. internal access roads, haul roads and the New England Highway), existing infrastructure (i.e. power station, powerlines and easements), and operation land uses (i.e. ash dams and mining).
Maison Dieu Solar Farm	The Maison Dieu Solar Farm would increase the current level fragmentation within the subject land and assessment area by introducing further cleared areas. However, for species that utilise trees, this is the removal of 'stepping stone' type connectivity rather than significantly vegetated connectivity features. No barrier to the movement of ground dwelling fauna would be introduced.
Mandalong Road Upgrades	Native vegetation on the north-east side of the Mandalong Road/Freemans Drive/ Dora Street/Wyee Road roundabout has some broken connectivity south to a large patch of remnant native vegetation association with Pourmalong Creek, Morisset.
Muswellbrook Bypass	The proposed modification would impact wildlife connectivity and habitat fragmentation, similar to the assessment in the original project REF. Mitigation measures such as underpasses, overpasses, and fauna fencing were identified as suitable solutions in the original connectivity assessment. These options provide road mitigation that enables terrestrial wildlife movement across sections of the new highway while adhering to road safety guidelines. The proposed modification would not require any additional mitigation measures.

Project	Impacts on wildlife connectivity and habitat corridors
Muswellbrook Pumped Hydro Energy Storage Project	The site's vegetation would continue to contribute to connectivity between large areas of habitat to the west (Goulburn River National Park and Wollemi National Park) and the east (Barrington Tops National Park) for more mobile fauna able to cross open areas. Locally, the site's ephemeral creek line may provide connectivity as a riparian corridor. The site also occurs within an important area of the Great Eastern Ranges (GER) Corridor.
Muswellbrook Solar Farm	The proposal will result in the loss of scattered patches of native vegetation that occur across the subject land providing habitat for highly mobile species. Large areas of vegetation in the surrounding landscape remains, which will allow continued movement of threatened species across the subject land and adjacent habitat.
New England REZ Transmission Project	Impacts to habitat connectivity not yet assessed. Project is in the 'prepare EIS' stage so there is limited information available.
Restart of Redbank Power Station	The Restart of Redbank Power Station will not remove any native vegetation and therefore, the project will not drive a change in the pre-existing local connectivity or exacerbate fragmentation within the wider region.
Rix's Creek North Continuation Project	Impacts to habitat connectivity not yet assessed. Project is in the 'prepare EIS' stage so there is limited information available.
Hunter Transmission Project	
This project	This project is likely to have impacts on habitat connectivity where the alignment bisects vegetation associated with Olney, Watagan, Corrabare and Pokolbin State forests and Corrabare North Flora Reserve. Areas of pre-existing transmission easements within Jilliby State Conservation Area will also be impacted.

N2.4 Cumulative impacts on protected lands

Protected areas are set aside for conservation and managed by the NSW National Parks and Wildlife Service, and include areas such as national parks, nature reserves, regional parks and State conservation areas. Table N.5 outlines the cumulative impacts to protected and sensitive lands. The results from the review of available information indicate the following:

- Central-West Orana REZ Transmission Project directly impacts the Durridgere SCA.
- Project designs have been altered to avoid impacts on protected lands where possible.

The HTP would directly impact the Corrabare North Flora Reserve and Jilliby State Conservation Area, and would contribute to cumulative impacts to protected lands.

Table N.5 Potential impacts of relevant future projects on protected lands

Project	Impacts on protected lands
Bayswater Power Station Upgrade	No impacts on protected lands.
Bowmans Creek Wind Farm	No impacts on protected lands.
Central-West Orana REZ Transmission Project	The project directly impacts the Durridgere SCA. The Goulburn River National Park, Tuckland State Forest and Cope State Forest are located directly adjacent to the project, but there would be no direct impacts to these areas.
Edderton Solar Project	No impacts on protected lands.
Hunter Valley Operations Construction Projects (HVO North Open Cut Coal Continuation Project and HVO South Open Cut Coal Continuation Project)	No impacts on protected lands.
Hunter-Central Coast REZ Transmission Project	No impacts on protected lands assessed to date.
Intertrade Project	No impacts on protected lands.
Liddell Future Land Use and Enabling Works	No impacts on protected lands.
Maison Dieu Solar Farm	No impacts on protected lands.
Mandalong Road Upgrades	No impacts on protected lands.
Muswellbrook Bypass	No impacts on protected lands.
Muswellbrook Pumped Hydro Energy Storage Project	No impacts on protected lands. National parks near the project area include Scone Mountain National Park, Mount Royal National Park, Barrington Tops National Park, Goulburn River National Park and Wollemi National Park.
Muswellbrook Solar Farm	No impacts on protected lands.
New England REZ Transmission Project	The project has potential to impact protected lands, considering that several national park estates are either within or in close proximity to the study corridor shown in the Scoping Report.
Restart of Redbank Power Station	No impacts on protected lands.
Rix's Creek North Continuation Project	No impacts on protected lands.
Hunter Transmission Project	
This project	This project directly impacts the Corrabare North Flora Reserve and Jilliby State Conservation Area. The Corrabare Nature Reserve and Watagans National Park are located directly adjacent to this project, but there would be no direct impacts to these areas. Other protected lands near this project include Pokolbin State Conservation Area, Werakata State Conservation Area, Wollemi National Park and Warrawolong Flora Reserve, however there would be no direct impacts to these areas.

N2.5 Summary

The assessment of cumulative impacts, the incremental effect of multiple sources of impact (past, present and future), provides an opportunity to consider the HTP within a strategic context. The accumulating impacts of multiple projects, continuing agricultural activities, and development and maintenance of infrastructure would likely result in continued loss of biodiversity.

Taking into account the cumulative vegetation removal impacts of the relevant future projects considered in this cumulative assessment, an estimated 3,876.67 hectares of remnant vegetation would be removed. Two of these projects are in the early planning stages and the likely impacts of these projects are currently unknown, but biodiversity impacts from all these projects can be expected. Table N.6 provides a summary.

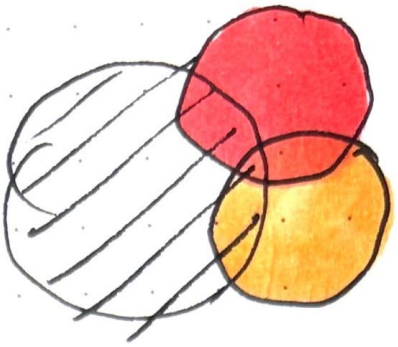
Table N.6 Summary of the cumulative biodiversity impact assessment

Project	Known or estimated native vegetation impacts (ha)	Native vegetation offsets (ecosystem credits)	Threatened species offsets (species credits)
Future relevant development, proposed and approved projects and changes to existing projects	2,931	42,022	64,961
Hunter Transmission Project	945.24	21,119	279,750
Cumulative totals	**3,876.67**	**63,141**	**344,711**

This project would not contribute to the cumulative impacts on GDEs.

This project would contribute to the cumulative impacts to wildlife connectivity and habitat corridors and would potentially have one of the largest impacts to connectivity of the projects considered. This is due to this project bisecting large areas of native vegetation associated with Olney, Watagan, Corrabare and Pokolbin State forests and Corrabare North Flora Reserve. Areas of pre-existing transmission easements within Jilliby State Conservation Area will also be impacted.

This project would contribute to the cumulative impacts to protected lands, as it would directly impact the Corrabare North Flora Reserve and Jilliby State Conservation Area.



Appendix O

Koala thermal drone survey report

Nightvision Ecology
Drone & Fauna Surveying | Consultancy

Our Reference: NVE_053

Nathan Stewart | Ecologist
E: Nathan.Stewart@nightvision-eco.com.au
P: 0487513557

Hunter Transmission Project – Thermal Drone Survey Methodology

1 METHODOLOGY

1.1 SURVEY METHODOLOGY

Surveys were conducted based on s4.5.3 of the 'Koala (*Phascolarctos cinereus*) BAM Survey Guide' (DPE, 2022).

The drone was piloted along a preprogrammed flight path in a lawnmower pattern which consisted of parallel linear transects spaced 50 metres apart, at a constant height of 65 metres, and a maximum speed of 8m/s to provide a 30% overlap in survey field of view (15% each side).

Surveys were initiated as the BAM guidelines suggest and undertaken between 21:00 and 06:00 where daily minimum temperatures were expected to be ≤18°C. This allows for heat to move out of the structure/s (such as trees and rocks) and improves thermal homogeneity of the environment allowing visualization of a higher thermal differential between fauna and the environments. The pilots conducting the surveys have experience conducting thermal drone surveys successfully detecting numerous Koalas and individually judge acceptable environmental thermal homogeneity for each survey.

Where thermal signatures were identified, an attached spotlight was toggled on, and camera mode switched to colour (RGB) zoom to allow for real-time visual identification of the fauna detected from the digital display. Both thermal and zoom video footage are simultaneously recorded and stored for each detection. If necessary to gain a better view of a detection, the drone was lowered to a distance ≥20 metres, from the detected animal and hovered with the light on to observe animal movements not exceeding 2 minutes, for identification.

Survey 123 is used to record survey location, weather conditions from a Kestrel 5000 Environmental Meter, detection identification, and detection timestamp. After surveys, data is compiled by NSW Drone Hub from flight information recorded by the aircraft (video and SRT file), GPS pins from the controller, and Survey123 for results. Location of detections for non-threatened fauna is determined from the drone's GPS position. For positive detection of a threatened species, the laser rangefinder of the M30T drone is used to record a more accurate GPS pin, reported accuracy ≥5m.

1.2 Drone Specifications

The specifications of drone equipment are shown in *Table 1*.

Table 1. Specifications of drones used in thermal survey

Serial Number	Make and Model	Year of Manufacture	Thermal camera
1581F5BKB23C700F016A (ID: NVEM30T001)	Drone DJI Matrice 30T	Dec 7th, 2023	**M30T Thermal Camera Sensitivity:** ≤50 mK@F1.0 **Temperature Measurement Range:** High Gain Mode: -20° to 150° C **Spectral Range:** 12 µm **Resolution:** Infrared Image Super-resolution Mode: 1280×1024 (used) @30 Hz Normal Mode: 640×512 **Focal Length:** 9.1 mm (equivalent: 40 mm)
1581F5BKB23C900F0104 (ID: NVEM30T002)	Drone DJI Matrice 30T	Dec 9th, 2023	**M30T Thermal Camera Sensitivity:** ≤50 mK@F1.0 **Temperature Measurement Range:** High Gain Mode: -20° to 150° C **Spectral Range:** 12 µm **Resolution:** Infrared Image Super-resolution Mode: 1280×1024 (used) @30 Hz Normal Mode: 640×512 **Focal Length:** 9.1 mm (equivalent: 40 mm)
2PNL309ATA (ID: NVE_LP12_001)	Spotlight CZI LP12	April, 2023	**Control:** on/off PSDK switch **Luminous Flux**: 2122±3%lm **Searchlight FOV:** 13° **Spot Diametre:** 34m (distance: 150m), 22.8m (distance: 100m), 29.6m (distance: 130m), 11.4m (distance: 50m) **Central Illuminance:** 25Lux (distance: 50m), 6.3Lux (distance: 100m), 2.5Lux (distance: 130m), 1.7Lux (distance: 150m)
T6SEUF583000CEF0 (ID: NVE_JZ_001)	Spotlight JZ_T60S MATRIX LAMP	March, 2024	**Control:** on/off PSDK switch **Lighting Power:** 60W **Luminous flux:** 4068lm (est.) **Searchlight FOV:** 14° **Spot Diameter:** 113m^2 (distance: 50m), 471m^2 (distance: 100m), 1063m^2 (distance: 150m) **Central Illuminance:** 36Lux (distance: 50m), 8.7Lux (distance: 100m), 3.7Lux (distance: 150m)

1.3 Personnel – RPAS Pilots

All drones were operated by qualified staff (*Table 2*) who hold a valid CASA Remote Pilots License (RePL) class multirotor <25kg, and Aeronautical Radio Operator Certificate (AROC). All pilots have completed additional industry specific training in drone survey under the NSW Wildlife Drone Hub, DCCEEW.

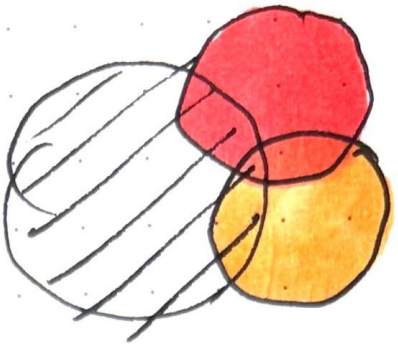
Each faunal identification was made by an ecologist with >5 years' experience in threatened mammal surveys including spotlighting, and camera trapping of the likely target species.

Table 2. Personnel qualifications

Personnel	Qualifications
Stephen Mahony (Pilot / Ecologist)	- Completed training in Koala drone survey under NSW Wildlife Drone Hub, DCCEEW. - Over 300 drone flight hours for Koala and arboreal mammal survey. - Eight years' experience in threatened mammal surveys including spotlighting for Koala, Squirrel Gliders and other arboreal mammals. - Bachelor of Science Major in Biology, University of Newcastle - RePL. ARN: 1196087 Multirotor <25kg, Powered Lift <25kg
Rebecca Seeto (Pilot / Ecologist)	- Completed training in Koala drone survey under NSW Wildlife Drone Hub, DCCEEW. - Over 200 drone flight hours for Koala and arboreal mammal survey. - Five years' experience in threatened mammal surveys including spotlighting for Koala, Squirrel Gliders and other arboreal mammals. - Bachelor of Biotechnology, University of Newcastle - RePL. ARN: 1221096 Multirotor <25kg
Nathan Stewart (Pilot / Ecologist)	- Trained in Koala drone and arboreal mammal survey under Stephen Mahony, Nightvision Ecology. - Six years' experience in threatened mammal surveys including spotlighting for Koala, Squirrel Gliders and other arboreal mammals. - Over 50 drone flight hours for Koala and arboreal mammal survey. - Bachelor of Biotechnology, University of Newcastle - RePL. ARN: 1248149 Multirotor <25kg
Oliver Brynes (Pilot / Ecologist)	- Completed training in Koala drone survey under NSW Wildlife Drone Hub, DCCEEW. - Over 150 drone flight hours for Koala and arboreal mammal survey. - Four years' experience in threatened mammal surveys including spotlighting for Koala, Squirrel Gliders and other arboreal mammals. - Bachelor of Biotechnology, University of Newcastle - RePL. ARN: 1197984 Multirotor <25kg

1 REFERENCES

DPE. (2022). *Koala (Phascolarctos cinereus) Biodiversity Assessment Method Survey Guide* (EHG 2022/0249). Environment and Heritage Group Department of Planning and Environment



Appendix P

Remote assessment

Memo

To:	Department of Climate Change, Energy, the Environment and Water
From:	Alex Cockerill
Subject:	**Application for Remote Assessment of biodiversity values – Hunter Transmission Project**
Our ref:	PS201156-Appendix P_Remote assessment
Date:	**13 February 2026**

This memo has been prepared by WSP Australia Pty Ltd on behalf of Energy Corporation of NSW (Energy Co) for the proposed Hunter Transmission Project (HTP) (the project).

WSP Australia Pty Ltd are currently undertaking a Biodiversity Development Assessment Report (BDAR) that accompanies an Environmental Impact Statement for the project. Due to the projects strategic importance, it has been declared as Critical State Significance Infrastructure (CSSI) under Section 5.13 of the EP&A Act.

The projects transmission corridor of around 100 kilometres, passes through areas of State Forest, Crown Land, active mine leases and private land holdings. Due to some limited access restrictions, EnergyCo have requested approval for the use of the recently released *Remote assessment of biodiversity values: Biodiversity Assessment Method guide* (DCCEEW, 2025) (the guide).

The guide is restricted to CSSI projects application of BAM in situations where access is not possible to land on which impacts are likely to occur. The guide allows for the remote assessment of biodiversity values using a combination of existing data, tools, information and surrogate sites, where appropriate.

EnergyCo's request on 8 May 2025 for application of the guide across limited private land holdings for a select number of threatened flora species was approved by CPHR on 14 May 2025 (refer to Attachment A).

This memo includes an assessment of environmental characteristics of the restricted areas through available relevant desktop resources and provides a comparison of these areas with surrogate areas of survey. The information considered includes:

- similarity in PCTs in the same broad condition state as well as patch size and connectivity to native vegetation for fauna species (see data below)
- similarity in land use history, soils, geology, landscape position, elevation, slope, rainfall etc (see data below)
- records of the species within the local area

The list of candidate species to be considered through surrogate survey information and why this approach is, with justification provided on ecology and life history traits is also provided in accordance with section 3.2.3 of the guide.

A summary of the proposed surrogate survey information used to inform assumptions with regard to species in the assessment area, including:

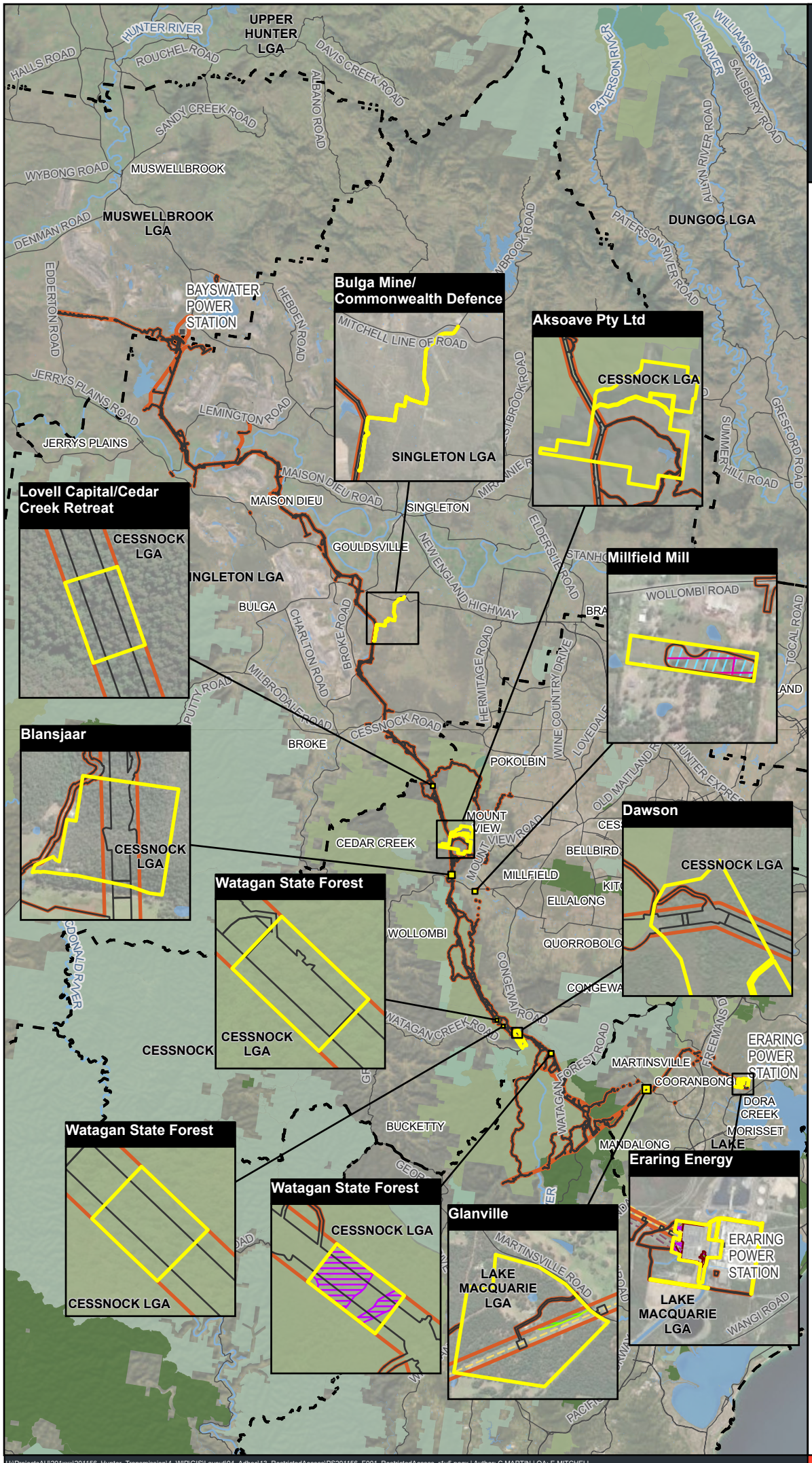
- where surrogate site/s are proposed to determine presence
- proximity to inaccessible area
- survey approach used in the surrogate site to determine the species presence in accordance with section 5.3 of the BAM
- limitations in relation to the application of the surrogate data to estimate presence of the species in the inaccessible areas
- all spatial data should be prepared with reference to Appendix D of the BAM Stage 2 Ops Manual.

Further amendments were made to this memo on 30 January 2026 to the Amendment design and additional survey undertaken throughout the subject land. This included removing areas allocated to the application of the guide, due to recently acquired access and targeted survey within these areas.

1.1 Sites proposed for application of the guide

The application of the guide was restricted to eight private landholdings and minor areas of the State Forest and Commonwealth Singleton Training Area that have restricted access for targeted surveys within the subject land (refer to Figure 1). These sites include:

- **Eraring Energy**: no flora surveys have been undertaken within this property due to access limitations during survey periods.
- **Site A (11/808560)**: no flora surveys have been undertaken within this property due to access limitations during survey periods.
- **Watagan State Forest**: Survey has been unable to be conducted within small areas due to steep topographic constraints, cliffs etc or heavy overgrowth of Native Raspberry (*Rubus rosifolius*) and other native vine species following disturbance, which have made the site impenetrable for survey.
- **Site B (283/700414 & 284/700414)**: no flora surveys have been undertaken within this property due to access limitations during survey periods.
- **Site C (21/1115900)**: no flora survey has been undertaken within this property due to access restrictions over the course of the entire project.
- **Site D (1205/1033443 & 1832/1042551)**: no flora survey has been undertaken within this property due to access restrictions over the course of the entire project.
- **Site E (129/755241 & 143/755241)**: no flora surveys have been undertaken within this section between these properties due to steep topographic constraints which made the site impenetrable for survey.
- **Millfield Mill** (near the junction of Wollombi Rd and Hayes Rd): no flora survey has been undertaken within this property due to access restrictions over the course of the entire project.
- **Singleton Training Area Boundary Road**: no flora surveys have been undertaken within this area due to training being undertaken when surveys were undertaken.



wsp

Hunter Transmission Project

Figure 1
Restricted access

Legend

- Biodiversity study area
- Subject land

Existing environment

- Road
- Power station
- River
- Waterbody
- NPWS reserve
- State conservation area
- Flora reserve
- State forest
- Local government area
- Restricted access area

Coordinate system: GDA2020 MGA Zone 56
Scale ratio correct when printed at A4

GDA 2020 1:500,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Vantor
World Imagery: Earthstar Geographics

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1.1.1 Characteristics of the restricted access areas and surrogate survey areas proposed for application of the guide

Table 1 Location and size of restricted access areas

Restricted access area	IBRA subregion	Subject land within restricted access area (ha)	Proportion of restricted access area within total project subject land (%)
Eraring Power Station	Wyong	25.90	1.91
Site A	Wyong	0.59	0.04
Watagan SF	Wyong	4.61	0.34
Site B	Wyong	4.08	0.30
Site C	Yengo	3.42	0.25
Site D	Yengo	7.48	0.55
	Hunter	2.81	0.21
Site E	Yengo	1.50	0.11
Millfield Mill	Hunter	1.58	0.12
Singleton Training Area Boundary Road	Hunter	3.49	0.26
Total		**55.46**	**4.09**

1.1.2 Mitchell landscape

A summary of the NSW (Mitchell) landscapes within the subject land and assessment area for each IBRA subregion is provided in Table 2 and Figure 2.

Table 2 Mitchell landscape summary

Restricted access area	IBRA subregion	Mitchell landscape name	Subject land within restricted access area (ha)	Area within proposed surrogate survey (ha)
Eraring Power Station	Wyong	Gosford – Cooranbong Coastal Slopes	25.90	54.41
Site A	Wyong	Gosford – Cooranbong Coastal Slopes	0.44	54.41
		Sydney – Newcastle Coastal Alluvial Plains	0.15	2.31
Watagan SF	Wyong	Watagan Ranges	4.61	214.41
Site B	Wyong	Watagan Ranges	4.08	214.41
Site C	Yengo	Central Hunter Alluvial Plains	0.90	15.05
		Watagan Ranges	2.51	303.01
Site D	Yengo	Watagan Ranges	7.48	303.01
	Hunter	Watagan Ranges	2.81	21.59
Site E	Yengo	Watagan Ranges	1.50	303.01

Restricted access area	IBRA subregion	Mitchell landscape name	Subject land within restricted access area (ha)	Area within proposed surrogate survey (ha)
Millfield Mill	Hunter	Central Hunter Foothills	1.58	568.74
Singleton Training Area Boundary Road	Hunter	Central Hunter Foothills	3.49	568.74

1.1.3 Geology and elevation

The specific geology of the subject land is mapped by the Colquhoun et. al. (2025) as comprising the geological units presented in Table 3 and Figure 3. Elevation ranges of the restricted access areas are also provided in Table 4.

Table 3 Geology within subject land within restricted access properties

Property name	IBRA subregion	Stratigraphic unit	Parent unit	Subject land within restricted access area (ha)	Area within proposed surrogate survey (ha)
Eraring Power Station	Wyong	Anthropogenic deposits	Anthropogenic deposits	2.66	178.18
		Munmorah Conglomerate	Narrabeen Group	23.24	38.14
Site A	Wyong	Alluvial valley deposits	Alluvium	0.04	0.41
		Munmorah Conglomerate	Narrabeen Group	0.55	38.14
Watagan SF	Wyong	Hawkesbury Sandstone	Ungrouped Triassic units	2.00	175.25
		Terrigal Formation	Gosford Subgroup	2.61	120.43
Site B	Wyong	Hawkesbury Sandstone	Ungrouped Triassic units	3.59	175.25
		Terrigal Formation	Gosford Subgroup	0.49	120.43
Site C	Yengo	Alluvium	Quaternary	0.01	10.22
		Grose Subgroup	Narrabeen Group	3.19	225.92
		Newcastle Coal Measures	Singleton Supergroup	0.22	22.50

Property name	IBRA subregion	Stratigraphic unit	Parent unit	Subject land within restricted access area (ha)	Area within proposed surrogate survey (ha)
Site D	Yengo	Grose Subgroup	Narrabeen Group	7.18	225.92
		Newcastle Coal Measures	Singleton Supergroup	0.30	22.50
	Hunter	Grose Subgroup	Narrabeen Group	0.43	4.96
		Newcastle Coal Measures	Singleton Supergroup	2.38	62.96
Site E	Yengo	Grose Subgroup	Narrabeen Group	1.50	225.92
Millfield Mill	Hunter	Branxton Formation	Maitland Group	1.58	86.32
Singleton Training Area Boundary Road	Hunter	Mulbring Siltstone	Maitland Group	3.49	140.26

Table 4 Elevation ranges within subject land within restricted access properties

Property name	Minimum elevation (m)	Maximum elevation (m)	Surrogate survey area within elevation range (ha)
Eraring Power Station	6	32	Yes
Site A	16	30	Yes
Watagan SF	310	410	Yes
Site B	160	450	Yes
Site C	150	210	Yes
Site D	170	370	Yes
Site E	350	440	Yes
Millfield Mill	110	120	Yes
Singleton Training Area Boundary Road	80	100	Yes

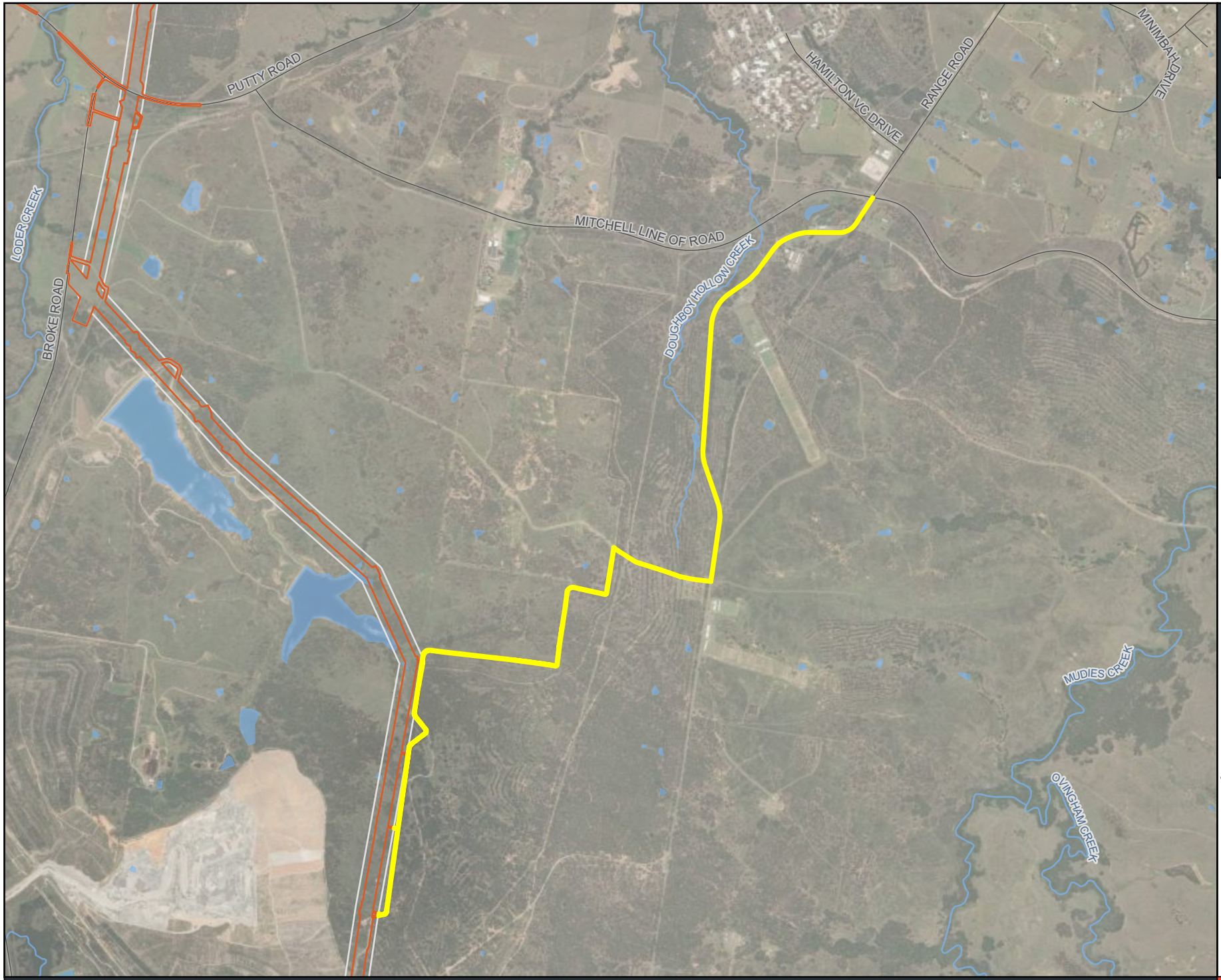
1.1.4 Existing threatened flora species BioNet records

A review of existing threatened flora species BioNet records within one kilometre of each proposed remote area assessment site was undertaken with the results presented in Table 5 and Figure 4.

Table 5 Existing threatened flora species BioNet records within one kilometre of each proposed remote area assessment site

Property name	Scientific name	Common name	BC Act	SAII	Comments
Eraring Power Station	*Acacia bynoeana*	Bynoe's Wattle	V	No	Five records occur within one km of the site. All records are greater than 15 years old and range from 1966 to 2007. There are no recent (less than five-year-old) records.
	Grevillea parviflora subsp. parviflora	Small-flower Grevillea	V	No	Two records within one km of the site. The species has been recorded from surrogate surveys within the project subject land and as such the species is assumed within the remote area assessment.
	Tetratheca juncea	Black-eyed Susan	V	No	Nine records within one km of the site. The species has been recorded from surrogate surveys within the project subject land and as such the species is assumed within the remote area assessment.
Site A	*Melaleuca biconvexa*	Biconvex Paperbark	V	No	One record occurs within one km of the site. The record is about 23 years old (28/12/2002). There are no recent (less than five-year-old) records. This species was not recorded from within the surrogate survey areas.
Watagan SF	*Rhodamnia rubescens*	Scrub Turpentine	CE	Yes	Numerous records within one km of the site. The species has been recorded from surrogate surveys within the project subject land and as such the species is assumed within the remote area assessment.
	Rhodomyrtus psidioides	Native Guava	CE	Yes	One record occurs within one km of the site. The species has been recorded from surrogate surveys within the project subject land and as such the species is assumed within the remote area assessment.
Site B	*Rhodamnia rubescens*	Scrub Turpentine	CE	Yes	Numerous records within one km of the site. The species has been recorded from surrogate surveys within the project subject land and as such the species is assumed within the remote area assessment.
Site C	–	–	–	–	No records of threatened species
Site D	*Rhodamnia rubescens*	Scrub Turpentine	CE	Yes	One record occurs within one km of the site. The species has been recorded from surrogate surveys within the project subject land and as such the species is assumed within the remote area assessment.

Property name	Scientific name	Common name	BC Act	SAII	Comments
Site E	*Leionema lamprophyllum subsp. fractum*	–	CE	Yes	Five records occur within one km of the site. All records occur as a single point record to protect the point location of the species. The five records date 1993, 2002, 2014, 2019 and 2024. The species was described by Bell and Walsh in 2015 with all Broken Back Range specimens occurring on steep northerly to north-westerly facing broken spur-end of a rugged, rocky cliffline within Pokolbin State Forest (Bell and Walsh 2015). The remote area assessment site within this property occurs on a south-west facing slope that is not consistent with known microhabitat requirements. Surrogate surveys within associated PCT 3605 within the subject land covered 99.73% of potential habitat and the species was not recorded. Species has therefore been excluded from the site.
	Prostanthera cineolifera	Singleton Mint Bush	V	No	Numerous records within one km of the site. The species has been recorded from surrogate surveys within the project subject land and as such the species is assumed within the remote area assessment.
	Rhodamnia rubescens	Scrub Turpentine	CE	Yes	Numerous records within one km of the site. The species has been recorded from surrogate surveys within the project subject land and as such the species is assumed within the remote area assessment.
Millfield Mill	–	–	–	–	–
Singleton Training Area Boundary Road	*Eucalyptus glaucina*	Slaty Red Gum	V	No	A single record of this species occurs within 1 km of the site.



Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Bulga Mine/Commonwealth Defence
(No access)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access

Existing environment

- Road
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Mitchell landscapes

- Central Hunter Foothills

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:30,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Vantor

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Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Lovell Capital/Cedar Creek Retreat
(No access)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area
- Local government area
- Assumed flora extent

Mitchell landscapes

- Watagan Ranges

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

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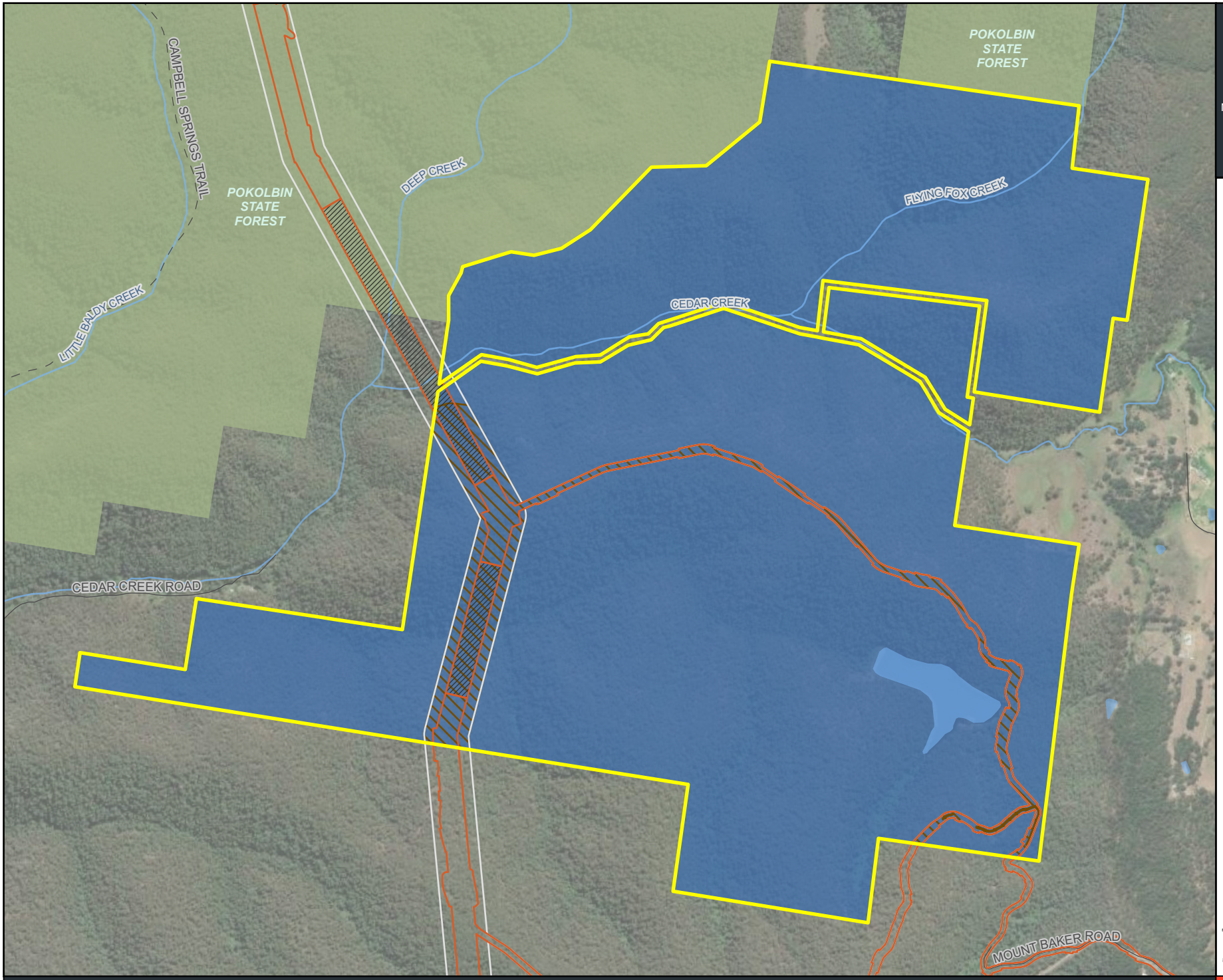

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Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Aksoave Pty Limited (No access)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area

Existing environment

- Road
- Track
- Named watercourse
- Waterbody
- State forest
- Local government area
- Assumed flora extent

Mitchell landscapes

- Watagan Ranges

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:16,000 Date: 29/01/2026

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Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Blansjaar
(No access)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Mitchell landscapes

- Central Hunter Alluvial Plains
- Watagan Ranges

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Millfield Mill
(No access)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access

Existing environment

- Road
- Waterbody
- Local government area
- Assumed flora extent

Mitchell landscapes

- Central Hunter Foothills

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Watagan State Forest (Topographic or other safety constraints)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area

Existing environment

- Track
- State forest
- Local government area
- Assumed flora extent

Mitchell landscapes

- Watagan Ranges

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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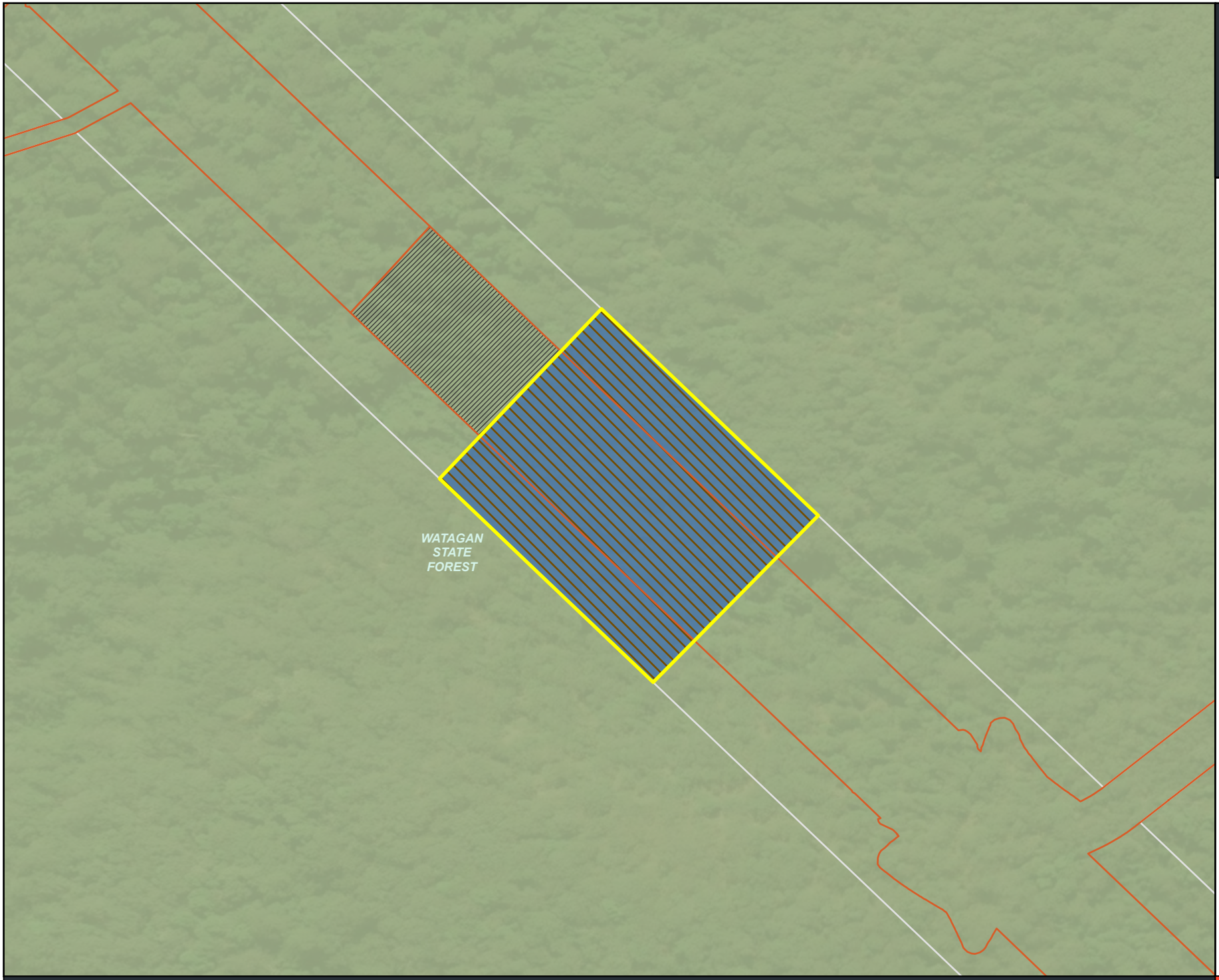

Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Watagan State Forest (Topographic or other safety constraints)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area
- State forest
- Local government area
- Assumed flora extent

