Transgrid

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Victoria to New South Wales Interconnector West (VNI West) (NSW)

Technical paper 1 – Biodiversity Development Assessment Report

Appendix A

BDAR requirements compliance

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

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Introduction	Sections 2 and 3	Information	
		Introduction to the biodiversity assessment including:	–
		☒ brief description of the proposal	Section 1.1
		☒ identification of subject land boundary, including: ☒ operational footprint ☒ construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure	Section 1.2
		☒ general description of the subject land	Section 1.2.5
		☒ sources of information used in the assessment, including reports and spatial data	Section 1.6
		☒ identification and justification for entering the BOS	Section 1.4
		Maps and tables	
		☒ Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure	Figure 15.1 Figure 15.2 Figure 15.5
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
		☒ per cent native vegetation cover in the assessment area (as described in BAM Section 3.2)	Section 3.3

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ 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 3.2.2
		☒ wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.))	Section 3.2.2
		☒ connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	Section 3.2.3
		☒ karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(12.))	Section 3.2.4
		☒ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.))	Section 3.2.5
		☒ any additional landscape features identified in any SEARs for the proposal	Section 3.2.7
		☒ NSW (Mitchell) landscape on which the subject land occurs	Section 3.2.6
		☒ 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
		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 15.1
		☒ Location Map	Figure 15.2 Figure 15.3

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ 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 15.5
		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 ☒ any additional landscape features identified in any SEARs for the proposal ☒ NSW (Mitchell) landscape on which the subject land occurs	Figure 15.1 Figure 15.2 Figure 15.3
		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

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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	Section 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 15.8
		☒ 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 2.1.1 Section 2.2.2
		☒ Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2	Section 2.2.3
		☒ 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 2.5.3

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		For each PCT within the subject land, describe:	–
		☒ PCT name and ID	Section 4.2 Figure 15.8
		☒ 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 2.2.3
		☒ plant species relied upon for identification of the PCT and relative abundance of each species	Section 4.2 Appendix D
		☒ if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1–2.))	Section 4.2 Figure 15.9
		☒ 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 15.10
		☒ 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 Figure 15.10
		☒ 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 4.5.1

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.))	Section 4.5.3
		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 would 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)	Section 4.5.3
		☒ provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	Section 4.5.3
		☒ provide written confirmation from the decision-maker that they support the use of local benchmark data	Appendix B
		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 15.4 Figure 15.8
		☒ Map of PCTs within the subject land (as described in BAM Section 4.2(1.))	Figure 15.8
		☒ Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1)	Figure 15.10
		☒ Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	Figure 15.7
		☒ Map of TEC distribution on the subject land and table of TEC listing, status and area (ha)	Figure 15.9 Table 4.64

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ 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 15.10 Table 4.78 Table 4.79 Table 4.80
		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	Table 4.83
		Data	
		☐ All report maps as separate jpeg files	To be submitted once BDAR is finalised
		☒ Plot field data (MS Excel format)	Appendix D
		☒ Plot field datasheets	Appendix D
		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

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ floristic vegetation survey and vegetation integrity plot locations	To be submitted once BDAR is finalised
Threatened species	Section 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 Section 5.1.1
		☒ 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 Section 5.1.1 Section 5.1.2
		☒ 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 5.1.2
		☒ justification for addition of any species credit species to the list	Section 5.1.4 Section 5.2

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		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 15.11
		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 15.7
		☒ 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)	Appendix I
		Where survey has been undertaken include detailed information on:	–
		☒ survey method and effort (as described in BAM Section 5.3)	Section 2.3 Section 2.5 Section 2.6 Section 5.3 Figure 15.7

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ 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 2.5 Section 2.6 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 2.9
		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	Section 5.1.2 Section 5.4 Appendix I
		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

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		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 5.5
		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 5.5 Figure 15.11
		☒ 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 5.5
		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 5.5
		☒ 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 5.5
		☒ 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 5.5 Figure 15.11
		☒ 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 5.5

BDAR section	BAM ref.	BAM requirement		Page reference(s) in the BDAR
		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, 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 5.5, 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 5.10
		☒	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 5.12 and Table 5.13
		☒	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 15.11
		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

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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	To be submitted once BDAR is finalised
		☐ Field datasheets detailing survey information including prevailing conditions, date, time, equipment used, etc.	To be submitted once BDAR is finalised
Prescribed impacts	Section 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 7
		☒ 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 7
		☒ Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	Chapter 7

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ 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 7
		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 proposal area (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 proposal 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 proposal	Chapter 7
		Maps and tables	
		☒ Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	Figure 15.1, Figure 15.2
		☒ Map showing location of potential vehicle strike locations	Figure 15.1
		☒ 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

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ Prescribed impact features map in jpeg format	To be submitted once BDAR is finalised
Avoid and minimise impacts	Section 7	Information	
		Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Section 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 8.1
		☒ routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route	Section 8.1
		☒ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	Section 8.1
		☒ alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site	Section 8.1
		☒ Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Sections 7.1 and 7.2)	Section 8.1 Section 8.2 Section 8.4
		☒ Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.))	Section 8.1
		☒ Detail measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints)	Section 8.1 Section 8.2 Section 8.4

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Maps and tables	
		☒ Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	Table 8.2
		☒ Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final proposal footprint, including construction and operation	Figure 15.5
		☒ Maps demonstrating indirect impact zones where applicable	Figure 15.5
		Data	
		Digital shape files of:	–
		☐ alternative and final proposal 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	Section 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 9.1

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		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 proposal	Section 9.2 Table 9.19
		☒ documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications	Section 9.2 Table 9.19
		☒ reporting any limitations or assumptions, etc. made during the assessment	Section 9.2 Table 9.19
		☒ identification of the threatened entities and their habitat likely to be affected	Section 9.2 Table 9.19
		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 9.3.1
		☒ human-made structures	Section 9.3.2
		☒ non-native vegetation	Section 9.3.3
		☒ connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	Section 9.3.4
		☒ movement of threatened species that maintains their life cycle	Section 9.2
		☒ water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities	Section 9.3.5

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ 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 9.3.6
		☒ evaluate the consequences of prescribed impacts	Chapter 9
		☒ describe impacts that are uncertain	Section 9.5
		☒ document limitations to data, assumptions and predictions	Section 2.9
		Maps and tables	
		☒ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	Table 9.6, Table 9.7, Table 9.8
		Data	
		N/A	–
Mitigation and management of impacts	Section 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 9.4.2
		☒ document any adaptive management strategy proposed	Section 9.5

BDAR section	BAM ref.	BAM requirement	Page 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 9.5
		☒ Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	Section 9.5
		Maps and tables	
		☒ Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	Table 9.28
		Data	
		N/A	–
Impact summary	Section 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 10.1
		☒ for each TEC, report the extent of the TEC in NSW	Section 10.2 Figure 15.9
		☒ addressing all criteria in Subsection 9.1.2 for each threatened species at risk of an SAII present on the subject land	Section 10.1

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ for each threatened species, report the population size in NSW	Section 10.3 Section 10.4 Figure 15.14
		☒ 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 10.1
		☒ Identification of impacts requiring offset in accordance with BAM Section 9.2	Chapter 11
		☒ Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	Chapter 11
		☒ Identification of areas not requiring assessment in accordance with BAM Section 9.3	Chapter 11.2
		Maps and tables	
		☒ Map showing the extent of TECs at risk of an SAII within the subject land	Figure 15.13
		☒ Map showing location of threatened species at risk of an SAII within the subject land	Figure 15.13
		Map showing location of:	–
		☒ impacts requiring offset	Figure 15.14
		☒ impacts not requiring offset	Figure 15.14
		☒ areas not requiring assessment	Figure 15.14
		Data	
		Digital shape files of:	–
		☐ extent of TECs at risk of an SAII within the subject land	To be submitted once BDAR is finalised

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☐ 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
		☐ 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	Section 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 proposal on each vegetation zone within the subject land (BAM Subsection 10.1.2)	Section 9.1.2 Chapter 11
		☒ biodiversity risk weighting for each	Section 11.1.1
		☒ number of required species credits for each candidate threatened species that is directly impacted on by the proposal (BAM Subsection 10.1.3)	Section 11.1.2
		Maps and tables	
		☒ Table of PCTs requiring offset and the number of ecosystem credits required	Table 11.1, Table 11.2, Table 11.3

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ Table of threatened species requiring offset and the number of species credits required	Table 11.4 Table 11.5 Table 11.6 Table 11.7 Table 11.8 Table 11.9
		Data	
		☒ Submitted proposal in the BAM Calculator	To be submitted once BDAR is finalised
Biodiversity credit report	Section 10	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)	Section 12.2
		☒ BAM credit report in pdf format	Appendix E
		Maps and tables	
		☒ Table of credit class and matching credit profile	Appendix E
		Data	
		☒ BAM credit report in pdf format	Appendix E

Appendix B

CPHR consultation

Meeting Minutes

VNI West

Meeting title:	VNI West – BCS Meeting #1	**Date:**	15 February 2024
Location:	Teams	**Time:**	09:30 – 10:30
Chairperson:	Geoffrey Hudson (the Chair)		
Attendees			
VNI West Project Team			
Geoffrey Hudson	Environment Manager – VNI West (Transgrid)		
Wardia Kessal	Environmental Approvals – VNI West (Transgrid)		
Emma Taylor	Project Director - WSP		
Alex Cockerill			
Michelle Patrick, Alex Cockerill, Tuesday Heather	WSP Ecologists -		
Biodiversity, Conservation and Science (BCS)			
Andrew Fisher, Claire Coulson, Helen Waudby, Leigh Maloney, Marcus Wright, Michael Todd, Michela Clark, Simon Maffei			
Apologies			
Devon Raiff	Ecologist - WSP		

Meeting Proceedings

Item	Summary notes
1. Welcome, introductions	The Chair welcomed everyone and asked everyone to introduce themselves.
2. VNI West project introduction	**VNI West project timeline and progress:** *The Chair presented the following:* • Introduction on the VNI West project and overview of the project timeline • Outlined the corridor options process • Consultation processes and amount undertaken • Noted the "where we are in the process" at this point in time • Into the preferred route – 1km wide – around early draft in December and public in early January. Looking to finalise preferred route around March 2024 • Looking to have CSSI declaration – aiming to do this in the next couple of months • Have started ecological/spring surveys - *Emma T - Noted that the slides would be circulated with minutes.* - *Preferred route shapefile were requested by BCS.*

Item	Summary notes
	• - *Miranda K – asked whether undergrounding was planned for the whole line or just the substation entry* - *Miranda K - Clear definition of all impacts need to be considered – there has been challenges in the past with aspects not clearly defined and therefore impacts not able to be determined appropriately* > *Colin M explained no intention for any undergrounding.* > *Colin m / Emma T explained that we are in the process (ongoing) of defining impacts and this meeting is to provide an update and to discuss ongoing ecology program and engagement with BCS*
3. Project development to date	*Jarryd Barton (WSP EIS lead) provided an over view of the development and options process*. • Noted NSW side has been subject to desktop assessment only due to more constraints on property access (private land) as opposed to Victorian side (mostly public reserve land) • Multiple Criteria Analysis (MCA) or similar (Traffic Light Analysis) is being undertaken at both sides • Ongoing regular meetings with TCV to discuss and ensure consistency in assessment processes, timing and route alignment at the border crossing.
4. Approach to environmental assessment – biodiversity matters	*Michelle Patrick / Alex Cockerill (WSP Ecology leads) presented the current and proposed approach to ecology surveys/assessment.* - *Leigh M – If there are any deviations requested from the large area survey guidelines – BCS wants a written clarification early. Would like a few months to review and respond.* - *Miranda K - any existing maps including regional scale PCTs are indicative and Transgrid really survey at grasslands in the area for species composition* > *Alex C – responded that we had this issue with PEC and that early surveys last year were focussed on finding grasslands* - *Michael T – Asked for clarification on 'no approved access'.* > *Emma T clarified that some have said no and some unresponsive and explained that there are ongoing discussions with land owners and we expect some properties will not grant access.* > *Geoff H clarified mainly south of Moulamein is the issue with access.* - *Michael T - Is 31% access of all land or just private land?. MP – just the private and we can access public land holdings on top of the 31% private.* > *Jarryd B - Much of the public land is TSRs* > *Emma T – we will provide additional details (ballpark) of current land access*