Mitchell landscapes

- Watagan Ranges

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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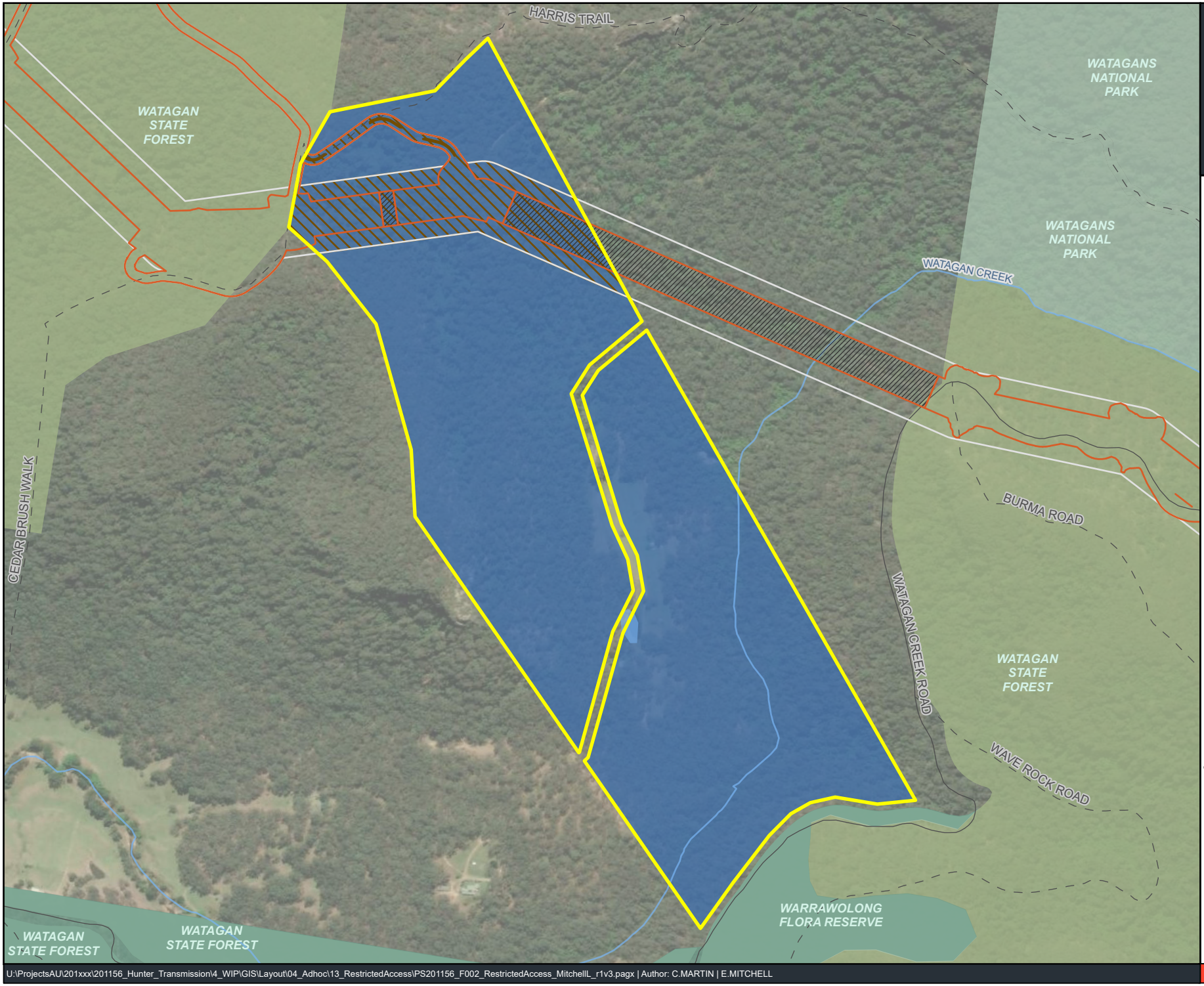

Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Dawson
(No access)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area

Existing environment

- Road
- Track
- Named watercourse
- Waterbody
- NPWS reserve
- Flora reserve
- State forest
- Local government area
- Assumed flora extent

Mitchell landscapes

- Watagan Ranges

0 0.2 0.4
Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:10,000 Date: 29/01/2026

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Figure 2
Mitchell landscapes within restricted access properties - Watagan State Forest (Topographic or other safety constraints)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area

Existing environment

- Track
- Named watercourse
- NPWS reserve
- State forest
- Local government area
- Assumed flora extent

Mitchell landscapes

- Watagan Ranges

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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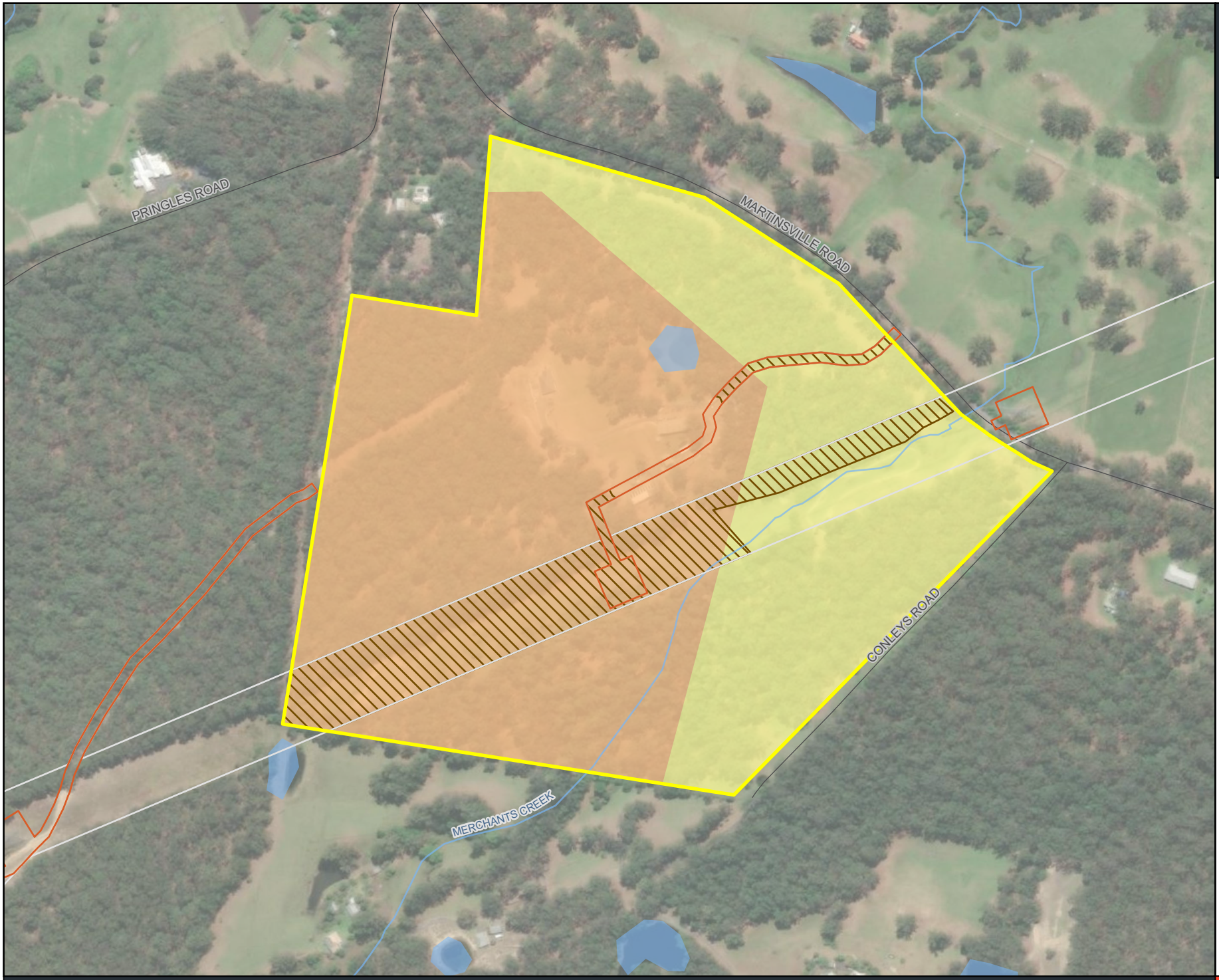

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Hunter Transmission Project

Figure 2
Mitchell landscapes within restricted access properties - Glanville
(No access)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access

Existing environment

- Road
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Mitchell landscapes

- Gosford - Cooranbong Coastal Slopes
- Sydney - Newcastle Coastal Alluvial Plains

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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Figure 2
Mitchell landscapes within restricted access properties - Eraring Energy
(No access)

Legend

- Biodiversity study area
- Subject land
- Property with restricted access

Existing environment

- Road
- Track
- Power station
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Mitchell landscapes

- Gosford - Cooranbong Coastal Slopes

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

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GDA 2020 1:7,500 Date: 29/01/2026

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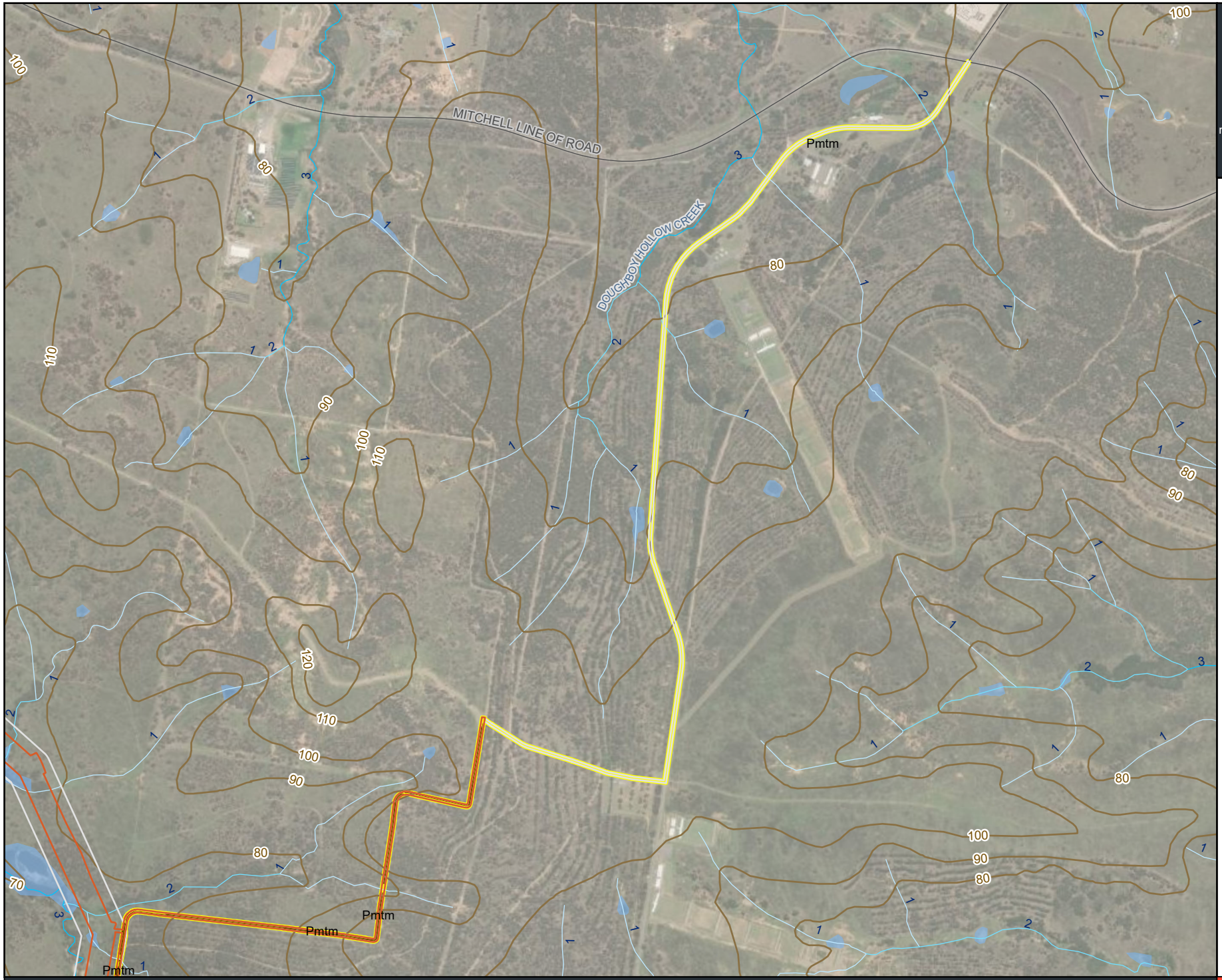

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Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Bulga Mine/ Commonwealth Defence
(No access No access No access No access)

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line

Existing environment

- Road
- Waterbody
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3

Geology - rock units

- Pmtm - Mulbring Siltstone

0 0.3 0.6
Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:16,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Lovell Capital/Cedar Creek Retreat (Topographic or other safety constraints)
Page 2 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3

Geology - rock units

- Tnr - Grose Subgroup

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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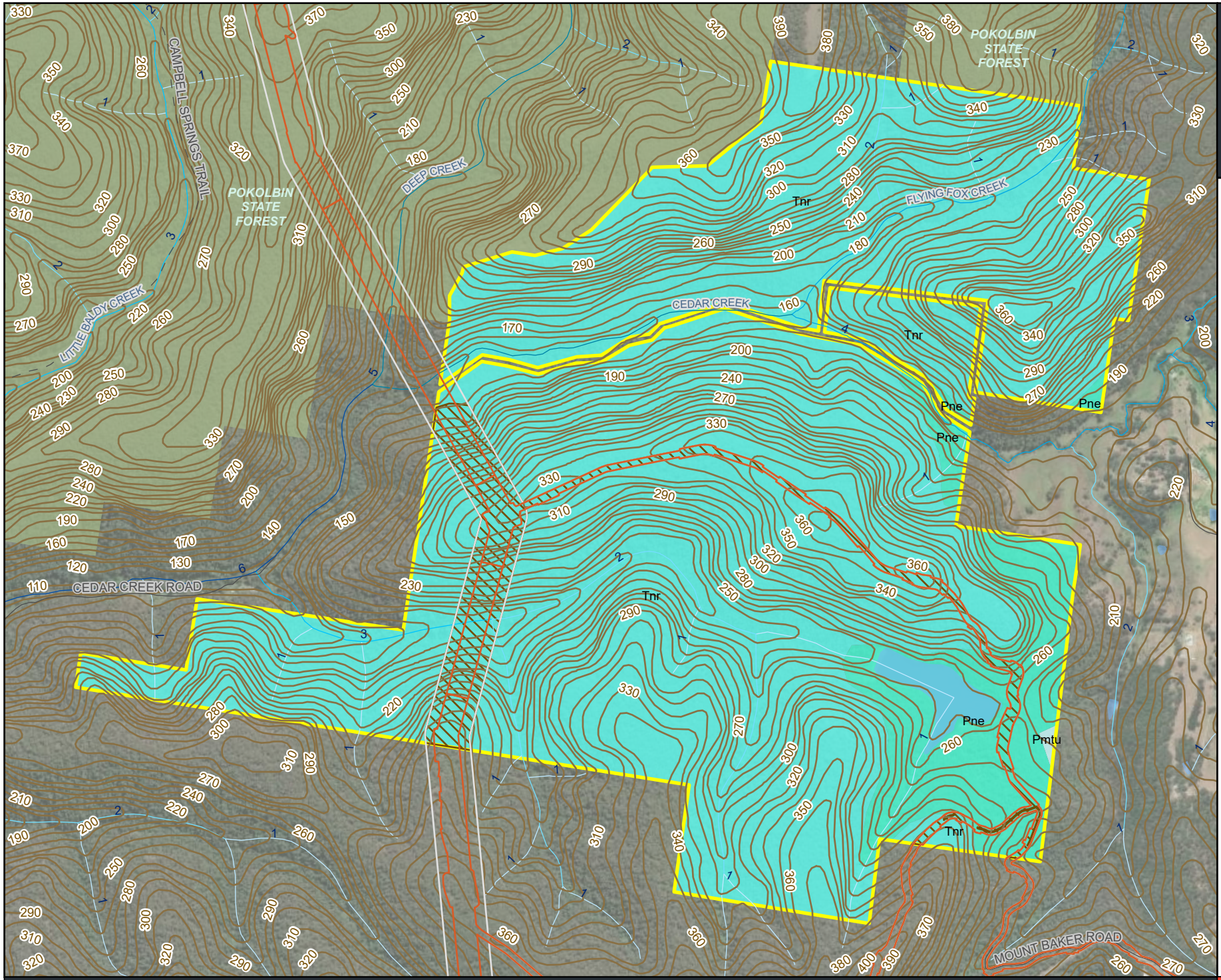

Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Aksoave Pty Limited
(No access)

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line

Existing environment

- Road
- Track
- Waterbody
- State forest
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3
- 4
- 5
- 6

Geology - rock units

- Pmtu - Muree Sandstone
- Pne - Newcastle Coal Measures
- Tnr - Grose Subgroup

0 0.3 0.6
Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:16,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Vantor

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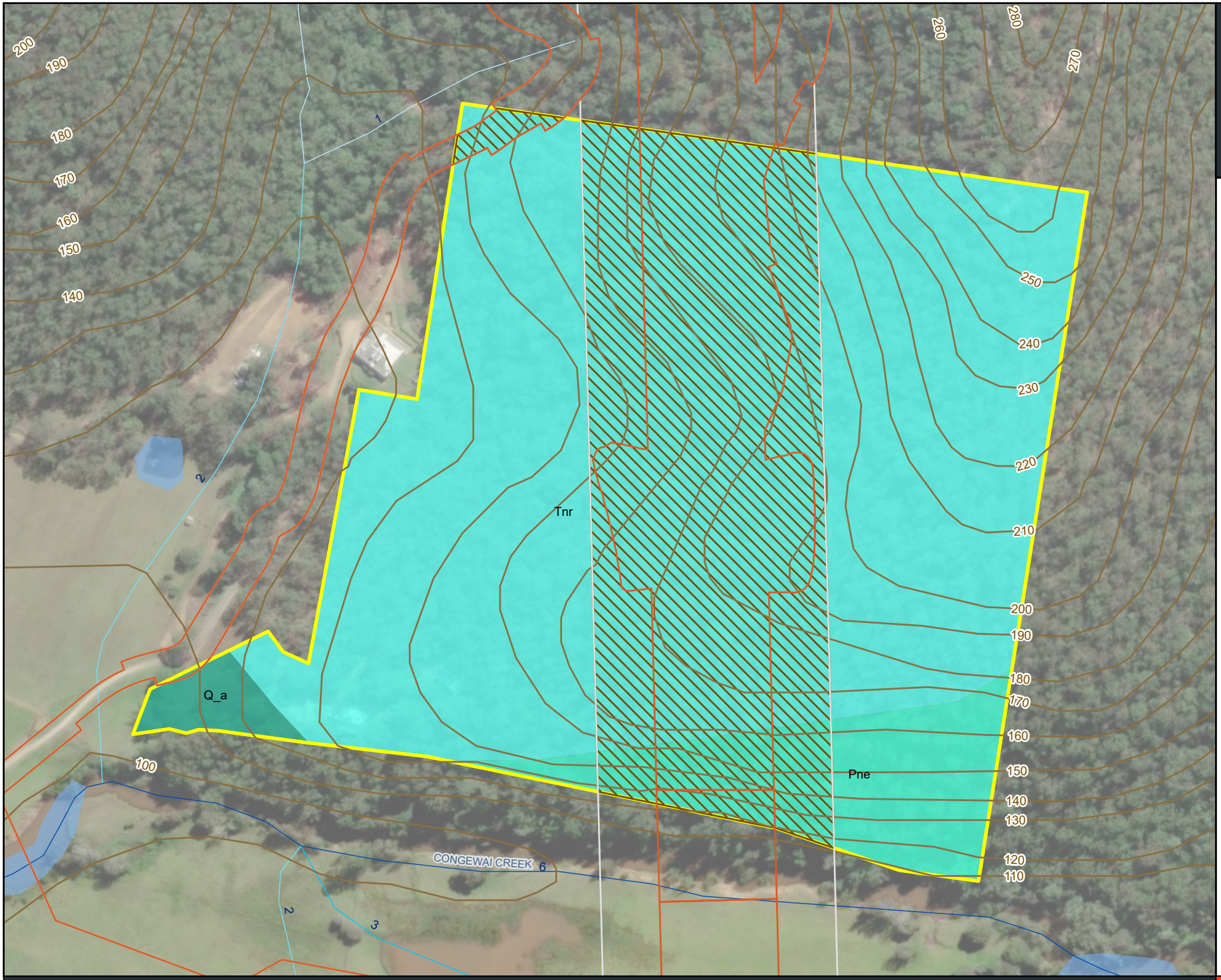

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Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Blansjaar (No access)
Page 4 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line
- Waterbody
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3
- 6

Geology - rock units

- Pne - Newcastle Coal Measures
- Q_a - Alluvium
- Tnr - Grose Subgroup

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Source: Esri, Vantor, Earthstar

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Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Millfield Mill (No access)
Page 5 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line

Existing environment

- Road
- Waterbody
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1

Geology - rock units

- Pmtb - Branxton Formation
- Pmtbf - Fenestella Shale Member

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Source: Esri, Vantor, Earthstar

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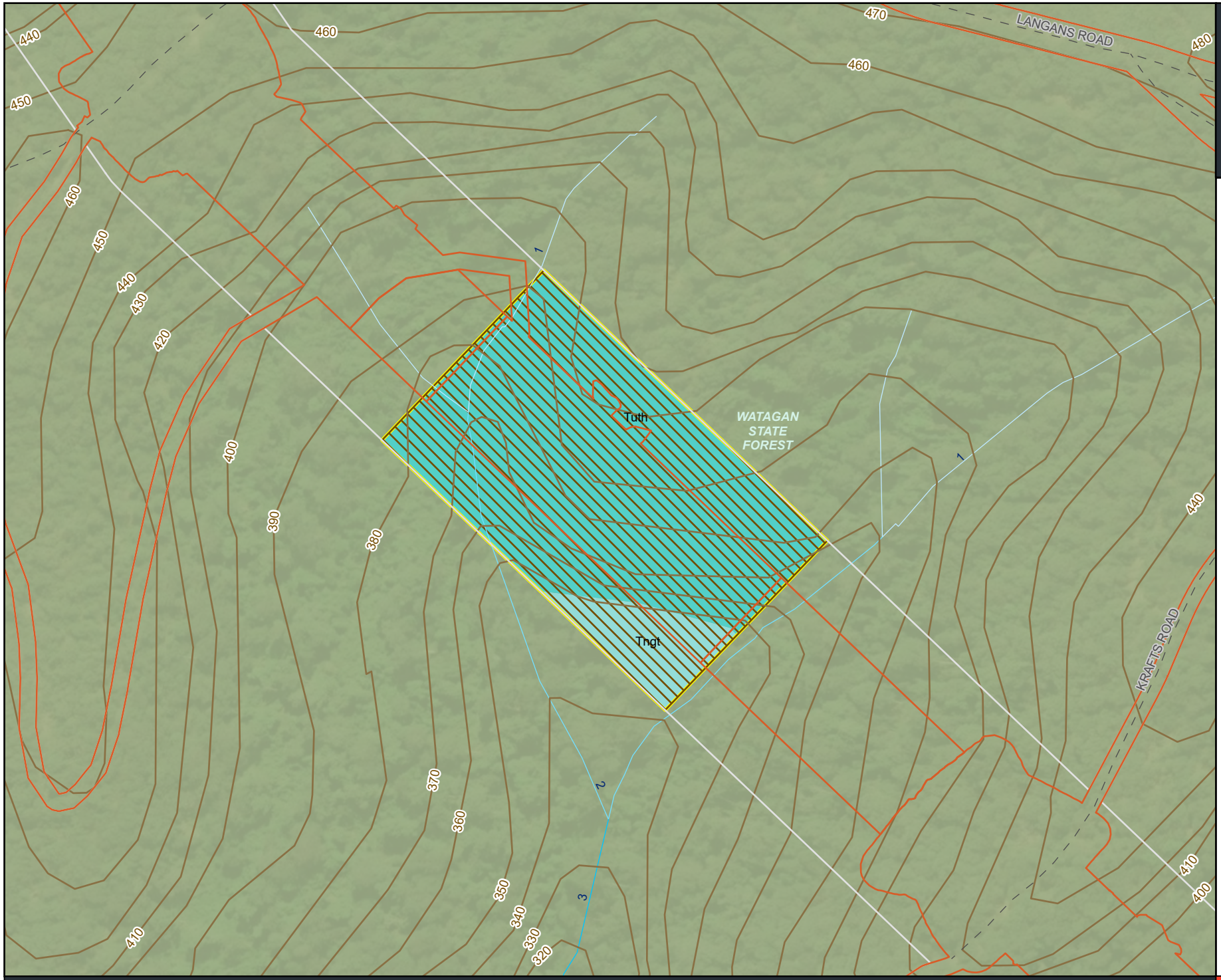

Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Watagan State Forest
(Topographic or other safety constraints)
Page 6 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line

Existing environment

- Track
- State forest
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3

Geology - rock units

- Tngt - Terrigal Formation
- Tuth - Hawkesbury Sandstone

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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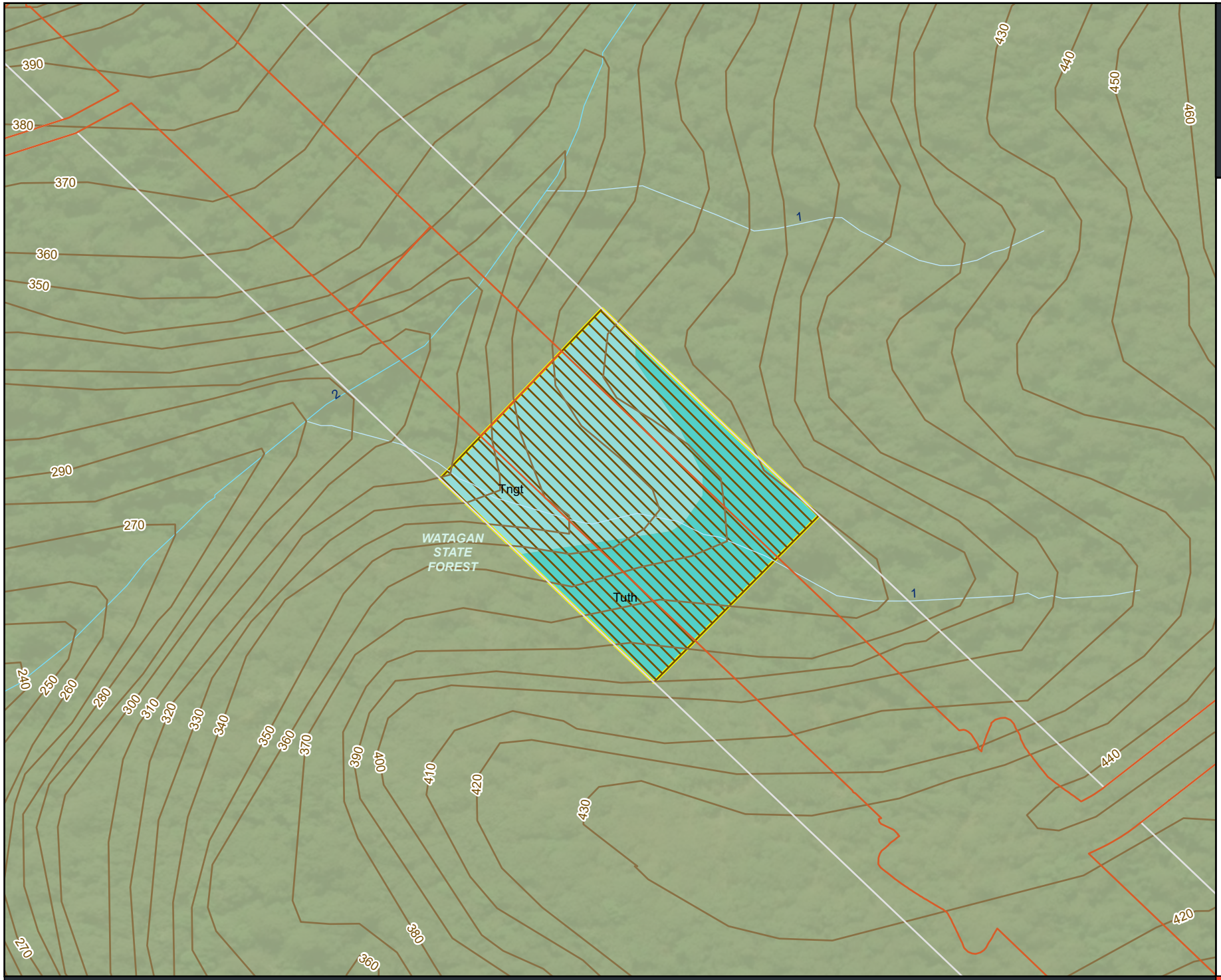

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Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Watagan State Forest
(Topographic or other safety constraints)
Page 7 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line
- State forest
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2

Geology - rock units

- Tngt - Terrigal Formation
- Tuth - Hawkesbury Sandstone

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Vantor

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Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Dawson (No access)
Page 8 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line

Existing environment

- Road
- Track
- Waterbody
- NPWS reserve
- Flora reserve
- State forest
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3
- 4

Geology - rock units

- Tngt - Terrigal Formation
- Tuth - Hawkesbury Sandstone

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:10,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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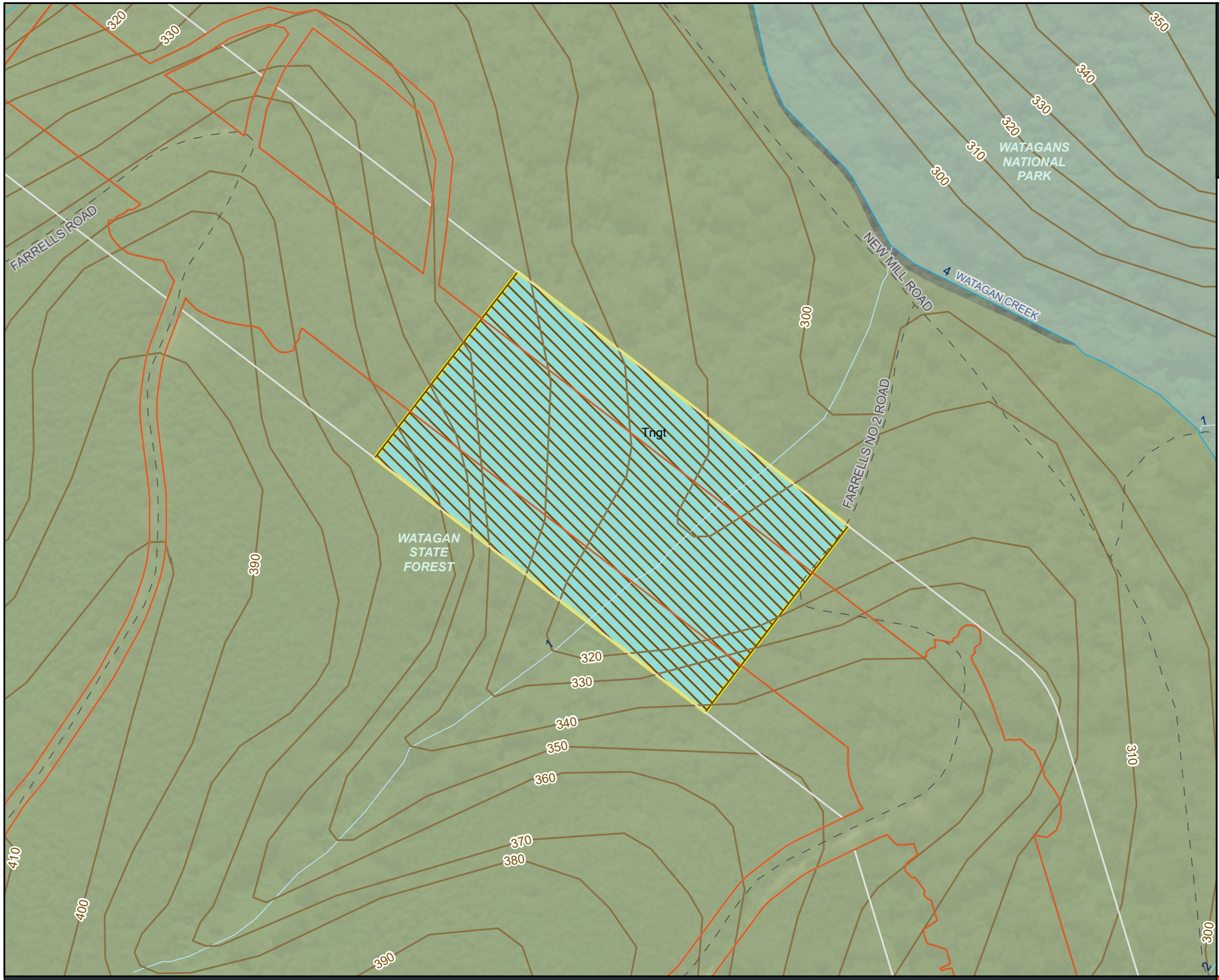

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Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Watagan State Forest
(Topographic or other safety constraints)
Page 9 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line

Existing environment

- Track
- NPWS reserve
- State forest
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3
- 4

Geology - rock units

- Tngt - Terrigal Formation

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Glanville
()
Page 10 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line

Existing environment

- Road
- 500 kV transmission line
- Waterbody
- Local government area
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3
- 4

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:5,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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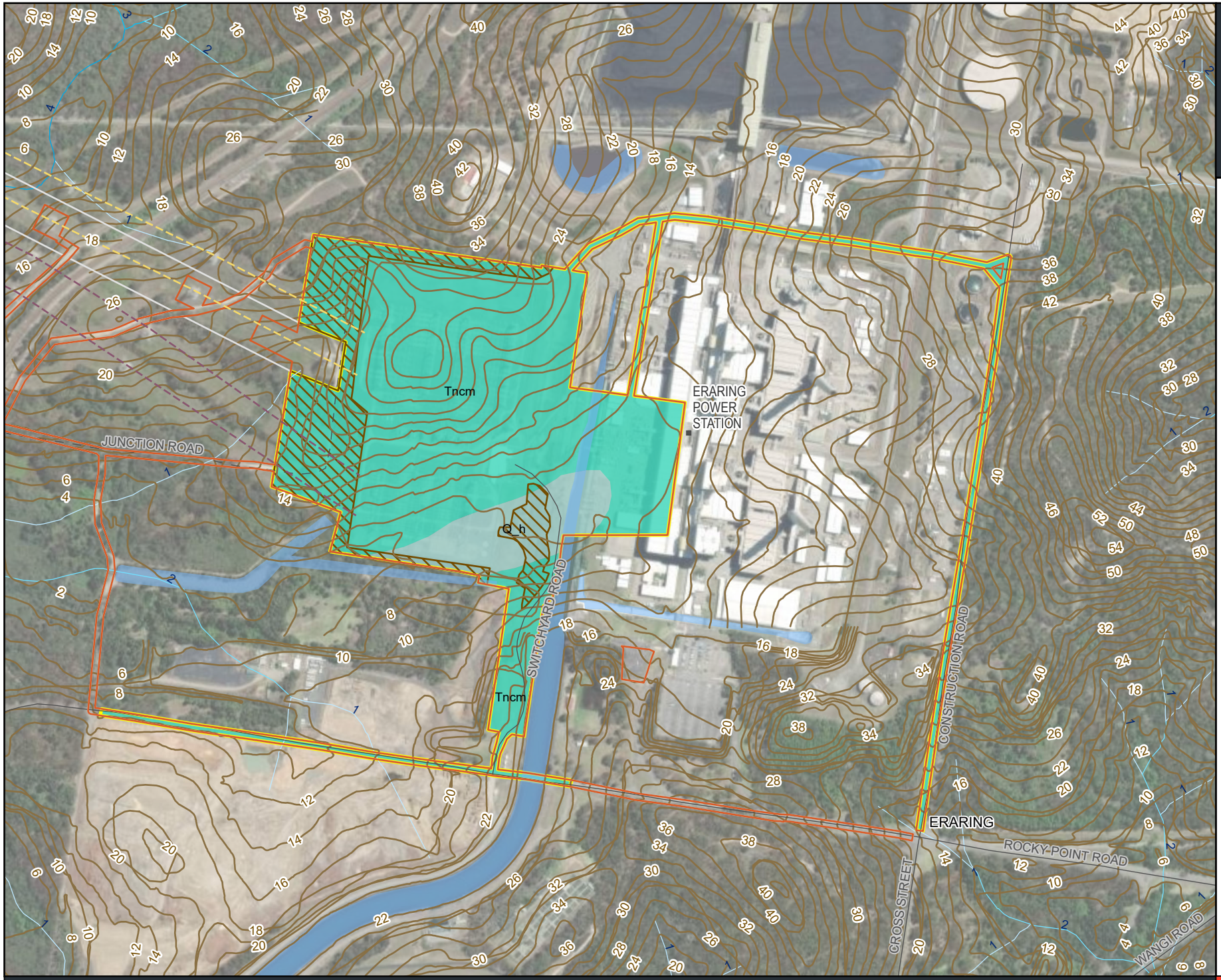

Hunter Transmission Project

Figure 3
Geology and context features within restricted access properties - Eraring Energy
(No access)
Page 11 of 11

Legend

- Biodiversity study area
- Subject land
- Transmission towers
- Proposed transmission line

Existing environment

- Road
- Track
- Power station
- 330 kV transmission line
- 500 kV transmission line
- Waterbody
- Local government area
- Property with restricted access
- Assumed flora extent
- 10m contour

Watercourse (Strahler stream order)

- 1
- 2
- 3
- 4

Geology - rock units

- Q_h - Anthropogenic deposits
- Tncm - Munmorah Conglomerate

0 50 100 Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:7,500 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Vantor

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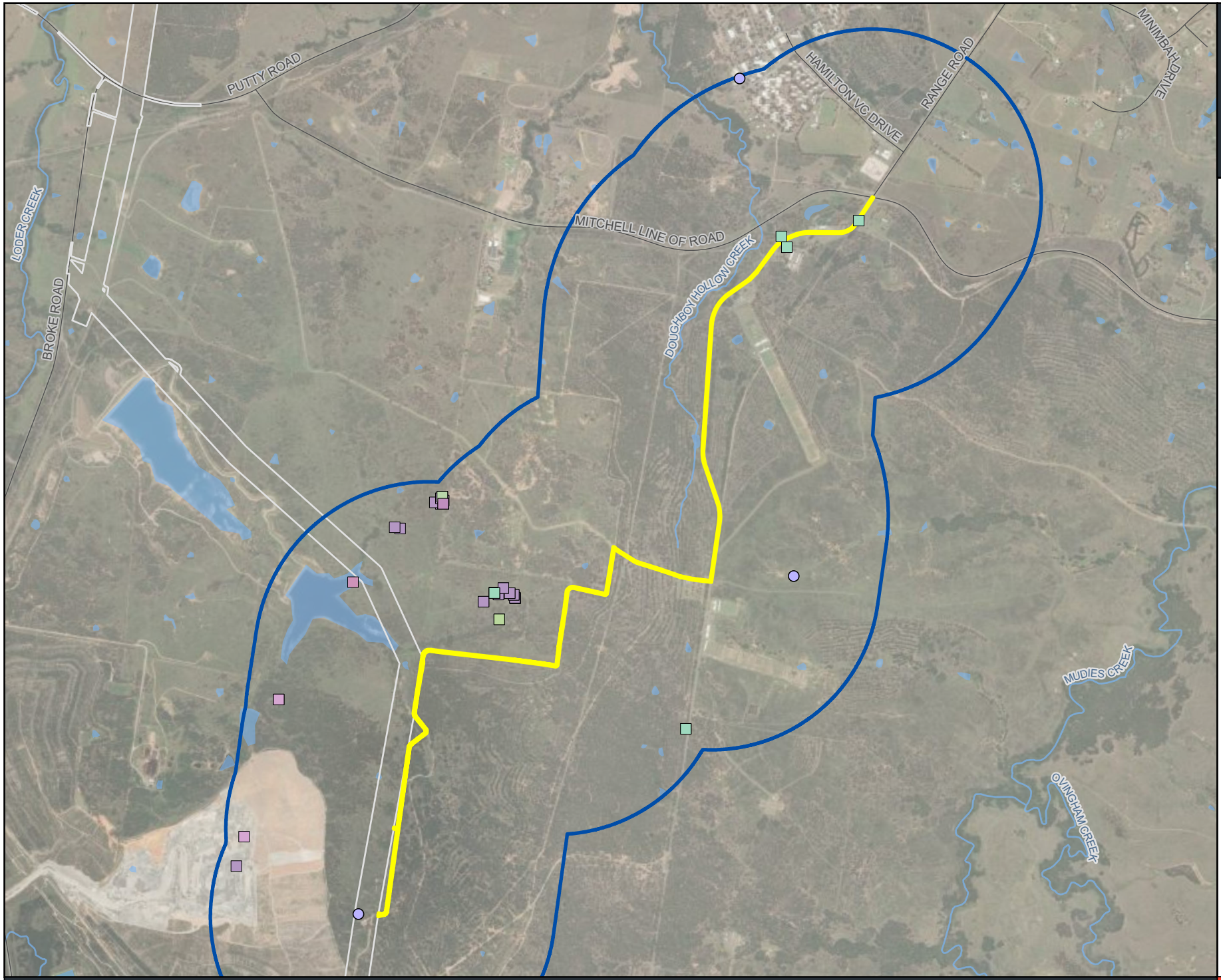

Hunter Transmission Project

Figure 4
BioNet records within a 1km buffer of the restricted access properties - Bulga Mine/ Commonwealth Defence
(No access)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer

Existing environment

- Road
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Fauna records (BioNet)

- Grey-crowned Babbler (eastern subspecies)
- Grey-headed Flying-fox
- Latham's Snipe
- Speckled Warbler
- Squirrel Glider
- Swift Parrot
- White-throated Needletail

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:30,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Earthstar Geographics

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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Lovell Capital/ Cedar Creek Retreat
(No access)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer
- Non-disturbance area
- Local government area
- Assumed flora extent

Fauna records (BioNet)

- Gang-gang Cockatoo
- South-eastern Glossy Black-Cockatoo

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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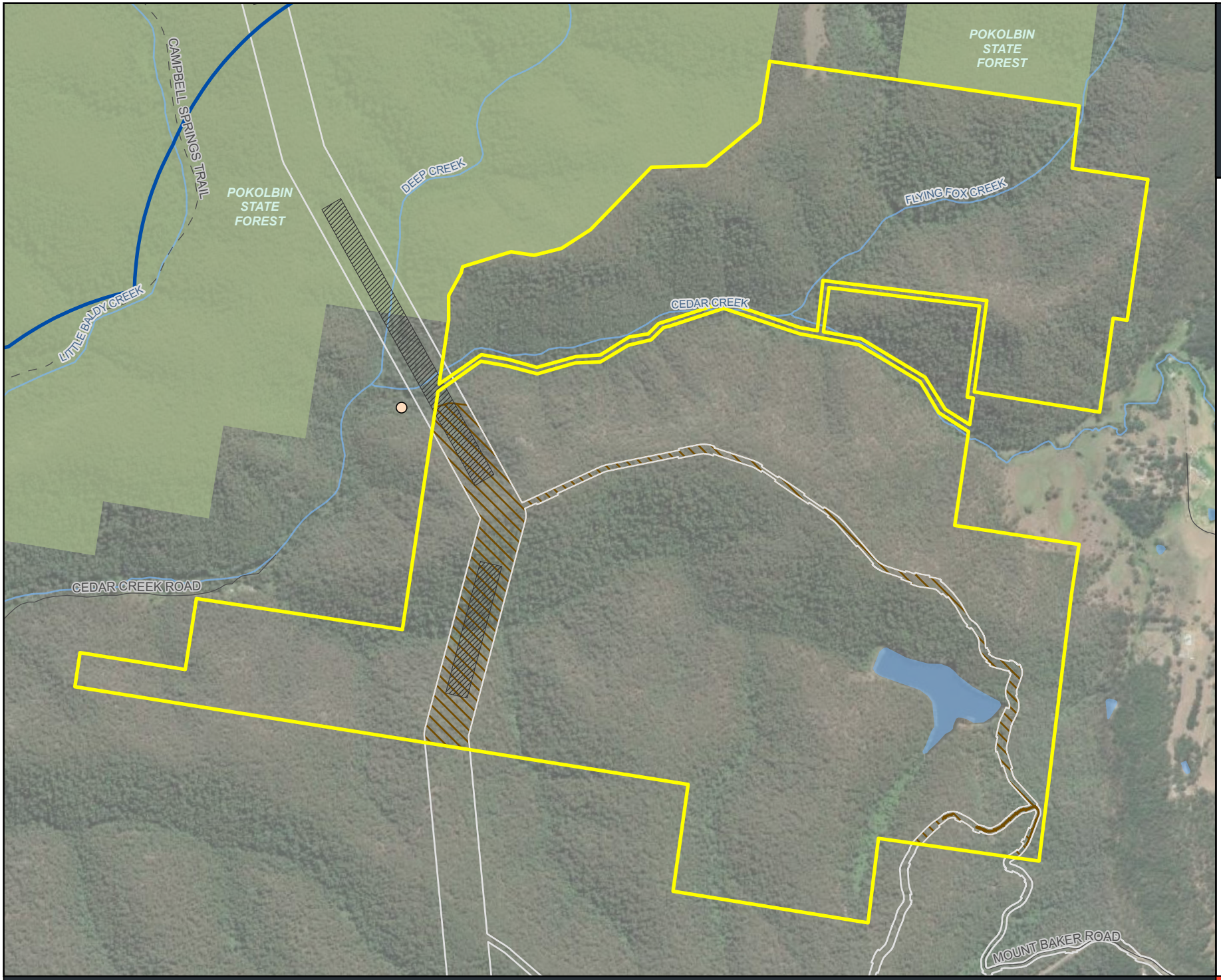

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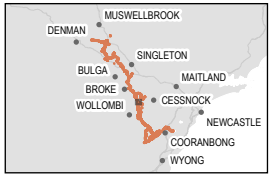
Figure 4
BioNet records within a 1km buffer of the restricted access properties - Aksoave Pty Limited
(No access)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer
- Non-disturbance area

Existing environment

- Road
- Track
- Named watercourse
- Waterbody
- State forest
- Local government area
- Assumed flora extent



0 0.25 0.5
Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:16,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Blansjaar (No access)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer
- Non-disturbance area
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Millfield Mill (No access)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer

Existing environment

- Road
- Waterbody
- Local government area
- Assumed flora extent

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Watagan State Forest
(Topographic or other safety constraints)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer
- Non-disturbance area

Existing environment

- Track
- State forest
- Local government area
- Assumed flora extent

Fauna records (BioNet)

- Golden-tipped Bat
- Parma Wallaby
- Southern Greater Glider

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Watagan State Forest
(Topographic or other safety constraints)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer
- Non-disturbance area
- State forest
- Local government area
- Assumed flora extent

Fauna records (BioNet)

- Yellow-bellied Glider

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Vantor

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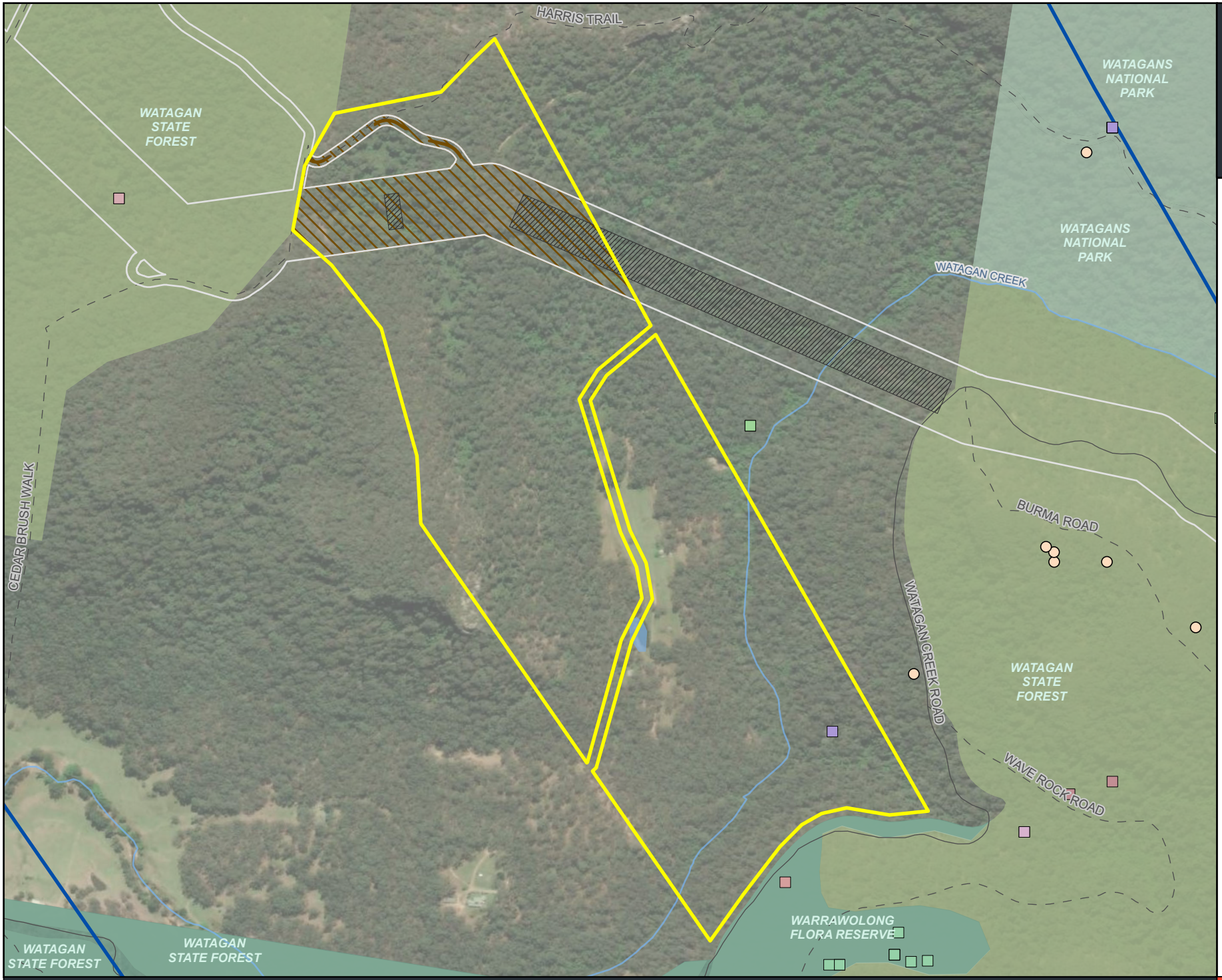

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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Dawson (No access)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer
- Non-disturbance area

Existing environment

- Road
- Track
- Named watercourse
- Waterbody
- NPWS reserve
- Flora reserve
- State forest
- Local government area
- Assumed flora extent

Fauna records (BioNet)

- Brush-tailed Rock-wallaby
- Gang-gang Cockatoo
- Golden-tipped Bat
- Koala
- Little Lorikeet
- Sooty Owl
- Southern Greater Glider
- Spotted-tailed Quoll
- Yellow-bellied Glider

0 0.15 0.3
Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:10,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Watagan State Forest
(Topographic or other safety constraints)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer
- Non-disturbance area

Existing environment

- Track
- Named watercourse
- NPWS reserve
- State forest
- Local government area
- Assumed flora extent

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Glanville (No access)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer

Existing environment

- Road
- 500 kV transmission line
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Fauna records (BioNet)

- Gang-gang Cockatoo
- Green-thighed Frog
- Powerful Owl
- Turquoise Parrot
- White-throated Needletail

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:5,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Vantor

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Figure 4
BioNet records within a 1km buffer of the restricted access properties - Eraring Energy (No access)

Legend

- Biodiversity study area
- Property with restricted access
- Restricted access area 1km buffer

Existing environment

- Road
- Track
- Power station
- 330 kV transmission line
- 500 kV transmission line
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Fauna records (BioNet)

- Grey-headed Flying-fox
- Powerful Owl
- Southern Myotis
- Swift Parrot

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:7,500 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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1.1.5 Assessing native vegetation, threatened ecological communities and vegetation integrity

In the absence of access and previous surveys in these restricted sites, the following information has been utilized in determining the vegetation extent and condition likely present in the restricted sites:

- NSW State Vegetation Type Map release C2.0M2.1 (accessed April 2025) (NSW DCCEEW, 2025)
- NSW BioNet Flora Survey Plots – PCT Reference Sites: full floristic plots used in the development of the quantitative Plant Community Type (PCT) classification. Currently available for eastern NSW PCTs version C2.0. (NSW Department of Planning and Environment, 2022)
- Recent plot data acquired elsewhere in the subject land
- Aerial photos provided on the ArcGIS online World Imagery map server

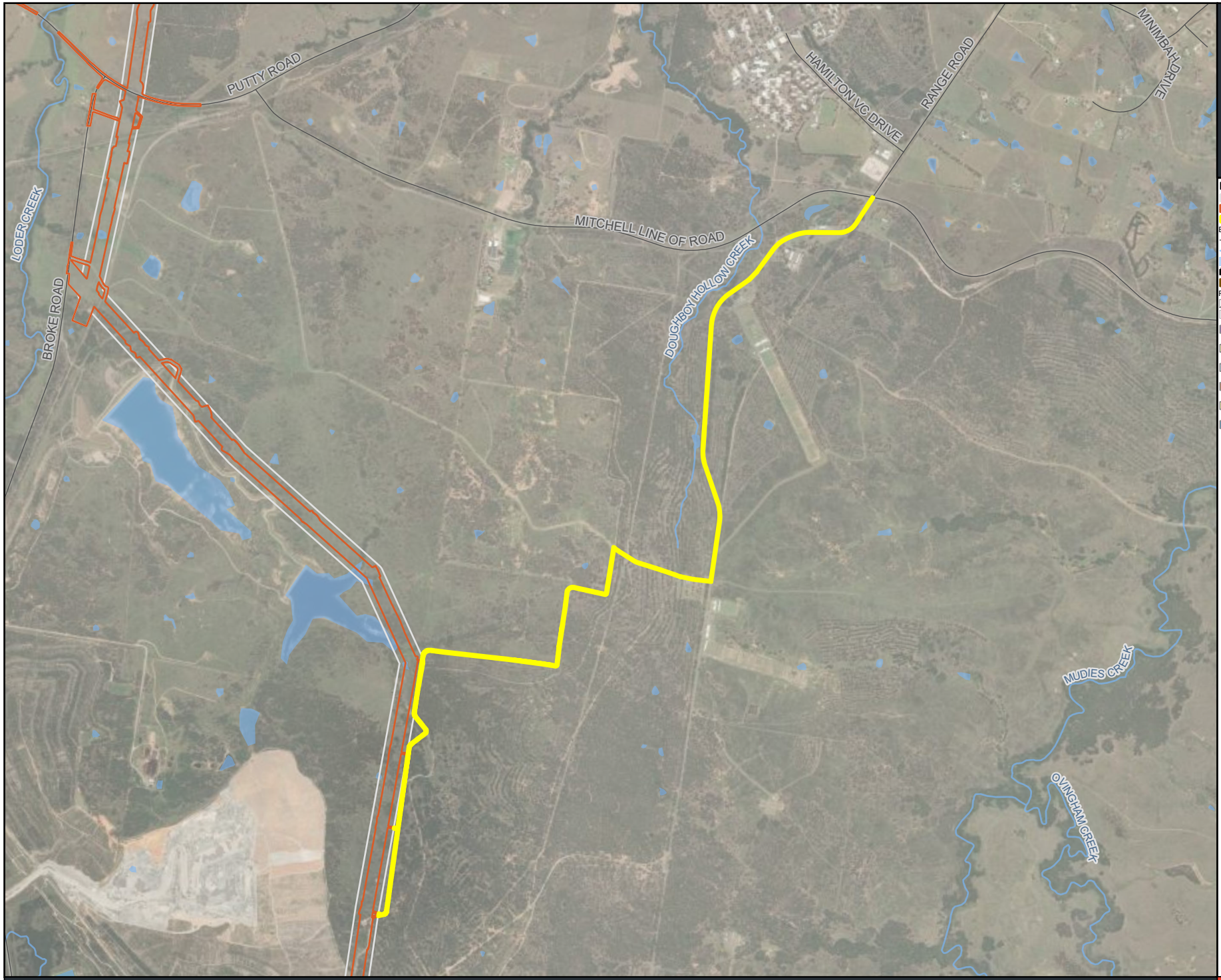
A summary of each identified PCT and condition class within the restricted access areas and corresponding extent within proposed surrogate survey areas is provided in Table 6 and Figure 5.

The surrogate survey for the project has been completed across significantly greater areas of continuous vegetation in similar or better quality condition and land use practices for all of the PCTs and condition classes.

Table 6 Plant Community Types present in restricted access properties

Property name	IBRA subregion	Plant Community Type	Condition class	Subject land within restricted access area (ha)	Area within proposed surrogate survey (ha)
Eraring Power Station	Wyong	PCT0 - Not classified	-	20.77	-
		PCT 3582 - Hunter Coast Lowland Apple-Bloodwood Forest	Derived	1.77	4.49
			Mod-good	3.36	1.48
Site A	Wyong	PCT0 - Not classified	-	0.15	-
		PCT3230 - Central Coast Escarpment Moist Forest	Derived	0.17	6.97
			Mod-good	0.07	55.14
		PCT3250 - Northern Foothills Blackbutt Grassy Forest	Derived	0.02	2.31
			Mod-good	0.17	3.43
Watagan SF	Wyong	PCT3029 - Lower North Wet Gully Palm Rainforest	Mod-good	0.40	2.45
		PCT3150 - Hunter Coast Ranges Turpentine Wet Forest	Mod-good	1.23	40.96
		PCT3242 - Lower North Ranges Turpentine Moist	Mod-good	2.97	23.61
Site B	Wyong	PCT0 - Not classified	-	0.06	-
		PCT3029 - Lower North Wet Gully Palm Rainforest	Mod-good	0.49	2.45
		PCT3242 - Lower North Ranges Turpentine Moist Forest	Mod-good	2.03	23.61
		PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest	Derived	0.05	5.78
			Mod-good	1.46	52.02

Property name	IBRA subregion	Plant Community Type	Condition class	Subject land within restricted access area (ha)	Area within proposed surrogate survey (ha)
Site C	Yengo	PCT3151 - Northwest Sydney Sandstone Grey Myrtle Dry Rainforest	Mod-good	0.03	1.82
		PCT3238 - Hunter Range Colluvial Apple-Gum Forest	Mod-good	0.05	0.00
		PCT3239 - Hunter Range Sheltered Grey Gum Forest	Mod-good	1.50	99.58
		PCT3489 - Hunter Escarpment Grey Box Forest	Mod-good	0.45	4.30
		PCT3605 - Hunter Range Ironbark Forest	Mod-good	1.39	52.57
Site D	Yengo	PCT3152 - Hunter Range Turpentine-Grey Myrtle Gully Forest	Mod-good	0.39	0.46
		PCT3241 - Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	0.44	12.61
		PCT3605 - Hunter Range Ironbark Forest	Mod-good	6.65	52.57
	Hunter	Category 1 Land	-	0.05	-
		PCT0 - Not classified	-	0.07	-
		PCT3241 - Lower North White Mahogany-Spotted Gum Moist Forest	Mod-good	2.12	4.94
		PCT3605 - Hunter Range Ironbark Forest	Mod-good	0.57	1.21
Site E	Yengo	PCT3152 - Hunter Range Turpentine-Grey Myrtle Gully Forest	Mod-good	0.08	0.46
		PCT3237 - Hunter Range Blue Gum Gully Forest	Mod-good	1.43	3.93
Millfield Mill	Hunter	PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest	Mod-good	1.58	39.44
Singleton Training Area Boundary Road	Hunter	Category 1 Land	-	0.42	-
		PCT0 - Not classified	-	1.68	-
		PCT3431 - Central Hunter Ironbark Grassy Woodland	Disturbed Grassland	0.46	79.23
		PCT3431 - Central Hunter Ironbark Grassy Woodland	Plantation	0.44	14.74
		PCT3431 - Central Hunter Ironbark Grassy Woodland	Poor	0.02	8.38
		PCT3431 - Central Hunter Ironbark Grassy Woodland	Thinned	0.40	70.74
		PCT4015 - Central Hunter Swamp Oak Riparian Forest	Derived	0.04	7.34
		PCT4015 - Central Hunter Swamp Oak Riparian Forest	Thinned	0.04	6.77



Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Bulga Mine/Commonwealth Defence
(No access)
Page 1 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access

Existing environment

- Road
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Plant Community Types

- Category 1 Land
- PCT0 - Not classified
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Disturbed Grassland)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Plantation)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Poor condition)
- PCT3431 - Central Hunter Ironbark Grassy Woodland (Thinned condition)
- PCT4015 - Central Hunter Swamp Oak Riparian Forest (Derived condition)
- PCT4015 - Central Hunter Swamp Oak Riparian Forest (Thinned condition)

0 0.15 0.3
Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:30,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Vantor

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Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Lovell Capital/Cedar Creek Retreat
(No access)
Page 2 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area
- Local government area
- Assumed flora extent

Plant Community Types

- PCT3152 - Hunter Range Turpentine-Grey Myrtle Gully Forest (Mod-good condition)
- PCT3237 - Hunter Range Blue Gum Gully Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
World Imagery: Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

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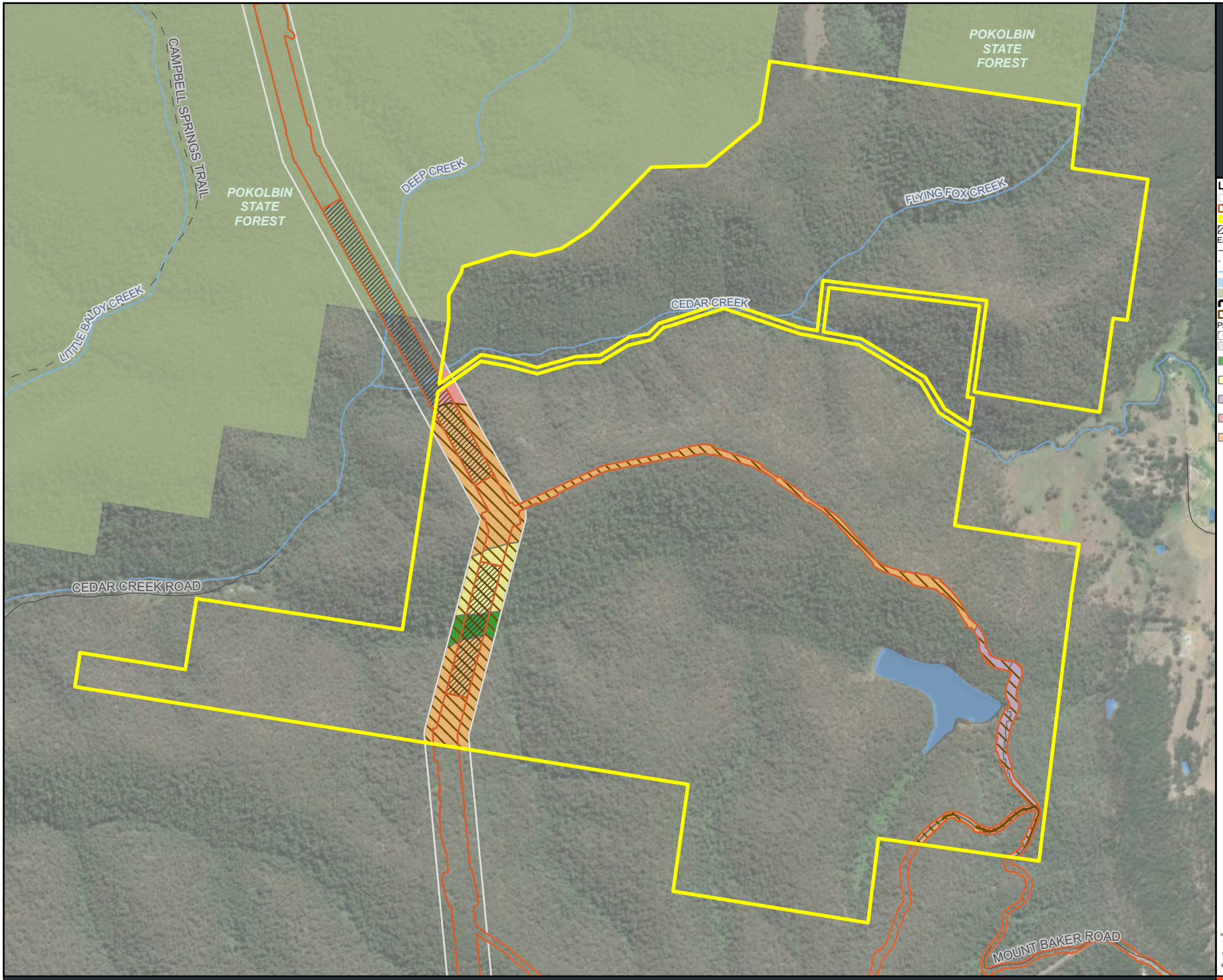

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Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Aksoave Pty Limited (No access)
Page 3 of 11

Legend

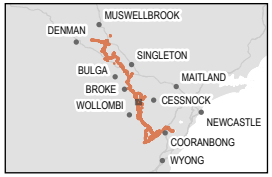
- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area

Existing environment

- Road
- Track
- Named watercourse
- Waterbody
- State forest
- Local government area
- Assumed flora extent

Plant Community Types

- Category 1 Land
- PCT0 - Not classified
- PCT3087 - Lower North Ranges Riparian Turpentine Forest (Mod-good condition)
- PCT3152 - Hunter Range Turpentine-Grey Myrtle Gully Forest (Mod-good condition)
- PCT3241 - Lower North White Mahogany-Spotted Gum Moist Forest (Mod-good condition)
- PCT3258 - Sydney Basin Creekflat Blue Gum-Apple Forest (Mod-good condition)
- PCT3605 - Hunter Range Ironbark Forest (Mod-good condition)



0 0.1 0.2
Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:16,000 Date: 29/01/2026

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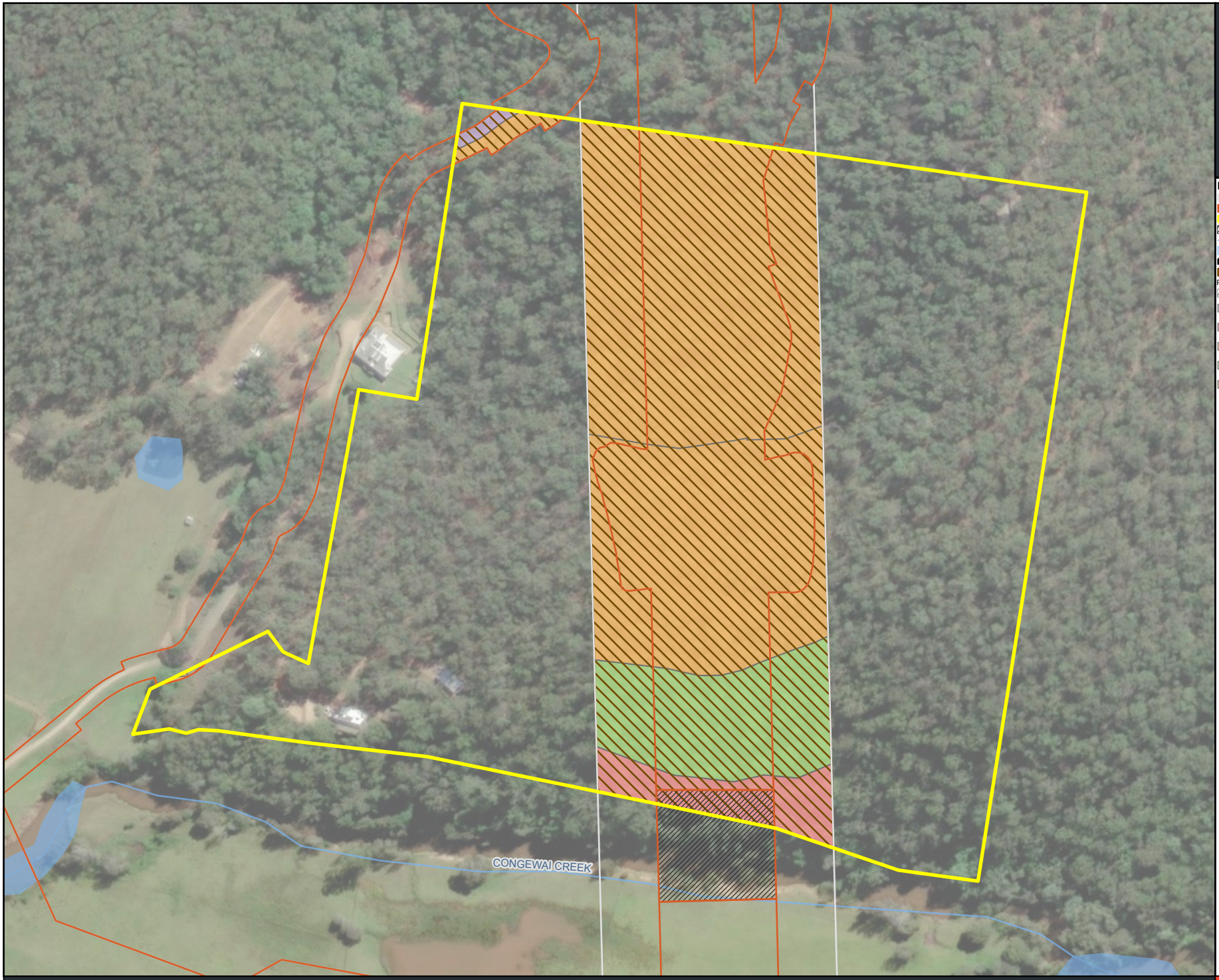

Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Blansjaar (No access)
Page 4 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Plant Community Types

- Category 1 Land
- PCT3151 - Northwest Sydney Sandstone Grey Myrtle Dry Rainforest (Mod-good condition)
- PCT3238 - Hunter Range Colluvial Apple-Gum Forest (Mod-good condition)
- PCT3239 - Hunter Range Sheltered Grey Gum Forest (Mod-good condition)
- PCT3489 - Hunter Escarpment Grey Box Forest (Mod-good condition)
- PCT3605 - Hunter Range Ironbark Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

Data sources: EMM, Beca, Geoscience Australia, NSW State Government, WSP
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Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Millfield Mill (No access)
Page 5 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access

Existing environment

- Road
- Waterbody
- Local government area
- Assumed flora extent

Plant Community Types

- PCT3444 - Lower Hunter Spotted Gum-Ironbark Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

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Figure 5
Vegetation within restricted access properties - Watagan State Forest (Topographic or other safety constraints)
Page 6 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area

Existing environment

- Track
- State forest
- Local government area
- Assumed flora extent

Plant Community Types

- PCT3242 - Lower North Ranges Turpentine Moist Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

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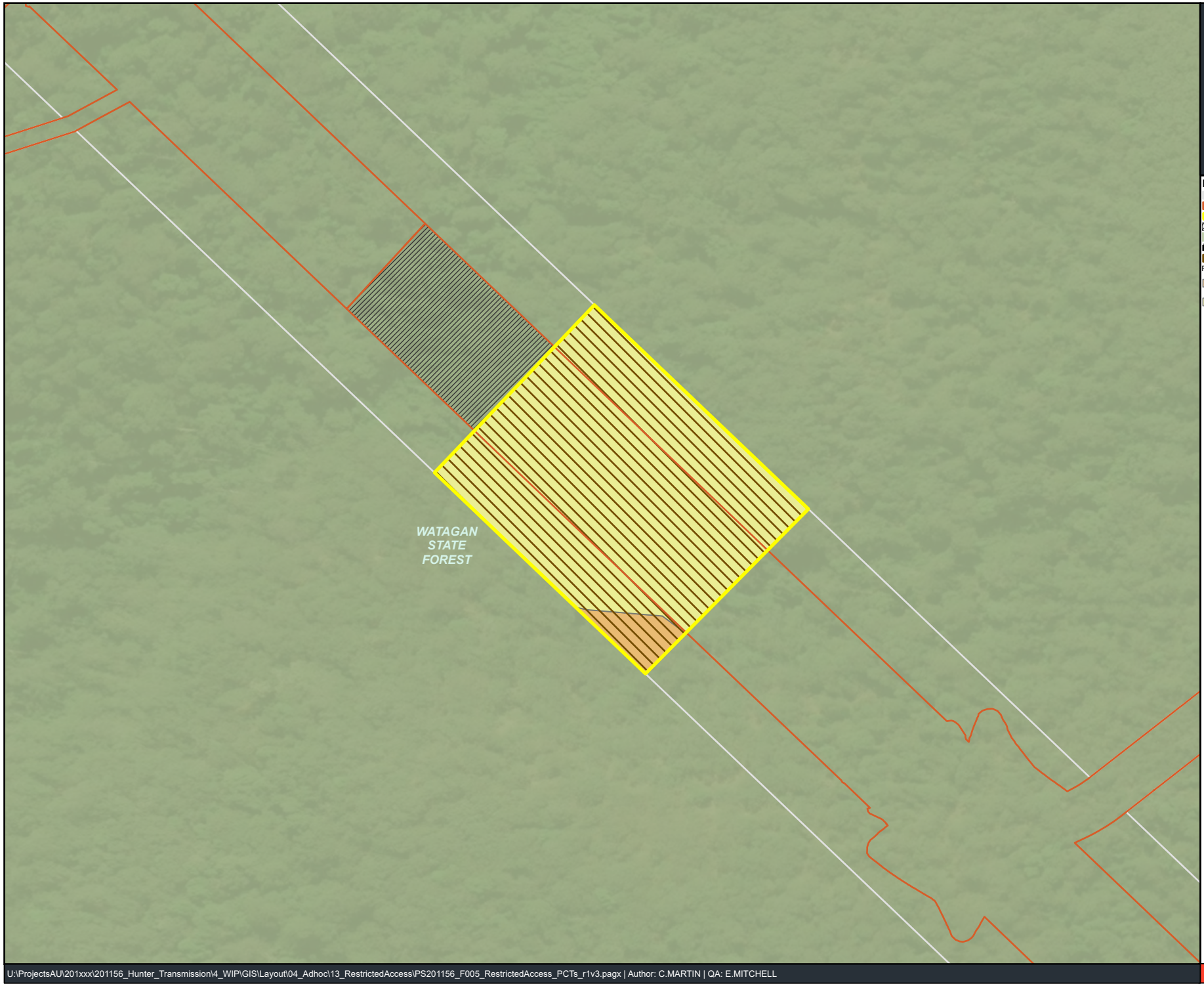

Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Watagan State Forest (Topographic or other safety constraints)
Page 7 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area
- State forest
- Local government area
- Assumed flora extent

Plant Community Types

- PCT3239 - Hunter Range Sheltered Grey Gum Forest (Mod-good condition)
- PCT3242 - Lower North Ranges Turpentine Moist Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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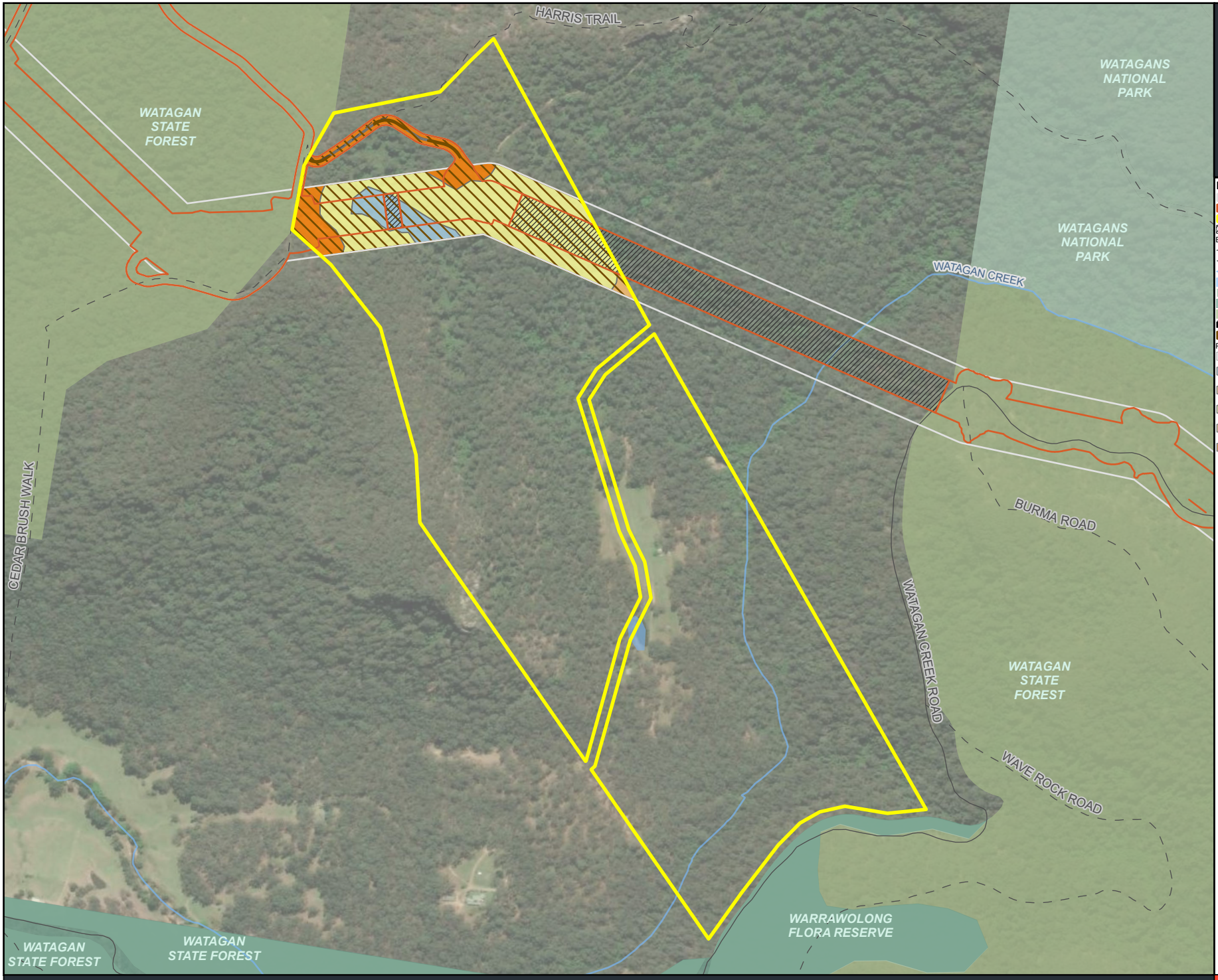

Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Dawson
(No access)
Page 8 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area

Existing environment

- Road
- Track
- Named watercourse
- Waterbody
- NPWS reserve
- Flora reserve
- State forest
- Local government area
- Assumed flora extent

Plant Community Types

- PCT0 - Not classified
- PCT3029 - Lower North Wet Gully Palm Rainforest (Mod-good condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3242 - Lower North Ranges Turpentine Moist Forest (Mod-good condition)
- PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Derived condition)
- PCT3263 - Watagan Range Turpentine-Mahogany Grassy Forest (Mod-good condition)

0 0.06 0.12
Kilometres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:10,000 Date: 29/01/2026

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Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Watagan State Forest (Topographic or other safety constraints)
Page 9 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access
- Non-disturbance area

Existing environment

- Track
- Named watercourse
- NPWS reserve
- State forest
- Local government area
- Assumed flora extent

Plant Community Types

- PCT3029 - Lower North Wet Gully Palm Rainforest (Mod-good condition)
- PCT3150 - Hunter Coast Ranges Turpentine Wet Forest (Mod-good condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Plantation)
- PCT3242 - Lower North Ranges Turpentine Moist Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:3,000 Date: 29/01/2026

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Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Glanville
(No access)
Page 10 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access

Existing environment

- Road
- 500 kV transmission line
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Plant Community Types

- PCT0 - Not classified
- PCT3230 - Central Coast Escarpment Moist Forest (Derived condition)
- PCT3230 - Central Coast Escarpment Moist Forest (Mod-good condition)
- PCT3250 - Northern Foothills Blackbutt Grassy Forest (Derived condition)
- PCT3250 - Northern Foothills Blackbutt Grassy Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

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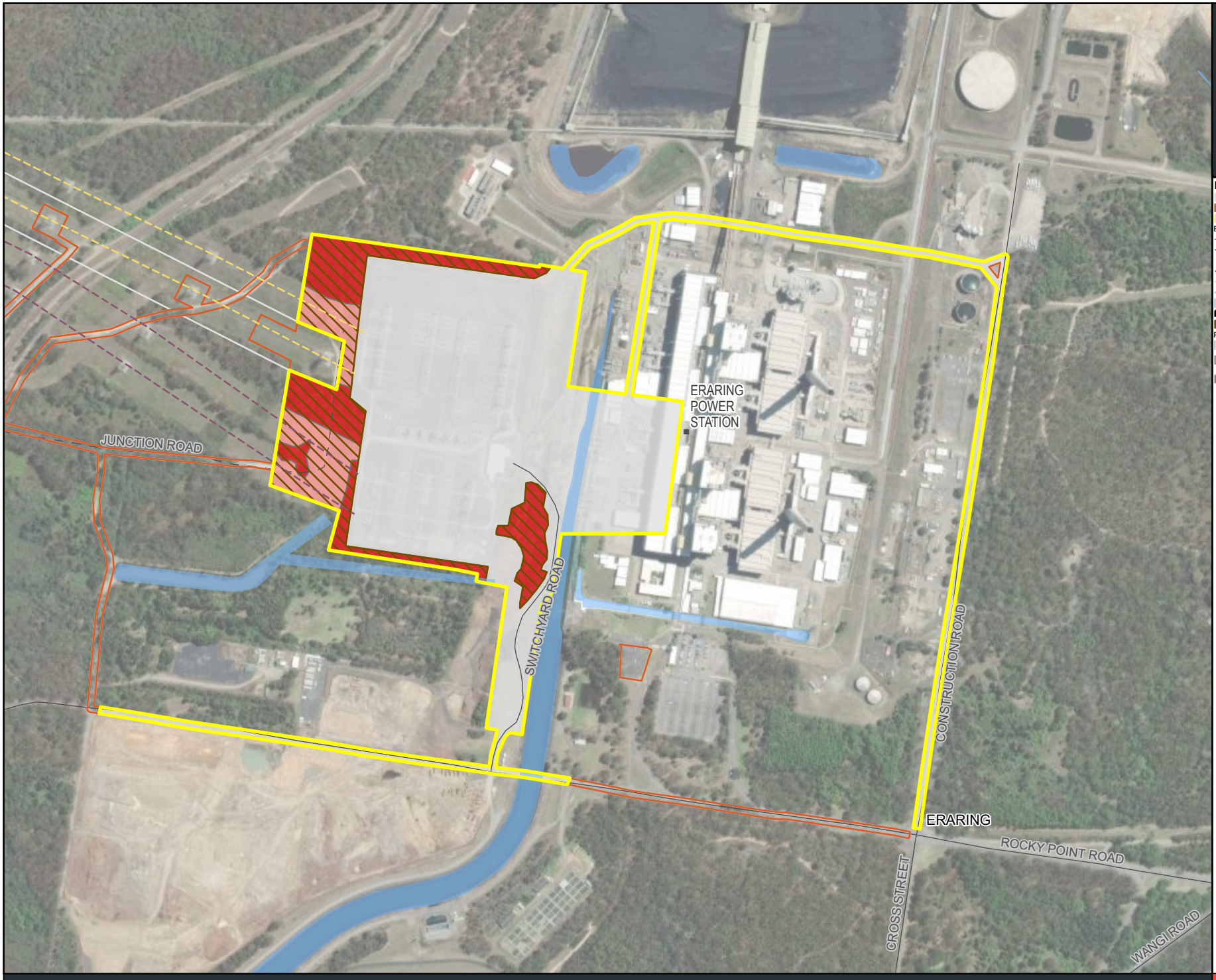

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Hunter Transmission Project

Figure 5
Vegetation within restricted access properties - Eraring Energy (No access)
Page 11 of 11

Legend

- Biodiversity study area
- Subject land
- Property with restricted access

Existing environment

- Road
- Track
- Power station
- 330 kV transmission line
- 500 kV transmission line
- Named watercourse
- Waterbody
- Local government area
- Assumed flora extent

Plant Community Types

- PCT0 - Not classified
- PCT3582 - Hunter Coast Lowland Apple-Bloodwood Forest (Derived condition)
- PCT3582 - Hunter Coast Lowland Apple-Bloodwood Forest (Mod-good condition)

0 50 100
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A4

GDA 2020 1:7,500 Date: 29/01/2026

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1.1.6 Assessing the habitat suitability for threatened species within restricted access areas

An assessment of habitat constraints and vagrant species in the subject land, including areas of restricted access has been undertaken in Section 5.1 of the BDAR. The following species were excluded based on geographic limitation or habitat constraints:

- *Darwinia glaucophylla*
- *Diuris praecox*
- *Eucalyptus oblonga* (endangered population)
- *Gaudium deanei (Syn. Leptospermum deanei)*
- *Gyrostemon thesioides*
- *Hibbertia procumbens*
- *Kunzea rupestris*
- *Leucopogon fletcheri subsp. fletcheri*
- *Maundia triglochinoides*
- *Micromyrtus blakelyi*
- *Persoonia pauciflora*
- *Prostanthera askania*
- *Senecio spathulatus*
- *Seringia denticulata* (endangered population).

Additionally vagrant species have been further assessed in Section 5.1.2 of the BDAR and removed in accordance with BAM Subsection 5.2.3.

In the absence of survey, the following habitat features were assumed present within the restricted access areas:

- Burrows
- Epiphytes
- Fallen/standing dead timber, including logs
- Hollow-bearing trees
- Rocky substrates
- Native groundcover.

1.2 Species not proposed for exclusion through surrogate survey

1.2.1 Fauna

Given the assumed presence of these habitat features and/or the recorded presence within contiguous areas of habitat no candidate fauna species are proposed for exclusion through surrogate survey effort under the guide.

1.2.2 Flora

19 candidate species of flora that have been confirmed present within the surrogate survey areas, or have otherwise been included based on advice from CPHR, have not been excluded from the subject land with restricted access and assumed presence. This includes species that are only listed under the EPBC Act, which the remote assessment guidelines aren't applicable to. A summary of these species is provided in Table 7 below.