Item	Summary notes
	> *Alex C commented that we are running parallel to public roads for much of the route and there remnant ecology adjacent to the road is decent quality so we can survey along the road boundaries* - *Andrew F – how does compulsory acquisition work prior to approvals?* > *Geoff H – Compulsory acquisition is our least preferred approach and we are continuing with landowner access agreements* > *Colin M – access is based on goodwill with property owners and TG does not traditionally use Compulsory acquisition (needs Ministerial sign off)* - *Andrew F commented that 50% access if difficult for BCS to assess* > *Tuesday H - Post approval biodiversity assessment strategy is being discussed with BCS east to look at providing more confirmation on assumed presence* > *Andrew F - reaffirmed that we should be pushing for EIS assessment and not post approvals processes. Conversation for another day. This is a reasonable confronting picture – (the lack of property access so far)*
5. Ongoing consultation with BCD, NSW DCCEEW	• *Alex Cockerill outlined a preferred approach to further consultation with BCS between now and May, 2024*
6. Group discussion and action items	- *AF – thanks and committed to discussing the timing and frequency of ongoing consultation will respond to the information from this presentation* **ACTIONS**: - Transgrid to issue minutes and slide pack - Transgrid provide Shapefile of route corridor to BCS. - Transgrid to provide approximate of hectares we currently have access to in the broader route corridor. - Transgrid to organise follow up meeting to discuss ongoing engagement / field visit approach – subject to B/C's suggested timing of such meetings

Next meeting

Date:	To be confirmed	**Time:**	To be confirmed
Location:	To be confirmed	**Chairperson:**	Geoffrey Hudson

Resources

Item	Link
Draft Route Report	https://www.transgrid.com.au/media/1vbfkt2d/vni_west_draft_route_report-29-january-2024.pdf (PDF 23.3MB)
Preferred Corridor Report	https://www.transgrid.com.au/media/0wue2k4h/vni-west-preferred-corridor-report-october-2023.pdf (PDF 3.66 MB)
Draft Corridor Report	https://www.transgrid.com.au/media/af5d3pry/ps135761-env-rep-001-reva_corridor_rpt_v2-2.pdf (PDF 39.34 MB)
Regulatory Investment Test for Transmission Documents	https://www.transgrid.com.au/projects-innovation/vni-west#Regulatory-Investment-Test-for-Transmission--RIT-T-

Meeting Minutes

VNI West – CPHR team meeting

Meeting title:	Project and BDAR update	**Date:**	20 February 2025
Location:	MS Teams	**Time:**	10 am – 11.30 am
Chairperson:	Geoff Hudson		
Attendees:			**Apologies:**
CPHR: • Adam Vey • Andrew Fisher (AF) • Georgina Xu • Marcus Wright • Simon Maffei (SM) • Clare Coulson • Leigh Maloney (LM) • Mel Cotterill	• Michael Todd (MT) • Miranda Kerr (MK) **Transgrid:** • Geoff Hudson (GH) • Colin Mayer (CM) • Daniel Whaite (DW) • Tuesday Heather • Ben Coddington • Andrew Cook	**WSP:** • Alex Cockerill (AC) • Caitlin Bennet • Emma Taylor Michelle Patrick (MP) • Damian Williams **DPHI:** • Julie Green	Nil

Agenda items

Note: refer to attached presentation for the content provided at the meeting.

Agenda item	Notes	Actions
1. Project overview	An overview of the project components was provided, including: • NSW/Victorian border to Dinawan substation • Network augmentation works between existing Wagga substation to future Gugaa substation The timing of the EIS was also provided with exhibition expected mid-year.	
2. Ecology survey update	An overview of surveys undertaken to date was provided with reference to BAM requirements, areas surveyed and access limitations. Discussion points included: • Assessment area clarification: - MP provided clarification that the 500-metre buffer for assessment area is on either side of the transmission line centreline (i.e. total width of about 1,000 metres) • Property access constraints: - AF asked what is the process to try and gain access to the main restricted access landholding as there is difficulty with delaying survey to the post-approval process? - GH and CM noted that Transgrid are continuing to try and get access with the landholder. It is probable that access will continue to be denied and that a compulsory acquisition process will need to be followed. - AF requested that CPHR team are kept up to date on the status of this.	

Agenda item	Notes	Actions
	• Use of HumeLink data: - LM asked whether all the HumeLink data has been field verified or are there areas relying on SVTM - Humelink data shared for VNI West has been ground-truthed by Niche as part of that project. This data can be provided to CPHR if required. - *Post-meeting note: WSP conducted surveys of the Humelink area (that overlaps with VNI West) and new areas in the last week of February 2025. Access was not available for three holdings. The WSP surveys will be included in the final BDAR.* • Threatened flora effort: - LM asked how have surveys been carried out and how have guidelines been applied? - MP stated that two-phased grids and transects were undertaken. - Gilgai searches were conducted as part of the microhabitat searches for threatened flora. These surveys were fine scale searches and conducted in these locations to search for threatened flora. Gilgais were recorded and an assessment of the habitat condition identified. - MP also provided clarification that *Swainsona murrayana* has been identified during surveys. • Threatened fauna effort: - MT queried the phascogale and squirrel glider surveys and their completion status - MP stated they have been completed. A species expert report is also being prepared by Rodney van der Ree who is an approved species expert for these species.	
3. Vegetation clearing approach	An overview of the vegetation clearing approach for the project and BDAR was provided. This included the adoption of a partial clearing approach similar to Project EnergyConnect (PEC) with partial impact disturbance areas A, B4, B10 and hazard tree zone assessed in the BDAR Discussion points included: • AF requested the partial clearing assessment approach is provided in a memo to CPHR for further consideration before the BDAR is submitted • LM wanted to know if there has been data collected in construction areas for PEC East to provide a stronger evidence base to justify the proposed approach being applied. LM also stated that this about post-clearing impacts not about post-rehabilitation resultant condition. • AC noted that based on his recent post-construction surveys of PEC West, the scores were demonstrating greater VI than assessed and approved within the BDAR. This includes a number of vegetation formations directly relevant to VNI West.	**Action:** WSP to prepare a partial clearing assessment approach memo and submit to CPHR by11 April 2025

Agenda item	Notes	Actions
	• MK suggested PEC West is a different scenario to PEC East. Ecosystems on PEC East are more relevant to VNI West and assessing VI condition closely following clearing works is more applicable. For PEC West, there was no assessment of VI condition along the construction route as works were completing. There was also no monitoring to enable review of clearing practices and to allow for changes. • LM would like to see data from PEC East to support the partial clearing approach being proposed. CPHR accept that partial clearing is a good process for avoidance of impacts and to minimise impact. However, the focus needs to be on what the actual impacts are though in reality with VI score reductions, not the resultant condition. • DW acknowledged that there have been some performance issues with undertaking partial clearing on previous projects. However, Transgrid are looking to achieve an offset obligation which reflects the resultant impact level follow rehabilitation. • MK suggested construction contractors need to be better informed of partial clearing approach. Transgrid need to make it clear to contractors what partial impacts means and what implementation processes are needed. It was suggested that this has not been demonstrated sufficiently on PEC. • SM stated that PEC East has a requirement for data to be collected within 3 months of clearing works – this timeframe establishes the impact assessment parameters. It does not specify the rehabilitated state at a time substantially longer than that timeframe.	
Biodiversity offsets approach	An overview of the biodiversity offset strategy for the project was provided and it was noted that it was progressing well and likely to include significant portion of the ecosystem liability secured prior to EIS exhibition. However, due to the scale and complexity the project would be seeking mechanism of deferment. Discussion points included: • AF noted that with respect to request for offset obligation deferment this requires further approval and discussion before it can be agreed that it will be applied.	
Site visit opportunities	The potential for the CHPR team to undertake a site visit was discussed. SM requested Transgrid provide a schedule of upcoming surveys so the CHPR team can consider.	**Action:** Transgrid to provide schedule of upcoming surveys
Other discussion	AF requested that in addition to the partial clearing assessment approach memo, they would like to see another memo that includes the BDAR survey and assessment methodology and how it meets the BAM before the BDAR is submitted.	**Action:** WSP to prepare a BDAR survey and assessment methodology memo and submit to CPHR by 30 April 2025

Next meeting

Date:	TBC	**Time:**	TBC
Location:	MS Teams	**Chairperson:**	Geoff Hudson

Meeting Minutes

VNI West – Update on draft BDAR, assessment methodology

Meeting title:	VNI West – BCS Meeting #1	**Date:**	30 April 2025
Location:	Teams	**Time:**	12.00 – 12:30pm
Chairperson:	Geoffrey Hudson (the Chair)		
Attendees			
VNI West Project Team			
Geoffrey Hudson (GH)	Environment Manager – VNI West (Transgrid)		
Wardia Kessal (WK)	Environmental Approvals – VNI West (Transgrid)		
Andrew Cook (AC)	Environmental Approvals – VNI West (Transgrid)		
Emma Taylor (ET)	Project Director - WSP		
Alex Cockerill (AC-WSP)	Lead Ecologist (National Executive)- WSP		
Conservation Programs Heritage and Regulation CPHR -			
Andrew Fisher, Adam Vay, Leigh Maloney, Simon Maffei, Mel Cotterill			
Apologies			

Meeting Proceedings

Item	Summary notes
1. Welcome, introductions	.
2. VNI West project presentation	Presentation was run through and this is provided as an attachment to the minutes
3. Key Discussion Points	• . Key discussion points: **Partial clearing approach** MC queried method for survey of field data from PEC- West project AC responded: The number of plots does not replicate a full BAM plot survey for the project. Not reasonable and feasible to do this based on scale of project. Where possible, three sample paired plots for each PCT have been targeted. For all PCTs multiple replicates have been collected. Noting that PCTs with existing disturbance have been avoided for the assessment of Partial Impact within Disturbance area B. • In relation to timing the sampling has typically been as follows post construction of the project: PEC – West data: collected between 12-24 months post construction at the sites PEC – East data: collected about 12 months from initial vegetation clearing noting variable in relation to when construction was completed as some sites still have some construction works occurring (i.e. stringing activities)

Item	Summary notes
	LM queried how the sampled sites were selected: • AC responded: Sites have been selected to be representative of the following key items: Areas of better condition PCTs. Having higher VI scores Considered land use practices – to avoid the influence of impacts from other practices on construction disturbance (i.e. avoiding grazing areas) PEC – West sites – focused on reasonable representative areas of the construction partial impact, including where there had been a canopy impact from construction activities (i.e. avoided areas where no canopy impact so not skewing results) AC noted – offer to validate results in the field with CPHR if this was beneficial. LM noted would be good to see the locations and data before any site visit. AC noted the BDAR appendix on partial impact would be provided this week for information with this detail – noting it covers the PEC-West data points only (PEC-East would come later once analysed) ET noted that the proposed approach in relation to exhibition BDAR data inclusion in relation to partial impacts and subsequent update at Amendment Report stage (with PEC-East data) has been briefed to DPHI assessment team as well. **Remote assessment biodiversity values BAM guide:** MC acknowledges that inclusion of this approach into the EIS BDAR was not anticipated due to timing. MC noted that keen to work in collaborative manner in relation to application of the guideline to the project. It was agreed that the following process would generally occur to enable further work on this matter • **Actions** -Transgrid to prepare a short (1 pager) letter for initial application for the guide to be applied to the VNI West project (for Amendment Report BDAR phase of works). • Pending response to application the aim would be to set-up working session to discuss the details of how the guide could be applied and to which properties/species etc. Process for this will be determined based on response to initial application. Ideal timing for this would be June onwards.