Table 7 Candidate flora species assumed to be presence within the restricted access areas

Species	BC Act	EPBC Act	SAII	Reason for not applying the guide	Assumed habitat within restricted access area (ha)
Acacia bynoeana	E	V	No	This species has been previously recorded near the restricted access area in the Wyong IBRA subregion.	5.13 ha in the Wyong
Angophora inopina	V	V	No	Species not excluded via the remote assessment guidelines as requested by CPHR.	3.53 in the Wyong
Corybas dowlingii	E	-	No	This species has been previously recorded near the restricted access area in the Wyong IBRA subregion. No surrogate survey within the Hunter IBRA subregion.	4.76 ha in the Wyong 2.12 ha in the Hunter
Cymbidium canaliculatum – endangered population	EP	-	No	Recorded during survey within the Hunter IBRA subregion.	0.86 ha or 3 individuals (count) in the Hunter
Diuris tricolor	V	-	No	Recorded during survey within the Hunter IBRA subregion.	1.32 ha in the Hunter
Eucalyptus fracta	E	-	Yes	Recorded during survey within the Yengo IBRA subregion.	8.48 ha in the Yengo
Genoplesium insigne	CE	CE	Yes	Recorded during survey within the Wyong IBRA subregion.	5.13 ha in the Wyong
Grevillea parviflora subsp. Parviflora	V	V	No	Recorded during survey within the Wyong IBRA subregion.	5.13 ha in the Wyong
Melaleuca groveana	V	-	No	Recorded during survey within the Yengo IBRA subregion.	9.56 ha or 31 individuals (count) in the Yengo
Prasophyllum petilum	E	E	No	Species not excluded via the remote assessment guidelines as requested by CPHR.	2.44 ha in the Hunter
Prasophyllum sp. Wybong	-	CE	No	Remote assessment guidelines not applicable to EPBC species.	2.44 ha in the Hunter
Prostanthera cineolifera	V	V	No	Recorded during survey within the Yengo and Hunter IBRA subregion.	11.41 ha in the Yengo 4.27 ha in the Hunter
Pterostylis chaetophora	V	-	No	Species not excluded via the remote assessment guidelines as requested by CPHR.	4.56 ha in the Hunter
Pterostylis gibbosa	E	E	No	Recorded during survey within the Hunter IBRA subregion.	0.86 ha in the Hunter
Rhizanthella slateri	V	E	Yes	Insufficient targeted surrogate survey within the Wyong IBRA subregion for PCT 3150 and 3242.	6.23 ha in the Wyong

Species	BC Act	EPBC Act	SAII	Reason for not applying the guide	Assumed habitat within restricted access area (ha)
Rhodamnia rubescens	CE	CE	Yes	Recorded during survey within the Wyong, Yengo and Hunter IBRA subregion.	9.06 ha or 32 individuals (count) in the Wyong 11.95 ha or 17 individuals (count) in the Yengo 2.12 ha or 6 individuals (count) in the Hunter
Rhodomyrtus psidioides	CE	CE	Yes	Recorded during survey within the Wyong IBRA subregion.	8.75 ha in the Wyong
Senna acclinis	E	-	No	Recorded during survey within the Wyong and Yengo IBRA subregion.	8.58 ha in the Wyong
Tetratheca juncea	V	V	No	Recorded during survey within the Wyong IBRA subregion.	7.31 ha in the Wyong

1.3 Species proposed for exclusion through surrogate survey

1.3.1 Flora

A total of 30 candidate flora species are proposed to be excluded from presence within restricted areas of the subject land based on targeted survey within the surrogate areas (refer to Table 8).

Table 8 Candidate flora species proposed for exclusion under the guide

Species	BC Act	EPBC Act	SAII	Assumed habitat within restricted access area (ha)
Acacia pendula – endangered population	EP	-	Yes	0.86 ha in the Hunter
Asperula asthenes	V	V	No	5.17 ha in the Wyong 2.12 ha in the Hunter
Callistemon linearifolius	V	-	No	3.43 ha in the Wyong 1.58 ha in the Hunter
Cryptostylis hunteriana	V	V	No	5.32 ha in the Wyong
Cynanchum elegans	E	E	No	1.06 ha in the Wyong 3.88 ha in the Yengo
Dendrobium tetragonum var. melaleucaphilum	E	-	No	0.17 ha in the Wyong
Dillwynia tenuifolia	V	-	No	8.03 ha in the Yengo 0.57 ha in the Hunter
Epacris purpurascens var. purpurascens	V	-	No	1.42 ha in the Wyong
Eucalyptus camfieldii	V	V	No	3.36 ha in the Wyong
*Eucalyptus fracta**	E	-	Yes	0.57 ha in the Hunter
Eucalyptus glaucina	V	V	No	3.55 ha in the Hunter

Species	BC Act	EPBC Act	SAII	Assumed habitat within restricted access area (ha)
Eucalyptus parramattensis subsp. parramattensis – endangered population	EP	-	No	3.36 ha in the Wyong
Eucalyptus pumila	V	V	Yes	10.00 ha in the Yengo 2.15 ha in the Hunter
Genoplesium branwhiteorum	CE	CE	Yes	5.13 ha in the Wyong
Grammitis stenophylla	E	-	No	7.12 ha in the Wyong 1.50 ha in the Yengo
*Grevillea parviflora subsp. parviflora**	V	V	No	1.58 ha in the Hunter
Leionema lamprophyllum subsp. fractum	CE	CE	Yes	1.43 ha in the Yengo
Melaleuca biconvexa	V	V	No	10.65 ha in the Wyong 0.44 ha in the Yengo 2.12 ha in the Hunter
*Melaleuca groveana**	V	-	No	0.19 ha in the Wyong 0.57 ha in the Hunter
Olearia cordata	V	V	No	10.08 ha in the Yengo
Ozothamnus tesselatus	V	V	No	0.86 ha in the Hunter
Persoonia hirsuta	E	E	Yes	8.08 ha in the Yengo
Pomaderris queenslandica	E	-	No	0.86 ha in the Hunter
*Rhodomyrtus psidioides**	CE	CE	Yes	0.50 ha in the Yengo
Rutidosis heterogama	V	V	No	5.32 ha in the Wyong 8.03 ha in the Yengo 2.15 ha in the Hunter
Syzygium paniculatum	V	V	No	7.29 ha in the Wyong 0.44 ha in the Yengo 2.12 ha in the Hunter
*Tetratheca juncea**	V	V	No	2.12 ha in the Hunter
Thelymitra adorata	CE	CE	Yes	5.13 ha in the Wyong
Velleia perfoliate	V	V	No	10.00 ha in the Yengo
Zieria involucrata	E	V	No	10.08 ha in the Yengo

* Species that have been recorded in different IBRA subregions to what has been assessed and excluded within the restricted access areas.

1.4 Proposed use of surrogate survey information

Extensive targeted candidate threatened flora surveys have been undertaken throughout the accessible areas of the project in like for like PCTs and condition classes to the assumed habitats associated with species within these restricted access areas.

Field survey techniques for targeted seasonal surveys are presented within Section 2.3 of the BDAR and were in general accordance with *Surveying threatened plants and their habitats: NSW guide for the Biodiversity Assessment Method* (DPIE 2020). These include both:

- two-phase grid-based systematic survey
- parallel field traverses of microhabitats

The completed targeted surveys in similar condition PCTs areas across the subject land, including areas directly adjacent and contiguous with the restricted areas are proposed as adequate surrogate survey effort to exclude areas of assumed habitat.

A summary of the surrogate survey area for each candidate species, in each IBRA subregion is provided in Tables 8–10. Survey areas represented are restricted to surveys within like for like PCTs in corresponding species seasonal requirements. For many species additional areas of associated PCTs not recorded within the restricted access areas have also been subject to survey.

The surrogate surveys demonstrate significant representative coverage (~>70%) of each species representative PCT and condition classes surveyed within each IBRA subregion.

Table 9 Assumed flora species in restricted sites (Wyong IBRA subregion)

Species	PCT	Condition	Assumed habitat within restricted area (ha)	Assumed like for like habitat within surrogate survey (ha)	Total percentage of habitat within subject land subject to survey in surrogate areas (%)
Asperula asthenes	3242	Mod-good	5.00	23.61	89.1
	3250	Mod-good	0.17	3.43	95.2
	TOTAL		**5.17**	**27.04**	**89.9**
Callistemon linearifolius	3230	Mod-good	0.07	55.14	100
	3582	Mod-good	3.36	1.48	100
	TOTAL		**3.43**	**56.62**	**100**
Cryptostylis hunteriana	3250	Derived	0.02	2.31	16.7
	3250	Mod-good	0.17	3.43	68.1
	3582	Derived	1.77	4.49	39.9
	3582	Mod-good	3.36	1.48	40.0
	TOTAL		**5.32**	**11.71**	**43.6**
Cynanchum elegans	3029	Mod-good	0.89	2.45	100
	3250	Mod-good	0.17	3.43	95.2
	TOTAL		**1.06**	**5.88**	**97.1**
Dendrobium tetragonum var. melaleucaphilum	3250	Mod-good	0.17	3.43	95.2
	TOTAL		**0.17**	**3.43**	**95.2**

Species	PCT	Condition	Assumed habitat within restricted area (ha)	Assumed like for like habitat within surrogate survey (ha)	Total percentage of habitat within subject land subject to survey in surrogate areas (%)
Epacris purpurascens var. purpurascens	3150	Mod-good	1.23	40.96	91.9
	3250	Derived	0.02	2.31	100
	3250	Mod-good	0.17	3.43	95.2
	TOTAL		**1.42**	**46.70**	**92.6**
Eucalyptus camfieldii	3582	Mod-good	3.36	1.48	100
	TOTAL		**3.36**	**1.48**	**100**
Eucalyptus parramattensis subsp. parramattensis – endangered population	3582	Mod-good	3.36	1.48	100
	TOTAL		**3.36**	**1.48**	**100**
Genoplesium branwhiteorum	3582	Derived	1.77	4.49	39.9
	3582	Mod-good	3.36	1.48	40.0
	TOTAL		**5.13**	**5.97**	**39.9**
Grammitis stenophylla	3029	Mod-good	0.89	2.45	100
	3150	Mod-good	1.23	40.96	91.9
	3242	Mod-good	5.00	23.61	89.1
	TOTAL		**7.12**	**67.02**	**91.2**
Melaleuca groveana	3250	Derived	0.02	2.31	100
	3250	Mod-good	0.17	3.43	95.2
	TOTAL		**0.19**	**5.74**	**94.1**
Melaleuca biconvexa	3029	Mod-good	0.89	2.45	100
	3150	Mod-good	1.23	40.96	91.9
	3242	Mod-good	5.00	23.61	89.1
	3250	Mod-good	0.17	3.43	95.2
	3582	Mod-good	3.36	1.48	100
	TOTAL		**10.65**	**71.93**	**95.2**
Rutidosis heterogama	3250	Derived	0.02	2.31	100
	3250	Mod-good	0.17	3.43	95.2
	3582	Derived	1.77	4.49	100
	3582	Mod-good	3.36	1.48	100
	TOTAL		**5.32**	**11.71**	**98.5**

Species	PCT	Condition	Assumed habitat within restricted area (ha)	Assumed like for like habitat within surrogate survey (ha)	Total percentage of habitat within subject land subject to survey in surrogate areas (%)
Syzygium paniculatum	3029	Mod-good	0.89	2.45	100
	3150	Mod-good	1.23	40.96	91.9
	3242	Mod-good	5.00	23.61	89.1
	3250	Mod-good	0.17	3.43	95.2
	TOTAL		**7.29**	**70.45**	**91.4**
Thelymitra adorata	3582	Derived	1.77	4.49	100
	3582	Mod-good	3.36	1.48	100
	TOTAL		**5.13**	**5.97**	**100**

Table 10 Assumed flora species in restricted sites (Yengo IBRA subregion)

Species	PCT	Condition	Assumed habitat within restricted area (ha)	Assumed like for like habitat within surrogate survey (ha)	Total percentage of habitat within subject land subject to survey in surrogate areas (%)
Cynanchum elegans	3151	Mod-good	0.03	1.82	100
	3152	Mod-good	0.47	0.46	100
	3237	Mod-good	1.43	3.93	93.3
	3239	Mod-good	1.50	99.58	97.8
	3489	Mod-good	0.45	4.30	100
	TOTAL		**3.88**	**110.09**	**97.7**
Dillwynia tenuifolia	3605	Mod-good	8.03	52.57	100
	TOTAL		**8.03**	**52.57**	**100**
Eucalyptus pumila	3152	Mod-good	0.47	0.46	100
	3239	Mod-good	1.50	99.58	97.8
	3605	Mod-good	8.03	52.57	100
	TOTAL		**10.00**	**152.61**	**98.5**
Grammitis stenophylla	3239	Mod-good	1.50	99.58	97.8
	TOTAL		**1.50**	**99.58**	**97.8**
Leionema lamprophyllum subsp. fractum	3605	Mod-good	1.43	52.57	100
	TOTAL		**1.43**	**52.57**	**100**
Melaleuca biconvexa	3241	Mod-good	0.44	12.61	100
	TOTAL		**0.44**	**12.61**	**100**

Species	PCT	Condition	Assumed habitat within restricted area (ha)	Assumed like for like habitat within surrogate survey (ha)	Total percentage of habitat within subject land subject to survey in surrogate areas (%)
Olearia cordata	3151	Mod-good	0.03	1.82	100
	3152	Mod-good	0.47	0.46	100
	3238	Mod-good	0.05	0.00	0.00
	3239	Mod-good	1.50	99.58	97.8
	3605	Mod-good	8.03	52.57	100
	TOTAL		**10.08**	**154.43**	**98.6**
Persoonia hirsuta	3238	Mod-good	0.05	0.00	0.00
	3605	Mod-good	8.03	52.57	100
	TOTAL		**8.08**	**52.57**	**100**
Rhodomyrtus psidioides	3151	Mod-good	0.03	1.82	100
	3152	Mod-good	0.47	0.46	100
	TOTAL		**0.50**	**2.28**	**100**
Rutidosis heterogama	3605	Mod-good	8.03	52.57	100
	TOTAL		**8.03**	**52.57**	**100**
Syzygium paniculatum	3241	Mod-good	0.44	12.61	100
	TOTAL		**0.44**	**12.61**	**100**
Velleia perfoliata	3152	Mod-good	0.47	0.46	100
	3239	Mod-good	1.50	99.58	97.8
	3605	Mod-good	8.03	52.57	100
	TOTAL		**10.00**	**152.61**	**98.5**
Zieria involucrata	3151	Mod-good	0.03	1.82	100
	3152	Mod-good	0.47	0.46	100
	3238	Mod-good	0.05	0.00	0.00
	3239	Mod-good	1.50	99.58	97.8
	3605	Mod-good	8.03	52.57	100
	TOTAL		**10.08**	**154.43**	**98.6**

Table 11 Assumed flora species in restricted sites (Hunter IBRA subregion)

Species	PCT	Condition	Assumed habitat within restricted area (ha)	Assumed like for like habitat within surrogate survey (ha)	Total percentage of habitat within subject land subject to survey in surrogate areas (%)
Acacia pendula – endangered population	3431	Plantation	0.44	14.74	100
	3431	Poor	0.02	8.38	97.2
	3431	Thinned	0.40	70.74	99.4
	TOTAL		**0.86**	**93.86**	**99.3**
Asperula asthenes	3241	Mod-good	2.12	4.94	100
	TOTAL		**2.12**	**4.94**	**100**
Callistemon linearifolius	3444	Mod-good	1.58	39.44	100
	TOTAL		**1.58**	**39.44**	**100**
Dillwynia tenuifolia	3605	Mod-good	0.57	1.21	100
	TOTAL		**0.57**	**1.21**	**100**
Eucalyptus fracta	3605	Mod-good	0.57	1.21	100
	TOTAL		**0.57**	**1.21**	**100**
Eucalyptus glaucina	3241	Mod-good	2.12	4.94	100
	3431	Plantation	0.44	14.74	100
	3431	Poor	0.02	8.38	97.2
	3431	Thinned	0.40	70.74	99.4
	3605	Mod-good	0.57	1.21	100
	TOTAL		**3.55**	**100.01**	**99.4**
Eucalyptus pumila	3444	Mod-good	1.58	39.44	100
	3605	Mod-good	0.57	1.21	100
	TOTAL		**2.15**	**40.65**	**100**
Grevillea parviflora subsp. parviflora	3444	Mod-good	1.58	39.44	100
	TOTAL		**1.58**	**39.44**	**100**
Melaleuca biconvexa	3241	Mod-good	2.12	4.94	100
	TOTAL		**2.12**	**4.94**	**100**
Melaleuca groveana	3605	Mod-good	0.57	1.21	100
	TOTAL		**0.57**	**1.21**	**100**

Species	PCT	Condition	Assumed habitat within restricted area (ha)	Assumed like for like habitat within surrogate survey (ha)	Total percentage of habitat within subject land subject to survey in surrogate areas (%)
Ozothamnus tesselatus	3431	Plantation	0.44	14.74	100
	3431	Poor	0.02	8.38	97.2
	3431	Thinned	0.40	70.74	99.4
	TOTAL		**0.86**	**93.86**	**99.3**
Pomaderris queenslandica	3431	Plantation	0.44	14.74	100
	3431	Poor	0.02	8.38	97.2
	3431	Thinned	0.40	70.74	99.4
	TOTAL		**0.86**	**93.86**	**99.3**
Rutidosis heterogama	3444	Mod-good	1.58	39.44	100
	3605	Mod-good	0.57	1.21	100
	TOTAL		**2.15**	**40.65**	**100**
Syzygium paniculatum	3241	Mod-good	2.12	4.94	100
	TOTAL		**2.12**	**4.94**	**100**
Tetratheca juncea	3241	Mod-good	2.12	4.94	49.9
	TOTAL		**2.12**	**4.94**	**49.9**

1.5 Conclusion

The projects assessment of impacts to candidate threatened flora within the BDAR and BAM-C has adopted the recently released guide for assessing areas of restricted access in accordance with the BAM.

Nine restricted access areas were identified and described through available desktop resources to inform the potential assumed presence of candidate flora and fauna species.

Given the habitat requirements for a number of candidate fauna species and the recorded presence in adjoining and contiguous areas of habitat, all candidate fauna with associated habitats within the restricted access areas were assumed present.

A total of 19 candidate flora species recorded within the subject land through targeted survey, or were otherwise requested by CPHR, were also assumed present within the restricted access areas, if they were recorded within the same IBRA subregion.

30 candidate flora species with habitat within both the restricted access areas and adjoining contiguous areas of the subject land were assessed and excluded from the assessment through surrogate survey in accordance with the BAM.

The surrogate survey areas were within representative PCT and condition classes and sampled >70% of the species like for like habitats within each IBRA subregion.

Attachment A EnergyCo approval for the use of the recently released *Remote assessment of biodiversity values: Biodiversity Assessment Method guide* (DCCEEW, 2025)

EnergyCo

Ref: DOC 25/359969

8 May 2025

Dr Louisa Mamouney
Executive Director,
Planning, Offsets, Ecosystems and Threatened Species Division

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Re: Request to use the remote assessment of biodiversity values guide for inaccessible land for the Hunter Transmission Project (HTP)

Dear Louisa,

I refer to our recent discussions on the development of the Hunter Transmission Project.

I would like to request the use of the *Remote assessment of biodiversity values guide* (DCCEEW, 2025) (the Guide) to exclude species in inaccessible areas of the proposed transmission line alignment that were not present in surveyed areas.

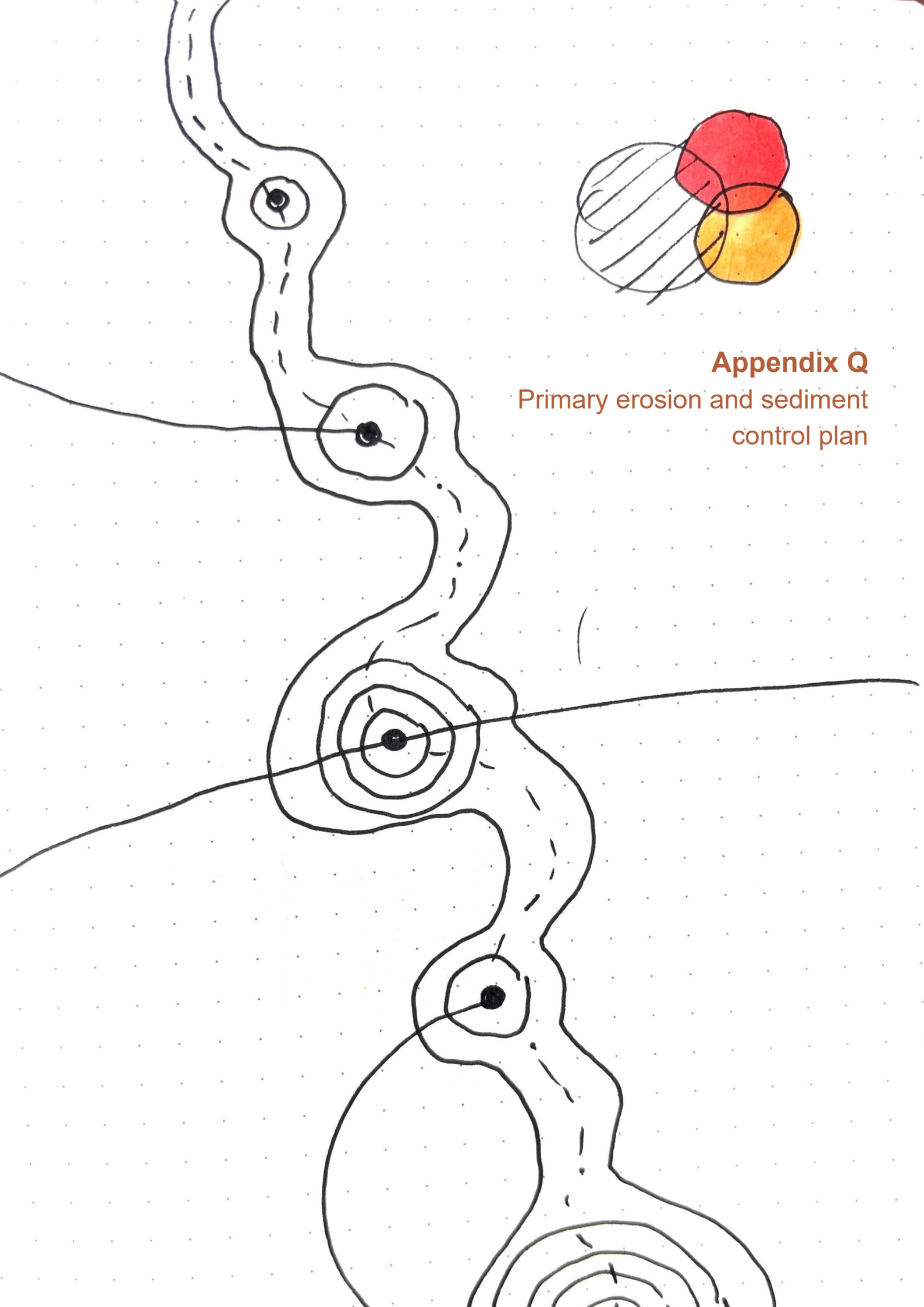
The areas proposed for application of the Guide include two private properties with no land access agreements in place, minor realignment changes that occurred after seasonal surveys and small areas where the topography was deemed to represent an unacceptable safety risk to access (such as cliff lines).

We consider the HTP meets the requirements for the application of the guide as a Critical State Significant Infrastructure project. We would like to work with your team to develop and agree the process to undertake the assessment. Subject to the time required, the outcome may not be included until the revised BDAR at the response to submissions stage.

Thank you for you and your team's ongoing support and collaboration with EnergyCo to deliver the HTP. Please contact Robin Ward to progress this matter, or for more information at robin.ward@planning.nsw.gov.au.

Sincerely,

Thomas Watt
Director, Planning and Policy
Energy Corporation of NSW



Appendix Q

Primary erosion and sediment control plan

Primary Erosion and Sediment Control Plan

Hunter Transmission Project

Prepared for EnergyCo

CONTRACT No.: TBA

Revision History

Rev	Prepared By	Approved By	Date	Description/Summary of Changes
A	Bradley Cole (CPESC #7645)	Bradley Cole (CPESC #7645)	07 November 2025	Initial Draft for Review
B	Bradley Cole (CPESC #7645)	Bradley Cole (CPESC #7645)	20 January 2026	Updated to address comments

Draft issues of this document are identified as Revision A, B, C etc. Following acceptance by the document approver, the first finalised revision will be Revision 0. Subsequent revisions will have an increase of "1" in the revision number (1, 2, 3 etc.).

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1 Objective of this plan

EnergyCo are committed to planning and executing the construction of the critical State Significant Infrastructure Project (SSI-70610456) – The Hunter Transmission Project (HTP or the Project) in a manner that does not cause erosion and/or pollute the environment. This strategy has been prepared with reference to the requirements of (SSI-70610456) – The Hunter Transmission Project to provide measures, processes and responsibilities to minimise risks to local sensitive ecological receptors and for the potential for soil and water impacts (including impacts to groundwater and geomorphology) during construction and details how Erosion and Sediment Control (ESC) will be managed and implemented during construction and provides:

- key management principles.
- management of specific areas/stages of construction.
- details of proposed erosion and sediment control measures.
- comments on the use or exclusion of existing operational structures within the ESC Strategy.
- proposed alternative approaches.
- specific approaches for sensitive areas and a process for planning inspection and review.
- guidance on planning and communication of ESC through model erosion and sediment control plans; and
- the commitment to training and communication with construction personnel.

This Plan has been developed in accordance with the principles discussed in the following publications and documents:

- Best Practice Erosion and Sediment Control (International Erosion Control Association (IECA, 2008)
- Managing Urban Stormwater, Soils & Construction, Vol 1. (Landcom, 2004).
- Managing Urban Stormwater: Soils and construction - Volume 2A Installation of services (DECC, 2008).
- Managing Urban Stormwater: Soils and construction – Volume 2C, Unsealed roads (DECC, 2008).

Progressive erosion and sediment control plans are to be developed progressively throughout the construction staging to provide detailed and up-to-date information relating to specific areas and control measures. Progressive ESCPs will be updated as works progress or upon review of site condition performance to reflect the evolution of site conditions. Initial concept plans are provided in Appendix 3 of this document.

1.1 Supporting Documents

This plan has been prepared in reference to other key documents, strategies and procedures for the HTP, which collectively provide a holistic approach to the site management of erosion and sediment control for the construction activities.

1.1.1 Guidelines and Standards

- Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018
- Best Practice Erosion and Sediment Control (International Erosion Control Association (IECA, 2008)
- Managing Urban Stormwater: Soils and Construction (4th Edition) Volume 1 (the “Blue Book”), Landcom, 2004
- Managing Urban Stormwater: Soils and Construction (4th Edition) Volume 2A: Installation of Services, DECC, 2008
- Managing Urban Stormwater: Soils and construction – Volume 2C, Unsealed roads (DECC, 2008).
- NSW EPA, Approved Methods for the Sampling and Analysis of Water Pollutants in NSW, 2004
- NSW EPA, Waste Classification Guidelines, 2021

1.1.2 SWMP

This plan should be read in conjunction with the approved Soil and Water Management Plan (SWMP) for the Project to provide guidance on roles and responsibilities on site, monitoring requirements for water quality objectives and Project specific requirements for the management of soil on the site.

1.1.3 PESCP's

Progressive Erosion and Sediment Control Plans (PESCP's) will be developed for the site throughout the construction period by the contractor. These plans will be developed in accordance with this strategy and will document the specific measures to be implemented within the active work areas.

Project Engineers, Superintendents, Foremen, the appointed Certified Professional in Erosion and Sediment Control (CPESC), and environmental management staff will be responsible for the development and implementation of PESCP's on site. This will ensure that erosion and sediment management is incorporated into the planning phase of construction activities in an effective manner. PESCPs will be reviewed and certified by the Project CPESC prior to implementation. A hold point is to be established at the time ESC measures have been installed and prior to works commencing in the catchments with potential to impact significant receiving environments, particularly environments that provide habitat for the Littlejohn's Tree Frog and Giant Burrowing Frog. Sign-off is to be provided by a CPESC (or delegate) that the required controls have been adequately installed prior to the commencement of works, or to verify that works are implemented in conjunction with the commencement of works where access for their installation is impeded.

PESCP's will be reviewed every three months (or more frequently if progression of works fundamentally change landscapes and site management requirements) and updated as required. Once approved by the Project CPESC, all revisions will be controlled and allocated an appropriate revision number in the Project quality management system. PESCP's will be maintained in a site-specific register and available to site personnel for reference. A process for the preparation, review and auditing of PESCP's is to be detailed in the SWMP.

PESCP's will generally be prepared on site / design layout plans and/or detailed drainage diagrams, however topographic maps (aerials) or digital base layers may also be utilised where relevant and effective. PESCP's will incorporate the following aspects:

- title, date and revision number.
- details regarding the implementation period and staging.
- a layout of the site, including the location of access roads, ancillary infrastructure, stockpile locations.
- protected vegetation, heritage, potential contaminated sites and disturbed (cleared) areas.
- the location of temporary and permanent erosion and sediment control measures proposed to treat storm water prior to discharge (including vegetated treatment systems); and
- approval and signoff from CPESC (if applicable).

A concept PESCP has been developed for the Project and provided in Appendix 3. It's noted that the intent of this concept PESCP is to illustrate the general approach to erosion and sediment control management and indicate the potential location and type of controls which may be implemented throughout the Project. Site specific PESCPs will be developed for each work area as the Project progresses which will be verified by the Project CPESC.

1.1.4 EWMS

An environmental work method statement will be prepared for high-risk activities as defined by the Project risk assessment or as specified in the Project contract. These work statements will detail the specific management requirements for the high-risk activity and any additional measures for implementation.

1.1.5 Procedures

All staff on site will be trained in the approved Project procedures and guidelines for the management of site risks including erosion and sediment control management and dewatering activities as well and Project specific incident and reporting procedures.

2 Project Description

2.1 Key Project Components (as exhibited)

The Hunter Transmission Project (HTP, the project) involves the construction of a new overhead 500 kilovolt (kV) transmission line of around 110 kilometres connecting the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring in the Hunter region of New South Wales (NSW). The HTP description is detailed in the EIS and the HTP Amendment Report and includes:

- A new overhead 500 kilovolt (kV) double circuit transmission line of around 110 kilometres
- Realignment of the transmission line at Mount Thorley to establish a safe minimum distance from facilities
- Realignment of the transmission line at Gouldsville to avoid impacts on high-quality threatened ecological communities through co-location with existing electrical infrastructure easements and access tracks.
- Localised easement widening for conductor swing to be between 80 metres and around 140 metres wide in certain locations so that the transmission line assets stay wholly within the operational easement for the project.
- 2 new switching stations (Bayswater South and Olney)
- Upgrades and relocation of components to the existing Bayswater and Eraring substations including expansion of the stations to accommodate the installation of transformers, new componentry and transmission connections
- General adjustments and upgrades to existing transmission lines, alterations to access tracks for construction and operation of the project to provide more suitable route for construction vehicles and to minimise impacts to a number of threatened amphibian species and their habitat.
- Minor adjustments to the project impact area for intersection upgrades to cater safely for the proposed construction traffic volumes and delivery of oversized equipment or construction material and ensure public road safety.
- Development of the Wollombi Road construction support site to include a temporary worker accommodation facility with capacity to house up to 300 construction workers.
- Construction of dedicated Project laydown areas with seven (7) areas identified as part of the EIS And Amendment Report

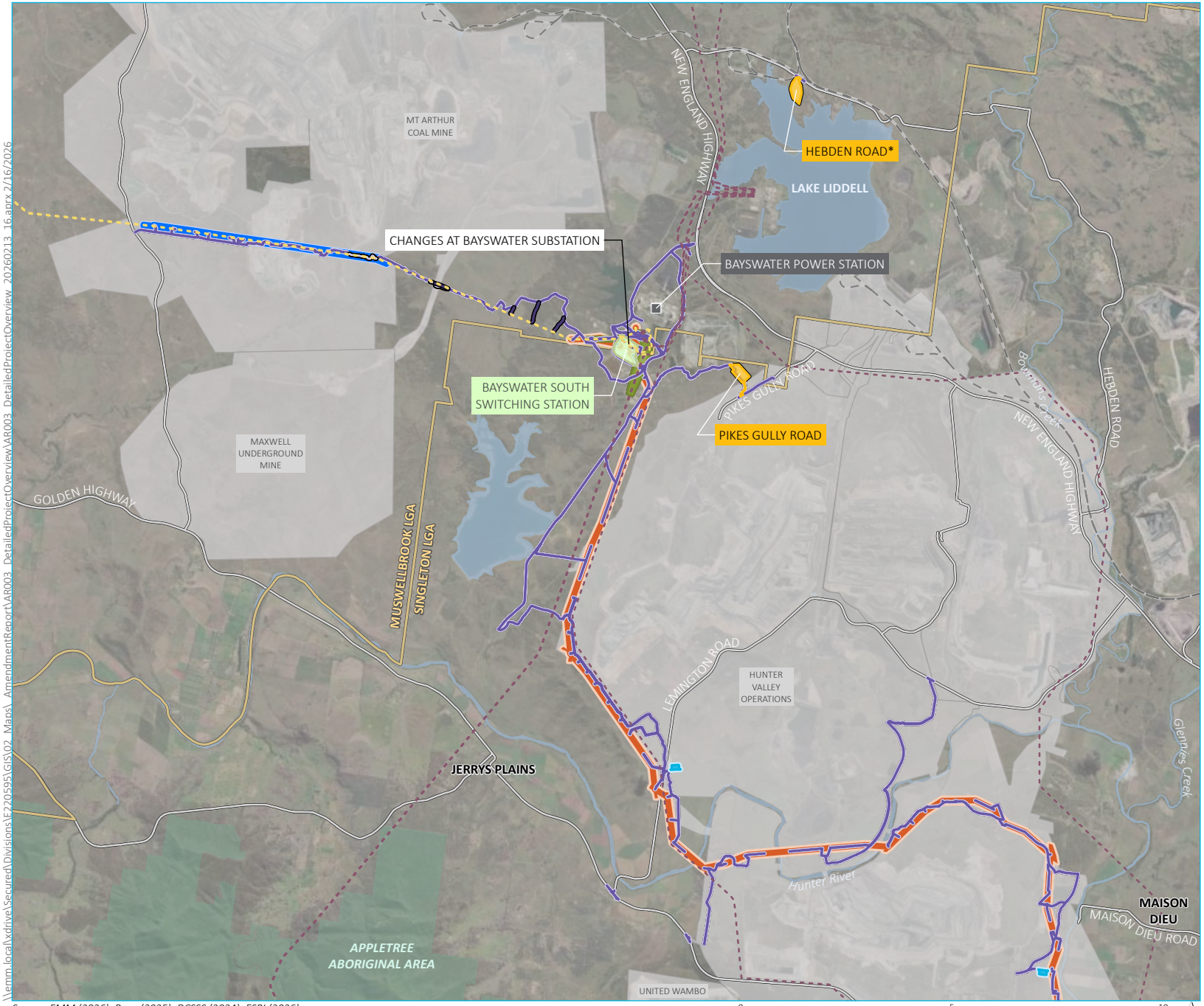
The new transmission line would transport electricity generated in the Central-West Orana and New England Renewable Energy Zones (REZs). It would connect the existing 500 kV transmission line at Bayswater to the existing 500 kV transmission line in the Olney State Forest near Eraring. This would strengthen the State's core electricity grid and supply clean and reliable energy to NSW consumers for generations to come.

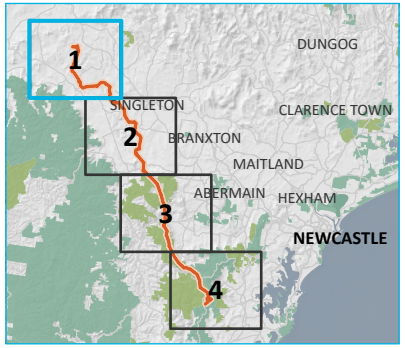
The HTP involves development across 5 local government areas (Muswellbrook, Singleton, Cessnock, Central Coast and Lake Macquarie). Most of this development would be concentrated in and around the HTP corridor (refer to Figure 1 below).

2.2 Key Project Components (as amended)

The proposed amendments and refinements to the exhibited project are collectively referred to in this plan as the 'amended project'.

- The key proposed amendments and refinements include:
- realignment of the transmission line at Mount Thorley
- realignment of the transmission line at Gouldsville
- localised easement widening for conductor swing
- minor changes at Bayswater substation
- changes at Eraring substation





KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Bayswater South switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Adjustment to existing transmission line (lines 31 and 32)
- Upgrades to existing transmission line (lines 5A3 and 5A4)
- Access tracks, road upgrades and intersection upgrades
- New access track
- Access tracks no longer required

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- Energy
- Local government area

Detailed amended project overview
Map 1 of 4

Hunter Transmission Project
Figure 1.1

EMM
creating opportunities

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

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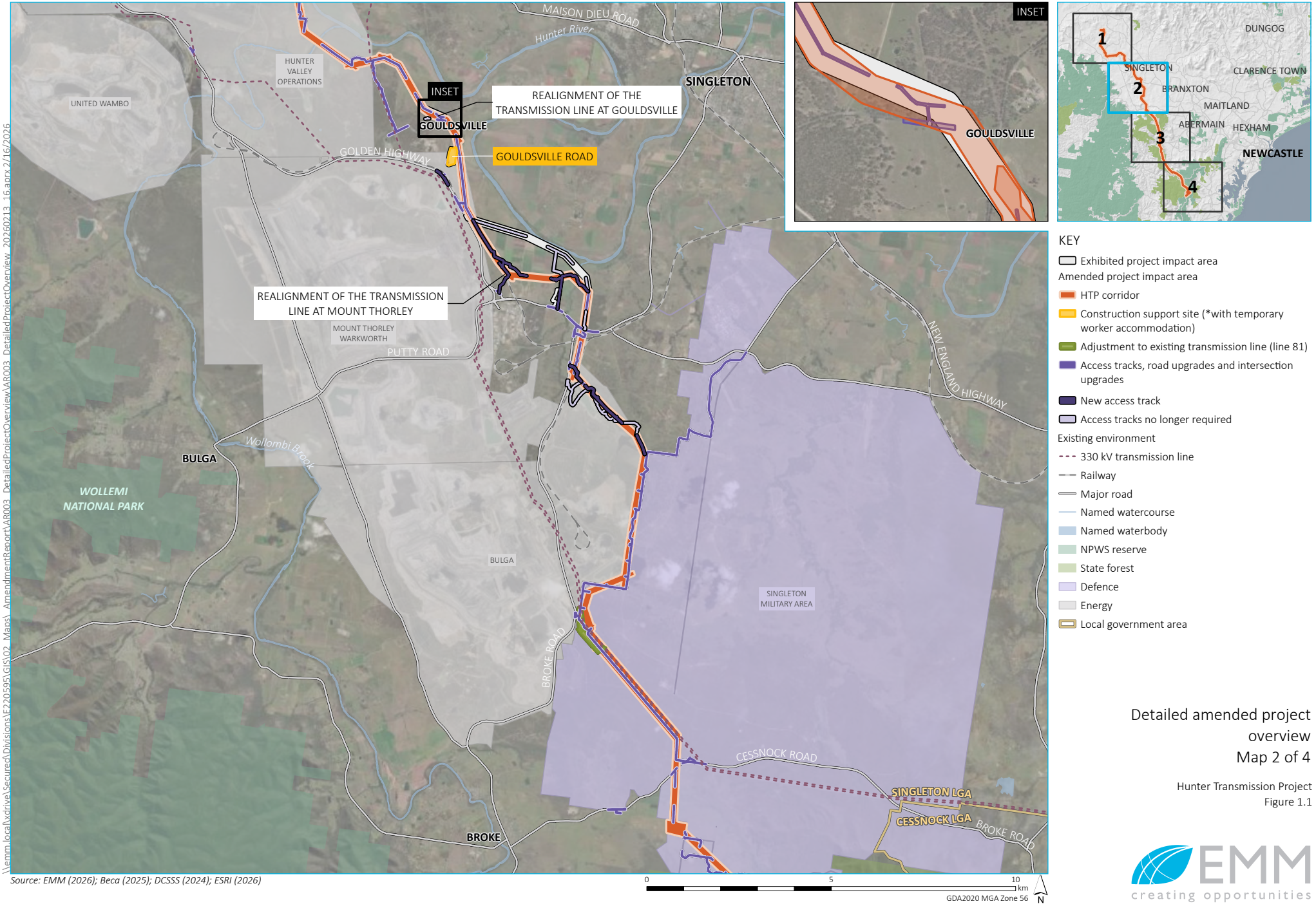

KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Construction support site (*with temporary worker accommodation)
- Adjustment to existing transmission line (line 81)
- Access tracks, road upgrades and intersection upgrades
- New access track
- Access tracks no longer required

Existing environment

- 330 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest
- Defence
- Energy
- Local government area

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

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Detailed amended project overview
Map 2 of 4

Hunter Transmission Project
Figure 1.1

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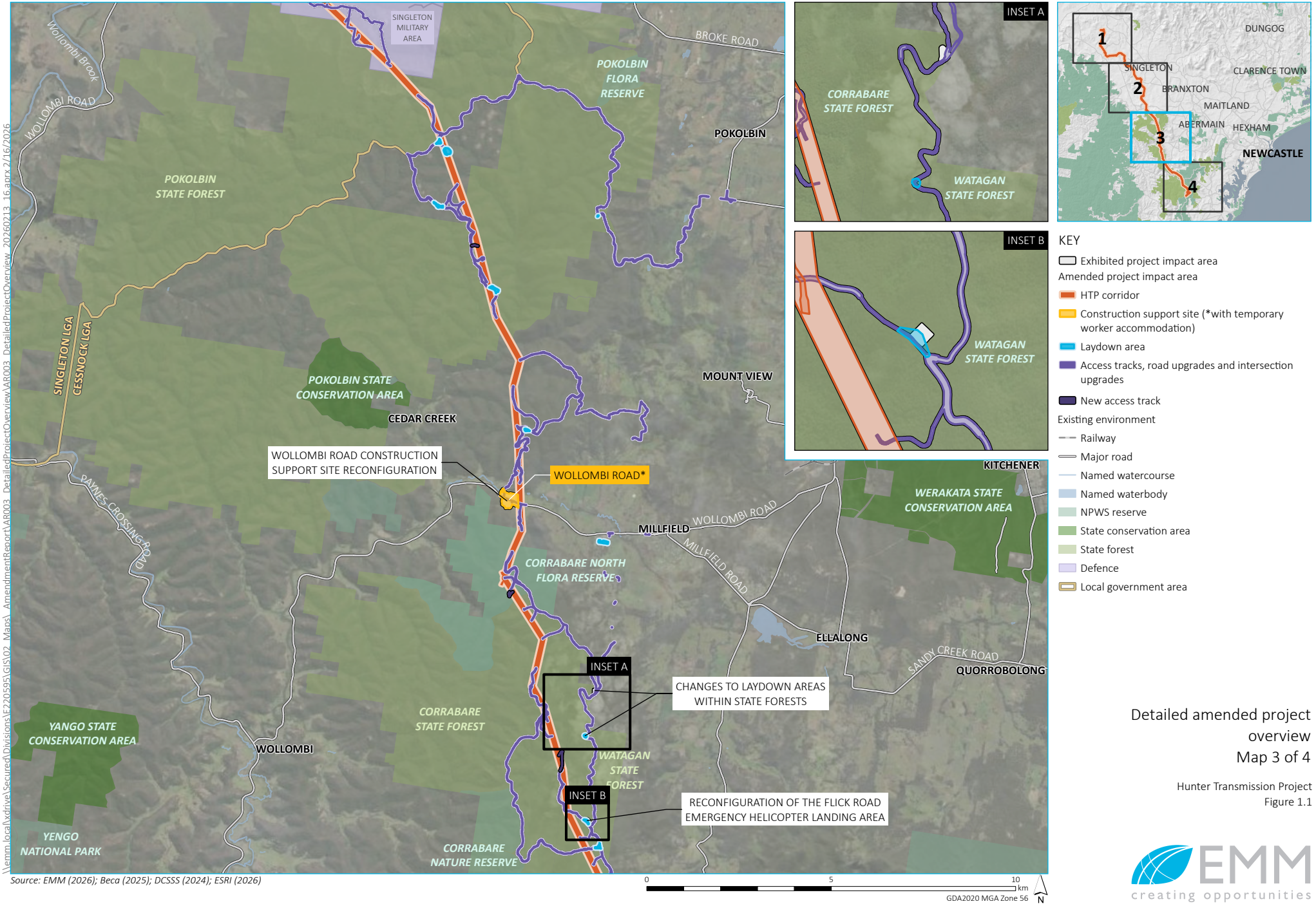

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Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

Detailed amended project overview
Map 3 of 4

Hunter Transmission Project
Figure 1.1

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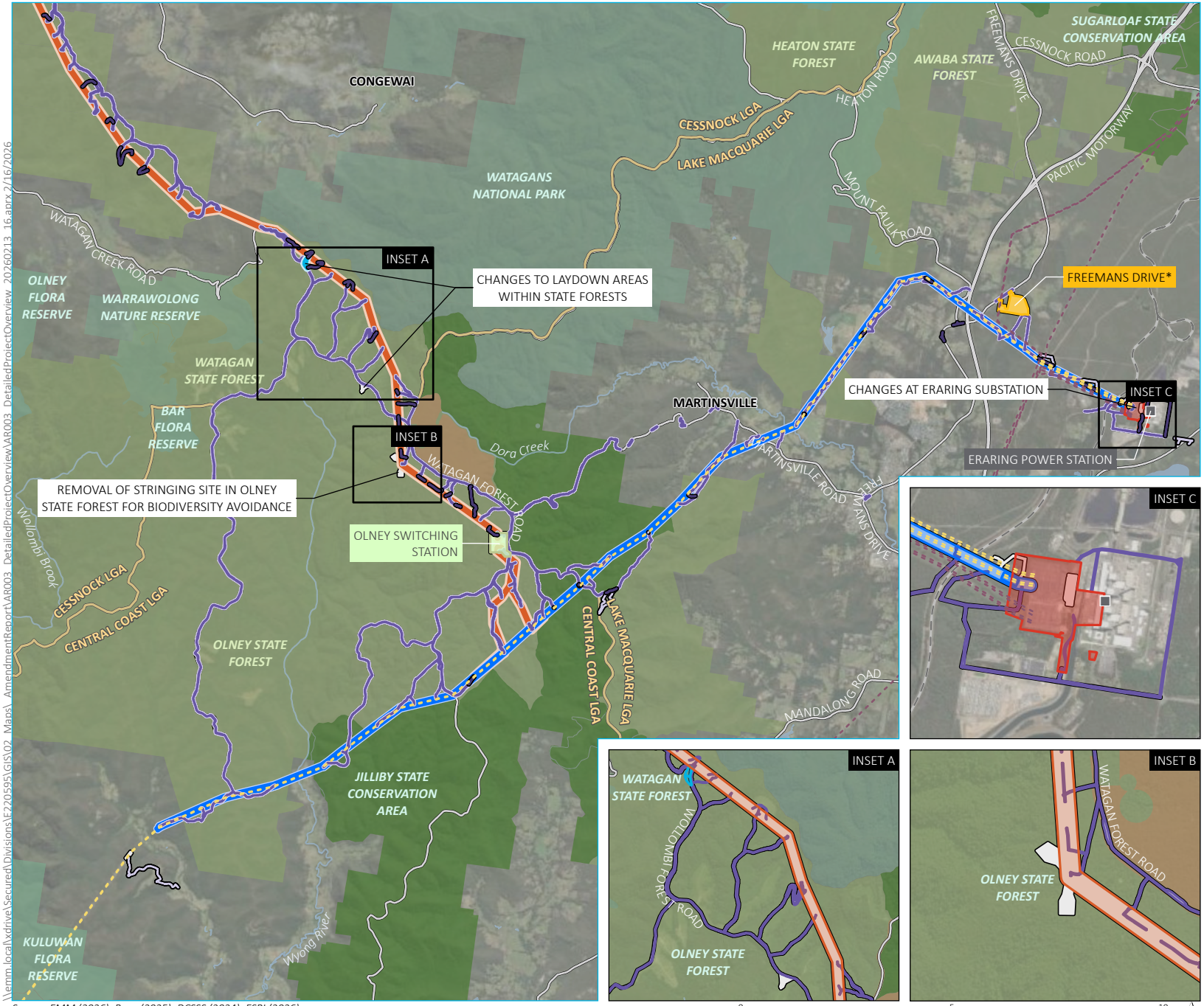

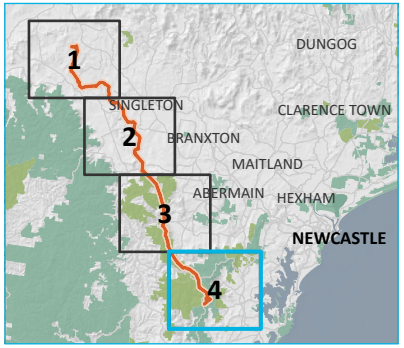

KEY

- Exhibited project impact area

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access tracks, road upgrades and intersection upgrades
- New access track
- Access tracks no longer required

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State conservation area
- State forest
- Recreation area
- Local government area

Detailed amended project overview
Map 4 of 4

Hunter Transmission Project
Figure 1.1

Source: EMM (2026); Beca (2025); DCSSS (2024); ESRI (2026)

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creating opportunities

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- changes to access tracks
- minor adjustments to the project impact area for intersection upgrades
- adjustments to the proposed access routes for construction
- reconfiguration of construction support sites and temporary worker accommodation facilities
- changes to laydown areas within State forests
- reconfiguration of the Flick Road emergency helicopter landing area
- removal of stringing site in Olney State Forest
- changes to construction plant and equipment types and locations
- changes to the disturbance area at Olney.

These amendments are further outlined in Figure 1, and descriptions of the amendments are included in Chapter 2 (Description of amendments).

The works subject to this report are those that will occur in the southern portion of the HTP Alignment within the Olney State Forest. These works are predominantly towers 1 to 10 locations, the Olney Switching Station and the associated access roads within this area. This area is depicted in Figure 2.

Erosion and sediment impact from the Project has the potential to result in pollution of waters and offsite impacts to particularly sensitive receiving environments if not managed effectively. For this Project, the preliminary assessment has identified the following erosion and sedimentation risks:

- stockpiling or material storage.
- earthworks exposing bare soils and affecting flow paths.
- drainage works and watercourse activity.
- movement of vehicles and machinery on and off site; and
- wind and water impacts on exposed soils.

2.2.1 Preliminary Erosion and Sediment Assessment

A Preliminary Erosion and Sedimentation Assessment (PESA) for the proposed works has be undertaken to assess the proposal works and identify areas of high risk based on the ground condition and receiving environments encountered and to inform the details of this document. Key aspects of the PSEA include:

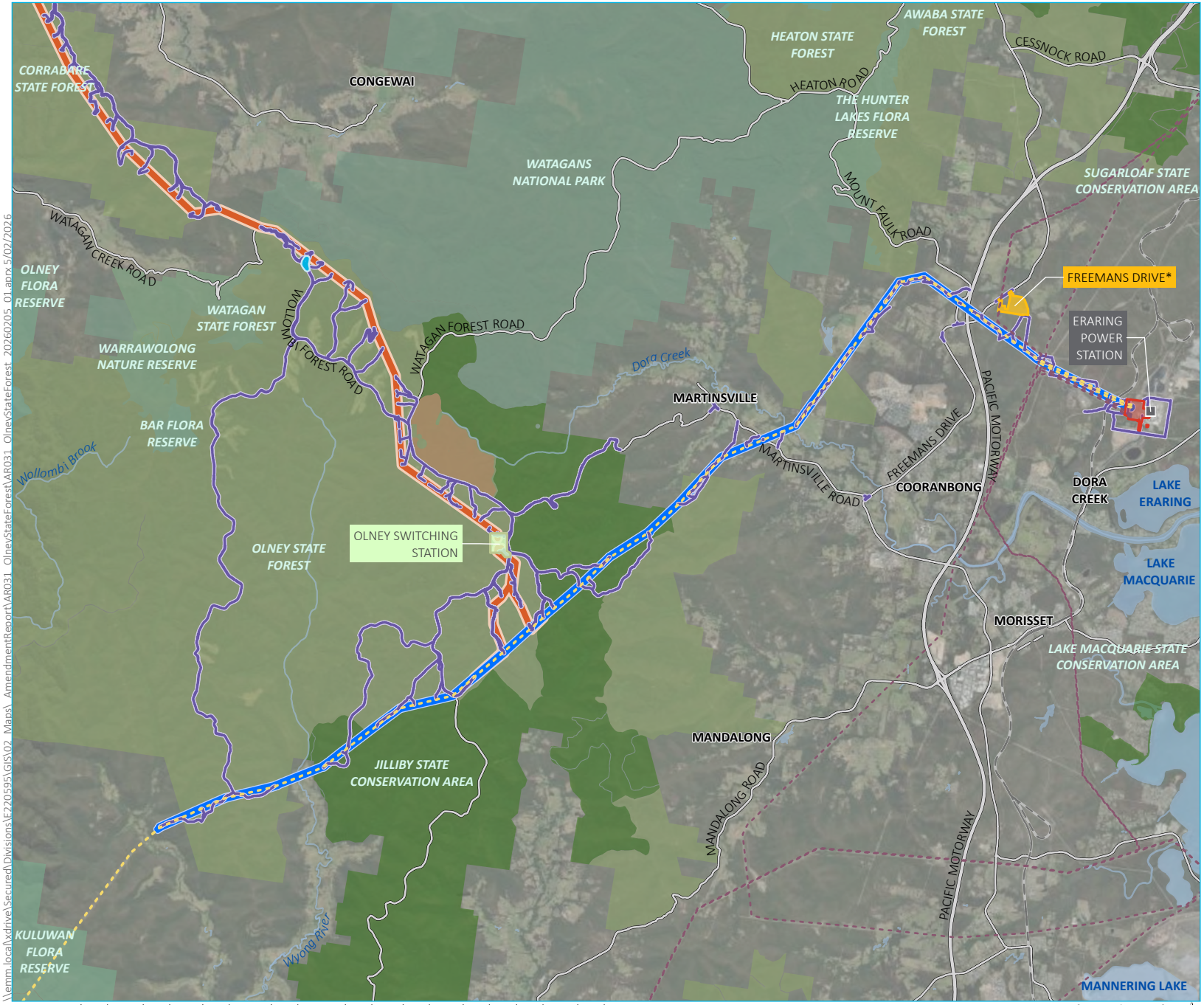
- Areas of land greater than 2500m^2 that would likely be disturbed.
- Soil erodibility and erosion hazard that has been mapped as very high for some parts of the proposal.
- Sensitive receiving environments and wetlands which are located in proximity to the Project.
- Sensitive landform and drainage features within or adjacent to the HTP impact areas.

3 Key Project Environmental Considerations

The Project is located in Hunter Region of NSW (Figure 3). The project impact area (PIA) relevant to this report will travel primarily through Olney State Forest land that has historically been cleared for timber purposes. The alignment crosses several unsealed state forest access roads, watercourses and will be in proximity to privately owned properties. Biological sensitivities and assurance of ecological connectivity continuation in the immediate local surrounding areas are identified as significant environmental considerations for the Project with threatened and endangered species known to occur in the area.

3.1 Surface Water

The Catchment area identified for this scope of works is the Tuggerah Lakes Catchment which has largely regenerative state forest areas used for recreational and forestry harvesting purposes with limited development / residential areas.



KEY

Amended project impact area
- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access track

Existing environment
- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody
- Recreation area
- NPWS reserve
- State conservation area
- State forest

Olney State Forest section of the Hunter Transmission Project (HTP)

Hunter Transmission Project
Amendment Report
Figure 2

EMM
creating opportunities

Source: EMM (2026); Beca (2025); ESRI (2025); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009); DPIE (2021)

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These areas included in this assessment includes the Olney and Watagan State Forests in the upper catchments of Wyong River and Watagan Creek which are tributaries to the Tuggerah Lakes. The Olney switching station and several access roads for the HTP are included in this area. Tuggerah Lakes drains Lake Munmorah and Budgewoi to the Tasman Sea through a tidal channel at its southern end. Tuggerah Lake is relatively shallow but a highly productive system that contains a large biomass of aquatic vegetation.

The topography is close to sea level around Tuggerah Lakes with elevations up to 300 m AHD to the west in the Ourimbah and Wyong State forests. Specifically, this section of works associated with this PESCP includes the Wyong River, Watagan Creek and Dora Creek Catchment areas. The Watagan and Creek and Wyong River catchments drain to the southwestern areas of the HTP with the Dora Creek draining to the east for the western portion of the HTP (west of Watagan Forest Road). The Wyong River confluence is approximately 12 km upstream of Tuggerah Lake.

The surface water features for the Project are presented in Section 17 of the EIS prepared for the HTP which has identified several unnamed drainage features and watercourses within the PIA from the *NSW Hydro Line* spatial dataset from the NSW Foundation Spatial Data Framework (NSW Government 2018). The nature of the watercourse includes the Strahler order, stream conditions and recovery potential. Strahler order classifies the hierarchy of streams and rivers from smallest to largest. The stream order keeps increasing as streams and rivers of the same order join. The Strahler order was determined from the *NSW Hydro Line* spatial dataset (NSW Government 2018).

Within the identify catchment areas, riparian corridors are well formed from regenerative vegetation. Riparian corridors form a transition zone between watercourses and the surrounding landscape. They provide valuable functions including bed and bank stability, habitats for a diversity of terrestrial and aquatic species, and conveyance functionality for low flows and floods. Riparian corridors are particularly important to maintaining the geomorphic form of a watercourse. The drainage lines relevant to the specific works area in Olney State Forest are presented in Table 1.

Table 1: Watercourse in Olney State Forest works area

Watercourse	Catchment	Strahler stream order	River Style	Proximity to Project	Comments
Dora Creek	Tuggerah Lakes	5	Meandering / Sand	Tributaries intersected by the Project (eastern areas)	Good condition within conservation area. High sensitivity receiving environment
Watagan Creek	Tuggerah Lakes	3	Floodplain pockets / Sand	Tributaries intersected by the Project (northern areas)	Good condition within conservation area. High sensitivity receiving environment
Wyong River	Tuggerah Lakes	5	Headwater	Tributaries intersected by the Project. (central / western and southern areas) Receiving water for Tuggerah Lakes	Good condition within conservation area. High sensitivity receiving environment

3.1.1 Key fauna species

The proposed works are to occur in proximity to some identified threatened and endangered species which will govern the level of protection and measures implemented on the Project during development. The biodiversity development assessment report (*Technical Report 1– Biodiversity development assessment report*), has identified several threatened frog breeding habitats within, or near the PIA. These include:

- Giant Burrowing Frog – listed as vulnerable under the Biodiversity Conservation Act 2016 (BC Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

- Littlejohn's Tree Frog – listed as endangered under the BC Act and EPBC Act
- Stuttering Frog – listed as endangered under the BC Act and vulnerable under the EPBC Act
- Giant Barred Frog – listed as vulnerable under the BC Act and EPBC Act
- Red-Crowned Toadlet – listed as vulnerable under the BC Act.

Threatened frog breeding habitats that have been identified by the biodiversity development assessment report (*Technical Report 1 – Biodiversity development assessment report*), are concentrated in the upper reaches of the Olney, Watagan and Corrabare State forests.

The potential key threatening processes for these species relevant to this PESCP include habitat loss and fragmentation from development, altered water flow impacts and sedimentation impacts during construction and operation. These factors could lead to impacts to small, isolated populations with low genetic diversity, or limited breeding environments making them more vulnerable to extinction. Water pollution and increased sediment loads from run-off can impact egg and tadpole development (deMaynadier & Hunter 1995; Welsh & Ollivier 1998) within these species which are primarily pond breeders.

3.2 Topography and drainage

The HTP PIA climbs up the Watagan mountain range within the Olney and Watagan State forests. Elevations quickly ascend to greater than 300 metres AHD and along mountain ridges crossing drainage valleys that descend into the Dora Creek valley of Lake Macquarie where elevations are as approximately 10 to 20 metres AHD.

The Wyong River catchment near the PIA, largely consists of forested areas, including the Olney State Forest. Areas adjacent to Wyong Creek in the flatter, lower reaches are cleared for limited agricultural and residential uses. Water quality at Wyong water pump station (WSC 2014), approximately 20 km downstream of the PIA, is noted in the EIS as having generally good fresh water with a slightly acidic pH. with TSS, turbidity and total phosphorous typically below guideline values for the catchment.

3.3 Soils and Geology

The project is located within the Singleton 1: 250,000 Geological Series Sheet (Soil Conservation Service of NSW, Sydney 1991). The project is located within the Sydney Basin which formed in the Late Carboniferous – Early Permian due to igneous rifting and crustal thinning, which resulted in the deposition of Permian and Triassic aged sedimentary sequences.

The PIA lies within the Soil and Land Resources of the Hunter Region 1:100,000 Sheet (DPIE 2020). Four hundred and sixty soil landscape map units have been described within the Hunter Region. Each unit is an inventory of soil and landscape information with relatively uniform land management requirements, allowing major soil and landscape qualities and constraints to be identified. Many representative type profiles are supported by laboratory analysis and soils are described using the Australian Soil Classification and the Great Soil Groups systems.

The soils for the Project footprint identified in this report include Tenosols and Kurosols from the Sydney Town and Watagan Soil Landscapes. Tenosols are a type of soil with very weak development, meaning they have little to no horizon development beyond a surface layer. They are often found on rocky areas or in sandy deposits where soil development is limited by the parent material, wind, and water. This results in a soil that is typically low in fertility and may have a loose or weak structure. Kurosol soils are acidic (pH below 5.5), texture-contrast soils that have a hard-setting, bleached sandy surface layer over a clay-rich subsoil. These soils have low fertility, low water-holding capacity, and are prone to structural degradation and poor internal drainage. They often contain subsoils with high levels of magnesium, sodium, and aluminium.

Soil landscapes identified in the Project footprint are presented in Table 2.

Table 2: Soil Landscapes relevant to HTP

Soil Landscape	Soils	Recorded Limitations
Sydney Town Soil Landscape	Undulating rises to rolling low hills on quartz sandstone of the Hawkesbury Sandstone, Terrigal Formation and Narrabeen	• Localised rock outcrop hazard, • Localised recharge zone, • Localised discharge zone,

Soil Landscape	Soils	Recorded Limitations
	Group in the south of the Hunter Region and north of the Hawkesbury Nepean catchment. Slopes 5 - 25%, local relief <80 m, elevation 40 - 360 m. Occasional rock benches are present. Extensively cleared open-woodland. Shallow to moderately deep (25 - <100 cm), well-drained Orthic Tenosols (Earthy Sands) and Brown Kandosols (Yellow Earths); Moderately deep (50 - <100 cm), moderately well-drained Brown and Yellow Kurosols (Yellow Podzolic Soils); and Shallow to moderately deep (25 - <100 cm), poorly drained Stratic Rudosols, Tenosols and Grey Kandosols (Siliceous Sands, Leached Sands and Grey Earths).	• Widespread sheet erosion hazard, • Localised high run-on, • Localised permanent waterlogging, • Widespread seasonal waterlogging
Watagan Soil Landscape	Rolling to very steep hills on fine grained Narrabeen Group sediments mainly in the north of the Hawkesbury Nepean Catchment and in the south of the Hunter Region. Slopes >25%, local relief 50 - 220 m, elevation 30 - 1176 m. Mostly uncleared tall eucalypt open-forest with closed-forest in sheltered positions. Moderately deep to deep (50 - <150 cm), well to imperfectly drained Red and Brown Kurosols (Red Podzolic Soils and Yellow Podzolic Soils); Shallow to deep (25 - <150 cm), well-drained brownish black Rudosols (No Suitable Group and Lithosols); Shallow to deep (25 - <150 cm), imperfectly drained Yellow and Brown Kurosols (Yellow Podzolic Soils); Shallow (25 - <50 cm), rapidly drained Rudosols (Lithosols and Siliceous Sands); and Moderately deep to deep (50 - <150 cm), well-drained Melacic Red and Brown Kandosols (Yellow Earths).	• Localised shallow soils, • Widespread complex soils, • Localised non-cohesive soils, • Widespread steep slopes, • Localised rock outcrop hazard, • Localised rockfall hazard, • Widespread mass movement hazard, • Widespread foundation hazard, • Widespread recharge zone, • Widespread sheet erosion hazard, • Localised high run-on.

The biophysical features of the land that are associated with various hazards are broadly soil, climate and landform, specifically noted as slope, landform position, acidity, salinity, drainage, rockiness, and climate. The 8 hazards associated with these biophysical features that are assessed by the LSC scheme are:

1. Water erosion
2. Wind erosion
3. Soil structure decline
4. Soil acidification
5. Salinity
6. Water logging
7. Shallow soils and rockiness
8. Mass movement

The project was assessed under the NSW regional based maps of The Land and Soil Capability Assessment Scheme; Second approximation (OEH 2013) (referred to as the LSC Guideline), as detailed in the HTP Technical Paper 9 Section 4.5. The assessment has indicate the PIA is characterised by LSC classes 6 to 7 identifying 'low' to 'very low' capability land: Land has very high to severe limitations for high-impact land uses (refer to Figure 3).

The EIS (Section 20) has assessed the specific erosion and sedimentation risks for the Project using the following regional data:

- slope length factor: representing the effect of slope length on erosion.
- soil erodibility factor: representing both susceptibility of soil to erosion and the rate of runoff.
- cover management factor: representing the effects of plants, soil cover, soil biomass, and soil disturbing activities on erosion.

Modelled soil erosion rates in the EIS consider bare soil surfaces (i.e. no vegetation) and covered soil surfaces (i.e. vegetated, rock capped). Erosion rates between 50 and 200 t/ha/yr are considered high, while rates greater than 200 up to 3000 t/ha/yr are considered extreme.

The EIS modelled erosion potential of the soils across the Project site was assessed as high to extreme due to the moderately high rainfall characteristics of the Hunter region, the nature of the terrain within the PIA, and the anticipated impacts from surface disturbance during construction and the associated with weak structure integrity of sandy soils. The project impact area contains a wide range of modelled soil erosion rates. Modelled soil erosion rates in this document consider bare soil surfaces for worst case scenario during construction. Rates for bare areas varied from approximately 50 t/ha/yr to approximately 2000 t/ha/yr (refer to the EIS Technical paper 9 section 4.9) with the land capability classification identifying soil structural risks such as mass movement and soil acidification of soils with a potential for a strong structural decline.

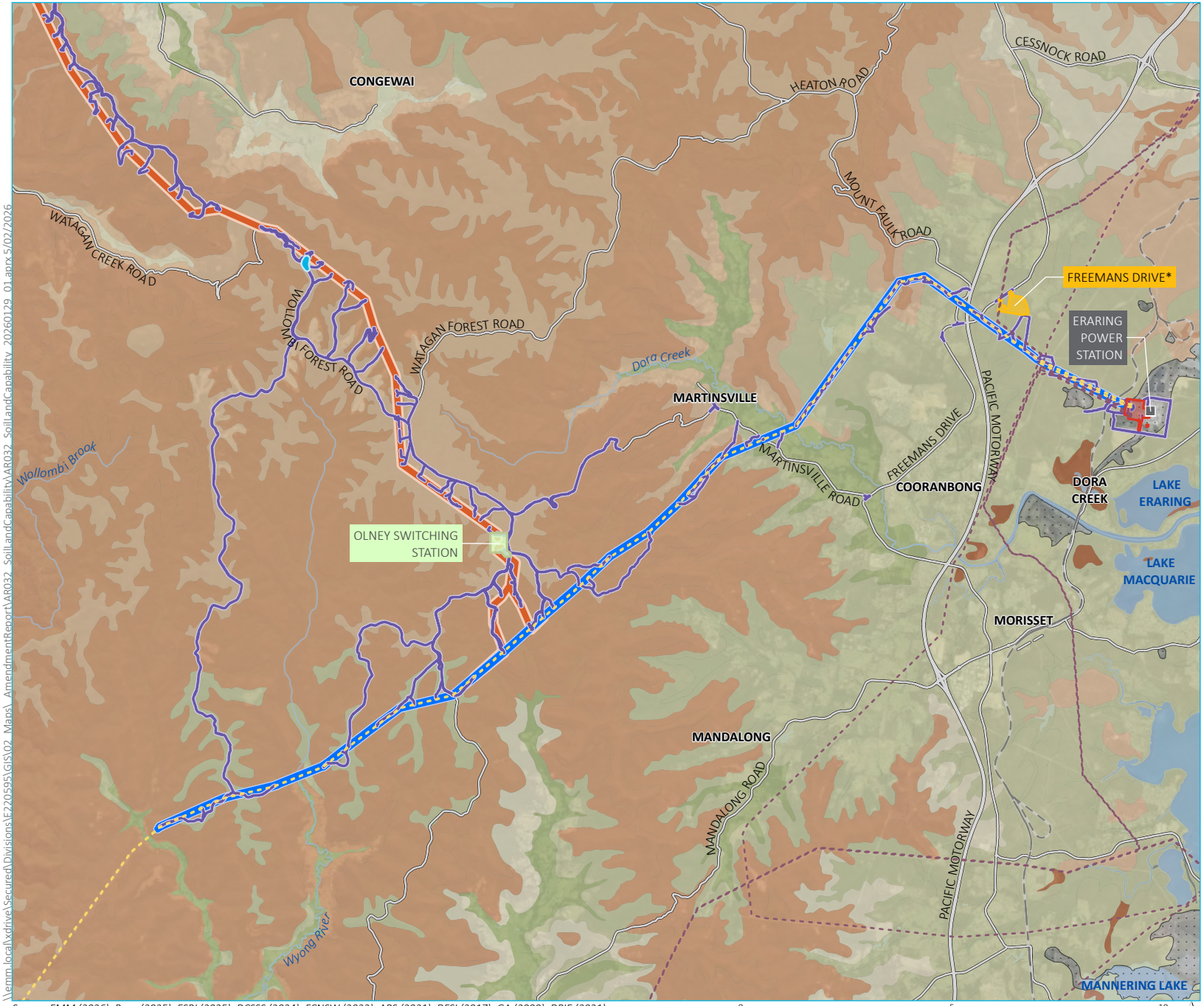
There is a high potential risk for dispersion where soils are disturbed by project construction activities within the PIA. Increased dispersive behaviour is very likely to occur when soil is exposed (i.e. left bare), remoulded, compacted or pulverised from high-intensity construction activities such as earthworks. This risk is especially high for all exposed surfaces, especially on the steeper inclines of Rises, Hills and Escarpments.

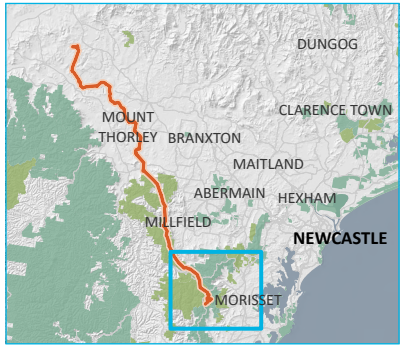
3.3.1 Acid Sulphate Soils

Acid sulphate soils (and potential acid sulphate soils) are naturally occurring soils containing iron sulphides. In their natural state, these soils are submerged but when exposed or drained, they become oxidised and sulphuric acid is produced. This reduces soil fertility, kills vegetation and reduces fish populations.

When acid sulphate soils are disturbed, such as through land development or drainage activities, the sulphide minerals are exposed to air and water, triggering a series of chemical reactions. The exposure to oxygen and moisture leads to the oxidation of pyrite, producing sulfuric acid. This acidification process significantly lowers the pH levels of the soil, making it highly acidic and toxic to plants, animals, and microorganisms. Furthermore, the release of heavy metals, such as iron, aluminium, and manganese, occurs during this acidification process, further exacerbating the environmental impact.

The EIS Technical Paper 9 (Section 4.7) has identified that the Project site is not located on or near areas identified as having an acid sulphate soils risk (as per ESPADE data base (NSW Department of Planning, Industry and Environment).





KEY

Land and soil capability

- 3- High capability land
- 4- Moderate capability land
- 5- Moderate-low capability land
- 6- Low capability land
- 7- Very low capability land
- 8- Extremely low capability land
- No data

Amended project impact area

- HTP corridor
- Olney switching station
- Construction support site (*with temporary worker accommodation)
- Laydown area
- Eraring Substation upgrade
- Upgrades to existing transmission line (lines 5A1 and 5A2)
- Access track

Existing environment

- Power station
- 330 kV transmission line
- 500 kV transmission line
- Railway
- Major road
- Named watercourse
- Named waterbody

Land and soil capability

Hunter Transmission Project
Amendment Report
Figure 3

creating opportunities

Source: EMM (2026); Beca (2025); ESRI (2025); DCSSS (2024); FCNSW (2022); ABS (2021); DFSI (2017); GA (2009); DPIE (2021)

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4 Key Principles

The PESCS draws upon the best management practices and principles to mitigate the overall environmental impact of the proposed upgrade. The objective of these is to minimise the pollution of waters resulting from construction activities. This includes specific structures and measures to minimise erosion and sedimentation to be implemented in conjunction with various site management techniques. The following hierarchy of principles will apply to all areas and stages of the construction program:

1. minimise extent of ground disturbance;
2. control “clean” water around and through the work areas as they are undertaken;
3. implement erosion control strategies to prevent generation of sediment;
4. progressive stabilisation following completion of each work area;
5. implement sediment control strategies to prevent off-site pollution, and
6. monitoring of controls & strategies including maintenance requirements.

Specific erosion and sediment control measures as identified below will be implemented to achieve a dual phased approach to the mitigation of pollution. The approach will utilise site specific features, such as topography, vegetation, structures and infiltration areas to develop a complementary approach to the site erosion and sediment management.

4.1 Site management and hygiene

Maintaining a site that it is clean, free of excessive loose site material and where site erosion and sediment controls are well maintained and installed is the most effective means of preventing sediment pollution.

Key to effective site management is communication and integration of site erosion and sediment control activities into daily work practices. Staff will be inducted into the plans and made aware of not only the intent and function of site controls but also of their responsibilities in their use. Site shutdown procedures will be detailed for each construction area and use of controls included in work method statements.

Site erosion and sediment control plans will consider and address factors such as access, management of bulk material and sweeping. It will also detail key points for protection, the selection and location of sediment controls.

4.2 Minimise Site Disturbance

Due to the limited area available for the site works, in many cases the construction works will be constrained with little available space adjacent to the Project boundaries.

The PESCPs will focus on utilising existing drainage infrastructure where appropriate and will minimise clearing of vegetation for additional control measures where possible. The PESCP aims to address each individual catchment area as a separate management location to reduce impacts and cross contamination of areas as far as reasonably practicable.

Erosion and sediment controls will be implemented prior to works with ongoing monitoring and maintenance measures implemented concurrently with earthworks operations.

4.3 Separation of site and non-site water

Separation of on site, construction water (i.e. rainfall and/or site water that is impacted by construction activities) and off site / natural water running through the Project (drainage lines, existing drainage network etc.) is central to the erosion and sediment strategy proposed in this document. Off-site water will be diverted around and through the site without contamination and/or mixing with construction runoff. This will be achieved through constructing adequately sized diversion structures with suitable armouring to prevent erosion. These include;

- earth and concrete cut-off drains;
- lined channels;
- diversion banks; and
- permanent and temporary culverts.

The minimisation of impact areas necessitates that water from the construction areas to be managed and treated as close to the source as practicable using numerous smaller or alternate sediment controls prior to release. The separation of these waters enables the volume of water requiring treatment to be minimised. Drainage design standards from industry guidelines (IECA 2008, Landcom 2004) are summarised in Table 3.

Table3: Recommended drainage design standards (IECA 2008, Landcom 2004)

Drainage Structure	Standard adopted	Source
Construction drains	10 Year ARI	Landcom 2004 / IECA 2008
Clean water diversion	10 Year ARI	Landcom 2004 / IECA 2008
Culvert crossings	2 Year ARI	Landcom 2004

Table 4:Design flow velocity for various channel linings

Lining Type	Allowable velocity (m/s)	Comment
Jute mesh with tackifier	1.3 – 1.7 m/s	1yr design life
Coir mesh	1.7 m/s	1-2 yr design life
Turf	1.5 - 2.0 m/s	To be anchored and monitored
Hydro spray (cementitious)	2.6 - 3.2 m/s	Applied as per specification
Rock	Dependant on size and shear stress	Durable angular rock underlying soil gypsum treated. Variable rock sizing for interlocking.
Reinforced turf matting	5.5m/s 30min 3 m/s 30 hours	To be adequately secured
Concrete	7 m/s	

4.3.1 Existing drainage

Construction work associated with the Project will be carried out for stanchion locations, access roads and the switching station within the Olney State Forest area. Drainage in these areas include the tributaries to Dora Creek, Watagan Creek and Wyong River within the broader Tuggerah Lakes Catchment. Drainage occurs primarily southwest with several drainage channels and creek lines through the identified Project area. The field inspection undertaken by Ochre Environmental Management in November 2025, noted that the drainage lines have moderate to significant areas of natural scour and erosion features including gully erosion and bank instability with pool and deposition areas along creek lines.

To ensure best practice in sediment control, the existing drainage channels shall be maintained separate from the movement of site waters wherever possible. Drainage infrastructure will be implemented to manage local flows for the development including piping sections of the existing drainage channels to safely convey water across the works areas.

Construction water shall only mix with off-site water where no other option exists to separate and manage water. These combined locations will be marked on the site specific PESCP and will be treated using appropriate construction sediment controls.

Work staging will accommodate expansion and improvements to the existing stormwater drainage and construction of the new stormwater network within the progressive erosion and sediment control plans.

Frog ponds and habitat features were noted to have been created as part of the Frog Building Project within Olney State Forest. This is a joint partnership between Forestry Corp NSW, Newcastle University and The Australian Museum Frog ID for the preservation and recovery of threatened frog species (such As Little Johns Tree Frog and the Gian Burrowing Frog) which have potential to occur in the immediate surroundings of the HTP corridor. These frog ponds are constructed pools and depressions on drainage channels for habitat recovery and should be retained wherever possible during the works. The location and operation of the Frog refuge ponds is to be considered in the construction

and erosion sediment control implementation on the Project and caution should be used in the implementation of ponds within the Project footprint to limit encouragement for frog habitat within the HTP works areas.

4.3.2 Catchment areas and working around drainage lines

As detailed in EIS Technical Paper 9, the Project exists in an undulating landscape with moderate to steep slopes into drainage channels and broad catchment areas. Key catchment features within the impact area of the HTP include the tributaries to the Wyong River, Watagan and Dora Creeks, potential Frog / amphibian habitat and recreation picnic and walking trails.

The topographical variation provides varied catchment runoff velocities with the transfer of surface waters into creek lines and drainage depressions the principal drainage activity of the Project work areas. Drainage is dominated by the southwest drainage line towards Wyong River, and the focus of the Project water management strategy will be to provide a clean water pathway for the carriage for all catchment water through or diverted around the site without contamination. This will be achieved by several measures including lined channels and temporary and permanent stormwater pipes. These measures and their use are described in more detail in Section 5 of this PESCP.

4.4 Erosion Control

Mitigation of erosion within construction sites is to be the primary approach for the prevention of pollution. A proactive and committed approach to erosion control will minimise the sediment generated from the site and lessen the chance of off-site impacts.

Construction activities will be planned and undertaken to:

- ensure any permanent erosion control measures are in place prior to construction.
- prevent water moving into the site from external areas.
- minimise the extent of disturbed areas and rehabilitate disturbed areas quickly.
- reduce length and steepness of slopes to reduce water velocity over exposed surfaces.
- limit volume of water movement and ponding within the site by taking water from work areas at regular intervals where this is practicable; and
- Implement erosion control measures in high-risk areas such as sensitive sites and discharge locations.

4.5 Sediment Control

Although essential, sediment controls are considered secondary to erosion controls in minimising ground and surface water pollution resulting from construction activities in Projects with confined corridor construction. The aim of this strategy will be to first reduce erosion (Section 4.4) and then capture sediment as close to the source of erosion as possible.

This will be achieved using multiple small measures, as reliance on sediment basins and a lesser number of large structures is not possible due to site constraints and preservation of ecological significance . Runoff from construction areas will be managed to ensure the highest possible water quality standard prior to its exit from the site, within design requirements.

Sedimentation control measures will be based on site specific factors including the level of site disturbance undertaken, flow and drainage features in the impacted areas, specifics of construction activities and practicality for installation and maintenance given construction activities. Measures will be selected for their effectiveness as well as practicality in construction and use by work teams. Where suitable, measures will utilise the existing topography and vegetation cover. A key factor in the implementation of sediment control will be the limiting of ponding and restriction of basin types (i.e. avoiding batch basin (Type D basin) implementation) on the HTP Impact area to deter occupation by threatened frog species.

In all cases, a primary consideration in implementing effective controls will be through effective site management and the correct selection, location and number of control measures. A suitably qualified CPESC will be engaged to assist in planning and then to continually monitor and improve implementation of control measures during construction.

4.6 Revegetation and Temporary Stabilisation

Sites will be progressively revegetated or temporarily stabilised following completion and/or suspension of construction activities. Required treatments will be nominated within the site PESCP and included in the construction schedule to ensure that materials and resources are available for correct and timely application. Rehabilitation will be undertaken in accordance with the detailed design of the HTP and any Individual Property Plans developed as part of the Project.

Prior to carrying of significant volume or concentrated flows, drainage lines are to have either adequate vegetation cover, armouring or lining equivalent to a maximum C-factor of 0.05 (70% groundcover equivalent). A combination of hydro mulching, hydro seeding and hand-seeding of batters may be implemented to achieve permanent rehabilitation. Site materials such as topsoil and mulched native vegetation may be used as part of the revegetation process to promote and achieve immediate cover and protection of exposed areas. For smaller, temporary channels these are to be protected with checking measures such as gravel bags or stacked rock.

Lands (drainage lines, batters, stockpiles) which are to remain exposed without works activities for extended periods (>5 days) are to be protected with adequate erosion control measures. As a minimum, the controls identified in the site specific PESCP will be implemented. For high erosion risk sites, additional control measures may be required as detailed in the Project's ERSED shutdown procedure Additional control measures for these high-risk areas may include covering with construction fabric or plastic, or sprayed with a suitable soil binder.

Permanent rehabilitation of sites as part of the final landscaping will aim to achieve a C-factor of 0.05 (70% groundcover equivalent) over a period of 60 days following completion of works.

4.7 Monitoring and Evaluation

The installation and maintenance of all soil and water management controls on the site are to be continually monitored to ensure effective operation, correct implementation and modification of primary and progressive plans when necessary. Daily monitoring of measures will be undertaken by internal environment and construction staff and site management personnel (e.g. Project Manager, Senior Engineers). Training will be provided to site personnel to raise the level of skills and awareness of effective erosion and sediment control and maintenance requirements for effective operation.

Pre and Post rainfall inspections will be undertaken to ensure controls are operating effectively and to identify the requirement for additional controls, modification of existing controls and /or maintenance of existing controls.

Regular inspections, monitoring and updating of PESCPs will be undertaken by a CPESC (Soil Conservationist) at least monthly during key construction activities. The frequency of inspections and monitoring by the CPESC will be determined by the requirements of the construction activities and the site risks at the relevant time with an erosion risk assessment prepared for justification of altered inspection regimes.

5 Sensitive Area Management

Within the PIA, there are several sensitive areas which require a carefully considered approach to erosion and sediment control. The PIA traverses a diversity of environmental and socially sensitive areas with high erosion potential risks and high biological significance. To assist pre-construction planning and onsite construction management, these constraints are to be consolidated on a series of map-based sheets that extend the length of the Project to identify significant locations and limitations for the management of erosion and sediment control practices on the HTP.

Sensitive Area Plans include information pertaining, but not limited to the following elements which may influence erosion and sediment control along the PIA:

- Flora and fauna features, including frog habitat areas, threatened species and endangered ecological communities.
- Local waterways and sensitive wetland areas.
- Areas of high erosion hazard.
- Identified contamination areas; and
- Areas of cultural sensitivity.

These plans are to be prepared as part of the initial construction documentation in the Project CEMP.

5.1 Clearing Procedure

Clearing will be minimised during construction to limit the impact of loss of habitat and to retain the vegetative groundcover within the corridor/ alignment. Some methods to reduce clearing impacts will include locating transmission towers on hilltops, spanning the transmission line across valleys to avoid vegetation clearing– particularly in the State forests, and only partially clearing the rest of the transmission easement. This is depicted in Figure 3 below. These design elements are to be considered in the HTP detailed design stages.

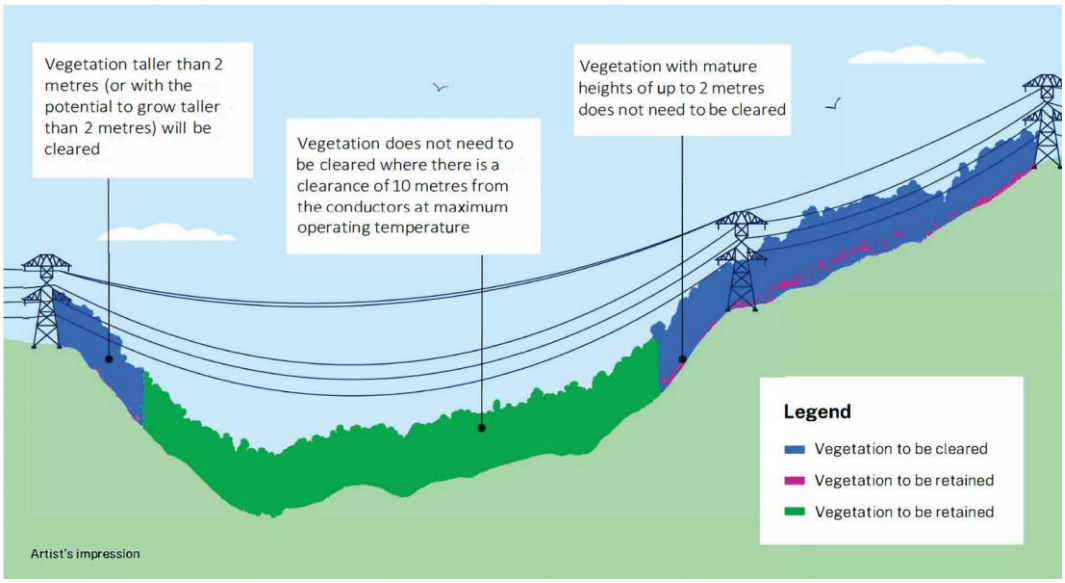


Figure 3 - Conceptual diagram of partial clearing on the forested plateau - Figure 8.3 from the EIS

Where vegetation clearing is required, the initial clearing of the site will be undertaken in a staged manner to minimise the area of the site exposed to erosion at any one time. Cleared vegetation is to be stockpiled in windrows across the contour of the disturbed area and at the lower end of the clearing footprint to act as a sediment control in slowing the flow of surface waters. PESCPs will be implemented on the Project prior to undertaking wide scaled clearing to control site water.

Wherever possible clearing activities will maintain native vegetation buffers and avoid significant stands of vegetation within the site that do not conflict with the HTP footprint or key Project features. This may require minor design alterations to minimise the impact on existing vegetation. This will be undertaken on a case-by-case basis and be undertaken in consultation with regulatory and approval authorities.

5.2 Access Tracks and Haul Roads

The PIA is accessed via unsealed roadways within the Olney State Forest. As such traditional access controls for the management of sediment tracking onto public roadways is not recognised as a key environmental risk on the Project. The main risks associated with the access tracks is the use of shared roadways (public and state forest roads), the structural integrity of the roadway formation and sedimentation for the runoff areas. This risk will be addressed through a focus on maintaining stable trafficable surfaces within construction and access areas which are free of excess material or areas of poor drainage. The management of roadways and access tracks will consider the potential impact in wet weather and the restriction of access during inclement weather to preserver roadway condition. Regular inspection and maintenance of site access points is to be nominated within the site PESCPs as will regular maintenance of adjacent access roads. Stabilised access areas will be provided to work compounds in accordance with best practice requirements (refer Figure 4) with predominantly aggregate based material used for stabilisation.