Next meeting

Date:	Sunday, 1 June 2025	**Time:**	To be confirmed
Location:	To be confirmed	**Chairperson:**	Geoffrey Hudson

Subject: RE: HPE CM: VNI West 1st Biodiversity briefing [Official] - proposed 2nd Biodiversity briefing
Sent: 20/12/2023, 5:41:47 PM
From: Geoffrey Hudson<Geoffrey.Hudson@transgrid.com.au>
To: Simon Maffei
Cc: Joel Annett; Wardia Kessal; Daniel Whaite; Williams, Damian; Cockerill, Alex; Barton, Jarryd; ROG South West Region Mailbox; Taylor, Emma; Colin Mayer

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Hi Simon, thanks for your email and yes we have considered these priority watering sites in our constraint analysis. Our draft route report will be released to public on the **29th January 2024** (open to a five week consultation/submission process) and we would like to organise a meeting with yourself and other relevant B/C team members to run through with you the findings of this report including our analysis/assessment process, avoidance of identified significant constraint areas, findings of some of the limited ecological field studies already completed and anything you/team would like to discuss further.

The overall aim of these proposed ongoing briefings is to ensure you and your team are kept up to date with our progression of a preferred route and into the EIS phase.

We also intend to get you/team out in the field (time suitable to you/team) with our WSP ecology leads to further understand the project constraints, opportunities, etc.

Could you please let me know some potential dates/times after the 29th Jan 2024 that would be suitable for "Teams" catchup and I will then lock in a date and time. Noting that we will also be requesting a further "ongoing" briefing with DPE i.e. Clay Preshaw and Nicole Brewer and would be happy if you want to line the above requested meeting with this proposed DPE.

Thanks and regards

Geoff

Geoffrey Hudson
Environment Manager – VNI-West | Major Projects

Transgrid | 180 Thomas St Sydney, NSW, 2000
Mobile 0436 928 001
E: Geoffrey.Hudson@transgrid.com.au **W:** www.transgrid.com.au

Transgrid

Data Classification: Official

From: Simon Maffei <Simon.Maffei@environment.nsw.gov.au>
Sent: Wednesday, December 20, 2023 11:27 AM
To: Geoffrey Hudson <Geoffrey.Hudson@transgrid.com.au>
Cc: Joel Annett <Joel.Annett@transgrid.com.au>; Wardia Kessal <Wardia.Kessal@transgrid.com.au>; Daniel Whaite <Daniel.Whaite@transgrid.com.au>; Williams, Damian <Damian.Williams@wsp.com>; Cockerill, Alex <Alex.Cockerill@wsp.com>; ROG South West Region Mailbox <rog.southwest@environment.nsw.gov.au>
Subject: RE: HPE CM: VNI West 1st Biodiversity briefing [Official]

Hi Geoff,

Following on from the biodiversity briefing last month, we sat down with internal staff from our Threatened Species and Environmental Water teams to discuss this project. They noted that there are a considerable number of priority watering sites within the proposed corridor that they deliver environmental water to for threatened species.

Attached is a shapefile that identifies the locations of the priority watering sites within the project study area.
It would be appreciated if this data could be considered in the project constraints mapping to ensure these actively managed sites are avoided as far as possible.

We have considerable data from these sites, including Southern Bell Frog records that have not yet made it into BioNet. This data can be provided in the new year if requested.

If you have any questions or would like get access to some of the site records, don't hesitate to contact me.

Thanks
Simon

Simon Maffei
Senior Project Officer Planning – South West

Biodiversity and Conservation | Department of Planning and Environment
T 02 6022 0646 | **E** simon.maffei@environment.nsw.gov.au
620 Macauley St, Albury NSW 2640
www.dpie.nsw.gov.au

Contact the South West Planning Team about biodiversity and flood management planning matters by emailing rog.southwest@environment.nsw.gov.au.

NSW GOVERNMENT

The Department of Planning and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

From: Geoffrey Hudson <Geoffrey.Hudson@transgrid.com.au>
Sent: Monday, 20 November 2023 5:21 PM
To: ROG South West Region Mailbox <rog.southwest@environment.nsw.gov.au>; Adam Vey <Adam.Vey@environment.nsw.gov.au>; Simon Maffei <Simon.Maffei@environment.nsw.gov.au>; Michael Todd <Michael.Todd@environment.nsw.gov.au>; Miranda Kerr <Miranda.Kerr@environment.nsw.gov.au>; Leigh Maloney <leigh.maloney@environment.nsw.gov.au>; Marcus Wright <Marcus.Wright@environment.nsw.gov.au>; Claire Coulson <claire.coulson@environment.nsw.gov.au>; Andrew Fisher <Andrew.Fisher@environment.nsw.gov.au>
Cc: Joel Annett <Joel.Annett@transgrid.com.au>; Wardia Kessal <Wardia.Kessal@transgrid.com.au>; Daniel Whaite <Daniel.Whaite@transgrid.com.au>; Williams, Damian <Damian.Williams@wsp.com>; Cockerill, Alex <Alex.Cockerill@wsp.com>
Subject: HPE CM: VNI West 1st Biodiversity briefing [Official]

Hi thanks for you time the other day. I have attached the general presentation outlining the VNI West project and as discussed we will contact you with a further update and discussion on survey methodology around March next year just prior to submitting our scoping report. You can also find further information on the project at https://www.transgrid.com.au/projects-innovation/vni-west

In the meantime if you have any questions please come back to me.

Thanks and regards
Geoff

Geoffrey Hudson
Environment Manager | Major Projects

Transgrid | 180 Thomas St Sydney, NSW, 2000
T: (02) 9284 3496 **M:** 0436 928 001,
E: Geoffrey.Hudson@transgrid.com.au **W:** www.transgrid.com.au

Transgrid

We acknowledge the Aboriginal and Torres Islander people as the Traditional Custodians of the land which we provide our services. We pay our respects to their Elders, past and present.

Data Classification: Official

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Meeting Minutes

VNI West – Update on draft BDAR, assessment methodology – Follow on meeting

Meeting title:	VNI West – CPHR Meeting #3	**Date:**	5 June 2025
Location:	Teams	**Time:**	09.00 – 10:00am
Chairperson:	Wardia Kessal (the Chair)		
Attendees			
VNI West Project Team			
Wardia Kessal (WK)	Environmental Approvals – VNI West (Transgrid)		
Andrew Cook (AC)	Environmental Approvals – VNI West (Transgrid)		
Daniel Whaite (DW)	Biodiversity Manager - Transgrid		
Emma Taylor (ET)	Project Director - WSP		
Alex Cockerill (AC-WSP)	Lead Ecologist (National Executive)- WSP		
Devon Raiff (DR)	Ecologist - WSP		
Caitlin Bennett (CB)	Project REAP - WSP		
Conservation Programs Heritage and Regulation CPHR -			
Andrew Fisher (AF), Leigh Maloney (LM), Simon Maffei (SM), Mel Cotterill, Miranda Kerr (MK), Georginni Xu, Michael Todd, Michelle Cox (MC)			
Apologies			
Geoffrey Hudson (GH)	Environment Manager – VNI West (Transgrid)		

Meeting Proceedings

Item	Summary notes
1. Welcome, introductions	
2. VNI West project presentation	Presentation was run through, and this is provided as an attachment to the minutes. The presentation included the following key items: • VNI West (NSW) – Project Status • Assessment approach & survey status • Overview of biodiversity impacts • Proposed mitigations • Offsets strategy • Amendment report consideration: Remote Assessment guidelines • Next steps
3. Key Discussion Points	1. ET Identified that traffic intersections / road upgrade and maintenance impacts not currently included in impact footprint assessment as these are still under consultation with Councils and TfNSW.

Item	Summary notes
	2. AF- query – will this be clearly identified in the EIS/ BDAR that this is still to come? ET – response - yes this is identified in the documentation. 3. MC - query – is some of the assumed presence for these species linked to access restrictions? 4. AC WSP - response - yes much of it is. Not all but a good deal and this is being worked through. 5. MK - query – have these been established under separate BAM-C case? AC WSP - response - not yet. To be established as part of Amendment Report BDAR 6. General Note – further discussion needed as to how to set up calculators, etc for the next Amendment BDAR and get agreement before these are set up. 7. AF - Mitigations - Compensatory habitat strategy approach. Noted proposed is supported so best outcomes can be achieved. 8. AF - Partial Impacts: Clarification that there is to be more work done on this as part of Amendment Report, including incorporation of EnergyConnect Eastern Section data. Response AC WSP: This is correct, this will be included as part of the Amendment Report BDAR. Comments from CPHR received this week on the submitted approach being adopted in EIS BDAR is acknowledged. 9. LM – Plains Wanderer SAII assessment approach? AC WSP – response - Additional survey has been completed, mainly focuses on areas east of the Cobb Highway (2 small areas to the west). BDAR discusses areas of additional potential habitat outside of important mapped habitat and TBDC listed associated habitat (i.e. areas of sparse chenopod shrubland). 10. MC - what is to be provided for early application of guidelines? AC WSP – response - high level approach to be submitted. Not detailed assessment of the outcomes. Intent to state in the exhibition EIS BDAR that we would be seeking to adopt the guidelines as part of an Amendment Report. 11. ET asked Question to CPHR on early information provision: AF- response - CPHR noted that they prefer to receive the full package of data at EIS submission time, not in advance. It is noted that there is to be notable change to the Amendment BDAR and therefore information in EIS BDAR will be subject to notable change. 12. ET - query on final GIS data provision & query on format of data. Please refer to options included in **Appendix to minutes** below**.** Action: CPHR to confirm their preferred format in response to these minutes. 13. AF - site visit request for 1 day in the field with WSP ecology team: AF/SM will respond to minutes on particular areas where they would like to focus on. i.e. Moulamein area to the south and preferred timing

Item	Summary notes
	14. AF - query - on status of the Victorian VNI section of the project WK – response - taken on notice and a response to be provided by Transgrid (actioned – please refer to Actions section below).
4. Actions	**1. CPHR to confirm their preferred final GIS data provision and format in response to these minutes.** **2. AF/SM will respond to minutes on particular areas where they would like to focus on for the field inspection. i.e. Moulamein area to the south and preferred timing** 3. Transgrid to provide status of the Victorian VNI section of the project. Transgrid response - TCV (Transmission Company Victoria) has been facing challenges in obtaining access to private properties which has impacted their ability to undertake studies required for the EES (Environmental Effects Statement). Transgrid anticipates this will result in a delay to the project delivery of the transmission line component of over about 2 years. TCV are anticipated to make a formal announcement at the end of this financial year.

Next meeting

Date:	To be confirmed	**Time:**	To be confirmed
Location:	Online	**Chairperson:**	Wardia Kessal

Appendix to Minutes - GIS data provision query for BDAR/EIS submission:

WSP GIS team seek CPHR clarification of the following items prior to final spatial packaging.

Note - A meeting to discuss the options can be arranged if this is CPHR preference. Advice is sought by 30 June to assist with preparation of data for submission.

1. Item 1. Species polygons

CPHR to confirm adoption of following option (s).

- **Option 1** - Amalgamation of assumed / confirmed species polygons into a 'clean' dataset – note this approach does not preserve PCTs / IBRAs or multicriteria analysis workings.

i.e. ECO_WSP_BDARv2_Fauna_PolygonsConsolidated_GDA20z55_XXXX

ECO_WSP_BDARv2_Fauna...GDA20z55_250521

Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy

	OBJECTID *	Shape *	MERGE_SRC	Species	Type	Shape_Length	Shape_Area
1	2	Polygon ZM	ECO_WSP_BDARv2_Fa...	Australian Bustard	Assumed	125651.838092	6076512.993795
2	3	Polygon ZM	ECO_WSP_BDARv2_Fa...	Australian Bustard	Exclude on both bird...	668443.979878	24069806.203793
3	4	Polygon ZM	INTERSECT_WSP_BDAR...	Barking Owl	Assumed	101391.208916	2236799.840637
4	5	Polygon ZM	INTERSECT_WSP_BDAR...	Black Breasted Buzzard	Assumed	16736.821572	194660.880176
5	6	Polygon ZM	INTERSECT_WSP_BDAR...	Bush Stone-Curlew	Assumed	288269.244451	7389624.544561
6	7	Polygon ZM	ECO_WSP_BDARv2_Fa...	Bush Stone-Curlew	Confirmed	5384.623199	233284.886498
7	8	Polygon ZM	ECO_WSP_BDARv2_Fa...	Gang-Gang Cockatoo	Removed based on lac...	13116.138295	136579.814165
8	9	Polygon ZM	ECO_WSP_BDARv2_Fa...	Gang-Gang Cockatoo	Assumed	680.850557	6391.731126
9	10	Polygon ZM	ECO_WSP_BDARv2_Fa...	Grey Snake	"Unsuitable habitat"	43588.357254	315908.556576
10	11	Polygon ZM	ECO_WSP_BDARv2_Fa...	Grey Snake	Assumed	377714.317283	10693587.967076
11	12	Polygon ZM	ECO_WSP_BDARv2_Fa...	Koala	Assumed	187461.308501	4223048.68446
12	13	Polygon ZM	ECO_WSP_BDARv2_Fa...	Little Eagle	Exclude on both bird...	387296.986994	10932604.90834
13	14	Polygon ZM	ECO_WSP_BDARv2_Fa...	Little Eagle	Assumed	47182.792572	1129312.038652

0 of 26 selected Filters:

- **Option 2** - Provision of individual species polygon layers – noting this approach ensure ALL PCT / metadata is retained inclusive of suitable habitat commentary.

i.e. ECO_WSP_BDARv2_Ammobium_craspedioides_Assumed_SubjectLand_GDA20z55_250513

IMPACT_ECO_WSP_BDARv...GDA20z55_250513 ECO_WSP_BDARv2_Ammob...GDA20z55_250513

Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy

		vegClass	IBRA_SUB_N	IBRA_REG_N	Area_H2	EPBC_Statu	SAll	BC_Status	Acraspedioides	Shape_Length	Shape_Area
1	assy Woodl...	Western Slopes Grassy...	Inland Slopes	NSW South Western S...	0.03314	Critically Endangered	Yes	Critically Endangered	Assumed	66.783784	331.399118
2	assy Woodl...	Western Slopes Grassy...	Inland Slopes	NSW South Western S...	0.363107	Critically Endangered	Yes	Critically Endangered	Assumed	727.199817	3631.072272
3	assy Woodl...	Western Slopes Grassy...	Inland Slopes	NSW South Western S...	0.025125	Critically Endangered	Yes	Critically Endangered	Assumed	64.017009	251.249286
4	assy Woodl...	Western Slopes Grassy...	Inland Slopes	NSW South Western S...	0.059295	Critically Endangered	Yes	Critically Endangered	Assumed	88.116537	592.953267
5	assy Woodl...	Western Slopes Grassy...	Inland Slopes	NSW South Western S...	0.225838	Critically Endangered	Yes	Critically Endangered	Assumed	390.837678	2258.3805
6	assy Woodl...	Western Slopes Grassy...	Inland Slopes	NSW South Western S...	0.009824	Critically Endangered	Yes	Critically Endangered	Assumed	43.665635	98.236379
7	assy Woodl...	Western Slopes Grassy...	Inland Slopes	NSW South Western S...	0.055131	Critically Endangered	Yes	Critically Endangered	Assumed	115.291663	551.306328

- **Option 3** - Provision of both Option 1 and Option 2 dataset – noting this has been supplied to Transgrid and has resulted in some confusion given the duplication of data supplied.

2. Item 2. Metadata

CPHR is requested to provide approved example of suitable metadata standards for spatial packaging.

3. Item 3. BDAR Data supply package

CPHR to please confirm data supply format / structure.

WSP propose spatial data be divided into appropriate sub geodatabases rather than singular geodatabase (inclusive of all layers). Example of this option provided below for comment:

File geodatabase

To assist end user review, WSP proposed to provide the following project geodatabases (split into categories relevant to the BDAR).

File geodatabase (name)	Examples of layers (non-exhaustive).
BDARv2_LandscapeFeatures.gdb	I.e. Native vegetation assessment area and associated layers, regional connectivity, IBRA / Mitchell landscapes etc.
BDARv2_DesignFeatures.gdb	I.e. Design elements utilised for this version of the BDAR (i.e. transmission line centrelines, substations, compounds, existing transmission lines).
BDARv2_SurveyEffort.gdb	I.e. Flora survey effort (BAM / Rapids, Microhabitat searches, Cat Assessment), survey tracks, Fauna survey effort (habitat tree points, scattered trees), significant species surveys ect.
BDARv2_SurveyResults.gdb	I.e. Field validated vegetation layers (apply definition query for EPBC TECs, BC TECs), Consolidated species polygons (apply query for singular species)
BDARv2_DisturbanceImpacts.gdb	I.e. All final layers utilised in BAM C calculations (i.e. impact field validated vegetation / TECS / EPBCS, species polygons (assumed / confirmed), scattered trees, significant species ect.
BDARv2_Working_SpeciesPolygons.gdb	I.e. All buffers, site features and layers utilised for the creation of final species polygons.

Accompanying spatial register

An excel document detailing feature class / file name and description used for each figure in BDAR (example provide below). Option to add additional field detailing definitions queries (if applicable).

BDAR Figure Reference	Feature class/file Name	Description
PS138962_BDAR_F015_1_SiteMap_r2v4		
	PLAN_LINE_TG_Transmission_lines_FullNSW_GDA20z55_240417	Regional connectivity
	ENV_POLY_NSW_National_Parks_Managed_Land_GDA20z55_231115	National park
	DESIGN_WSP_BDAR_DisturbanceImpactArea_250319_v804_GDA2020z55	Indicative disturbace footprint
	ECO_WSP_BDARv2_Rocky_Habitat_GDA20z55_250519	Rocky habitat
	T20250128_VNI_W_ProjectFootprint_Rev1_8_MGA55_GDA2020	Subject land
	CONSTRUCTION_WSP_DisturbanceFootprint_RtS_Eastern_v1_220304_GDA20z55	PECe disturbance area
	T20240821_VNI_W_Dinawan_Substation_Footprint_Combined_Rev1_1_MGA55_GDA2020	Dinawan\VNI-W - Dinawan Layout - Poly
	DESIGN_TG_VNI_W_LayoutConversion_Line_250319_GDA20z55	Dinawan\Dinawan substation works - proposed 500kV
	PlacePoint	Locality (NSW and VIC)\PlacePoint
	Locality_Point	Locality (NSW and VIC)\Locality_Point
	PLAN_LINE_Existing_Infrastructure_EnergyConnect_high_voltage_GDA20z54_240402	EnergyConnect (NSW - Eastern section) (under construction)
	PLAN_LINE_TG_Transmission_lines_FullNSW_GDA20z55_240417	Existing transmission line
	PLAN_LINE_Existing_Infrastructure_Rail_GDA20z55_231115	Rail line
	LINE_PLAN_WSP_RoadNameExtent_GDA20z55_250220_v2	Main road
	LINE_HYDRO_WSP_NamedWaterways_GDA20z55_250220_v2	Named waterway
	PLAN_LINE_Existing_Infrastructure_Rail_GDA20z55_231115	Rail line
	naluma_nsw_2017_abpl0_c20240729_u12_Clipped_GDA20z55_250410	Excluded land (Category 1) (NVR 2025)
	T20241217_VNI_W_CampAreas_Rev1_93_MGA55_GDA2020	Construction compound
	T20241217_VNI_W_CampAreas_Rev1_93_MGA55_GDA2020	Combined temporary worker accomodation facility
	IBRASubegion_Aust70	IBRA subregion - Outine
	AUSTRALIA_STATES_BOUNDARY	AUSTRALIA_STATES_BOUNDARY
	IBRASubegion_Aust70.shp	IBRA subregion
	MitchellLandscapes_v31_GDA20z55	Mitchell Landscapes

Appendix C

Matters of national environmental significance

C1 Introduction

Transgrid and the Transmission Company Victoria (TCV) are jointly developing a new electrical connection between Victoria and NSW called the Victoria NSW Interconnector West project (referred to as 'the project' or 'VNI West (NSW)'). Transgrid is responsible for developing the NSW component of VNI West (in the Riverina Region of NSW and would provide the transmission line connection component of VNI West between the NSW/Victorian border and the Dinawan substation as well as replacement of around nine kilometres of an existing single circuit 330 kV transmission line (Line 51) between Ivydale Road at Gregadoo and the proposed Gugaa 500 kV substation (which is subject to a separate planning approval – HumeLink, SSI-36656827) as a double circuit 330 kV transmission line.

Transgrid is seeking approval from the NSW Minister for Planning under Division 5.2, Part 5 of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) to construct and operate the project. The project has been declared as Critical State significant infrastructure under Section 5.13 of the EP&A Act.

The project would also require approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). A referral for *New transmission infrastructure – Victoria NSW Interconnector – West (NSW) (EPBC 2024/09871)* was submitted to the Minister for the Environment, and determined a controlled action due to impact on listed threatened species and communities (sections 18 & 18A) on the 4 September 2024 (DCCEEW, 2024), The delegate for the Commonwealth Minister also confirmed that the project would be assessed by EIS under a bilateral agreement between the Australian Government and the State of New South Wales (in accordance with section 45 of the EPBC Act).

To avoid duplication, the appendix has been prepared to address the requirements under the EPBC Act. Specifically, the appendix confirms the presence/likely absence of EPBC listed threatened species and communities identified by a desktop assessment and then field verified by targeted surveys. Then evaluates the significance residual impacts associated with the project on these listed threatened species and communities in accordance with the Significant Impact Guideline 1.1 – Matters of National Environmental (Department of the Environment, 2013c). Where a species is listed as both threatened and migratory are the EPBC Act, the species has only been considered under it threatened species status.

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

- Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (Significant Impact Guideline/s).
- The 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 threatened species and endangered ecological communities. Any additional information provided in the SPRAT profile for the relevant threatened species or endangered ecological communities including referral and survey guidelines.

The appendix should be read in conjunction with the BDAR in particular:

- Chapter 1 – Introduction and project description
- Chapter 2 – Methodology
- Chapters 3 and 4 – Site context including vegetation communities
- Chapter 5 – Habitat suitability and presence of threatened (candidate) species
- Chapter 8 – Avoidance and mitigation measures
- Chapters 9 and 11 – Impact assessment and summary
- Chapter 12 – Biodiversity credit report.

C2 Commonwealth requirements

Table C.1 details the additional Commonwealth guidelines for preparing assessment documentation relevant to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) as the project is being assessed under the NSW bilateral assessment process (as detailed in Attachment A of the SEARs issued on 4 October 2024).