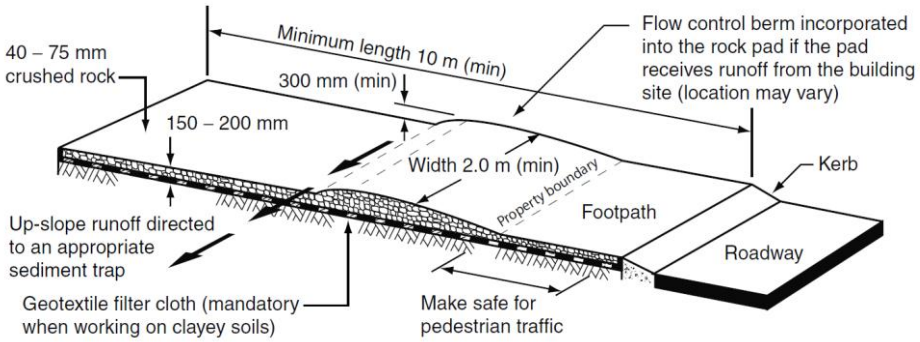


Figure 4 Stabilising access tracks

5.2.1 Unsealed Road

Unsealed roads have a number of key characteristics relating to their planning, design, construction and maintenance that are to be considered as part of the planning and implementation:

- they are linear.
- they may cross multiple catchments and have numerous site discharge points.
- the road corridor can be a limited width, with a designated easement for some types of unsealed roads and no easement boundary for others.
- erosion and sediment control is an important issue during both the construction of the road and its ongoing operation.
- specific works (e.g. culverts and causeways), location specific restrictions, road safety and constructability may all influence the selection and location of erosion and sediment control measures.

Some long-term erosion and sedimentation from unsealed roads is inevitable with principles to be aimed at minimising these problems with unsealed roads. Wherever possible, existing roadways should be used and/or improved to accommodate the desires access, thereby minimising addition impact areas. From an erosion and sediment control perspective, the following principles should be considered in selecting the location of new unsealed roads:

- reduce the catchment area above the road or track by locating the road along a ridge or as high as possible on side slopes.
- minimise disturbance to soil and vegetation.
- minimise the number of watercourse and drainage line crossings.
- avoid steep cross-slopes (greater than 18 degrees).
- avoid high erosion hazard soils (e.g. dispersive soils, soil loss classes 5, 6 and 7).
- avoid areas of riparian vegetation and maintain buffer strips between the road and any watercourse.
- avoid areas prone to mass movement; and
- avoid soil types having poor construction quality.

Existing and permanent access tracks will be used in preference to creation of new tracks when these are available. These existing tracks will be enhanced with improved drainage and surfacing if required. Unsealed roads have been categorised into three broad groups:

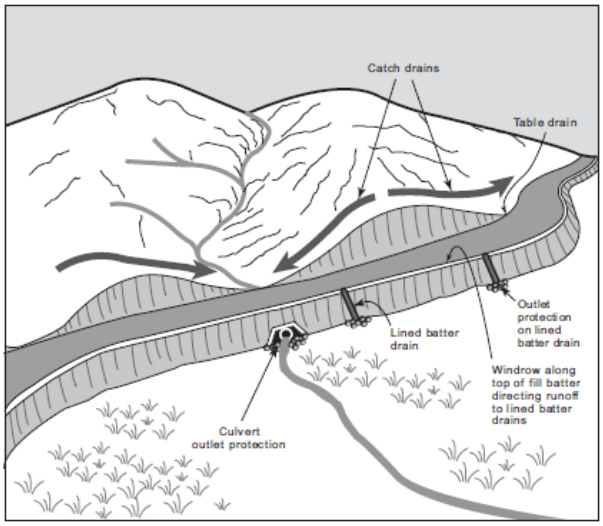
- Group 1 – designated easement roads, including public and Crown roads.
- Group 2 – access/maintenance tracks, including fire trails.
- Group 3 – private access tracks.

Unsealed roads and tracks can have various surfaces. Many are regularly graded while others are rough. Many minor tracks are covered in groundcover vegetation and leaf litter. Some unsealed roads act as strategic firebreaks. In these instances, the road surface should be kept free of vegetation and have slashed firebreaks on either side. However, other roads and particularly minor tracks should be left to accumulate a vegetative groundcover and leaf litter deposit. Vegetative cover with cross-banks and drains provide the most stable natural road surface available for minor tracks (e.g. group 3). By reducing the effects of raindrop impact and reducing the velocity of surface flows, erosion is minimised. The majority of unsealed roads utilised for the HTP will include access roads through Olney State Forest, therefore are generally designated or public access road that must comply with relevant road design standard .

Some unsealed roads or sections of them (e.g. bridge or ford approaches) may require gravelling to reduce erosion. Gravel should be tested and should not be used if it contains significant levels (greater than 10%) of dispersible fines. The use of gravel that breaks down easily, particularly under traffic, should also be avoided where possible.

Newly formed access tracks or enhanced access tracks will consider the following constructability aspects:

- clearing width should be limited to a maximum of between 2 and 5 metres from the edge of any construction activity, with clearing to be minimised to essential areas.
    - The clearing width can be increased to accommodate, constructability aspects such as (road drying, line of sight and turning bays).
- effective surface drainage is required on unsealed roads and tracks to minimise erosion by controlling runoff. All unsealed roads and tracks should be constructed with adequate permanent drainage;
    - unsealed roadway drainage structures are commonly designed to convey a 5-to-10-year ARI design flow
    - ‘crowning’ the centre of the road 150–300 millimetres above the surface of the table drain or natural surface, directing water to either side of road.
    - form of either outfall or infall drainage
- constructed as stabilised surfaces (including batters) with constructed drop-down structures and dissipater where drains divert water over exposed fill batters.



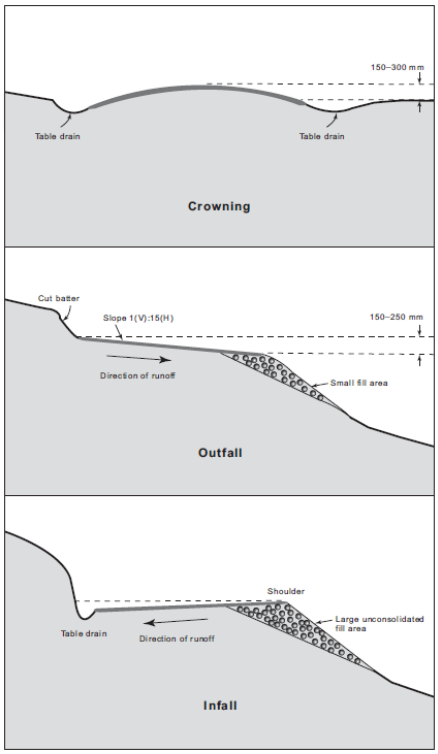


Figure 5: Batter protection measures

Figure 6: Surface drainage and stabilisation

5.2.2 Road Drainage

Cross-banks (or rollover banks), are earth banks with upstream channels used to minimise erosion by directing runoff across a road surface, minimising the concentration of runoff along the road and reducing runoff velocities. They are designed to collect road runoff at key locations (e.g. directly above an increase in track grade) and divert the cumulative flow across the surface of the road to a stable discharge point. The spacing of cross-banks will be dictated by soil type, slope, local rainfall characteristics and the existing track condition if cross-banks are being retrofitted to an existing road.

Table 5 Recommended cross bank spacing (IECA 2008)

Road Grade	**Soil Erodibility**		
	Low	*Moderate*	*High*
Up to 8 degrees	70m – 90m	60m – 70m	20m – 30m
8-12 degrees	60m – 70m	60m – 50m	-
12 to 16 degrees	40m – 50m	-	-
16 to 18 degrees	40m – 30m	-	-

When assessing an existing road, note should be taken of where the road surface has begun to degrade, as evidenced by surface riling or erosion in the table drain. These points indicate where the runoff has developed enough energy to cause erosion and are key locations for cross-banks. Cross-banks should normally be designed to have a minimum consolidated effective height of 300 millimetres. A suitable outlet point for a cross-bank should be stable, level and not blocked by a stump or rock. Outlets should be located so that runoff will spill into undisturbed vegetation (where this does not have high conservation value) and not flow back onto the track

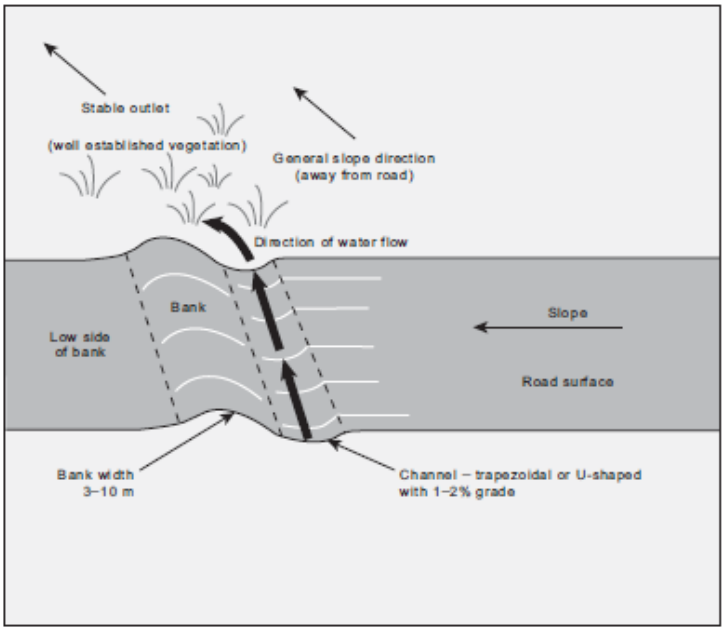


Figure 7: Cross bank design standard

A mitre drain conveys runoff from the shoulders of an unsealed road or track to a disposal area away from the road alignment, but still within the road/track easement. They keep the flow of runoff to a non-erosive velocity in table drains by reducing the length of run and potential flow velocities and diverting runoff onto a stable surface. A combination of road crowning and mitre drains provides adequate drainage on ridge roads (figure 5.9). However, they can be used intermittently with other 'in-road' structures to ensure road stability on steeper slopes. The frequency of

use will be determined by soil type, catchment, rainfall characteristics and slope. However, a maximum distance of 50 metres between mitre drains should not normally be exceeded on soils with a low erodibility.

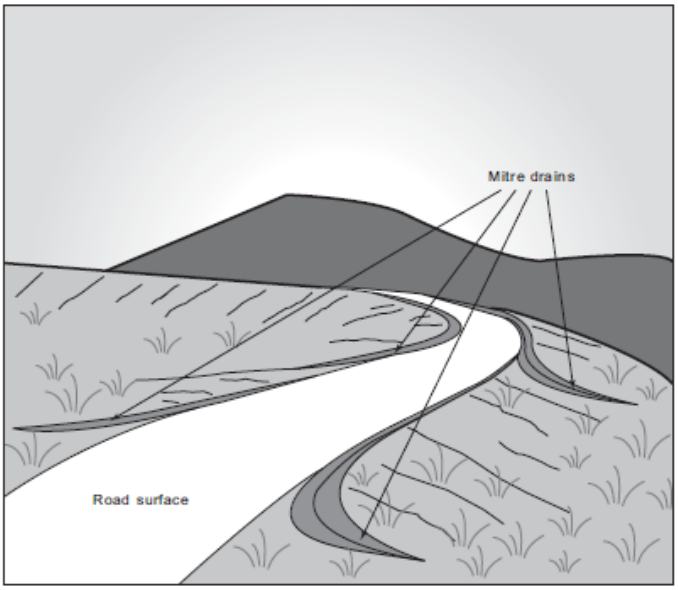


Figure 8 :Mitre Drains

Mitre drains are often 'V' shaped in cross-section. However, where a drain is required to carry larger flows, a 'U' or trapezoidal shaped design will be more stable and have a greater capacity. They should have a grade of no more than 5 degrees or 1:20 (5%), sufficient to ensure the effective removal of runoff from the table drain. Mitre drains should not discharge to areas adjacent to or near watercourses or into high conservation-value areas

Table 6: Recommended mitre drain spacing (IECA 2008)

Table Drain Slope (%)	Spacing of Mitre Drains (m)
0-2%	120
>2% but <4%	60
>4% but <8%	30
>8%	15

5.2.3 Unsealed Road Maintenance

It is standard practice to have some form of maintenance inspection program for construction utilised roadways regardless of whether the road is an unsealed public road, a fire trail or a private access track. Unsealed roads and tracks should be regularly inspected and properly maintained to provide for continuing structural integrity and safety, and to minimise the erosion and sedimentation potential. The frequency of maintenance inspections will vary depending upon the grade and purpose of the unsealed road or track and vehicle usage, and it is recommended that access tracks for the HTP are reviewed for maintenance at least weekly and immediately following rainfall events.

A maintenance program should include the following:

- location and class of road or track
- frequency of inspections, including scheduling after significant storms
- operational standards required for road to function effectively with minimum impact on surrounding environment – these can include Council guidelines and TfNSW.
- maintenance issues to be inspected.

- condition of existing drainage structures, road features and drainage lines (e.g. culverts, bridges, batters, drains, vegetation cover, road surface, creeks)
- maintenance checklists
- maintenance required; and
- a record of maintenance work undertaken.

5.3 Works Around Drainage lines

As part of the works, significant enhancement to the existing stormwater infrastructure is planned. These works include:

- Construction of drainage.
- Connection of new lines with in with existing pipes.
- New table drains and surface water channels; and
- New waterway crossings for unsealed access roads.

To avoid or minimise erosion and any adverse impact on water quality and riparian fauna and flora, construction activities are to be planned and scheduled, as much as feasible and reasonable, to be undertaken in dry conditions. If work is to continue over an extended period, exposed surfaces are to be covered with geotextile or similar material and secured with pins or sandbags.

Clearing of riparian vegetation is to be minimised where practicable, and access to waterways is to be restricted to the minimum amount of bank length required for an activity. Vegetation in drainage lines will be retained until drainage works are scheduled to begin. Where clearing is required for access or other requirements prior to drainage works, the vegetation near drainage lines will be cut at the stump with root structures retained in the ground and ground disturbance minimised as far as reasonably practical.

Clearing of riparian vegetation will be undertaken to avoid excessive disturbance of bed and banks. Riparian clearing will commence with 'scarfing' involving the retention of roots and large woody vegetation. Ground disturbance to be minimised in all riparian areas until appropriate erosion and sediment controls can be installed.

A Working Within and Adjacent to Waterways Procedure / work method statement is to be prepared by the contractor prior to the commencement of clearing activity. Work staging for these activities is to be detailed in the relevant PESCP specific to the location works.

5.3.1 Access Road drainage crossings

Drainage lines should be crossed with fords, culverts or bridges and should be designed to minimise disturbance to the bed and bank. Hydrological and engineering criteria should be used to determine the most appropriate watercourse crossing structure and its design. This will ensure that:

- the structure is inherently stable.
- there is minimal disturbance to stream flow for a designated peak-flow discharge.
- the long-term stability of the bank and bed of a drainage line and the integrity of a structure are not compromised.

Culverts should be designed with a headwall or box inlet (where water is being directed under the road or track from a table drain). Box inlets and headwalls direct water into the pipe, while allowing water to pond, forcing the culvert to run at its greatest capacity. When the culvert is flowing at its full capacity, it normally becomes self-scouring, clearing itself of sediment and debris. Headwalls and box inlets also reduce the potential for erosion around the inlet of the culvert. Culverts to be installed in drainage lines should be designed to be installed as close as possible to the natural alignment of the drainage line to avoid diverting the flow into the stream banks or creating scour of the drainage line.

Fords are most appropriate where stable natural crossings exist with no defined bank or bed and minimal earthworks are required. Fords should not normally be used where a watercourse has a deep cross-section requiring considerable excavation to provide approaches to the crossing.

Fords or causeways should be aligned as close as possible to perpendicular to the direction of the drainage line, unless an angled approach would reduce ground and soil disturbance and not impede or disturb the flow between the banks of the drainage line. Not all ford sites require extensive in-stream structures. Often, natural rock outcrops provide sufficient traction for safe crossings. In other instances, it may be necessary to stabilise the streambed using rock, with a 'retaining wall' where required to prevent any imported material from being washed away. Fords and causeways should be designed so that the entrances to the crossing are as level as possible

5.4 Earthworks

Some earthwork activities involving cut and fill operations are proposed to support the new infrastructure. The following approaches for the various earthworks have been developed to minimise the potential for soil loss and subsequent sedimentation resultant from the earthworks phase of the Project.

5.4.1 Batter formation

Batters are typically designed with a 2h:1v grade. Although a reduced batter grade is more desirable from a potential erosion perspective, this also increases the footprint of the alignment which has other environmental implications associated with additional clearing. Prior to revegetation, steep batters have the potential to experience sheet and rill erosion if site water is not controlled effectively over the formation. To assist in the retention of topsoil on batters, and their subsequent stabilisation, any batters will be constructed with the following principles:

- Clean water to be diverted around site (cut-off drains, push banks, temporary lined channels).
- Where required, ensure top of batter drains are in place and functioning as per engineering plans to capture and direct catchment waters to stormwater system.
- Site runoff above batters will be diverted away from the batters using small diversion bunds or directed to a batter chute to move from top of formation to toe of batter and sediment control structures (refer Figure 9:);

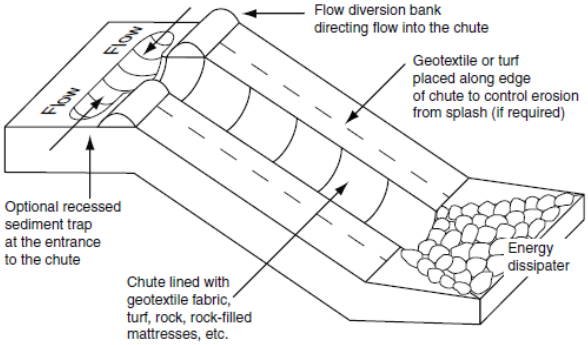


Figure 9: Batter chutes

- Topsoil to be stripped and stockpiled in designated areas or wherever possible direct transferred to minimise stockpiling impacts.
- Batters to be constructed as per plans, utilising a bench in the batter to control water flow on larger slopes with water released from the construction area at regular intervals.
- Sediment control structures such as rock and sandbag checks, mulch bunds and detention areas (sumps) will be utilised to contain runoff.
- Batters to be 'roughened' horizontally along the contour and progressively topsoiled.
- Batters to be revegetated as soon as practical after completion, in accordance with the Revegetation Management Sub-plan.

- Weather forecasts will be monitored to ensure prepared batters are not exposed to high rainfall events without adequate controls.

5.5 Ancillary Sites

"Ancillary sites" refers to temporary infrastructure such as site compounds, offices, car parks and material laydown areas or areas required for implementation of the construction program. These areas are high traffic and interaction areas and will have specific erosion and sediment control plans to manage site specific risks dependant on location and use of the ancillary site. The establishment of these areas will include the following erosion and sediment control considerations:

- suitable stabilised access including sediment / tracking controls (e.g. rumble pads).
- bitumen or crushed concrete foundation for high use tracks where appropriate.
- use of clean fill to create pads & hard stand areas.
- appropriate temporary stabilisation.
- diversion of clean water around the site; and
- diversion of site runoff to sediment control structures.

A typical access setup for a site compound is detailed in Figure 10.

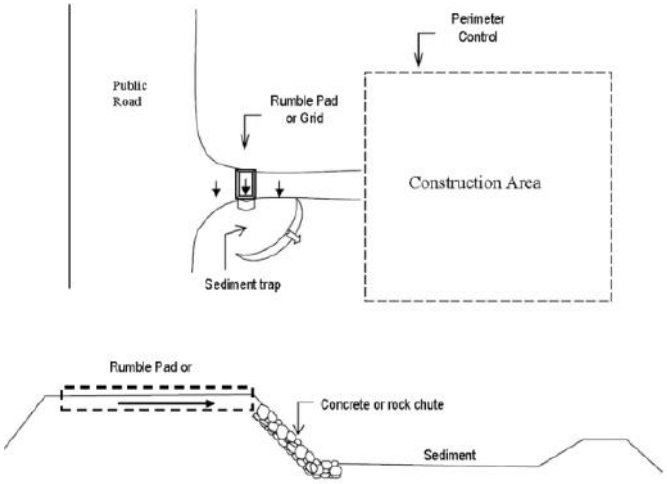


Figure 10 Typical site access to ancillary facility

Ancillary facilities which will undertake a substantial material processing component including the storage of loose material / spoil will implement a detention site control (such as a basin) to contain runoff from the site prior to discharge.

5.6 Stockpile Activities

The Project will undertake materials handling and storage of spoil at the ancillary facilities identified among the alignment and within the corridor. A site specific PESCP will be prepared for each compound location and will include specific measures for stockpile management and controls to reduce the risk of sediment laden runoff and contamination. Establishment of site soil and water management procedures will be detailed in the PESCP, reviewed by the Project CPESC and signed off by the Environmental Manager. Stockpile sites will be located and constructed consistent with the CEMP and the stockpile management plan. Long-term stockpiles are to be revegetated/stabilised as detailed in the relevant Rehabilitation Strategy.

5.7 Mulch

Following vegetation clearing, suitable mulch generated from these operations (i.e. non-weed, native hardwood mulch) may be utilised for erosion and sediment control in certain locations across the construction site. As sediment control, mulch is generally compacted into bunds to intercept sheet flow and trap sediments as runoff filters through

the bund. These controls may be berms, “horse shoe” detention areas, mulch blanket cover or wrapped in geofabric as sediment filters. As an erosion control, the use of mulch as a blanket cover protects the soil from raindrop impact and subsequent erosion.

Mulch will not to be stockpiled on site due to bushfire risk and is to be used in accordance with HTP documentation such as the Bushfire Management Plan.

Where appropriate and compliant with HTP approval documentation, the use of mulch as an erosion and sediment control measure is subject to meeting the following requirements:

- mulch is to be clean and free from soil material.
- mulch bunds are to be compacted to a height not exceeding 750mm (e.g. perimeter bunds, contour bunds, across haul roads). Mulch bunds within 50m of watercourses are to be compacted to a height not exceeding 300mm and monitored for tannin leachate.
- preference is to be given to the use of aged mulch in controls.
- mulch stockpiles will be located more than 50m from watercourses and poorly drained areas.
- mulch stockpiles will be located so that runoff is not directed to adjacent watercourses.
- mulch stockpiles will be protected with earth bund to divert run-on water and contain local runoff; and
- tannin leachate from mulch controls will be monitored daily within normal working hours.

6 Erosion Control

Erosion control is the first priority of any erosion and sediment control strategy. Erosion control measures generally function by reducing the duration of soil exposure to erosive forces, either by holding the soil in place or by shielding it. Measures to be used include a variety of construction practices, structural controls and vegetative measures aimed at managing runoff at a non-erosive velocity, and the protection of disturbed soil surfaces.

Effective and practical erosion control is achieved through:

- limiting area of disturbance and implementing progressive stabilisation to limit time of disturbance / exposure to erosion.
- integrating measures which reduce volume of water moving over exposed surfaces.
- these include diversions of non-site water safely around the site but also measures within the construction area to reduce the sizes of local catchments and take water to a regular outlet or some stable conveyance, pipe or lined channel.
- utilising measures which slow the movement of water over exposed areas to velocities which do not lead to scour of the surface. This may be achieved via creating flat gradients in channels and formations, introducing roughness or installing flow checking measures within channels; and
- providing additional protection, cover or stability to exposed surfaces so that it is less readily eroded. Options, depending on site constraints, include additional compaction, spray on stabilisers (tackifiers), mulches, blankets and temporary vegetation.

These approaches will be addressed in the planning phases for each work activity and integrated with the works at each site. This will lead to a greatly reduced potential in the generation of sediment and similarly reduce the reliance on sediment control for water quality management on the Project. A range of typical erosion control measures are expected to be used within this Project.

6.1 Minimised Disturbance

Construction areas will be kept to the minimum area required to allow for construction and access and effective working conditions. The Project environmental staff will work with construction managers to ensure limits of disturbance are clearly identified and delimitated on site. Disturbance limits (the Project boundary) will be shown on site erosion and sediment control plans and communicated within site inductions and toolbox talks.

Progressive stabilisation will be implemented on site and scheduled into the construction program as a work activity. This may mean that final revegetation is commenced in areas prior to completion of significant works across the whole of Project. Works in the areas of high erosion and pollution risk will be planned so that the period between disturbance and stabilisation is kept to an absolute minimum required to perform the works.

6.1.1 Lined Channels

Where runoff is collected and diverted to channels, these will be, as far as practical, kept to near zero grade (refer Figure). Where these channels exceed generally 3% slope or are expected to carry a substantial volume of water, they will be protected with concrete, rock, geotextile, plastic, jute or similar to prevent erosion of the channel invert. Where water is to be carried over steep areas such as batters, formal drop-down measures will be provided. A standard approach to the construction of diversion drains will include the following elements:

- batter no steeper than 3:1.
- minimum base width of 1000mm
- minimum 300mm overflow protection berm
- fabric or jute mesh lined for erosion protection.

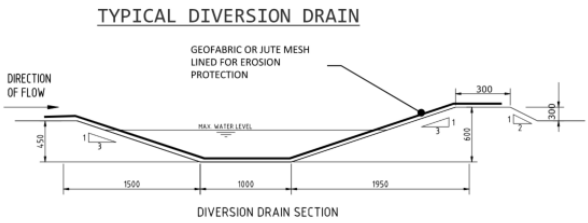


Figure 11: Typical diversion drain / channels

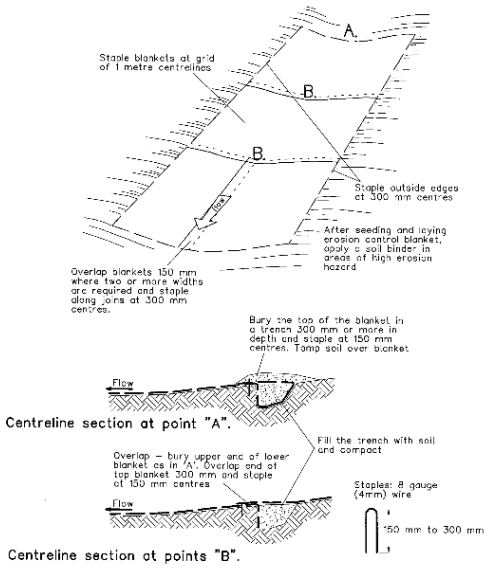


Figure 12: Lined diversion drain / channels

Construction batter cutes may be used with the incorporation of a rock dissipation area at the outlet to prevent erosion. Common to all channelized structures (channels, chutes, pipes etc.) is the requirement to ensure they are stable at both the inlet and outlet and are designed to convey the predict water flows without overtopping.

6.1.2 Diversion Banks

Diversion measures such as banks, berms, gravel socks and scratch drains assist in reducing site erosion by:

- reducing the length of slope (and the potential soil loss).
- increasing the time of concentration of overland flow.
- directing overland flow to a stable outlet point; and
- diverting run-on water around the construction site.

These measures are very effective at limiting the potential for erosion and, when integrated into the construction activities, form a critical part of the erosion and sediment control strategy. They are relatively simple to construct and are to be implemented during all stages of the construction program where appropriate. Figure demonstrates a typical installation of a diversion bund.

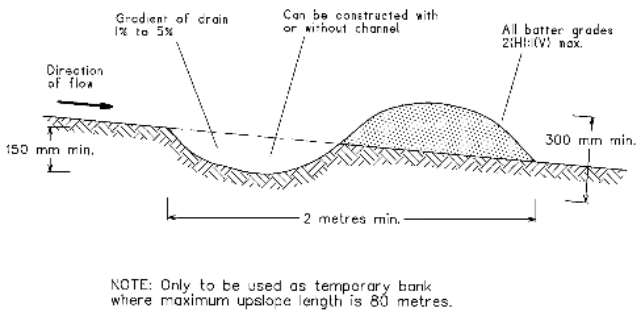


Figure 13: Typical diversion bund

6.1.3 Slow movement of water

Check dams and temporary detention areas may be formed out of rock, mulch or gravel/sandbags or similar materials to slow the movement of water on the Project. These will be used extensively on the Project for both erosion and sediment control where site water is moved either within a drain or against a formation or cut. They are inexpensive and easily implemented on site. The key to their implementation is understanding of where site water will discharge to create a stable and clearly defined spillway so as not to exacerbated loss of sediment.

Provision of greater storage capacity allows for them to function as effective small sediment controls and their performance is enhanced by reducing their spacing in the channel or flow line.

6.2 Surface Protection

In areas close to sensitive environments (bushland or clean waters) or where there is a lack of available space for sediment control, temporary and immediate protection will be achieved through covering the soil surface using geotextile, mulch, soil binders (tackifier) or plastic. This approach can also be applied as part of the construction works to secure areas which may be difficult to access removing a potential ongoing maintenance concern.

Areas disturbed as part of access construction or main works activities which are no longer required within the construction zone will be immediately protected using site mulch or light weight covers prior to revegetation and permanent rehabilitation. This approach will limit the size of the exposed construction area and reduce erosion potential.

7 Sediment Control

Although essential, sediment control is considered as secondary to erosion control in minimising ground and surface water pollution resulting from construction activities. The primary sediment control is a commitment to limiting the volume of lose and easily transportable material through generally small control measures which can be removed or replaced easily as site access and progression of work staging requires. The location and nature of controls will be indicated on progressive erosion and sediment control plans and will include temporary basins and sumps, check dams and traps and sediment fence and filters/flocculants.

7.1 Sediment Basins

Construction Sediment Basins are structures designed to meet the sediment control requirements for the construction stage and are designed to ensure containment and treatment of runoff from exposed and active work areas for a design rainfall event. For this Project, temporary sediment basins may be proposed around the switching station in Olney State Forest, however it is noted that the recommendation for any sediment basins will be to locate outside of the construction footprint area and to consider future function as frog ponds due to the potential for frog occupation. Within the alignment, the proposed staging and minimising of clearing will result in a confined corridor which in turn reduces the potential to implement standard basin controls. Sediment basins will be implemented in accordance with the PESCPs prepared by the Project CPESC and will be complimented with smaller sediment controls on site to provide an adaptive approach to management of site runoff. This may include temporary sediment traps and sumps at a smaller scale or a greater division of catchment areas to reduce the quantity of water / runoff treated at any single

location. Due to the nature of the soils in the HTP impact area being sandy and likely to be moderate to high porosity, sediment traps will aim to utilised infiltration methods wherever possible.

Sediment basin design will be in accordance with best practice guidelines and consider the sensitivity of receiving environments for the adoption of design criteria. Basin implementation may include high efficiency basins (Type B basins) and / or Type C basins based on the sensitivity of the receiving waters, the available area for the implementation of the control and specific soil loss calculations for the basin design. Where discharge of the basin is to be directly into a significant (Class 2 or higher) waterbody or a sensitive receiving environment based on biodiversity values, and amphibian habitat is not likely to be impacted, Type B basins will be preferred where reasonable and feasible to minimise the requirement for dewatering and potential disturbance of frog species and for the management of 80% hydrological effectiveness (i.e. High Efficiency basins are designed to treat at least 80% of the average annual runoff volume from its contributing catchment).

Where amphibian habitat has potential to be impacts or the basin inhabited by threatened frog species, Type C (self-draining) basins will be implemented. Guidance on basins practicality and selection is to be undertake in reference to the HTP Amphibian Management Plan.

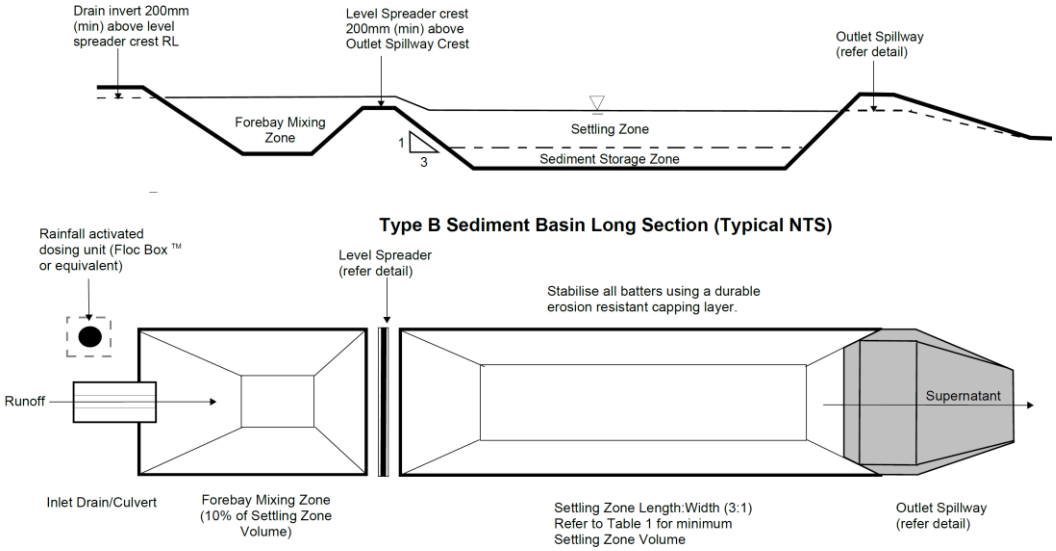


Figure 14: Typical Type B Basin

7.2 Sediment Traps

Due to limitations of space and to reduce ponding on the Projects, HTP will aim to manage catchments at reduced sizes through segmentation creating smaller volumes of runoff which can be treated by efficient smaller sediment controls.

In most cases these sediment controls may need to be removed to allow progress of works, as such they must be easily and readily replaced at the end of each day's work. Sediment controls will generally consist of check dams and temporary filter sumps constructed through stacked gravel filled bags or wrapped mulch bunds to form measures to slow surface water prior to inlets of pits or discharge locations. Shaped berms that are vegetation stabilised or covered with construction fabric will also be utilised for higher concentration areas to create a more substantial control and to act as a temporary detention / filter area.

Performance of these type of controls is improved through the increasing of the size of the measure relevant to the catchments it treats. For this Project, this increase is to be achieved through implementation of a higher number of structures treating water from smaller catchments.

7.3 Perimeter Banks

Perimeter banks will be installed on relatively flat areas where the catchment disturbance does not warrant or does not allow a basin to be installed. Perimeter banks function to slow and retain small volumes of water as sheet flow and allow sediment to drop out prior to the water passing slowly through. Their function is compromised should the

volume or velocity of the water lead to excessive pressure at any one point along the structure. Key to their effective use is ensuring they are on the contour of the slope and that they are regularly inspected and maintained. Their use can be enhanced by integrating their placement with vegetation strips to be retained adjacent the construction area. Despite having relatively low storage capacity (compared to basins), the resulting linear area has a large length/width ratio, thereby offering a good opportunity for sediment to settle, particularly when fully grassed.

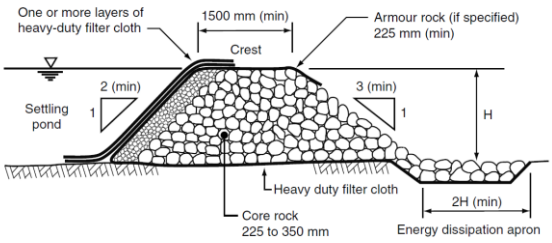
Figure 15 Example perimeter banks

7.4 Rock Berms and Check dams

Rock berms are formed by the wrapping of rock with geotextile fabric to form a sediment trap by temporarily retaining runoff to allow for slow filtering of runoff though the fabric and rock medium. They will be used along drainage lines and adjacent to watercourses where clearing of vegetation is to be minimised.

A similar method is achieved through a broader pile or berm formed out of smaller or graded aggregate without geotextile to slow flow prior to filtering through the rock material. These measures may be used on relatively flat areas in temporary drains and/or integrated into an earth berm to provide a stable and permeable section at the spillway. In these cases, care needs to be taken to ensure that the interface of the rock and earth are well protected with fabric to prevent scour and bypassing of the control.

Rock checks and sandbag checks will be used extensively on the Project for both erosion and sediment control. They have the advantage of being effective, cheap, easy and mobile. Sandbags will be filled with clean sand/gravel to around 3/4 of capacity to enable them to better conform to the desired shape. Rock checks will be used in swale and diversion drains to slow flow, reduce grade, provide dissipation and filter sediment. They will be constructed with a defined spillway to prevent undesirable diversion of runoff resulting in erosion.



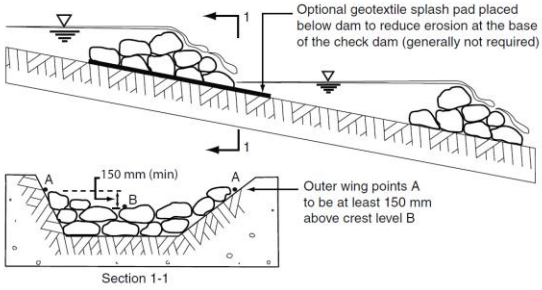


Figure 16: Rock Berms and Checks

7.5 Sediment fence

The main approach for this Project is to minimise the use of sediment fence due to the impediment for fauna traffic and maintenance requirements. It is preference to implement alternative methods for sediment capture including mulch bunds, rock socks, and diversion banks. There will be occasions where sediment fence provides the best sediment control solution, particularly where space is limited and for retention of silty and sandy soils as are known to occur on the HTP site. In these situations, sediment fencing will be woven polypropylene or cotton/geotextile thread with a flow rate >110litres/m² (AS 3706.9).

Sediment fences must be used as a control measure on the contour of the slope to ensure effective operation and installation of sediment fence in accordance with Blue Book best practice guidelines (refer Figure 17) is imperative to the effectiveness of the control.

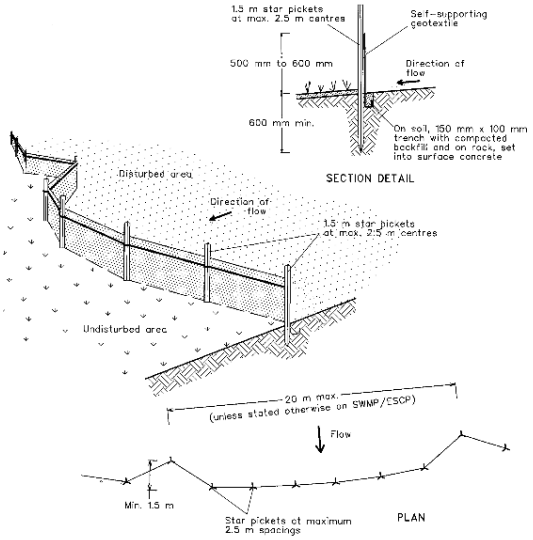


Figure 17 Typical installation of sediment fence

Some reasons that sediment fence may not be selected, in favour of other sediment controls include:

- they require disturbance of the ground to install and can be difficult to maintain mechanically.
- they can act to divert water and cause scour.
- they require a high degree of maintenance; and
- they are generally ineffective for smaller soil particles (i.e. silt and clay fractions of the soil).

7.6 Inlet Filter Protection

Inlet filter protection will be utilised during the construction stage where site water enters a formal stormwater system. In many areas this will be where the site waters discharge to the environment. Prior to this point numerous other measures will have been implemented to reduce generation of sediment and to prevent sediment movement.

These protections may be formed out of a sediment fence or other fabric (refer Figure 18) or may utilise gravel bags placed around the perimeter of the pit. In all cases the use of these measures must be balanced with the required function of the pit and the potential for flooding of road and access areas.

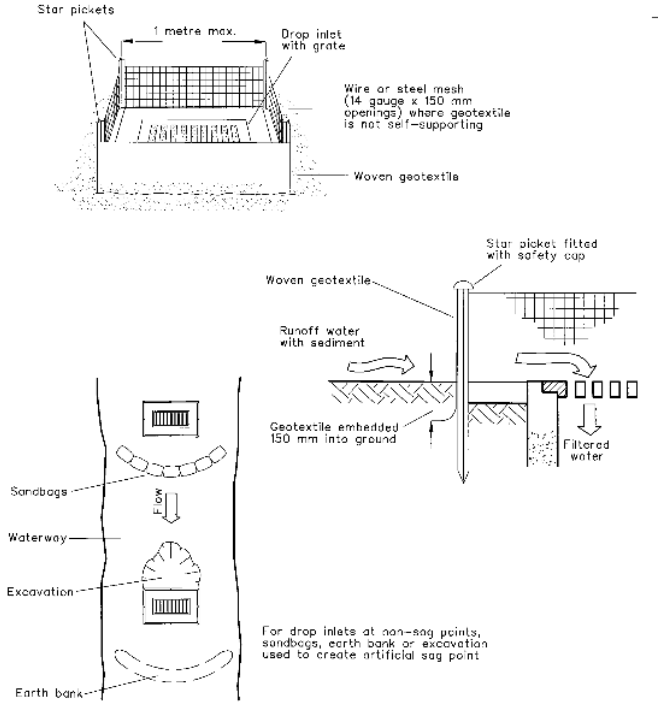


Figure 18 Inlet protection

8 Timing of installation

The timing for installation of major erosion and sediment controls is required to be consistent with the construction staging strategy as follows:

- Early works (clearing) – As required for service relocations, clearing activities and initial drainage works.
- Stage 0 – Early installation of major erosion and sediment control measures is recommended. This includes clean water diversion channels, sediment basins/sumps and stabilisation of existing temporary cross drainage as detailed within this report.
- Construction Stage – Standard erosion and sediment controls implemented as per the PESCPs for each sub-stage.

Detailed sub-staging will be specified by the construction contractor within the appropriate PESCPs and EWMS (refer to Section 6.3).

9 Design Parameters

Should sediment basins be required, their location and sizing of controls and construction will be developed consistent with recommendations of *Best Practice Erosion and Sediment Control (International Erosion Control Association (IECA), 2008)*). The parameters used in calculation of construction sediment basin capacities are presented below:

Table 7 Sediment basin parameters

Site Parameters

Rainfall erosivity (R-factor) *Rainfall estimation formula R=1.03 x P* *Conservative estimation R = 1.03 x M*	 1630 2600
Mean annual rainfall (P)	1582.5 mm
Maximum Annual Rainfall (M)	2533 mm
Soil erodibility (K-factor) *(Sydney Town / Watagan)*	0.023 – 0.036
Length / Slope factor (LS – factor) *3%to 10%*	0.65 – 2.81
Erosion Control Practice (P-factor)	1.3 (default)
Cover factor (C-factor)	1 (default)
5-day 85% rainfall depth (mm)	43.2
Runoff Coefficient (C_{10})	0.85
Soil Texture Group	D

9.1 Sediment Basin Construction

Construction Sediment Basin design capacities are based upon the parameters described in Table 7, together with the estimated contributing catchment area and topography of the construction site. Where possible, construction basins should be situated in areas where they will be converted to operational basins later in the Project, whilst maximising trapping of sediment and pollutant. Construction sediment basins will be constructed consistent with the *Best Practice Erosion and Sediment Control (International Erosion Control Association (IECA), 2008)*. Inlets and spillways are to be installed within one month of basin installation.

A review of the site potential for sediment yield in accordance with the Blue Book requirements will be undertaken with the progression of the Project and the information included in Appendix A. This assessment will utilise the Revised Universal Soil Loss Equation (RUSLE) to determine the areas with predicted soil yield greater then 150m^3 per year. Construction sediment basin capacities, catchment areas and proposed locations, will be populated within Appendix A.

9.2 Flocculation and Coagulants

The management of site runoff is required to meet required water quality parameters prior to discharge as detailed in Project approvals and licencing. The defined discharge criteria for the site are based on standard industry guidelines and accepted water quality objectives summarised below:

- TSS <50mg/L
- Ph 65-8.5
- Oil and Grease – Nil Observed

To achieve this, it is likely that site water will need to be treated (flocculated) to remove sediment from suspension. Automated dosage systems and alternative agents (e.g. flocculent blocks, inlet sumps) will also be considered to promote rapid management of sediment basins and reduce ongoing basin maintenance to achieve the desired result (i.e. High Efficiency basins).

All flocculants and coagulants used on HTP will be industry compliant and have valid toxicity assessments for aquatic species to ensure toxicity level and complaint to regulatory standards.

9.3 Sediment Basin Maintenance

Sediment basins will be maintained to ensure that accumulated sediment does not exceed 30% of the sediment storage zone (generally the 2-month potential soil loss). Markers will be installed within the basin to enable fast and effective measurement. Disposal of accumulated sediment will be incorporated into construction activities following drying and must ensure that sediment will not be conveyed back into the construction area or into watercourses. Where practical, sediment will be re-used on site (e.g. within sound mounds if approved/ practical) or incorporated

into fill material. Where this is not a practical option, sediment will be disposed of offsite as a waste product. Suitable access to basins will be provided to enable maintenance in all weather conditions.

Runoff water stored in basins will be used on site in dust suppression as a preference prior to discharge from site.

10 Site stabilisation

The progressive stabilisation of the site during construction is an important component of erosion and sediment control strategy as it reduces the total exposed area vulnerable to erosion forces and therefore the potential sediment yield from the Project. Stabilisation of the work site at the end of each day and/or in the event of wet weather will include:

- covering of vulnerable areas with geofabric or similar material to limit erosion.
- grading and smooth drum rolling placed fill and material; and
- installation of contour banks and diversions to limit slope length and direct runoff to control areas.

Permanent stabilisation of the site will be achieved through the implementation of the Rehabilitation Strategy.

10.1 Extended Shutdown and High Rainfall

During the holiday season and when weather conditions exceed the site capacity and the ability to undertake effective work, the Project will be shut down for an extended period. To prepare for these instances, additional controls will be implemented to ensure the site remains secure and erosion potential is reduced. These controls will be based on the predicted weather events for the closure period and will be undertaken in consultation with the Project CPESC. Key activities to be undertaken in these events will include:

- installation of additional controls at key locations on the Project, particularly around discharge locations, sensitive areas and large exposed surfaces.
- reduction of slope length across the Project to reduce runoff velocity.
- covering of excess material and stockpiles with geofabric or similar to reduce erosion potential.
- removing loose material and spoil from low areas and the vicinity of drainage lines.
- ensuring basins, detention areas and key site controls have maximum capacity to manage predicted site condition; and
- undertaking a pre-closure site inspection to ensure all controls are in place and effective.

Where the predicted event is likely to include excessive rainfall and potential flooding, controls details in Section 8.8 of the SWMSP will be implemented.

Personnel will be available to undertake required activities as required during these periods.

11 Implementation

11.1 Training

An essential component of the erosion and sediment control strategy is the training and supervision of staff involved in the construction of the Project. This includes managers, supervisors, engineers, environmental staff, designers, foreman, leading hands, machine operators and labourers. Initial training would be undertaken upon commencement of the Project through inductions and specific training to key staff on implementation and maintenance. Additional training will be conducted throughout the duration of construction including specific erosion and sediment control training (such as control installation, principles of erosion and sedimentation and stabilisation and rehabilitation) to targeted staff to ensure best practice is implemented through the Project. Refer to Section 9.2 and Appendix B of the SWMSP for further details on training.

11.2 Monitoring and Auditing

An accredited CPESC will be engaged to undertake regular inspection throughout the duration of the Project. Inspection frequency will be determined according to the requirements and risk of construction activities. It is

anticipated that in the early stages of the Project inspections will be conducted more regularly and then reduce in the latter stages of the Project as the site becomes more stable and risk is reduced.

An important part of the inspections will be continued communication and feedback by the specialist with construction staff to reinforce the initial training and drive continued improvement.

In addition to regular inspections by an accredited CPESC, the effectiveness of strategies and controls will be monitored by environment and construction staff daily.

All permanent and temporary erosion and sediment control works will be inspected:

- regularly during normal construction hours.
- regularly during periods of rainfall within normal working hours.
- following the cessation of all rainfall events resulting in runoff (generally 20mm)

Appropriate recording will be carried out to identify and rectify general problems including:

- controls prior to commencement of significant ground disturbance.
- areas of erosion, sediment deposition (sediment structures not to exceed 30% storage capacity) and/or poor vegetative cover.
- control and drainage failure (i.e. blocked drains, slumped batters, tracking of material onto roadways)
- stockpile locations, protection and stabilisation.
- sediment basins and/or other erosion and sediment control measures requiring maintenance.
- flocculation and discharge of licensed construction sediment basins.
- progressive stabilisation of the site.

11.3 Maintenance and Reporting

The site environmental inspection checklist will be completed during the inspection of erosion and sediment controls identifying any corrective actions, additional controls or maintenance activities to be undertaken for the effective operation of site controls. Any modifications required will be documented on the checklist and provided to the foreman to action who will date and sign upon completion. A copy of the completed form identifies the closure of actions will be retained by the site environmental staff to document closure of actions and compliance with the approval and contract requirements. The site environmental checklist documenting the status of environmental controls will be recorded:

- weekly during normal construction hours.
- regularly during periods of rainfall within normal working hours.
- within 24hrs following the cessation of all rainfall events resulting in runoff (generally 20mm); and
- following discharge of sediment basins in accordance with the EPL (where relevant).

Appendix 1 – Project Basins

Revised Universal Soil Loss Equation (RUSLE) sediment yield results

Construction area	Chainage (from- to)	RUSLE Sediment yield	Basin requirement (y/n)	Additional Information

Project Basin Information

Type D Basin Specifications		Basin HTP 1	Basin HTP 2	Basin HTP 3
Item	**Unit**			
Design volume requirement	m^3			
Design sediment storage component	m^3			
Length	m			
Width	m			
Type B Basin Specifications		**Basin HTP 1**	**Basin HTP 2**	**Basin HTP 3**
Item	**Unit**			
Design volume requirement	m^3			
Design surface area requirement	m^2			
Length	m			
Width	m			
Surface area	m^2			
Length to width ratio	ratio			
Depth	m			
Basin wall batter slope	ratio			
X-section area	m^2			
Basin volume	m^3			
Forebay (10% of volume)	m^3			
Forebay length	m			
Forebay width	m			
Forebay depth	m			
Forebay spillway basin slope	ratio			
X-section area	m^2			
Forebay volume	m^3			
Spillway crest below basin wall	m			
Spillway width	m			
Spillway freeboard	m			
Basin lining	ea			
Spillway lining	ea			
Outlet, concrete culvert	dia			

Appendix 2 – General control measure guidance register

Control Measure	Purpose
Early works stage / clearing	
Drainage Control	
Utilise existing tracks	Minimise disturbance to existing stable vegetation and minimise mud tracking to local roadways.
Causeway / fords	To allow vehicle access, overflow paths and clean upstream water to bypass the construction zone without contamination.
Pipe culverts	To divert water around construction areas and to allow vehicle access over waterways.
Clean water diversion	To divert clean water around disturbed areas and minimise sediment laden runoff.
Construction diversion drains	To divert on site water flows to dedicated management areas and reduce slope length.
Erosion control	
Delineation of boundary and work areas	To minimise disturbance area and protect sensitive vegetation.
Check dams	To reduce flow velocity along drainage lines until permanent linings can be installed and top capture sediment.
Cover cropping / polymer stabilisation	Rapid protection of batters an exposed areas with vegetation or binders.
Soil amelioration and gypsum application	Management of soil material for nutrients and organics and the reduction of ESP in dispersive soils.
Rock and energy dissipaters	Reduction of the flow velocities in drains to minimise scour and erosion.
Sediment fence	To capture coarse grain sediment in sheet flow.
Mulch bunds	To capture coarse and medium size sediment in sheet flow.
Sediment basins	To capture and treat sediment laden runoff from the construction area.
Flocculants and coagulants	To assist in the settlement of construction laden runoff in a basin or retention pond to achieve water quality objectives.
Earthworks	
Drainage Control	
Pipe culverts	To divert water around construction areas and to allow vehicle access over waterways.
Clean water diversion	To divert clean water around disturbed areas and minimise sediment laden runoff.
Construction diversion drains	To divert on site water flows to dedicated management areas and reduce slope length.
Permanent stormwater infrastructure	To manage the local stormwater for the locality to the ultimate drainage location
Erosion control	
Delineation of boundary and work areas	To minimise disturbance area and protect sensitive vegetation.
Check dams	To reduce flow velocity along drainage lines until permanent linings can be installed and top capture sediment.
Cover cropping / polymer stabilisation	Rapid protection of batters an exposed areas with vegetation or binders.
Soil amelioration and gypsum application	Management of soil material for nutrients and organics and the reduction of ESP in dispersive soils.
Rock and energy dissipaters	Reduction of the flow velocities in drains to minimise scour and erosion.
Sediment fence	To capture coarse grain sediment in sheet flow.
Mulch bunds	To capture coarse and medium size sediment in sheet flow.
Sediment basins	To capture and treat sediment laden runoff from the construction area.
Flocculants and coagulants	To assist in the settlement of construction laden runoff in a basin or retention pond to achieve water quality objectives.

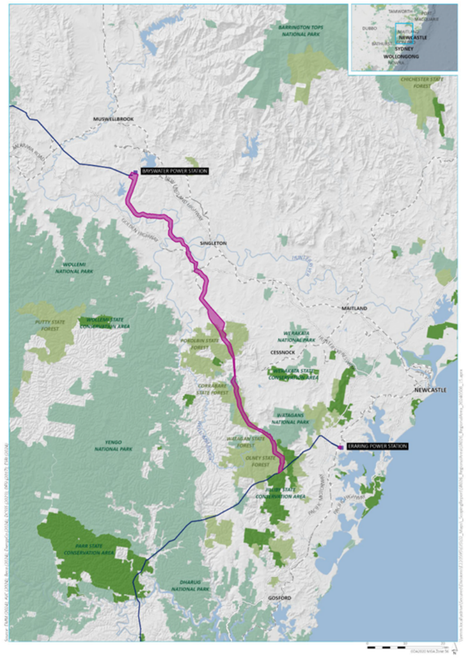
Topsoiling and hydro mulch / hydroseed	To stabilise and apply final design vegetative cover.
Building and Construction	
Drainage Control	
Clean water diversion	To divert clean water around disturbed areas and minimise sediment laden runoff.
Construction diversion drains	To divert on site water flows to dedicated management areas and reduce slope length.
Permanent stormwater infrastructure	To manage the local stormwater for the locality to the ultimate drainage location
Retention Ponds	To mitigate peak flow surcharge and reduce erosion potential
Erosion control	
Delineation of boundary and work areas	To minimise disturbance area and protect sensitive vegetation.
Check dams	To reduce flow velocity along drainage lines until permanent linings can be installed and top capture sediment.
Cover cropping / polymer stabilisation	Rapid protection of batters an exposed areas with vegetation or binders.
Soil amelioration and gypsum application	Management of soil material for nutrients and organics and the reduction of ESP in dispersive soils.
Rock and energy dissipaters	Reduction of the flow velocities in drains to minimise scour and erosion.
Sediment fence	To capture coarse grain sediment in sheet flow.
Mulch bunds	To capture coarse and medium size sediment in sheet flow.
Sediment basins	To capture and treat sediment laden runoff from the construction area.
Flocculants and coagulants	To assist in the settlement of construction laden runoff in a basin or retention pond to achieve water quality objectives.
Topsoiling and hydro mulch / hydroseed	To stabilise and apply final design vegetative cover.
Landscaping	Final aesthetic and groundcover protection

Appendix 3 – Concept PESCP

HUNTER TRANSMISSION PROJECT

EROSION & SEDIMENTATION PLAN (CONCEPT)

STATE SIGNIFICANT INFRASTRUCTURE
SSI-70610456



REV	DESCRIPTION	DATE
A	INITIAL SUBMISSION	04/12/2025

100mm on Original

CLIENT
NSW GOVERNMENT
EnergyCo

SCALE	N/A	Drawn	BC
		Designed	BC
GRID	MGA94 ZONE 56	Checked	GF
HEIGHT DATUM	AHD	Approved	

THIS DRAWING IS TO BE USED FOR THE PURPOSE ORIGINALLY INTENDED BY THE CONSTRUCTION CONTRACTORS ONLY

PROJECT
HUNTER TRANSMISSION PROJECT

TITLE
EROSION AND SEDIMENT CONTROL PLAN – COVER PAGE - SHEET 1

OCHRE ENVIRONMENTAL MANAGEMENT
OCHRE Environmental Management
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Status
INITIAL SUBMISSION

A

Project No. - Drawing No.
P123_HTP_CONCEPT_ESCP

Issue
1

EROSION AND SEDIMENT CONTROL NOTES

1. THIS EROSION AND SEDIMENT CONTROL PLAN (ESCP) HAS BEEN PREPARED BY A CPESC (AS CERTIFIED) IN ACCORDANCE WITH BLUE BOOK VOLUME 1 (LANDCOM, 2004) AND TO MEET THE REQUIREMENTS OF THE CONSTRUCTION PRINCIPALS SET OUT IN THE CEMP AND TIMING REQUIREMENTS FOR ACHIEVING THE CONSTRUCTION PHASE STORMWATER QUALITY TARGETS.
2. THE CONTROLS DEPICTED ARE SUBJECT TO STAGING AND THE CONTROLS MAY BE PROGRESSIVELY IMPLEMENTED OR REMOVED ACCORDING TO PROGRESSION OF WORKS. ALL IDENTIFIED CONTROLS ARE TO BE IN PLACE AT THE END OF EACH DAY AND IMMEDIATELY PRIOR TO RAINFALL.
3. CONTROLS IDENTIFIED ON THE PLAN ARE INDICATIVE AND WILL BE REVISED FOR IMPLEMENTATION ON THE SITE AS REQUIRED. ALTERNATIVE MEASURES MAY BE APPLIED WHERE CONTROL MAY PROVIDE THE SAME FUNCTIONALITY. THESE WILL BE UPDATED ON THE ESCP.
4. THE STAGING OF CONSTRUCTION ACTIVITIES WILL AIM TO IMPLEMENT FINAL CONTROLS WHERE POSSIBLE TO BE UTILISED DURING CONSTRUCTION (I.E. DRAINAGE FEATURES, LANDSCAPING).
5. THE PLAN IS TO BE REVISED WITH PROGRESSION OF WORKS TO MAINTAIN CURRENCY WITH SITE CONTROLS.
6. TEMPORARY CONTROLS SUCH AS CHECKS AND STABILISATION IN ADDITION TO THOSE SHOWN MAY BE REQUIRED WHERE EXTREME WEATHER EVENTS (I.E. GREATER THAN 43.2MM) ARE PREDICTED OR FOR EXTENDED SITE SHUT DOWN PERIODS (I.E. CHRISTMAS). ADDITIONAL CONTROLS ARE TO BE IMPLEMENTED UNDER THE ADVICE OF THE SITE ENVIRONMENTAL REPRESENTATIVE AND/OR PROJECT CPESC.
7. EROSION AND SEDIMENT CONTROLS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH BLUE BOOK' SPECIFICATIONS AND STANDARD DRAWINGS AS IDENTIFIED IN THE APPROVED ESCP. AS PER RECOMMENDATIONS UV STABILISED MATERIALS WILL BE USED AS NOT TO BECOME A POLLUTANT SOURCE AND WILL BE PROMPTLY REMOVED ONCE THE CONTRIBUTING CATCHMENT HAS BEEN PERMANENTLY STABILISED..
8. THE STAGING OF ACTIVITIES WILL MINIMISE EXPOSURE OF DISTURBED SURFACES AT ANY ONE TIME AND WILL IMPLEMENT PERMANENT AND TEMPORARY SOIL STABILISATION MEASURES (I.E. SOIL POLYMERS, FINAL LANDSCAPE AND VEGETATION AREAS), IN MINIMISING THE DURATION OF SOIL DISTURBANCE AND EXPOSURE TO WIND AND WATER EROSION.
9. ALL EXPOSED SURFACES OF HIGH RISK AREAS (I.E. STEEP SLOPES (5%), BATTERS, SURFACES NOT DRAINING TO SEDIMENT BASINS AND WORKS IN/NEAR WATERWAYS AND FLOW AREAS) WILL BE STABILISED WITH TEMPORARY GROUND COVERS LIE. I.E. VITAL P47/STONEWALL, GEOTEXTILE OR BLACK PLASTIC (SECURELY PINNED OR EQUIVALENT).
10. SITE PERSONNEL RESPONSIBLE FOR IMPLEMENTING EROSION AND SEDIMENT CONTROLS ARE TO BE APPROPRIATELY TRAINED IN IMPLEMENTATION AND MAINTENANCE OF CONTROL MEASURES.
11. TOOLBOX TALKS TRAINING SESSIONS ARE TO BE PROVIDED TO SITE PERSONNEL ON THE IMPORTANCE OF EROSION AND SEDIMENT CONTROL, THEIR INDIVIDUAL REQUIREMENTS, SPECIFIC PROJECT SITE CONTROLS TO BE IMPLEMENTED AND REQUIRED MITIGATION MEASURES,
12. VEHICULAR ACCESS IS TO BE RESTRICTED TO DESIGNATED ACCESS AREAS AND EXISTING ROADWAYS.
13. STABILISED SITE ENTRY AND EGRESS WILL BE PROVIDED TO MINIMISE TRACKING OF MATERIAL.
14. LOCAL WEATHER STATIONS WILL BE MONITORED DAILY (FOR HIGH RAINFALL EVENTS, HIGH WIND PERIODS AND FIRE RISK) AS PART OF DAILY WORKS PLANNING WITH CONSTRUCTION ACTIVITIES IN HIGH-RISK LOCATIONS (I.E. DRAINAGE LINES) SCHEDULED FOR DRY WEATHER PERIODS. WORKS SHALL BE SCHEDULED TO CONSIDER PREDICTED WEATHER CONDITIONS AND IF REQUIRED, CEASED PRIOR TO FORECAST RAINFALL OF 20MM OR MORE WITHIN A 24 HOUR PERIOD RESULTING IN RUNOFF OR ADVERSE SITE ACCESS CONDITIONS.
15. IN THE EVENT OF HIGH WINDS (>15M/S), ADDITIONAL MEASURES MAY BE IMPLEMENTED INCLUDING THE ALTERATION OF WORK ACTIVITIES, THE APPLICATION OF WATER TO DISTURBED AREAS AND THE COVERING OF EXPOSED SURFACES AND STOCKPILES WILL BE IMPLEMENTED TO MINIMISE IMPACTS TO LOCAL AIR QUALITY.
16. STRIP ANY TOPSOIL OR DELETERIOUS MATERIAL AND STOCKPILE IN DESIGNEATED AREAS WHERE POSSIBLE OR DISPOSE OF FROM SITE IF NOT BEING REUSED.
17. PRIOR TO ANY EARTHWORKS, EROSION CONTROL AS OUTLINED IN THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE COMPLETED.
18. DURING EARTHWORKS THE CONTRACTOR IS TO ENSURE ALL AREAS ARE FREE DRAINING & WILL NOT RETAIN WATER DURING RAINFALL. PROVIDE TEMPORARY MEASURES AS REQUIRED TO ENSURE FREE FLOWING RUNOFF THROUGH MANAGED DRAINAGE PATHS, DIVERSION DRAINS OR OTHER SUITABLE DISPOSAL METHOD AS AGREED DURING THE WORKS. REFER ANY CONCERNS TO THE ENGINEER. REFER TO EROSION AND SEDIMENT CONTROL DRAWINGS AND NOTES.
19. ON COMPLETION OF SERVICES INSTALLATION. ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS, AND ROAD PAVEMENTS.
20. ANY DEWATERING WORKS TO BE AS PER THE DEWATERING PROCEDURE AS CONTAINED WITHIN THE APPROVED SWMP
21. DUE TO THE PRESENCE OF DISPERSIVE SOIL, ADDING LIME OR GYPSUM MAY BE UNDERTAKEN AT THE ADVICE OF THE PROJECT CPESC TO DECREASE THE SODIUM EXCHANGE PERCENTAGE, REDUCESALL EARTHWORKS SHALL BE COMPLETED GENERALLY IN ACCORDANCE WITH THE EARTWORKS PLAN AND APPROVALS SPECIFIED FOR THE PROJECT DISPERSION, AND INCREASES STABLE SOIL STRUCTURE. IN ADDITION, DRAINS AND CHANNELS WILL BE LINED WHERE TOPSOIL MATERIAL IS REMOVED AND WHERE THEY ARE IN PLACE FOR EXTENDED PERIODS OF TIME OTHER METHODS INCLUDING ADDITION OF ORGANIC MATTER AND DEEP RIPPING MAY ALSO BE CONSIDERED UNDER THE ADVICE OF THE PROJECT CPESC.

SOIL STRIPPING STOCKPILING ACTIVITIES

22. TOPSOIL WILL BE STRIPPED AND STOCKPILED IN ACCORDANCE WITH BLUEBOOK STANDARD DRAWING SD 4-1. TOPSOIL MAY BE USED AS A DIRECT PLACEMENT WHEREVER POSSIBLE AND VIABLE.
23. SOIL STRIPPING AND STOCKPILING IDEALLY, STRIP TOPSOIL WHEN IT IS MOIST, NOT TOO WET OR TOO DRY.
24. TOCKPILES WILL BE DESIGNED, ESTABLISHED, OPERATED AND DECOMMISSIONED IN ACCORDANCE WITH THE TFNSW TECHNICAL GUIDELINE EMS-TG-010: STOCKPILE SITE MANAGEMENT.
25. TAKE CARE WHEN STRIPPING TOPSOIL NOT TO STRIP SUBSOIL WITH THE TOPSOIL PROFILE. TOPSOIL AND SUBSOILS SHOULD BE MANAGED SEPARATELY.
26. AS MUCH AS IS FEASIBLE, MULCHED VEGETATION, TOPSOIL AND SUBSOIL (IF APPLICABLE) ARE TO BE STOCKPILED SEPARATELY.
27. SOILS ARE TO BE SEGREGATED AND SIGNPOSTED ON SITE (I.E. TOPOSIL SUBSOIL, CONTAMINATED MATERIAL) TO PREVENT CROSS CONTAMINATION AND PRESERVE SOIL STRUCTURE AND VIABILITY OF TOPSOIL FOR SITE USE AND MAGEMENT.
28. STOCKPILES ACTIVITIES ARE TO BE UNDERTAKEN IN DESIGNATED AREAS AWAY FROM TREE DRIP ZONES, CONCENTERATED FLOWS AND DRAINAGE LINES. ADEQUATE CONTROLS (I.E. UPSLOPE DIVERSIONS AND DOWNSLOPE SEDIMENT CONTROLS) ARE TO BE IMPLEMENTED FOR ALL STOCKPILE SITES.
29. STOCKPILES ARE TO BE STABILISED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BLUEBOOK (SECTION 4.3.2) AND STABILISED / COVERED IN TIMES OF HIGH WINDS.
30. SEDIMENT FENCING IS TO BE INSTALLED AROUND THE LOWER EDGE OF STOCKPILES AS PER STANDARD DRAWING SD 4-1, UNLESS THE STOCKPILE IS IMMEDIATELY ADJACENT TO A SUITABLE ALTERNATIVE CONTROL SUCH AS A SEDIMENT BASIN. A DIVERSION DRAIN/BUND IS TO BE INSTALLED ON THE HIGH SIDE OF STOCKPILES IF RUN-ON FROM UPSLOPE LANDS COULD IMPACT ON THE STOCKPILE.
31. STOCKPILES ARE NOT TO BE POSITIONED WITHIN 5M OF POSSIBLE CONCENTRATED WATER FLOW (INCLUDES ROAD GUTTERS AND TABLE DRAINS).
32. STOCKPILES ARE TO BE SITED AT LEAST 50M FROM ANY WATERCOURSE, NATURAL DRAINAGE LINE OR CREEK AND AT LEAST 2M FROM ANY TREES TO BE RETAINED.
33. STOCKPILES WILL BE POSITIONED WITHIN THE APPROVED PROJECT CONSTRUCTION BOUNDARY AND AWAY FROM PROTECTED AREAS (E.G. NATIVE VEGETATION).
34. INACTIVE STOCKPILES ARE TO BE PROVIDED WITH AT LEAST 60% COVER (I.E. RUSLE C-FACTOR OF 0.1) WITHIN 10 DAYS OF FORMATION. STABILISATION OF STOCKPILES CAN BE ACHIEVED BY SEEDING AND SPRAYING WITH A SOIL STABILISER (E.G. VITAL P47), COVERING WITH GEOTEXTILE OR MATTING OR EQUIVALENT (NOTE SEEDING IS NOT REQUIRED FOR STOCKPILES IF THEY WILL BE IN PLACE FOR LESS THAN 3 MONTHS OR IF THEY HAVE AN EXISTING SEEDBANK). STOCKPILES OF TOPSOIL OR MULCH SHOULD BE CONSTRUCTED TO NO MORE THAN 2 METERS IN HEIGHT WHEREVER POSSIBLE (NOTE THIS ANLY APPLIES TO TOPSOIL AND MULCH).
35. STOCKPILES SHOULD BE FORMED TO BE NO STEEPER THAN 2:1 (H : V) WHEREVER POSSIBLE.
36. COVER, OR OTHERWISE STABILISE FROM EROSION, STOCKPILES THAT WILL BE IN PLACE FOR MORE THAN 20 DAYS AS WELL AS ANY STOCKPILES THAT ARE SUSCEPTIBLE TO WIND OR WATER EROSION, WITHIN 10 DAYS OF FORMING EACH STOCKPILE.

DUST SUPPRESSION

37. DUST SUPPRESSION IS TO BE CARRIED OUT WHENEVER NECESSARY TO MINIMISE SEDIMENT BECOMING AIR BORNE DUE TO WIND EROSION.
38. AN APPROPRIATE WATER SOURCE FOR DUST SUPPRESSION AND/OR DUST SUPPRESSANT MANAGEMENT SYSTEM MUST BE IDENTIFIED PRIOR TO STARTING CONSTRUCTION WORKS.
39. ENSURE DUST SUPPRESSION IS CARRIED OUT IN A MANNER TO AVOID WATER RUNOFF, EROSION OR PONDING ON SURFACES (I.E. APPLY IN A GENTLE MANNER AT APPROPRIATE RATES AND MONITOR REGULARLY).
40. TEMPORARY STABILISERS (E.G. VITAL BON-MATT P47), GEOTEXTILE, JUTE MATTING OR EQUIVALENT CAN BE USED IN NON-TRAFFICKED AREAS TO ASSIST WITH DUST CONTROL

ONSITE WATER MANAGEMENT

41. SITE CONTROLS WILL INCLUDE THE DIVERSION OF 'CLEAN' (OFF SITE WATER) AWAY FROM WORK AREAS AND MINIMISE EXTERNAL WATER ENTERING THE PROJECT AREA. WHERE POSSIBLE, FINAL DRAINAGE INFRASTRUCTURE (I.E. STORMWATER PIPES AND CULVERTS) WILL BE CONSTRUCTED AS EARLY AS PRACTICAL TO ALLOW FOR CLEAN WATER PASSAGE THROUGH THE PROJECT SITE.
42. ANY WATER ACCUMULATING ON SITE, EITHER IN DEPRESSIONS, BASINS OR OTHER CONTROLS, WILL BE CONSIDERED DIRTY WATER AND WILL BE MANAGED IN ACCORDANCE WITH THE APPROVALS, POEO ACT 1997 AND THE REQUIREMENTS FOR DISCHARGE CRITERIA, AS WELL AS ANY REQUIRED INTERFACE AGREEMENT WITH THE RECEIVING CONTRACTOR. PRIOR TO DISCHARGE OFFSITE A PERMIT TO DEWATER MUST BE APPROVED. ANY DISCHARGE OF DIRTY WATER WILL BE SUBJECT TO SECTION 120 OF THE POEO ACT 1997.
43. WHERE POSSIBLE, SITE WATER WILL BE REUSED ON SITE IN PREFERENCE TO OTHER DISPOSAL METHODS FOR ACTIVITIES SUCH AS DUST SUPPRESSION AND SOIL COMPACTION.
44. WATER DISCHARGE IS TO BE UNDERTAKEN AT NON-EROSIVE VELOCITIES WITH ADEQUATE DIFFUSERS, LEVEL SPREADERS, ETC. AND WILL ENSURE LOCALISED FLOODING DOES NOT OCCUR ALL DISCHARGES WILL BE TO IDENTIFIED DISCHARGE LOCATIONS.
45. WATER REUSE IS TO BE PREFERRED OVER DISCHARGE WITH WATER QUALITY OBJECTIVES TO INCLUDE:
- NO VISIBLE OIL AND GREASE
- NO POTENTIAL FOR WATER TO LEAVE THE PREMISES
- NO SURFACE RUNOFF WILL BE GENERATED FROM THE REUSE (REUSE INCLUDES DUST SUPPRESSION, WATERING, RETAINED VEGETATION ETC.)

46. NO POTENTIAL FOR WATER TO REACH ANY WATERCOURSE.
47. ANY WATER USED FOR PUBLIC ROAD WASHDOWN AND CLEANING WILL BE CAPTURED AND REUSED ON SITE OR TREATED PRIOR TO DISPOSAL.
48. VEHICLE AND PLANT WASHDOWN WILL BE UNDERTAKEN IN THE DESIGNATED WASHDOWN AREA ONLY (WITHIN THE SITE COMPOUND). WATER FROM THE WASHDOWN AREA WILL BE CAPTURED ON SITE AND REUSED OR TREATED PRIOR TO DISCHARGE /DISPOSAL.
49. ON SITE WATER FLOWS PATHS WILL BE MANAGED TO REDUCE FLOW LENGTH (LESS THAN 80M) AND MINIMISE VELOCITIES LIKELY TO RESULT IN SCOUR AND EROSION IMPACTS. LONG SLOPE LENGTHS WILL BE DIVIDED WITH CHECK DAMS (AT MAX 40M INTERVALS), DIVERSIONS, DROP STRUCTURES AND BATTER CHUTES AT REGULAR INTERVALS TO MANAGE HIGH VELOCITY FLOWS.
50. DIVERSION DRAINS AND INLETS ARE TO BE STABILISED WITH EROSION CONTROL PRODUCTS SUCH AS JUTE MESH, ROCK MATERIAL, GEOFABRIC OR SOIL BINDERS FOR IMPROVED STABILISATION WITH MINIMUM 300MM OVERLAP AT JOINTS.
51. STABILISATION OF AREAS IN ACCORDANCE WITH PROJECT LANDSCAPING AND FINAL LANDFORM DRAWINGS IS TO OCCUR PROGRESSIVELY IN CONJUNCTION WITH THE COMPLETION OF EARTHWORKS.

STABILISATION

52. UNDERTAKE PROGRESSIVE STABILISATION OF DISTURBED GROUND SURFACES AS THEY ARE COMPLETED RATHER THAN AT THE END OF THE WORKS PROGRAM.
53. FINAL STABILISATION IS TO ACHIEVE THE C-FACTORS (GROUND COVER) DETAILED IN TABLES 1 AND 2.
54. FINAL REHABILITATION IS TO BE IN ACCORDANCE WITH THE LANDSCAPING/REHABILITATION PLANS.
55. AREAS TO BE REVEGETATED ARE TO BE TOPSOILED FIRST. TOPSOIL IS TO BE SPREAD EVENLY TO AT LEAST 75MM. REFER TO B:UE BOOK STANDARD DRAWING (SD 4-2) FOR INSTRUCTIONS REGARDING TOPSOIL REPLACEMENT.
56. TOPSOIL IS TO BE TESTED PRIOR TO REVEGETATION TO CONFIRM TREATMENT (AMELIORATION / FERTILIZATION) REQUIREMENTS INCLUDING TESTING FOR DISPERSION, PH, TRACE NUTRIENTS, EC AND CEC.
57. APPROPRIATE SEEDBED PREPARATION SHOULD BE CARRIED OUT WHEN REVEGETATING LANDS (SEE BLUE BOOK STANDARD DRAWING (SD 7-1).
58. AS MUCH AS POSSIBLE, AVOID HANDLING TOPSOILS WHEN THEY ARE TOO WET OR TOO DRY. THIS HELPS PRESERVE SOIL STRUCTURE.
59. AVOID BLENDING FRESH MULCH WITH TOPSOIL, AS THIS LEADS TO DE-NITRIFICATION.
60. TO HELP PRESERVE SOIL STRUCTURE, AVOID EXCESSIVE COMPACTION OF TOPSOILS.
61. GYPSUM SHOULD BE APPLIED TO SUBSOILS (AS CLAYBREAKER) AT AROUND 0.5kg/m² FOR GENERAL SURFACES AND BATTERS. RATES TO BE CONFIRMED PRIOR TO REVEGETATION WITH SOIL TESTING.
62. ALL FLOW AREA SUBSOILS (DRAINAGE LINES, WATERWAYS, DIVERSION DRAINS, CHANNELS, BASINS) SHOULD BE GYSPUM TREATED AT A RATE OF 1.5kg/m².
63. TOPSOILS SHOULD BE AMELIORATED WITH LIME TO ADJUST PH IF FIELD TESTING SHOWS pH IS BELOW 6.
64. TEMPORARY DIVERSION DRAINS/BUNDS ARE TO BE STABILISED TO ACHIEVE THE C-FACTORS AS DETAILED IN TABLES 1 AND USING SEEDING + SOIL BINDER + JUTE MESH/MATTING OR ALTERNATIVELY GEOTEXTILE FABRIC, ROCK OR TRM. SUBSOILS ARE TO BE TREATED FIRST BY LIGHTLY RIPPING GYPSUM INTO THE SURFACE AT A RATE OF APPROX. 1.5kg/m².
65. REFER TO THE PLANS FOR SPECIFIC DETAILS. ALSO REFER TO BLUE BOOK STANDARD DRAWINGS (SD 5-6 AND SD 5-7).
66. REFER TO THE 'SOIL STRIPPING AND STOCKPILING' IN ESCP SHEET 2 NOTES FOR STABILISATION REQUIREMENTS ON STOCKPILES. ALSO REFER TO TABLES 1 AND 2 AND BLUE BOOK STANDARD DRAWING (SD 4-1).
67. SEDIMENT BASIN AND CULVERT INLETS/ OUTLETS ARE TO BE STABILISED IN ACCORDANCE WITH ENGINEERING DESIGN (WHERE APPLICABLE) OR WITH GEOTEXTILE UNDERLAY AND ROCK IN ACCORDANCE WITH RECOMMENDATIONS FOR "HIGH FLOW' AREAS ON TABLE 1 AND 2 AS DETAILED ON THE PLAN.
68. HIGHLY TRAFFICKED AREAS SUCH AS LAYDOWN/STORAGE AREAS, HAUL ROADS/ACCESS TRACKS AND SITE COMPOUNDS WILL BE FORMED IN ACCORDANCE WITH ENGINEERING SPECIFICATIONS AND STABILISED WHERE NECESSARY AND AS MUCH AS PRACTICABLE TO MINIMISE EROSION AND PROVIDE A TRAFFICABLE SURFACE. STABILISATION OF THESE AREAS WILL BE ACHIEVED WITH SUITABLE TRAFFICABLE MEASURES (E.G. WITH HEAVY BOUND DGB (CEMENT STABILISED), AGGREGATE, CRUSHED ROCK, ROAD BASE OR A HEAVY DUTY TRAFFICABLE SOIL STABILISER AND RE-GRADING/RE-SURFACING AS NECESSARY.
69. AS SURFACES ARE STABILISED (AT LEAST 90% OF ANY FINISHED AREA HAS AT LEAST 70% GROUND COVER) AND PERMANENT DRAINAGE MEASURES ARE INSTALLED, TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AND WATER MANAGEMENT STRUCTURES CAN BE REMOVED (E.G. DIVERSION DRAINS)
70. TEMPORARY STABILISATION OF EXPOSED SURFACES ON HIGH RISK AREAS {I.E. STEEP SLOPES (>5%), BATTERS, SURFACES NOT DRAINING TO SEDIMENT.
71. ALL EXPOSED LANDS WHERE WORKS ARE NOT ACTIVELY OCCURRING (FOR 20 DAYS OR MORE) ARE TO BE TEMPORARILY STABILISED WITH A TEMPORARY GROUND COVER (I.E. A SOIL BINDER (E.G. VITAL STONEWALL}, MATTING, GEOFABRIC OR EQUIVALENT.
72. WHEREVER POSSIBLE, RE-USE CLEARED/MULCHED VEGETATION FOR EITHER TEMPORARY OR PERMANENT STABILISATION OF DISTURBED AREAS.

CONTAMINATION

73. WORKS WILL CEASE SHOULD SUSPECTED CONTATAMINATION BE IDENTIFIED. INDICATORS OF CONTAMINATION INCLUDE DISCOLOURED SOIL, ANTHROPOGENIC FILL MATERIAL, ABESTOS, STRONG CHEMICAL OR PETROL ODOURS AND LEACHATE. CONTAIN DISTURBED MATERIAL ON AN IMPERMEABLE SURFACE AND CORDON AREAS OFF.
74. UPON IDENTIFICATION OF CONTAMINATION, THE FORMAL NOTIFICATION PROCESS IDENTIFIED IN THE CEMP WILL BE FOLLOWED.

ACCESS CONTROLS

75. PUBLIC ROADS WILL BE MONITORED FOR TRACKING OF MATERIAL FROM SITE. ANY MATERIAL IDENTIFIED WILL BE REMOVED THROUGH STREET SWEEPERS, WATERCARTS OR HAND METHODS AT THE END OF EACH WORKING DAY AND IMMEDIATELY BEFORE FORECAST RAINFALL EVENTS.
76. A STABLE ACCESS (I.E. AGGREGATE / CATTLE GRID) WILL BE IMPLEMENTED AT FILL EXIT AREAS WHERE THERE IS THE POTENTIAL TO CAUSE TRACKING

WET WEATHER

77. DURING CONSTRUCTION, WEATHER WILL BE RAINFALL EVENTS AND PROJECT ACTIVITIES WILL BE PLANNED APPROPRIATELY.
78. IN THE INSTANCE THAT THERE IS FORECASTED RAINFALL GREATER THAN 20MM (80% CHANCE) OR A FLOODING EVENT, EXPOSED AREAS WILL BE STABILISED. THE SITE WILL BE INSPECTED TO ENSURE THAT ALL ERSED AND STABILISATION CONTROLS ARE IN PLACE AND IN EFFECTIVE WORKING ORDER. ALL WORKS WILL CEASE IN THE VICINITY OF FLOOD PRONE AREAS AND LOOSE MATERIAL MOVED OR CONSOLIDATED AND COMPACTED.
79. TEMPORARY STABILISATION MEASURES MAY INCLUDE POLYMER, FABRIC APPLICATION, TEMPORARY GROUNDCOVER OR SIMILAR METHODS AND WILL BE DETERMINED DURING CONSTRUCTION IN CONSULTATION WITH THE PROJECT CPSEC FOR COMPLIANCE EITH THE BLUEBOOK REQUIREMENTS AND STAGING REQUIREMENTS FOR THE PROJECT.
80. UPON STABILISATION OF SURFACES CONTROLS WILL BE REMOVED TO RESTORE NATURAL DRAINAGE AND TOPOGRAPHY, INCLUDING REMOVING TRAPPED SEDIMENT IN DRAINAGE LINES.
81. ALL DISTURBED AREAS THAT ARE INACTIVE/SHUTDOWN (WORKS MAY CONTINUE LATER) FOR MORE THAN 20 DAYS SHALL BE STABILISED TO PREVENT EROSION, MEASURES SHOULD BE PUT IN PLACE TO ACHIEVE 60%GROUND COVER (OR EQUIVALENT).
82. ALL DISTURBED AREAS WHERE WORKS ARE COMPLETE SHALL BE PROGRESSIVELY STABILISED AND/OR REVEGETATED WITH THE AIM THAT WITHIN 60 DAYS NO AREAS REMAIN EXPOSED TO POTENTIAL EROSION DAMAGE.