Table C.1 Commonwealth guidelines for preparing assessment documentation

Requirement	Item	Where addressed in EIS
Biodiversity (threatened species and communities)	**Assessment Requirements** The EIS must identify each EPBC Act listed threatened species and communities likely to be impacted by the action. For any species and communities that are likely to be impacted, the proponent must provide a description of the nature, quantum and consequences of the impacts. For species and communities potentially located in the project area or in the vicinity that are not likely to be impacted, provide evidence why they are not likely to be impacted.	MNES, including threatened species and ecological communities and migratory species likely to be impacted by the project, are identified in Section 6 of *Technical paper 1 – Biodiversity Development Assessment Report* and Appendix C-3 – Appendix C-5. Species with potential to occur within the project footprint and broader locality were also considered and are addressed in Section 6 of *Technical paper 1 – Biodiversity Development Assessment Report* and Appendix C-1.
	For each of the EPBC Act listed threatened species and communities likely to be impacted by the action the EIS must provide a separate: i. description of the habitat (including identification and mapping of suitable breeding habitat, suitable foraging habitat, important populations and habitat critical for survival), with consideration of, and reference to, any relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans; ii. details of the scope, timing and methodology for studies or surveys used and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements; iii. description of the relevant impacts of the action having regard to the full national extent of the species or community's range; iv. description of the specific proposed avoidance and mitigation measures to deal with relevant impacts of the action; v. identification of significant residual adverse impacts likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account;	Section 6 of *Technical paper 1 – Biodiversity Development Assessment Report* and Appendix C-3 - Appendix C-5 of this appendix. Section 2 of *Technical paper 1 – Biodiversity Development Assessment Report* and section C2. Section 6 of *Technical paper 1 – Biodiversity Development Assessment Report* and Appendix C-3 – Appendix C-5. Section 8 of *Technical paper 1 – Biodiversity Development Assessment Report* and section C6. Section 8 of *Technical paper 1 – Biodiversity Development Assessment Report* and section C6. Section 11.4 of *Technical paper 1 – Biodiversity Development Assessment Report* Section 11.4 of *Technical paper 1 – Biodiversity Development Assessment Report* and section C7.

Requirement	Item	Where addressed in EIS
	vi. a description of any offsets proposed to address residual adverse significant impacts and how these offsets would be established; vii. details of how the current published NSW Biodiversity Assessment Method (BAM) has been applied in accordance with the objects of the EPBC Act to offset significant residual adverse impacts; and viii. details of the offset package to compensate for significant residual impacts including details of the credit profiles required to offset the action in accordance with the BAM and/or mapping and descriptions of the extent and condition of the relevant habitat and/or threatened communities occurring on proposed offset sites.	Section 11.4 of *Technical paper 1 – Biodiversity Development Assessment Report* and section C7.
	Any significant residual impacts not addressed by the BAM may need to be addressed in accordance with the EPBC Act 1999 Environmental Offset Policy. www.dcceew.gov.au/environment/epbc/publications/epbc-act-environmental-offsets-policy.	Addressed in Section 12 of *Technical paper 1 – Biodiversity Development Assessment Report.*

C3 Methodology

Section 2 of the BDAR sets out the detailed methodology including the review of existing information and targeted surveys which have been undertaken in accordance with the NSW Biodiversity Assessment methods (BAM) and the requirements of the BAM 2020 Operation Manual 1 (Department of Planning 2020).

C3.1 Desktop assessment

The BAM requires the accredited assessor to review additional information about threatened species to determine if any predicted or candidate species inclusions are required. This involved searches of the threatened species databases presented in Table C.2. For the purpose of this assessment, the term database searches include all the databases below, unless otherwise stated.

In addition to threatened species database searches, a range of relevant documents and literature related to threatened biodiversity was considered. A list of the documents is provided in section 2.3.2 of the BDAR.

Table C.2 Threatened species database searches

Database	Search date	Area searches	Reference
PlantNet Database	March - October 2024	Locality search	Royal Botanic Gardens and Domain Trust
BioNet Atlas of NSW Wildlife	April 2025	The search was completed to 10 km for the following IBRA subregions: — Murrumbidgee — Murray Fans — Inland Slopes	Threatened Biodiversity Data Collection (TBDC) 2025
EPBC Protected Matters Search Tool	May 2025	10 km search around project corridor	NSW DCCEEW 2024c
Biodiversity Assessment Method (BAM) Calculator (Credit Calculator)	Final updates in BAM-C May 2025	The following IBRA subregions: — Murrumbidgee — Murray Fans — Inland Slopes	BAM-C Version 80 OEH 2023
NSW Department of Primary Industries (Fishing and Aquaculture) threatened Aquatic Fauna Database	January 2025	Local government areas: — Edward River LGA — Murray River LGA — Murrumbidgee LGA — Wagga Wagga LGA.	Department of Primary Industries and Regional Development, n.d.

C3.2 Likelihood of occurrence assessment

Listed threatened species and ecological communities identified in the desktop assessment (section 2.4 of the BDAR) were assessed for likelihood of occurrence against the criteria outlined in Table C.3.

Field surveys and habitat assessments were also utilised to inform the likelihood of occurrence assessment. Assessments were based on the habitat profile for the species and other habitat information in the Threatened Biodiversity Data Collection (TBDC) and the Species Profile and Threats Database (DPE 2023c).

Table C.3 Likelihood of occurrence assessment

Likelihood of occurrence	Criteria
Low	Have not been recorded previously in the project site and surrounds and/or the project site 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 project site 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 project site. 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 project site. Are known or likely to visit during regular seasonal movements or migration.
Recorded	Have been recorded within the project site during surveys.

C3.3 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)* 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.

C3.4 Field surveys

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

- *Draft survey guidelines for Australia's threatened orchids* (Department of the Environment, 2013a)
- *Survey guidelines for Australia's threatened bats* (Department of the Environment Water Heritage and the Arts, 2010b)
- *Survey guidelines for Australia's threatened fish* (Department of Sustainability Environment Water Population and Communities, 2011a)
- *Survey guidelines for Australia's threatened mammals* (Department of Sustainability Environment Water Population and Communities, 2011b)
- *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method* (Department of Planning Industry and Environment, 2020b)
- *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)* (Department of Environment and Conservation, 2004)
- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts, 2010a)
- *Threatened Species Survey and Assessment Guidelines: field survey and methods for fauna. Amphibians* (Department of Environment and Climate Change, 2009)
- *Survey guidelines for Australia's threatened frogs* (Department of the Environment Water Heritage and the Arts, 2010c)
- *Survey guidelines for Australia's threatened reptiles* (Department of Sustainability Environment Water Population and Communities, 2011c)
- *'Species credit' threatened bats and their habitats NSW guide for the Biodiversity Assessment Method.* (Department of Planning Industry and Environment, 2021b)
- *NSW Survey Guide for Threatened Frogs. A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method* (Department of Planning Industry and Environment, 2020a)
- *BioNet Threatened Species Profile Database* (NSW DCCEEW, 2025a, Science, 2021)
- *Koala* (Phascolarctos cinereus) *Biodiversity Assessment Method Survey Guide* (Department of Planning and Environment, 2022)
- *Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013)* (DPI Fisheries, 2013)

A detail description of the methodology used is provide in Section 2.5 to 2.7 of the BDAR.

C4 Threatened biodiversity

C4.1 Threatened ecological communities

A desktop assessment utilising the EPBC Protected Matters Search Tool (NSW DCCEEW 2024c) determined seven EPBC listed TECs with the potential to occur on the subject land (section 6.2.1 of the BDAR). Following detailed field verification surveys, six TECs were recorded as present including:

- The Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions – Endangered
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – Endangered
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions – Critically Endangered
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered
- Weeping Myall Woodlands – Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered.

Vegetation within the subject land did not meet the EPBC listing advice for the Critically endangered Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregion TEC. One associated PCT was recorded (PCT 170). However PCT 170 within the subject land did not meet the minimum condition criteria for Plains mallee box woodlands TEC as the canopy layer was either lacking or did not contain the characteristic Eucalyptus species consistent with the TEC.

Table C.4 EPBC Act listed TECs within the subject land

TEC name	EPBC Act status	Associated vegetation zones within the subject land	Area within subject land (ha)
Buloke woodlands of the Riverina and Murray Darling Depression bioregions	Endangered	PCT 20_Thinned	0.16
		PCT 20_Derived	2.11
		PCT20_Dervied-Low conservation value	1.23
		Total	**3.50**
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	PCT 237_Moderate-good	0.84
Natural Grasslands of the Murray Valley Plains	Critically Endangered	PCT 44_Moderate-good	14.77
		PCT 44_SVTM	18.96
		PCT 45_Moderate-good	3.58
		PCT 45_SVTM	5.96
		PCT 46_Moderate-good	39.35
		PCT 46_SVTM	19.07
		Total	**101.69**

TEC name	EPBC Act status	Associated vegetation zones within the subject land	Area within subject land (ha)
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	Critically Endangered	PCT 47_Moderate-good	0.17
Weeping Myall Woodlands	Endangered	PCT 26_Moderate-good	91.32
		PCT 26_SVTM	1.33
		Total	**92.65**
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	PCT 266_Moderate	0.16
		PCT 266_Thinned	0.02
		PCT 277_Moderate-good	0.19
		PCT 277_Thinned	3.01
		Total	**3.38**

C4.2 Threatened flora

Database searches identified 27 threatened flora species listed under the EPBC Act with known or likely to occur within the project area or surrounding locality (10 km buffer area). Of these, five species were recorded within the subject land, with a further 8 species identified as having a moderate or higher likelihood of occurrence (Appendix C-1) within the subject land (Table C.5).

Table C.5 Threatened flora likelihood of occurrence within the subject land

Scientific name	Common name	EPBC Act[1]	Likelihood
Amphibromus fluitans	Floating Swamp Wallaby-grass	V	**Moderate.** Records associated with the Murray River and tributaries. Habitat occurs in the subject land in the form of PCTs 2, 11, 17 and 160.
Austrostipa metatoris	-	V	**Moderate.** Records associated with the Murray River Valley. Habitat occurs in the subject land in the form of PCTs 7, 19 & 28.
Austrostipa wakoolica	-	E	**Moderate.** Records associated with the Murray River and tributaries. Habitat occurs in the subject land in the form of PCTs 17, 26, 28, 70 & 237.
Brachyscome muelleroides	Mueller Daisy	V	**Moderate.** Habitat for the species is present within the subject land. Habitat occurs in the subject land in the form of PCTs 44, 45, 46 and 47.
Brachyscome papillosa	Mossgiel daisy	V	**Recorded.** Known populations within 5 km and extensive suitable habitat within 5 km of the subject land. Habitat occurs in the subject land in the form of PCTs 13, 15, 24, 44, 45, 46, 157, 160, 163, 164 and 237.
Eleocharis obicis	A spike rush	V	**Recorded.** A population of this species was recorded during preliminary surveys in an inundated gilgai on light grey clays in chenopod shrublands. Habitat occurs in the subject land in the form of PCTs 10, 11, 13, 17, 24, 76, 157, 160, 163, 164, 216 and 237.