MONITORING & REPORTING AND MAINTENANCE

83. INSPECTIONS OF EROSION AND SEDIMENT CONTROLS WILL OCCUR (AND BE DOCUMENTED) ON A WEEKLY BASIS BY THE SITE TEAM OR THE ENVIRONMENTAL SITE REPRESENTATIVE. THIS WILL INCLUDE IMMEDIATELY FOLLOWING RAINFALL EVENTS >20MM IN 24 HOURS, WITH REPAIRS IMPLEMENTED AS SOON AS POSSIBLE
84. REGULAR (MONTHLY) INSPECTIONS BY A CPESC TO MONITOR THE SITE CONDITIONS AND WATER QUALITY AND PROVIDE ADVICE IF CHANGES TO THE EROSION AND SEDIMENT CONTROLS ARE NECESSARY
85. THE POTENTIAL FOR SCOUR AND EROSION OF SOILS IS KEY ASPECT OF THE RECURRING CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) SITE INSPECTIONS AND WILL INCLUDE ADDITIONAL RECOMMENDATIONS AND CONTROLS FOR IMPLEMENTATION DURING THE CONSTRUCTION PERIOD OF THE PROJECT.
86. SEDIMENT TRAPS, SUMPS AND FILTERS ARE TO BE MAINTAINED IN EFFECTIVE WORKING ORDER INCLUDING DESILTING OF SEDIMENT CONTROLS, STABILISATION OF DRAINS AND DIVERSION STRUCTURES AND APPROPRIATE MANAGEMENT OF BASINS. SEDIMENT FROM BEHIND CHECK DAMS AND SEDIMENT FENCES WILL BE CLEARED ON A REGULAR BASIS AND PRIOR TO CONTROLS REACHING 60% SEDIMENT STORAGE.
87. EROSION AND SEDIMENT CONTROLS ARE TO BE MAINTAINED UNTIL THE PROJECT CATCHMENTS AREA IS STABILISED TO ACHIEVE SOIL SURFACE PROTECTION FACTORS AS PER THE 'BLUEBOOK' REQUIREMENTS.
88. AN INSPECTION BY THE PROJECT CPESC WILL BE UNDERTAKEN TO VERIFY THE STABILISATION OF THE PROJECT CATCHMENT AREA PRIOR TO REMOVAL OF CONTROLS.
89. ALL DISCHARGES ARE TO BE RECORDED ON A SITE DISCHARGE REGISTER AND REPORTED AS PART OF MONTHLY REPORTING TO THE CLIENT. WATER QUALITY WILL BE REVIEWED AND APPROVAL BY EITHER AN ENVIRONMENTAL SITE REPRESENTATIVE OR THE ENDORSED CPESC.
90. SHOULD OFFSITE POLLUTION OR IMPACTS OCCUR, THEY WILL BE REPORTED AS AN INCIDENT IN ACCORDANCE WITH THE PROJECT INCIDENT PROCEDURE

REV	DESCRIPTION	DATE
A	INITIAL SUBMISSION	14/01/2025

100mm on Original

PP RQ 2ULJLQDO

CLIENT

NSW GOVERNMENT EnergyCo

SCALE	N/A
GRID	MGA94 ZONE 56
HEIGHT DATUM	AHD

Drawn	BC
Designed	BC
Checked	BC
Approved	

THIS DRAWING IS TO BE USED FOR THE PURPOSE ORIGINALLY INTENDED BY THE CONSTRUCTION CONTRACTORS ONLY

PROJECT

HUNTER TRANSMISSION PROJECT

TITLE

EROSION AND SEDIMENT CONTROL PLAN – SHEET 2

OCHRE ENVIRONMETAL MANAGEMENT

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Status: INITIAL SUBMISSION

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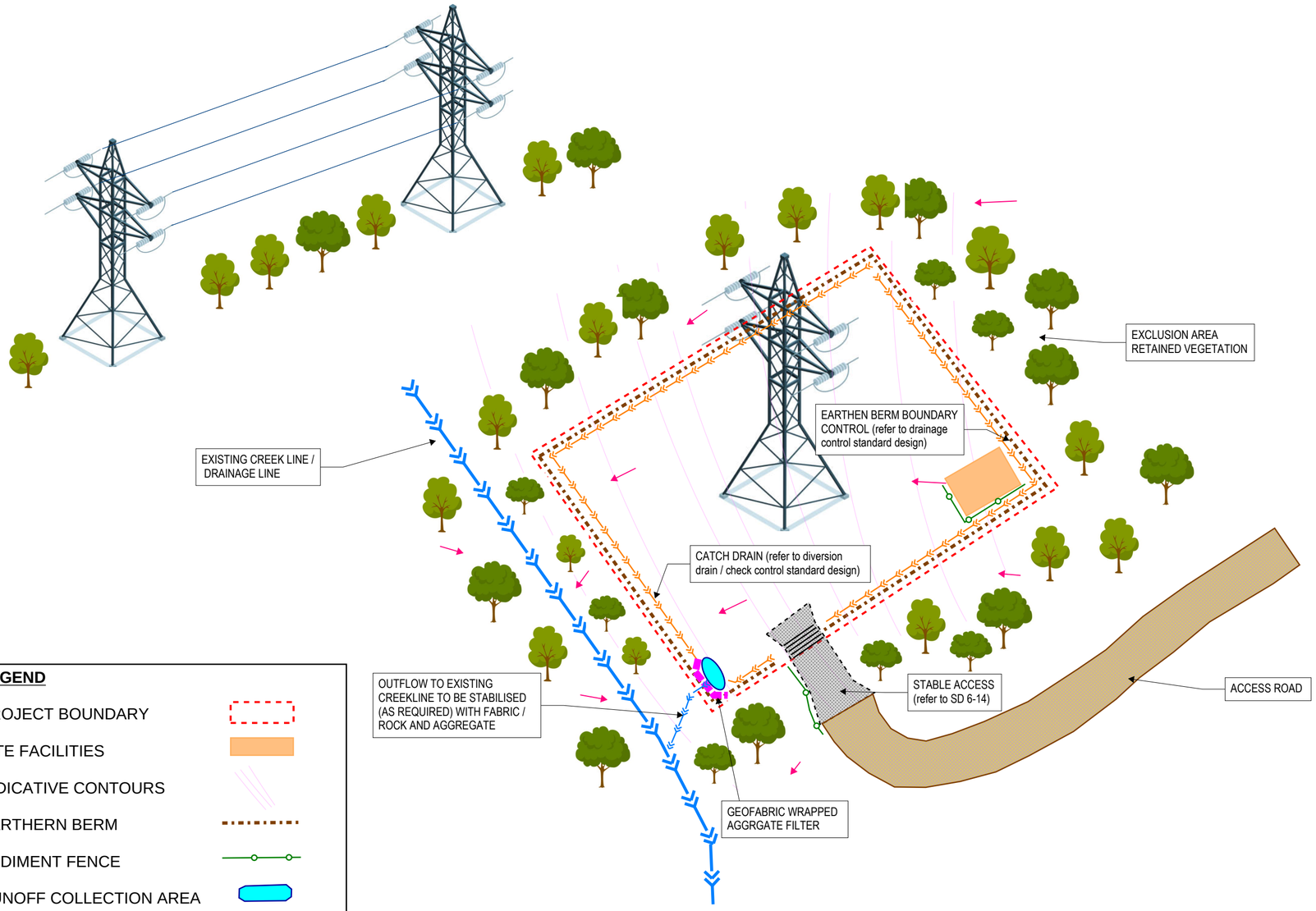
A

Issue 1

EXAMPLE - STAUNCHION / TOWER ESC CONTROLS



LEGEND

- PROJECT BOUNDARY
- SITE FACILITIES
- INDICATIVE CONTOURS
- EARTHERN BERM
- SEDIMENT FENCE
- RUNOFF COLLECTION AREA
- AGGREGATE FILTER
- CATCH DRAIN
- EXISTING DRAINAGE CHANNEL
- INDICATIVE FLOW DIRECTION

NOTES:

1. CLEARING TO BE MINIMISED TO THE AREA REQUIRED FOR UNDERTAKING OF WORKS

2. THE BOUNDARY BERM IS TO BE CONSTRUCED WITH TOPSOIL WHERE POSSIBLE TO ALLOW FOR SITE RESTORATION. FOR STRUCTURAL INTEGRITY, THE BERM MAY BE COVERED IN GEOFABRIC.

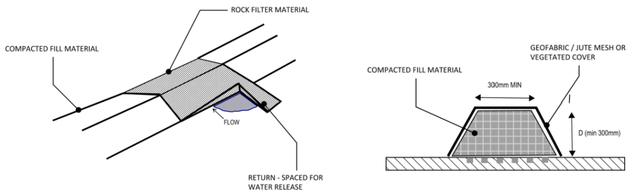
3. A DIVERSION DRAIN WILL BE COSTRUCTED WITH AGGREGATE CHECK CONTROLS (WHERE REQUIRED) TO DIRECT WATER TO THE FILTER OUTLET LOCATIONS.

4. FILTER OUTLET CONTROLS ARE TO BE CONSTRUCTED TO ALLOW RUN OFF TO BE FREE DRAINGING WATER TO LIMIT IMPACTS TO AMPHIBIOUS SPECIES AND HOLDING / PONDING OF WATER ON SITE.

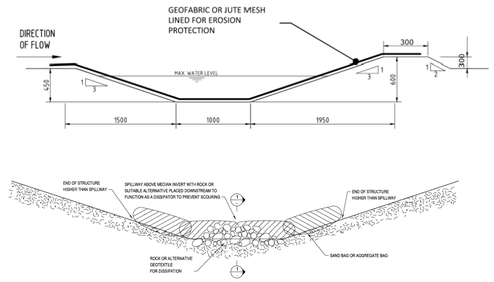
5. MULTIPLE FILTER OUTLET LOCATIONS MAY BE IMPLEMENTED IF REQUIRED FOR SITE SPECIFIC CONDITIONS.

4. A STABLE ACCESS IS TO BE CREATED WITH CRUSHED AGGREGATE OR SIMIALR.

TYPICAL EARTHEN BUND / TOPSOIL BUND



TYPICAL DIVERSION DRAIN



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A	INITIAL SUBMISSION	14/01/2025

100mm on Original

CLIENT: NSW GOVERNMENT EnergyCo

SCALE	N/A	Drawn	BC
		Designed	BC
GRID	MGA94 ZONE 56	Checked	BC
HEIGHT DATUM	AHD	Approved	

THIS DRAWING IS TO BE USED FOR THE PURPOSE ORIGINALLY INTENDED BY THE CONSTRUCTION CONTRACTORS ONLY

PROJECT: HUNTER TRANSMISSION PROJECT

TITLE: EROSION AND SEDIMENT CONTROL PLAN – SHEET 3

OCHRE ENVIRONMETAL MANAGEMENT
PO Box 70
Kurrajong, NSW 2758
ABN 18 640 756 038
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www.ochreenvironmental.com.au

Status: INITIAL SUBMISSION — A

Project No. - Drawing No.: P123_HTP_CONCEPT_ESCP

Issue: 1

EXAMPLE - ROAD UPGRADE ESC CONTROLS

EXAMPLE OF UPGRADED ROADWAY IN OLNEY STATE FOREST

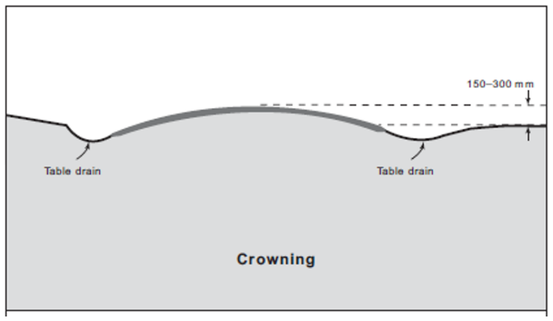
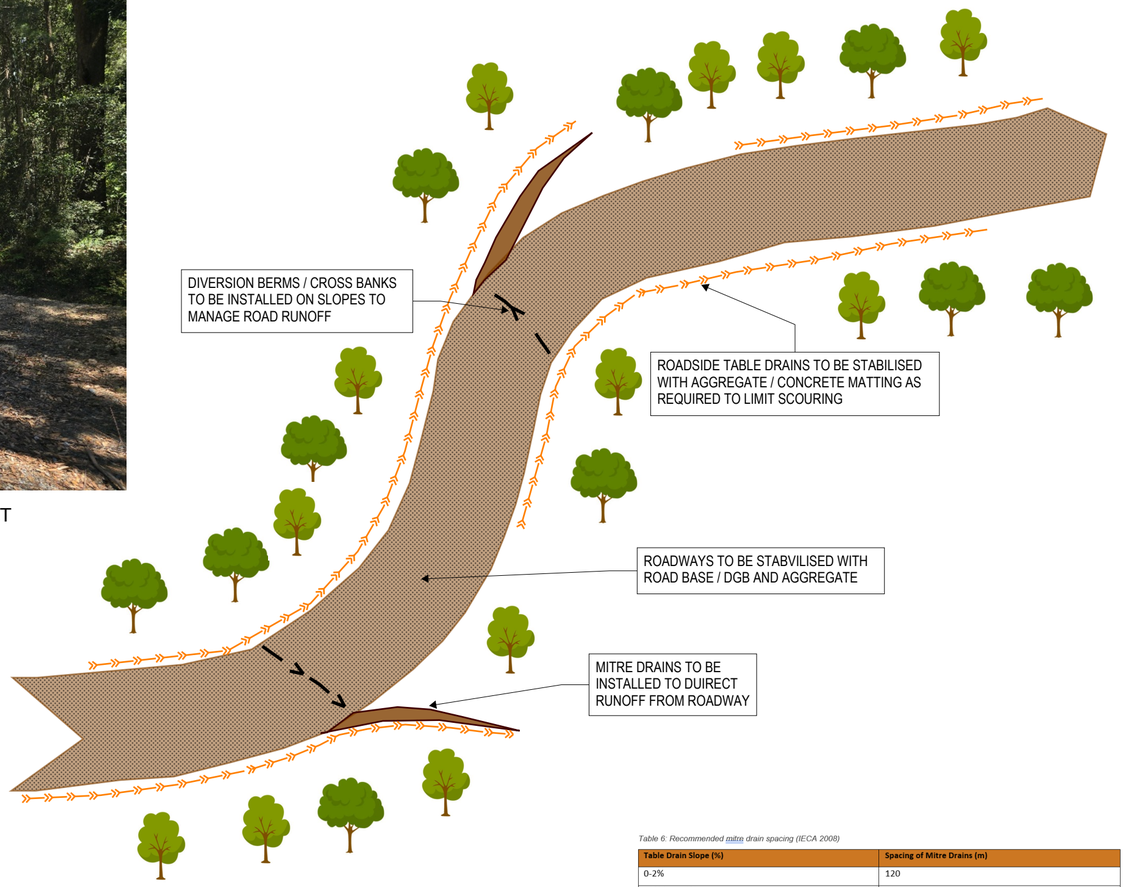


DIAGRAM SHOWING OF CROWING OF ROADWAY



NOTES:

1. CLEARING TO BE MINIMISED TO THE AREA REQUIRED FOR UNDERTAKING OF ROAD WORKS AND EXISTING ROADS TO BE USED WHERE POISSIBLE.

2. MITRE DRAINS TO BE INSTALLED AT REGULAR INTERVALS TO DIVERT ROAD RUNOFF. REFER TO TABLE 6 IN THE ESC STRATEGY FOR RECOMMENDED SPACING OF DRAINS.

3. CROSS BANKS WILL BE INSTALLED TO DIRECT ROADWAY RUNOFF TO DRAINAGE AREAS. REFER TO TABLE 5 IN THE ESC STRATEGY FOR RECOMMENDED SPACING.

4. ROAD BASE AND AGGREGATE WILL BE APPLIED TO THE ROADWAY TO REDUCE SCOUR POTENTIAL AND TO ASSIST IN ROAD STABILISATION.

5. WHERE REQUIRED, AGGREGATE / ROCK / CONCRETE MATTING WILL BE APLIED TO ROADWAY TABLE DRAINS FOR STABILITY AND TO LIMIT SCOUR POTENTIAL.

Table 6: Recommended mitre drain spacing (IECA 2008)

Table Drain Slope (%)	Spacing of Mitre Drains (m)
0-2%	120
>2% but <4%	60
>4% but <8%	30
>8%	15

TYPICAL MITRE DRAIN

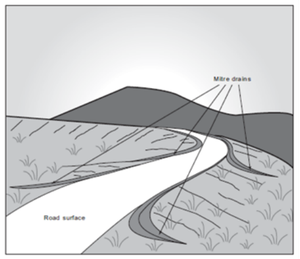
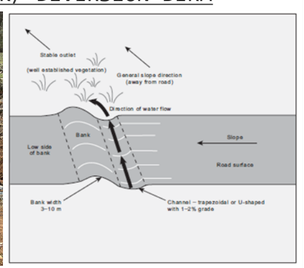


Table 5 Recommended cross bank spacing (IECA 2008)

Road Grade	Soil Erodibility		
	Low	*Moderate*	*High*
Up to 8 degrees	70m – 90m	60m – 70m	20m – 30m
8-12 degrees	60m – 70m	60m – 50m	-
12 to 16 degrees	40m – 50m	-	-
16 to 18 degrees	40m – 30m	-	-

TYPICAL CROSS BANK/ DIVERSION BERM



LEGEND

ROAD SECTION

MITRE DRAIN

DIVERSION BERM / CROSS BANK

CATCH DRAIN

REV	DESCRIPTION	DATE
A	INITIAL SUBMISSION	14/01/2025

100mm on Original

CLIENT

NSW GOVERNMENT EnergyCo

SCALE	N/A
GRID	MGA94 ZONE 56
HEIGHT DATUM	AHD

Drawn	BC
Designed	BC
Checked	BC
Approved	

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PROJECT

HUNTER TRANSMISSION PROJECT

TITLE

EROSION AND SEDIMENT CONTROL PLAN – SHEET 4

OCHRE ENVIRONMETAL MANAGEMENT

OCHRE Environmental Management

PO Box 70
Kurrajong, NSW 2758
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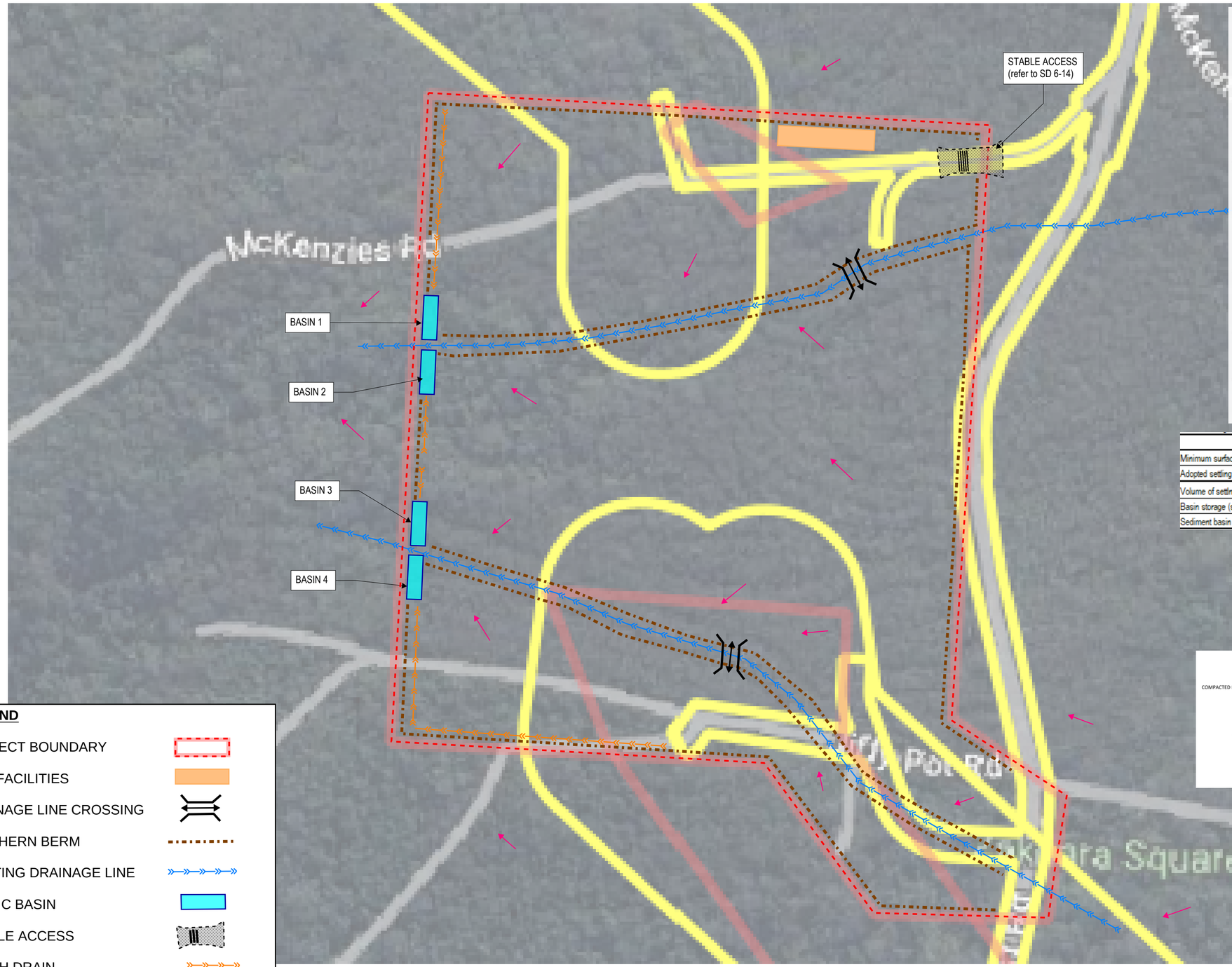
Status: INITIAL SUBMISSION — A

Project No. - Drawing No.: P123_HTP_CONCEPT_ESCP

Issue: 1

EXAMPLE - SWITCH STATION ESC CONTROLS



NOTES:

1. CLEARING TO BE MINIMISED TO THE AREA REQUIRED FOR UNDERTAKING OF THE WORKS.

2. BASIN CONSTRUCTION TO BE TYPE C BASINS TO LIMIT POTENTIAL INTERACTION WITH AMPHIBIOUS SPECIES.

3. INDICATIVE BASIN SIZING IS PRESENTED IN THE TABLE BELOW.

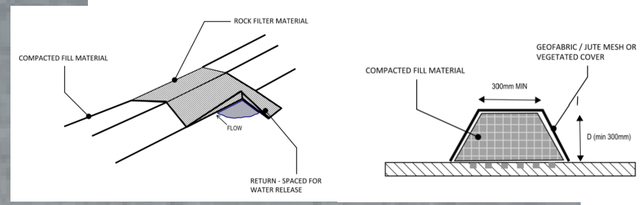
4. BERM TO BE CONTRUCTED WITH STRIPPED TOPSIL MATERIAL. BERM TO BE STABILISED WITH FABRIC / POLYMER / VEGETATION OR SIMILAR.

5. AGGREGATE OR MULCH FILTERS TO BE INSTALLED IN THE BERM DESIGN AS PER STANDARD DRAWING.

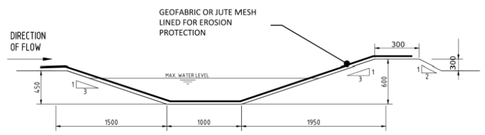
6. CLEARING AROUND DRAINAE LINES IS TO BE UNDERTAKEN IN A STAGED MANNER TO RETAIN ROOT STRUCTURES AND MINIMISE DISTURBANCE OF THE CHANNEL UNTIL COMMENCMENT OF EARTHWORKS ACTIVITIES.

Basin Name	Basin 1	Basin 2	Basin 3	Basin 4
Minimum surface area - As (m^2)	993.6	976.3	741.3	791.4
Adopted settling zone depth - Ds (m)	0.60	0.60	0.60	0.60
Volume of settling zone (m^3)	596.2	585.8	444.8	474.9
Basin storage (soil) volume (m^3)	298.0	293.0	222.0	237.0
Sediment basin total volume (m^3)	894.2	878.8	666.8	711.9

TYPICAL EARTHEN BUND / TOPSOIL BUND



TYPICAL DIVERSION DRAIN



LEGEND

- PROJECT BOUNDARY
- SITE FACILITIES
- DRAINAGE LINE CROSSING
- EARTHERN BERM
- EXISTING DRAINAGE LINE
- TYPE C BASIN
- STABLE ACCESS
- CATCH DRAIN

REV	DESCRIPTION	DATE
A	INITIAL SUBMISSION	14/01/2025

100mm on Original

CLIENT: NSW GOVERNMENT EnergyCo

SCALE: N/A
GRID: MGA94 ZONE 56
HEIGHT DATUM: AHD

Drawn	BC
Designed	BC
Checked	BC
Approved	

THIS DRAWING IS TO BE USED FOR THE PURPOSE ORIGINALLY INTENDED BY THE CONSTRUCTION CONTRACTORS ONLY

PROJECT: HUNTER TRANSMISSION PROJECT

TITLE: EROSION AND SEDIMENT CONTROL PLAN – SHEET 5

OCHRE ENVIRONMETAL MANAGEMENT
PO Box 70
Kurrajong, NSW 2758
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www.ochreenvironmental.com.au

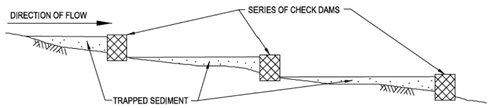
Status: INITIAL SUBMISSION — A

Project No. - Drawing No.: P123_I2S_CONCEPT_ESCP

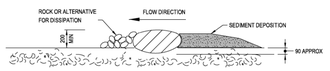
Issue: 1

DRAINAGE CONTROL STANDARD DESIGN

TYPICAL AGGREGATE CHECK CONTROL

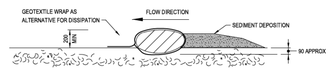


SERIES OF CHECK DAMS

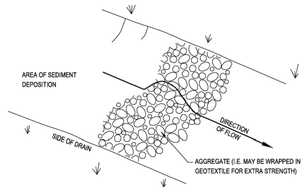


SECTION 1 NOT TO SCALE

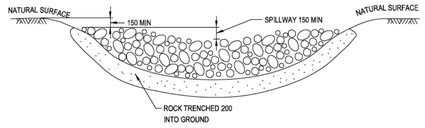
OR



SECTION 1 NOT TO SCALE

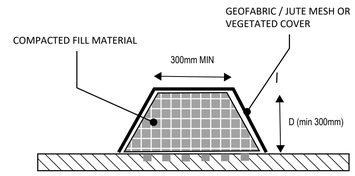


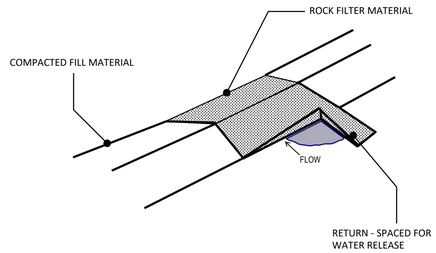
AGGREGATE CHECK DAM



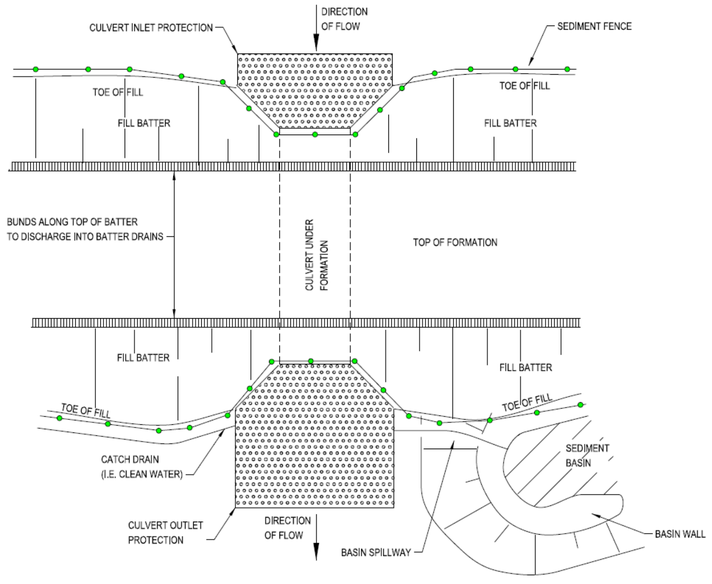
CROSS SECTION OF AGGREGATE CHECK DAM

TYPICAL EARTHEN BUND / TOPSOIL BUND

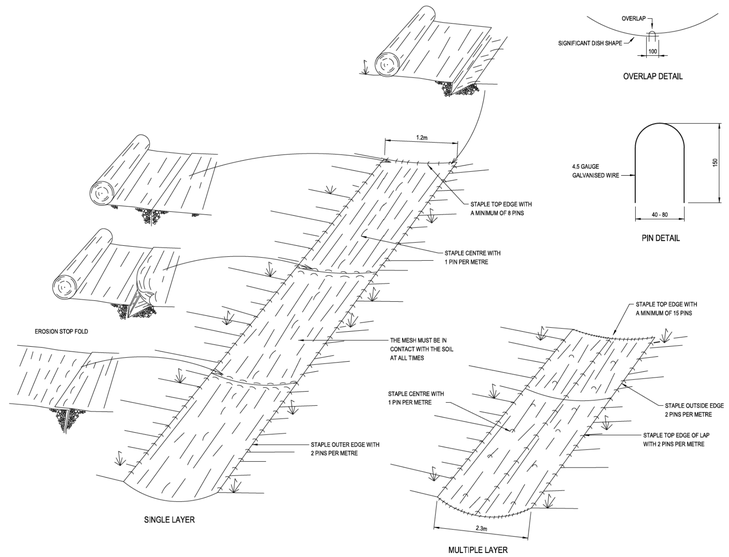




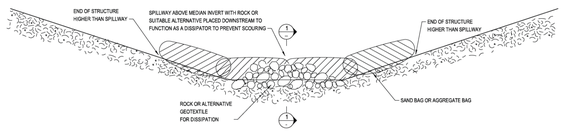
TYPICAL CULVERT SEDIMENT CONTROL



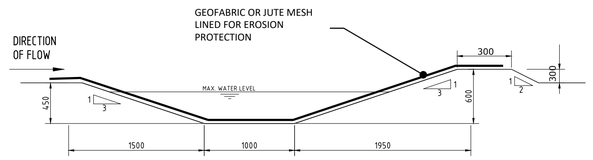
TYPICAL DRAIN LINING



TYPICAL DRAIN CHECK CONTROL



TYPICAL DIVERSION DRAIN



DIVERSION DRAIN SECTION

Issue	Description	Date
A	INITIAL SUBMISSION	14/01/2025

CLIENT

NSW GOVERNMENT EnergyCo

Scales	N/A	Drawn	BC
		Designed	BC
Grid	MGA94 ZONE 56	Checked	BC
Height Datum	AHD	Approved	

THIS DRAWING IS TO BE USED FOR THE PURPOSE ORIGINALLY INTENDED BY THE CONSTRUCTION CONTRACTORS ONLY

Project: HUNTER TRANSMISSION PROJECT

Title: EROSION AND SEDIMENT CONTROL STANDARD DESIGN - SHEET 6

OCHRE ENVIRONMENTAL MANAGEMENT
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www.ochreenvironmental.com.au

Status: INITIAL SUBMISSION — A

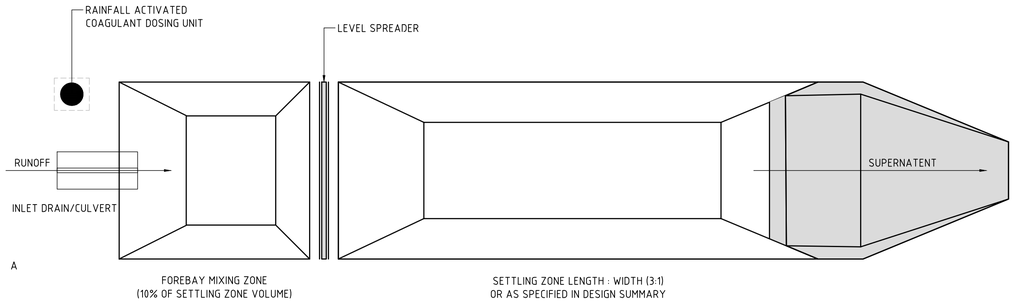
Project No. - Drawing No.: P123_I2S_CONCEPT_ESCP

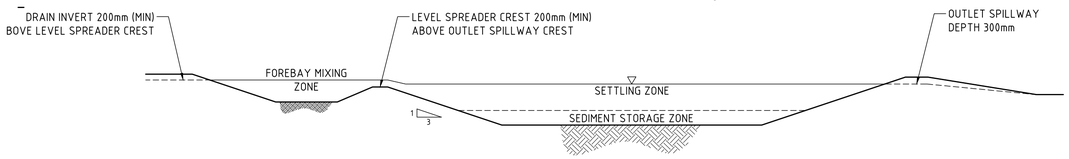
ISSUE: 1

SEDIMENT BASINS STANDARD DESIGN

TYPE B - HIGH EFFICIENCY SEDIMENT BASIN PLAN VIEW

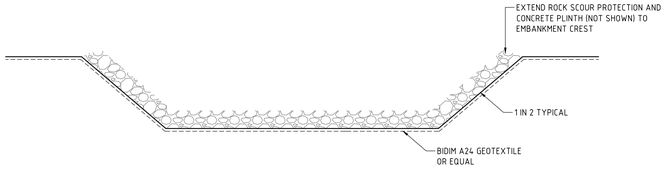
NTS





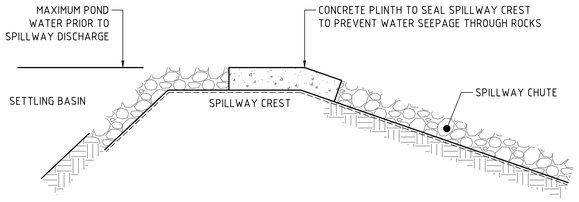
TYPE B - HIGH EFFICIENCY SEDIMENT LONG SECTION

NTS



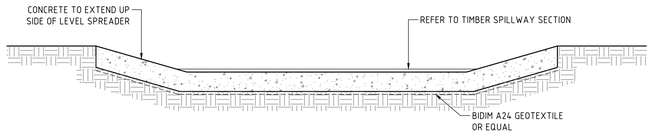
OUTLET SPILLWAY DETAILS - TYPICAL LONG SECTION

NTS



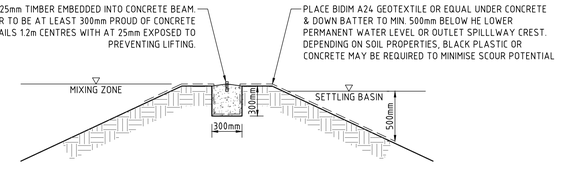
OUTLET SPILLWAY DETAILS - TYPICAL CROSS SECTION

NTS



LEVEL SPREADER DETAILS - TYPICAL LONG SECTION

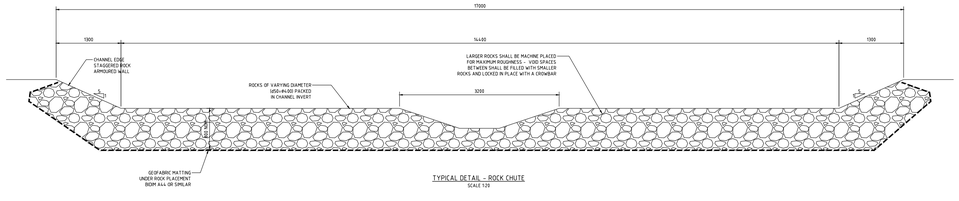
NTS



LEVEL SPREADER DETAILS - TYPICAL CROSS SECTION

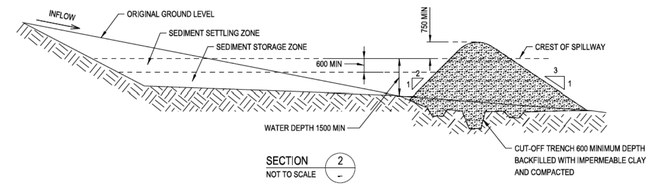
NT"

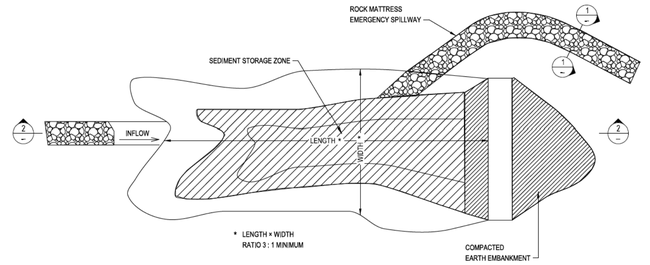
TYPICAL ROCK CHUTE / ROCK DRAIN



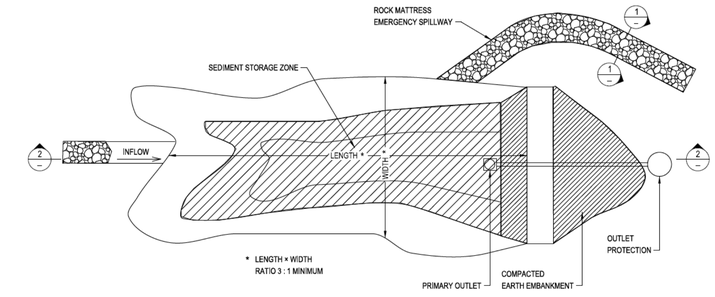
TYPICAL DETAIL - ROCK CHUTE
SCALE 1:20

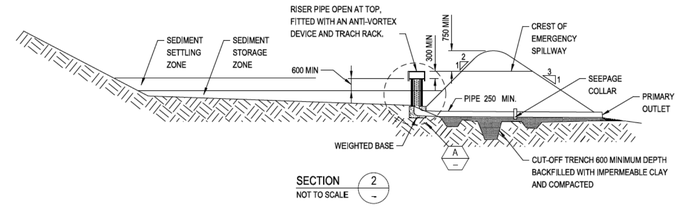
TYPE D- TYPICAL EARTH BASIN

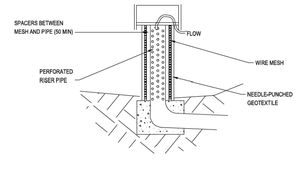




TYPE C- TYPICAL COARSE BASIN







Issue	Description	Date
A	INITIAL SUBMISSION	14/01/2025

CLIENT

EnergyCo

Scales	N/A	Drawn	BC
		Designed	BC
Grid	MGA94 ZONE 56	Checked	BC
Height Datum	AHD	Approved	

THIS DRAWING IS TO BE USED FOR THE PURPOSE ORIGINALLY INTENDED BY THE CONSTRUCTION CONTRACTORS ONLY

Project

HUNTER TRANSMISSION PROJECT

Title

EROSION AND SEDIMENT CONTROL
STANDARD DESIGN - SHEET 7

OCHRE ENVIRONMENTAL MANAGEMENT

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Kurrajong, NSW 2758
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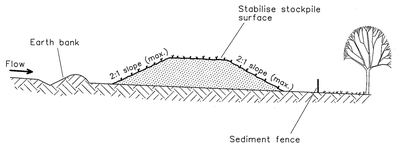
www.ochreenvironmental.com.au

Status: INITIAL SUBMISSION — A

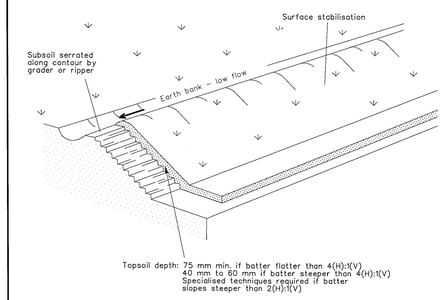
Project No. - Drawing No.: P123_I2S_CONCEPT_ESCP — ISSUE: 1



Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

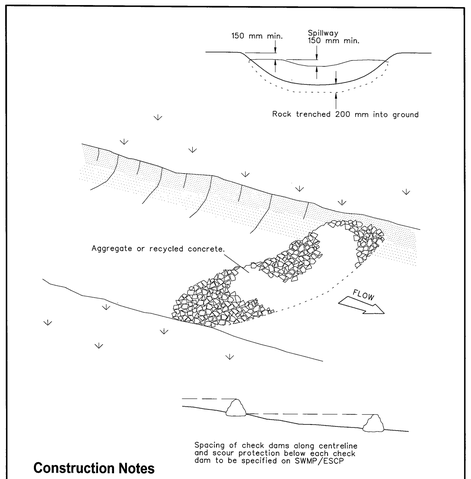
STOCKPILES **SD 4-1**



Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

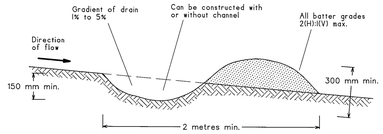
REPLACING TOPSOIL **SD 4-2**



Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

ROCK CHECK DAM **SD 5-4**

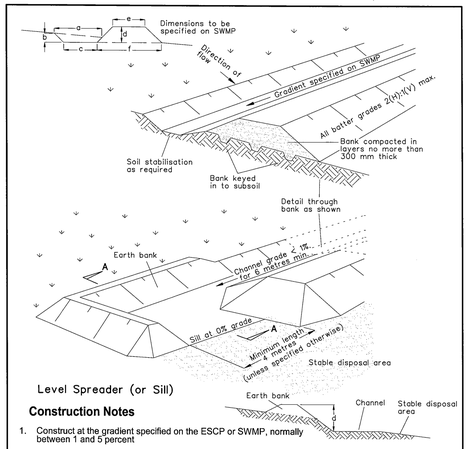


NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

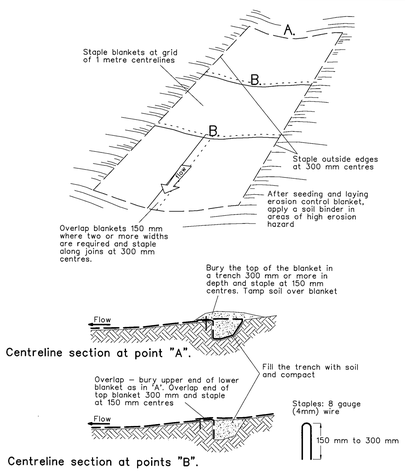
EARTH BANK (LOW FLOW) **SD 5-5**



Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

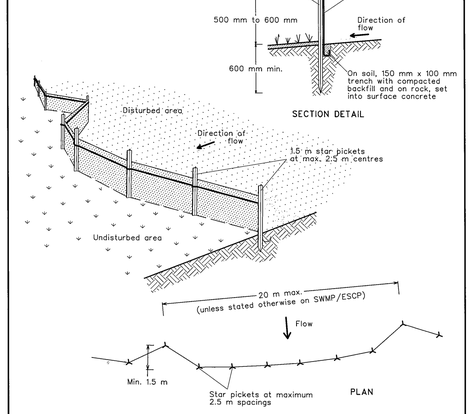
EARTH BANK (HIGH FLOWS) **SD 5-6**



Construction Notes

1. Remove any rocks, clods, sticks or grass from the surface before laying matting
2. Ensure that topsoil is at least 75 mm deep.
3. Complete fertilising and seeding before laying the matting.
4. Ensure fabric will be continuously in contact with the soil by grading the surface carefully first.
5. Lay the fabric in "shingle-fashion", with the end of each upstream roll overlapping those downstream. Ensure each roll is anchored properly at its upslope end (Standard Drawing 5-7b).
6. Ensure that the full width of flow in the channel is covered by the matting up to the design storm event, usually in the 10-year ARI time of concentration storm event.
7. Divert water from the structure until vegetation is stabilised properly.

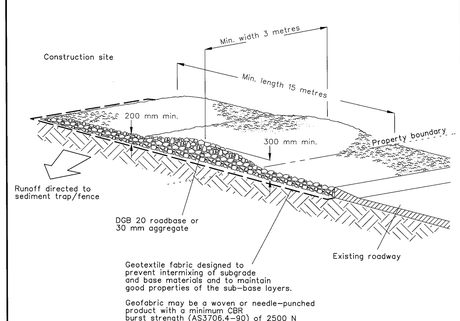
RECP : CONCENTRATED FLOW **SD 5-7**



Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

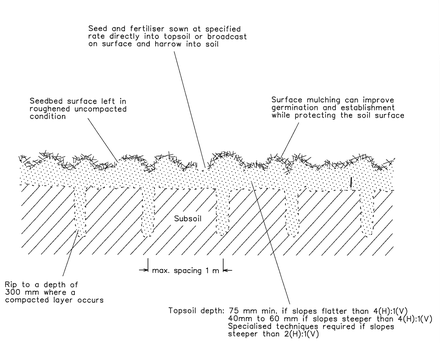
SEDIMENT FENCE **SD 6-8**



Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence

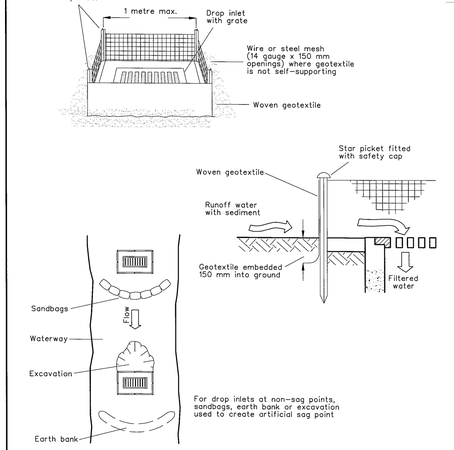
STABILISED SITE ACCESS **SD 6-14**



Construction Notes

1. Loosen compacted soil before sowing any seed. If necessary, rip the soil to a depth of 300 mm. Avoid rotary hoe cultivation.
2. Work the ground only as much as necessary to achieve the desired tilth and prepare a good seedbed.
3. Avoid cultivation in very wet or very dry conditions.
4. Cultivate on or close to the contour where possible, not up and down the slope.

SEEDBED PREPARATION **SD 7-1**



Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

GEOTEXTILE INLET FILTER **SD 6-12**

Issue	Description	Date
A	INITIAL SUBMISSION	14/01/2025

CLIENT

EnergyCo

Scales	N/A	Drawn	BC
		Designed	BC
Grid	MGA94 ZONE 56	Checked	BC
Height Datum	AHD	Approved	

THIS DRAWING IS TO BE USED FOR THE PURPOSE ORIGINALLY INTENDED BY THE CONSTRUCTION CONTRACTORS ONLY

Project

Title

EROSION AND SEDIMENT CONTROL
STANDARD DESIGN - SHEET 8

OCHRE ENVIRONMENTAL MANAGEMENT
PO Box 70
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Status: INITIAL SUBMISSION — A

Project No. - Drawing No.: P123_I2S_CONCEPT_ESCP — ISSUE: 1

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