Scientific name	Common name	EPBC Act[1]	Likelihood
Lepidium monoplocoides	Winged Peppercress	E	**Recorded**. One record of this species was found during targeted surveys within the Murrumbidgee IBRA sub-region. Extensive suitable habitat within the subject land and known populations within the locality. Habitat occurs in the subject land in the form of PCTs 13, 15, 24, 26, 45, 46, 160, 163, 216 and 237.
Maireana cheelii	Chariot Wheels	V	**Recorded.** Extensive suitable habitat within the subject land and known populations within the locality. Habitat occurs in the subject land in the form of PCTs 15, 26, 44, 46, 157 and 164.
Sclerolaena napiformis	Turnip Copperburr	E	**Moderate.** Habitat for the species is present within the subject land. Habitat occurs in the subject land in the form of PCTs 26, 44 & 46.
Swainsona murrayana	Slender Darling Pea	V	**Recorded.** BioNet records indicate multiple populations within the subject land. Additionally, extensive suitable habitat has been identified by SVTM. Habitat occurs in the subject land in the form of PCTs 15, 44, 45, 46, 76, 157, 163, 164and 216.
Swainsona plagiotropis	Red Darling-pea, Red Swainson-pea	V	**Moderate.** Habitat for the species is present within the subject land. Habitat occurs in the subject land in the form of PCTs 26, 44, 45 & 46.
Swainsona recta	Small Purple-pea	E	**Moderate.** Habitat for the species is present within the subject land. Habitat occurs in the subject land in the form of PCTs 266 & 277.

(1) Indicates a species is listed V= Vulnerable, E = Endangered under the Environmental Protection and Biodiversity Conservation Act 1999.

C4.3 Threatened fauna

Likelihood of occurrence assessments identified 26 threatened fauna species listed under the EPBC Act to have moderate or higher likelihood of occurring within the subject land or surrounding locality (10 km buffer area) (Appendix C-1) (Table C.6). Of these seven terrestrial fauna species were recorded within the subject land.

Table C.6 Threatened fauna likelihood of occurrence within the subject land

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Litoria raniformis	Southern Bell Frog	V	**Recorded.** Habitat associated with PCTs 2, 7, 10, 11, 13, 15, 17, 28, 44, 86, 160, 163 and 237
Aphelocephala leucopsis	Southern Whiteface	V	**Recorded.** BioNet records have identified individuals of this species within the subject land. Habitat associated with PCTs 7, 10, 11, 13, 15, 17, 20, 23, 24, 26, 28, 44, 45, 46, 58, 70, 76, 157, 159, 160, 163, 164, 170, 216, 237, 266 and 277.
Botaurus poiciloptilus	Australasian Bittern	E	**Moderate.** Habitat within the subject land is considered suitable for this species, and it has been recorded within the locality. Habitat associated with PCTs 10, 11, 13, 17, 24 and 160.

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Calidris acuminata	Sharp-tailed Sandpiper	V Mi, Mr	**Moderate.** This species has been recorded within a various habitat type and consistently throughout the locality when conditions are favourable. Although not associated with any present PCTs officially, habitats present may be considered suitable based on this species diverse habitat preferences.
Callocephalon fimbriatum	Gang-gang Cockatoo	E	**Moderate**. This species is associated with PCTs present within the subject land and these habitats are considered suitable for this species. Habitat associated with PCT 343
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	V	**Recorded.** BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land. Habitat associated with PCTs 76, 237, 266, 277 and 343.
Gallinago hardwickii	Latham's Snipe	V, Mi, Mr	**Moderate.** This species has been recorded throughout the locality when conditions are favourable. Although not associated with any present PCTs officially, habitats present may be considered suitable based on this species diverse habitat preferences.
Grantiella picta	Painted Honeyeater	V	**High.** BioNet records have identified individuals of this species within the subject land. Habitat associated with PCTs 22, 7, 10, 11, 13, 15, 20, 23, 26, 28, 58, 70, 76, 86, 237, 266, 277, 319 and 343.
Hirundapus caudacutus	White-throated Needletail	V, Mi, Mr	**High.** BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land. Habitat associated with PCTs 2, 7, 10, 11, 13, 15, 17, 24, 26, 44, 45, 46, 47, 76, 157, 160, 216, 237, 266, 277, 319 and 343.
Lophochroa leadbeateri	Pink Cockatoo	E	**High.** BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land. Habitat associated with PCTs 2, 7, 10, 11, 13, 15, 19, 20, 23, 26, 28, 45, 58, 70, 76, 159, 163, 170, 237 and 346.
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	E	**Moderate**. The subject land contains habitat suitable for this species and is within the known distribution of this species. Habitat associated with PCTs 2, 7, 10, 11, 13, 15, 19, 20, 23, 26, 28, 58, 70, 76, 86, 170 237, 266, 277, 319 and 343.
Neophema chrysostoma	Blue-winged Parrot	V, Mr	**Recorded.** BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land. Habitat associated with PCTs 2, 7, 11, 13, 15, 17, 24, 26, 28, 44, 45, 46, 58, 157, 159, 160, 163, 164, 170 and 216.
Pedionomus torquatus	Plains-wanderer	CE	**Recorded.** BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land. Habitat associated with PCTs 44 and 46.

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Polytelis swainsonii	Superb Parrot	V	**High.** BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land. Habitat associated with PCTs 7, 10, 11, 13, 23, 26, 28, 45, 46, 70, 76, 237, 266, 277 and 343.
Stagonopleura guttata	Diamond Firetail	V	**High.** BioNet records have identified individuals of this species within the subject land. Habitat associated with PCTs 2, 7, 10, 11, 13, 19, 20, 23, 26, 28, 44, 45, 46, 58, 70, 76, 86, 170, 237, 266, 277, 319 and 343.
Tringa nebularia	Common Greenshank	E, Mi, Mr	**Moderate.** This species has been recorded throughout the locality when conditions are favourable. Although not associated with any present PCTs officially, habitats present may be considered suitable based on this species diverse habitat preferences.
Nyctophilus corbeni	Corben's Long-eared Bat	V	**Moderate.** This species is associated with numerous PCTs of the Murray Fans IBRA subregion found within the subject land. As this species occurs in varied habitat types, the subject land is considered suitable. Habitat associated with PCTs 2, 10, 28, 86 and 266.
Phascolarctos cinereus	Koala	E	**Moderate.** Habitat associated with PCTs 7, 10, 11, 13, 15, 26, 28, 76, 237, 319 and 343.
Aprasia parapulchella	Pink-tailed Worm-lizard	V	**Moderate.** Habitat associated with PCT 319.
Hemiaspis damelii	Grey Snake	E	Moderate. This species is known to occur within the Riverina region and has been recorded in habitat types similar to some of the communities present within subject land. Habitat associated with PCTs 7, 10, 11, 13, 15, 17, 24, 44, 46, 160, 163, 164 and 170.
Bidyanus bidyanus	Silver Perch	E	**High**. Previously recorded near the subject land (ALA, 2025).
Craterocephalus fluviatilis	Murray Hardyhead	E	**Moderate**. The project intersects with key fish habitat for this species; however, the known populations of this species do not occur in NSW.
Galaxias rostratus	Flathead Galaxias		**Moderate.** The subject land intersects with key fish habitat for this species, however, there have been no records since 1995.
Maccullochella macquariensis	Trout Cod	E	**Moderate.** Potential for stocked fish to inhabit the larger watercourses within subject land.
Maccullochella peelii	Murray Cod	V	**High**. Previously recorded near the subject land (ALA, 2025).

(1) Indicates a species is listed V = Vulnerable, E = Endangered, CR = Critically Endangered, Mi = Migratory and/or Mr = Marine under the Environmental Protection and Biodiversity Conservation Act 1999 (*EPBC Act*). The controlling provision for the EPBC referral is listed threatened species and ecological communities. Therefore, where a listed threatened species is also identified as migratory and/or marine, it has only been considered under the threatened species status i.e., Endangered.

C5 Project impacts

The project would impact on the biodiversity within the subject land during the construction and ongoing maintenance once the VNI is operational. Direct impacts on listed threatened species and ecological communities associated with the project is considered in this assessment to be the direct vegetation clearing and loss of habitat.

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 ecologically processes these impacts can adversely affect the ecological values within the subject land.

The following sections provide a summary of the expected impacts. Further information is provided in Chapter 9 of the BDAR.

C5.1 Direct impacts

To assess direct impacts associated with the construction of each stage, indicative disturbance areas have been defined. The indicative disturbance area includes areas where vegetation would be impacted during the construction of the project. The indicative disturbance areas for the two locations include NSW/Victorian border to future Dinawan substation component and existing Wagga 330 kV substation to future Gugaa 500 kV substation component (network augmentation works). The indicative disturbance area is based on project components from the reference design. Disturbance areas would be confirmed during finalisation of design and construction methodology and would be developed as part of the consideration of avoidance and impact minimisation.

The indicative disturbance areas include the following categories:

- **Disturbance area A** – Vegetation clearance is assumed for all areas where complete removal of vegetation is proposed, and the approach is outlined further below.
- **Disturbance area B (B4 and B10)** – assumed to have minimal ground disturbance except in circumstances associated with the operational requirements for vegetation maintenance to meet the vegetation clearance heights. The partial vegetation clearing is restricted to clearance of vegetation with growth height potential of 4 metres or above within disturbance area B4 and a clearance of vegetation with a growth height potential of 10 metres or above within disturbance area B10.
- **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 metre and have poor structural stability posing a risk of falling.

C5.2 Threatened ecological communities

The project would require clearing of 1432.60 ha hectares of vegetation which may result in temporary and permanent residual impacts including threatened ecological communities. A summary of extent of clearing for threatened ecological are presented in Table C.7. In addition, the project has the potential to create favourable conditions for invasive plant species (weeds) to invade and/or spread within areas immediately adjacent to ground disturbance. This can lead to an increase of existing invasive plant (weed) populations., degraded the ecological communities. These impacts have been considered as part of the significant impact assessment (Appendix C-2). Further information on the impacts is provided in Chapter 9 of the BDAR.

Table C.7 Summary of project impacts on EPBC Act listed TECs

EC name	EPBC Act status[1]	Associated PCT and vegetation zones within the subject land	Disturbance area A (ha)	Disturbance area B4 (ha)	Disturbance area HZ (ha)	Total impact within subject land (ha)
Buloke woodlands of the Riverina and Murray Darling Depression bioregions	E	20_Thinned (0.16 ha) 20_Derived (2.11 ha) 20_Derived_LCV (1.23 ha)	1.79	1.71	0.00	3.50
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	E	237_Mod-good (0.84 ha)	0.21	0.48	0.15	0.84
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	CE	47_Mod-good (0.17)	0.17	0.00	0.00	0.17
Weeping Myall Woodlands	E	26_Mod-good (91.32 ha) 26_SVTM (1.33 ha)	51.06	41.59	0.00	92.65
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CE	266_Mod-good (0.16 ha) 266_Thinned (0.02 ha) 277_Mod-good (0.19 ha) 277_Thinned (3.01 ha)	2.11	0.83	0.44	3.36
Natural Grasslands of the Murray Valley Plains	CE	44_SVTM (10.17 ha0 44_Mo-good (14.77 ha) 45_Mod-good (3.58 ha) 45_STVM (5.96 ha) 46_Mod-good (39.35ha) 46_SVTM (19.307 ha)	101.69	0.00	0.00	101.69
Totals			**157.03**	**44.61**	**0.59**	**202.23**

E = Endangered, CE = Critically Endangered under the EPBC Act

C5.2.1 Threatened species

The project would directly impact habitat for threatened species listed under the EPBC Act, that have either been recorded or assessed as having a moderate to high likelihood of occurrence within the subject land. This would impact and reduce the overall in-situ and biodiversity (flora and fauna species abundance) within the subject land and wider locality. Even though, the extent of impacts has been refined based on design principles of avoid and minimise impacts, the anticipated impacts would happen, nonetheless.

The removal of habitat would 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 would be removed during land clearing, include:

- groundcover 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, 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.

A summary of impacts associated with habitat loss are presented in Table C.8 and Table C.9.

Table C.8 Summary of project impacts on listed threatened flora species

Scientific name	Common name	EPBC Act status[1]	Confirmed loss of habitat (ha) or individual's[2]	Assumed loss of habitat (ha) or individuals[2]	Total impact habitat (ha) or individuals[2]
Amphibromus fluitans	River Swamp Wallaby-grass	V	0.00	0.43	0.43
Austrostipa metatoris	-	V	0.00	1.24	1.24
Austrostipa wakoolica	-	E	0.00	29.11	29.11
Brachyscome muelleroides	Mueller Daisy	V	0.00	1.04	1.04
Brachyscome papillosa	Mossgiel Daisy	V	12.67	128.59	141.26
Eleocharis obicis	Spike Rush	V	13.21	144.10	157.31
Lepidium monoplocoides	Winged Peppercress	E	0.05	80.49	80.54
Maireana cheelii	Chariot Wheels	V	4.19	152.60	156.79
Sclerolaena napiformis	Turnip Copperburr	E	0.00	43.39	43.39
Swainsona murrayana	Slender Darling-pea	V	168.51	171.95	340.46
Swainsona plagiotropis	Red Darling-pea, Red Swainson-pea	V	0.00	45.67	45.67
Swainsona recta	Small Purple-pea	E	0.00	2.08	2.08

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

(2) Impact areas sourced from Section 9.1.5 in the BDAR

Table C.9 Summary of project impacts on listed threatened fauna species

Scientific name	Common name	EPBC Act status[1]	Total impact habitat (ha) or individuals
Aprasia parapulchella	Pink-tailed Worm-lizard	V	1.82[2]
Aphelocephala leucopsis	Southern Whiteface	V	1430.26
Botaurus poiciloptilus	Australasian Bittern	E	239.00
Calidris acuminata	Sharp-tailed Sandpiper	V	7.19
Callocephalon fimbriatum	Gang-gang Cockatoo	E	48.04
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	V	49.18
Gallinago hardwickii	Latham's Snipe	V	7.19
Grantiella picta	Painted Honeyeater	V	753.80
Hemiaspis damelii	Grey Snake	E	190.31[2]
Hirundapus caudacutus	White-throated Needletail	V	951.64
Litoria raniformis	Southern Bell Frog	V	10.25[2]
Lophochroa leadbeateri	Pink Cockatoo	E	771.08
Melanodryas cucullata cucullata	South-eastern Hooded Robin	E	761.00
Neophema chrysostoma	Blue-winged Parrot	V	1336.57
Nyctophilus corbeni	Corben's Long-eared Bat	V	37.46
Pedionomus torquatus	Plains Wanderer	CE	92.15
Phascolarctos cinereus	Koala	E	149.77[2]
Polytelis swainsonii	Superb Parrot	V	706.42
Stagonopleura guttata	Diamond Firetail	V	762.97
Tringa nebularia	Common Greenshank	E	7.19

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

(2) Impact areas sourced from Section 9.1.5 in the BDAR. Remaining impact (ha) calculation has been based on the associated PCTs polygon and therefore may represent an overestimate of the impacts associated the project.

C5.3 Indirect impacts

A summary of the indirect impacts associated with the project is provide in Table C.10, further details on the indirect impacts are discussed in section 9.2 of the BDAR.

Table C.10 Summary of indirect impacts associated with the project

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
Inadvertent impacts on adjacent habitat or vegetation	All PCTs Threatened species Threatened ecological communities Aquatic habitat	All PCTs Aquatic habitats associated with creeks and rivers.	Frequent during the length of the construction phase where it is near the feature.	Short-term	Construction	**Low.** Inadvertent impacts on adjacent vegetation can include a range of indirect impacts including soil disturbance, erosion, sedimentation, enriched run-off and water quality. Construction of the project has the potential to result in sedimentation and erosion and mobilisation of contaminants within the disturbance area and into adjoining native vegetation and aquatic habitats, through soil disturbance and construction activities. Sediment laden runoff and spills affect water quality and adversely affect aquatic life particularly during construction near rivers, creek lines and Key Fish Habitats. These impacts have the potential to reduce the viability of habitat for aquatic and semi aquatic species (including frogs) temporarily.	The project has been carefully designed to minimise impact to these sensitive environmental receivers through targeting narrow width crossing points of waterways and floodplain areas (and their associated riparian habitats e.g. around the Edward, Wakool and Murray River). The mobilisation of sediments would be contained within the indicative disturbance area as sediment control measures would be implemented as part of mitigation measures.
Reduced viability of adjacent habitat due to edge effects	Native vegetation	All PCTs	Ongoing. Impacts are likely to be higher during construction. The level of impacts is likely to decrease over time with the increase resilience of managed vegetation and habitats.	Long-term	Construction/ operational	**Negligible.** Indirect impacts on adjacent native vegetation and habitats are considered unlikely due to the observed quality of woodland and forest habitats adjacent to existing transmission line easements in the subject land and biodiversity survey area. Vegetation integrity scores are considered unlikely to decline in adjacent retained vegetation.	The new environmental conditions along habitat edges can promote the growth of different vegetation types (including weeds), promote invasion by pest animals specialising in edge habitats, or change the behaviour of resident animals (Moenting & Morris, 2006). The species composition, structure and ecological processes of a patch of habitat at the line of contact with another patch of habitat may be changed (see Murcia, 1995). The intensity of edge effects (abiotic, biological and indirect biological effects) is generally measured by distance from the edge. The distance of edge effect influence can vary, with the extent of edge effects having been recorded greater than 1 kilometre from an edge (Forman *et al*. 2000) and stopping as little as 50 m from an edge (Bali, 2005). The new edges created by the easement as it crosses through vegetation would cause changes in microclimates (a gradient of temperature, light intensity, and moisture would be formed running perpendicular to the edge) (see Murcia, 1995). The increase in light at the edge may result in increased plant growth (Murcia, 1995) which may favour certain species. Increased wind speed at edges can result in detrimental impacts to taller tree growth forms due to impacts from wind throw (Murcia, 1995) as the trees on the new edge would be poorly adapted to increased wind speeds as they have grown in the confines of the interior of the vegetation patch buffered from direct wind gusts.

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
							There would be changed dynamics of species interactions at the newly created edge and cascading effects may occur (Murcia, 1995). Increased leaf growth can be expected which may result in attraction of more herbivorous insects that in turn may attract more insectivorous birds, which may attract more nest predators and brood parasites (Murcia, 1995). The newly created edges would create a new habitat type, but the impact may not be negative based on evidence collected from the subject land.
Reduced viability of adjacent habitat due to noise, dust or light spill	Native vegetation Threatened species Threatened ecological communities	All PCTs	Noise and dust pollution is likely to be more frequent during the construction phase. During the operation phase, the generation of noise and dust is likely to be minimal and restricted to scheduled maintenance times. Light spill is likely to be daily (during night-time hours), however restricted to specific locations.	Short-term	Construction/ operational	**Negligible.** During construction increased levels of noise and dust are likely however these would be short term and mostly associated with vehicle movements, vegetation clearing, access track and transmission infrastructure construction. Operational phase would result in no lights on the transmission line sections and minimal additional lighting at other transmission line infrastructure. A short-term increase in construction noise would be mostly limited to daylight hours and is unlikely to have long-term adverse effects on the viability of adjacent habitats as they would be short-term in nature only. In terms of increased dust, construction impacts associated with permanent vegetation clearing is limited to Disturbance area A. This clearing area would mostly be buffered by Disturbance area B where partial clearing is limited to vegetation above 4 metres growth height areas. Disturbance area B would have limited dust generation post construction. Increased vehicle movements would have a short-term increase in localised dust levels although given the ongoing agricultural landscape usage, current dust levels are unlikely to substantial increase to an extent that would adversely reduce the viability of adjacent habitats. Beyond the transmission line corridor (such as for construction compounds and substation works) dust impacts are likely to also be limited and short term in nature. The project is unlikely to generate light spill to an extent that would adversely reduce the viability of adjacent habitats as lighting during construction would be minimal. Mitigation measures would require lighting designs to be in accordance with the *National Light Pollution Guidelines for Wildlife* (DCCEEW, 2023a). Operational impacts would include minor light spill from permanent lighting installed at Dinawan substation and to vehicle movements for maintenance activities.	Anthropogenic noise can alter the behaviour of animals or interfere with their normal functioning (Bowles, 1997). The impacts from noise emissions are likely to be localised to the construction areas and are not considered likely to have a significant, long-term, impact on wildlife populations outside the area of impact. Within the area of impact, some sensitive species (e.g. woodland birds) may avoid the noise and some more tolerant species, including small mammals, would habituate over the longer-term (Byrnes *et al*. 2012). Elevated levels of dust may be deposited onto the foliage of vegetation adjacent to the project during construction. This has the potential to reduce photosynthesis and transpiration and cause abrasion and radioactive heating resulting in reduced growth rates and decreases in overall health of the vegetation. Consequently, changes in the structure and composition of plant communities and consequently the grazing patterns of fauna may occur (Auerbach *et al*. 1997; Walker & Everett 1987). The deposition of dust on foliage is likely to be highly localised, intermittent, and temporary and is therefore not considered likely to be a major impact of the project Ecological light pollution is the descriptive term for light pollution that includes direct glare, chronic or periodic increased illumination, and temporary unexpected fluctuations in lighting, that can have potentially adverse effects on wildlife (Longcore and Rich, 2004). Ecological light pollution may potentially affect nocturnal fauna by interrupting their life cycle. Some species (i.e. light tolerant microchiropteran bats) may benefit from the lighting due to increased food availability (insects attracted to lights) around these areas. Due to the likely short frequency and duration of the lighting, it is unlikely that animals would need to habituate to the light disturbance and only a short-term impact in the area of lighting is likely.

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
						Permanent lighting installed at Dinawan substation would be operational from dusk until dawn, 7 days a week and be installed in accordance with the requirements of Australian Standard AS 4282-2019 *Control of the obtrusive effects of outdoor lighting* (Standards Australia, 2019). As such, the lighting would be designed and installed in a way that reduces light spill into areas beyond the substation boundary and indirect impacts are considered unlikely to reduce viability of adjacent habitat due to light spill. Additionally, vehicle movement, would be periodic and of an extent and duration that is unlikely to reduce viability of adjacent habitat due to noise, dust or light spill. Any residual negligible impact such as short-term impact aspects is considered likely to be adequately managed with mitigation measures.	
Transport of weeds, pests and pathogens from the site to adjacent vegetation	Native vegetation Threatened flora species Threatened ecological communities	All PCTs		Long-term	Construction/ operational	**Negligible.** Whilst this type of indirect impact has the potential to lead to a reduction of native vegetation integrity in surrounding habitats, management measures would be developed during construction to maintain the integrity of native vegetation in adjoining habitats. During operational phase, all maintenance and associated works would be subject to biosecurity protocols.	Weed and pest species pose some of the greatest threats to biodiversity as these species displace native species through predation and competition, and damage vegetation by grazing and trampling (Adair & Groves, 1998; Clarke, G. M., *et al*. 2000; Thorp & Lynch, 2011). Consequently, proliferation of weed and pest species due to the project has the potential to be a key biodiversity impact. Proliferation of weed and pest species is likely to occur during construction and operation, although impacts would be greatest as a result of vegetation clearing during the construction phase. The effects of proliferation of weed and pest species may not be experienced immediately, however, would likely commence a few months after the construction phase commences. Without appropriate management strategies, project activities have the potential to disperse weeds into areas of remnant vegetation where weed species are currently limited or in low density. Project activities also have the potential to import new weed species into the subject land. The most likely causes of weed dispersal and importation associated with the project include earthworks, movement of soil, and attachment of seed (and other propagules) to vehicles and machinery during all phases. Weed dispersal by vehicles along roads and access tracks is a key source of weed invasion (see Birdsall *et al*. 2012). The subject land is currently habitat for a range of pest species including rabbits. Project activities have the potential to disperse pest species out of the project footprint across the surrounding landscape and increase the ability of pest species to utilise habitats due to habitat removal, noise, and human presence during construction and operation. Construction of linear infrastructure through large patches of intact vegetation can result in the establishment of pest species (particularly predators such as foxes and cats) into areas where they are currently absent or in low numbers. However, in the context of the project this impact is predicted to be minimal as all vegetation in the subject land is likely to be impacted by foxes and cats. The magnitude of this impact would be low.

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
							During operational phase, all maintenance and associated works would be subject to biosecurity protocols so the potential for a detrimental impact to occur is reduced.
Increased risk of starvation, exposure and loss of shade or shelter	All fauna species	All PCTs	Impacts of potential starvation, exposure and loss of shade or shelter would occur at one time at the clearing/construction phase of the project. Ongoing vegetation management is likely to occur every 12 months, maintaining the vegetation structure. Vegetation management is unlikely to cause any significant changes to the level of the initial impacts.	Short-term to medium-term	Construction	**Negligible.** A significant portion of subject land has been subject to agricultural development, and only smaller proportions of the subject land are made up of native vegetation. Displacement of resident fauna species during native vegetation clearing is considered relatively low due to the modified vegetation structure resulting from long term agricultural stock grazing. Given the linear nature of the project and mostly highly mobile nature of most potential resident fauna species the increased risk of starvation, exposure and loss of shade or shelter due to the project is considered low.	Vegetation clearance and habitat loss can cause indirect impacts associated with increased risk of starvation, exposure and loss of shade or shelter as fauna may not survive due to shortages in available habitat resources. Even small-scale clearing within largely intact patches of vegetation can cause localised depletion of some species (see Kutt *et al*. 2012). However, in the context of the project and subject land the impacts are likely to be minimal. Entire habitat patches would not be removed and habitat adjacent to the easement would remain intact. It is therefore considered unlikely that the project would result in an increase in risk of starvation, exposure and loss of shade or shelter.

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
Loss of breeding habitats	All fauna species	All PCTs	Impacts to breeding habitat (incl. hollow-bearing trees, nests, dreys, burrows & fallen timber) would occur at one time at the clearing/earth works and construction phase of the project. Ongoing vegetation management is likely to occur every 12 months, maintaining the vegetation structure. Vegetation management has the potential to cause further loss breeding habitats such as nests, dreys & burrows.	Long-term	Construction/ operation	**Moderate.** The loss of breeding habitat such as hollow-bearing trees, nests, dreys and burrows and fallen timber has the potential to affect native animals such as: — hollow-dependent bats — hollow-nesting and canopy-nesting birds — arboreal mammals — reptiles and amphibians — terrestrial fauna (including species that utilise burrows and fallen timber). The loss of breeding habitats is unlikely to extend beyond the subject land. Impacts beyond this area would be avoided through mitigation and management measures.	Loss of discrete breeding habitats impacts population persistence. Loss of specific breeding habitats is associated with a decrease in roost-site preference or selectivity, an increase in mobility of individuals, and a decrease in social cohesion (Chaverri and Kunz, 2011). These responses may reduce fitness by potentially increasing energetic expenditure, predator exposure, and a decrease in cooperative interactions (Chaverri and Kunz, 2011). Loss of breeding habitats such as hollow-bearing trees, nests, dreys and burrows and fallen timber would be managed through avoidance as a priority.
Trampling of threatened flora species	Threatened flora species	All PCTs providing habitat for these species	Likely maintenance activities would include regular inspection and maintenance of all network infrastructure (ground and aerial), including transmission lines and transmission line infrastructure, Vegetation removal required to maintain appropriate electrical safety clearances to the transmission lines (as required depending on vegetation growth rates).	Construction – Short-term Operation – long-term	Construction/ operation	**Low.** Reduction in population extent and available habitat of threatened flora species that occur in the ground stratum could occur due to trampling or unauthorised material, storage, vehicle and plant equipment. All populations and associated habitat for threatened flora species would be available in GIS files for all construction contractors and would be designated no-go areas during construction. Mitigation measures would include protection for these areas and inadvertent impacts such as trampling is considered unlikely. During the operational phase, any maintenance would be subject to existing environmental operational protocols and have a low risk of any inadvertent impacts to any threatened flora species.	Trampling can cause decreases in plant density, plant size and reproductive performance (flowers and fruits production) (see Fenu *et al.,* 2013; Kelly *et al.,* 2003; McDougall and Wright, 2004 for some examples). The vegetation and habitats within the subject land display the damage caused by stock grazing since the 1800s. The continuous intense grazing by large, introduced herbivores that has occurred in the subject land over the last 200+ years has caused significant trampling effects. Any impacts caused by the project are insignificant in the context of current agricultural practices. During the operational phase, any maintenance would be subject to existing environmental operational protocols and have a low risk of any inadvertent impacts to any threatened flora species.

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
Increased risk of fire	Native vegetation All flora & fauna species	All PCTs	Ongoing	Long-term	Construction/ operation	**Moderate.** Bushfire risk assessment has been considered as part of the project. The risk of ignition and spreading of a bushfire from project construction activities would be extreme and specific mitigation measures for bushfire have been identified in the EIS. Ignition of bushfires as a result of the project's operation has the potential to occur during maintenance of project infrastructure and from the infrastructure itself. The project would be designed and managed in accordance with the *Electricity Supply Act 1995* and Electricity Supply (Safety and Network Management) Regulation 2014 which requires a network operator to take all reasonable steps to ensure that all aspects of its network are safe. Vegetation maintenance would occur in accordance with standard operational procedures. Impact assessment has considered this maintenance provision and is included in Disturbance area B calculations.	Most Australian plant species are adapted to specific fire regimes. Different components of the fire regime may have adverse impacts on plant persistence, including fire frequency, severity, seasonality, type and spatial extent and patchiness (Gallagher *et al.,* 2021). High fire frequency is known to threaten the persistence of plant species reliant on specific fire intervals to facilitate regeneration (Fisher *et al*., 2009; Russell-Smith *et al.,* 2002). Altered fire regimes due to the project may result in impacts to species. In terms of fauna species there are winners and losers with any fire regime and most faunal groups are extremely resilient to fire (highly contrasting fire regimes often having little or no detectable impact on species abundances, at least in the medium term) (Andersen, 2021). The most important effects of fire on fauna are typically indirect through habitat modification and fire intensity is not as important a factor as is widely thought; rather, fire frequency is particularly important (Andersen, 2021). Vegetation maintenance would occur in accordance with standard operational procedures. Increased risk of fire is considered likely to be low. Fire would be suppressed, and this may have detrimental impacts to some species.
Increased risk of collision with lines and EMF impacts with new infrastructure	Birds with large territories or home range such as birds of prey, cockatoos and some parrots, Migratory species (i.e., waterbirds and waterfowl)	All PCTs	Ongoing	Long-term	Operation	**Moderate.** This impact has the potential to lead to some level of increase of bird mortality, though the extent of impacts are likely to reduce over time as birds become accustomed to the presence of infrastructure. Additionally mitigation measures would be implemented to ensure the likely impacts are minimised including line markers (i.e. bird flappers/ divertors). At a minimum, bird diverters would be used within one kilometre of wetland/riverine habitats to reduce collision risk for aerial fauna and allow safer passage within these areas. The subject land is expected to cross 22 named and 83 unnamed watercourses, which are located within Central Murray and Murrumbidgee catchments. Major rivers that occur within the subject land include Wakool River, Niemur River as well as a range of major creeks that are tributaries of such major rivers. Bird diverters would focus on habitats surrounding these areas to discourage potential strikes relating to broad movements of threatened birds.	A review of available scientific literature on EMF indicates that it is likely that EMF's may influence the physiology of birds nesting on transmission 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. In their 2005 review paper, Fernie and Reynolds (2005) 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). Studies have shown positive effects of Electromagnetic Fields (EMFs) on birds including increased fertility in two breeding events studied in American Kestrels (*Falco sparverius*) (Fernie and Reynolds, 2005). Furthermore, a study conducted over nine (9) breeding seasons found 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 by 7% and an increase in egg volume by 3% (Tomas et al., 2012).

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
							Despite mitigation efforts reducing the impact of powerline electrocution of raptors, the impacts persist with powerlines still responsible for a significant cause of death (Kagan, 2016). This is partially because some of these risks are likely inconspicuous or just more pervasive than originally thought in the late 20th century (Lehman, 2001). There is limited data available on estimate impacts within Australia however in 2014 it was estimated power line related mortalities were between 12 to 64 million birds with as much as 11.6 million bird electrocution deaths each year (LossWill and Marra, 2014). Power line collision rates varies between species of similar flight trajectories, however overall in respect to population sizes, are not a major threat to populations (Janss and Ferrer, 2000). 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). Mitigation for EMF impacts are best implemented by tower designs that discourage birds from building nest on them. As an important priority for managers maintaining power transmission lines to ensure that nesting birds do not constitute a risk to power delivery, towers being considered are currently designed to discourage their use by birds.
Increased risk of collision with lines and EMF impacts with new infrastructure	Larger and higher-flying birds, and which generally reside over larger territories, such as birds of prey, ravens and magpies, cockatoos and some parrots, waterbirds and waterfowl	All PCTs	Daily	Long-term	Operation	**Moderate.** Whilst this type of indirect impact has the potential to lead to some level of increase of bird mortality, mitigation measures would be implemented to ensure the likely impacts are minimised. While the southern part of the project starts at the Murray River and heads north through the Wakool and Edward Rivers it has been located within the most disturbed parts of these catchment areas and away from wetlands to the greatest extent possible. The project transmission lines are likely to be below flight paths for a majority of species. Mitigation measures would include line markers (i.e. diverters).	It is widely known and observed that, of all fauna groups, birds most regularly use electrical transmission lines, and their associated infrastructure, such as transmission line structures and poles, for perching and nesting. A detailed analysis of potential transmission line impacts and ameliorative measures for birds is provided in Appendix C-5. 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 transmission lines does not extend across all bird species, as the open spaces in which aerial transmission line infrastructure are located is too exposed for many bird species, especially smaller cover preferring bird groups. Therefore, the most common transmission line using groups are birds that use open and aerial habitats.

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
							A review of available scientific literature on EMF indicates that it is likely that EMF's may influence the physiology of birds nesting on transmission line structures. 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. In their 2005 review paper, Fernie and Reynolds (2005) 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). Studies have shown positive effects of Electromagnetic Fields (EMFs) on birds including increased fertility in two breeding events studied in American Kestrels (*Falco sparverius*) (Fernie and Reynolds, 2005). Furthermore, a study conducted over nine (9) breeding seasons, Tomas *et al.* (2012) found 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 by 7% and an increase in egg volume by 3%. Despite mitigation efforts reducing the impact of transmission line electrocution of raptors, the impacts persist with transmission lines still responsible for a significant cause of death (Kagan, 2017). This is partially because some of these risks are likely inconspicuous or just more pervasive than originally thought in the late 20th century (Lehman, 2001). There is limited data available on estimate impacts within Australia however in 2014 it was estimated transmission line related mortalities were between 12 to 64 million birds with as much as 11.6 million bird electrocution deaths each year (Loss *et al.* 2014). Studies have shown transmission line collision rates varies between species of similar flight trajectories, however overall, in respect to population sizes, are not a major threat to populations (Janss & Ferrer 2000). Bats have shown a wide range of behavioural changes in response to anthropomorphic stressors; however, the effects of transmission lines are still relatively uncertain and diverse (Froidevaux *et. Al.* 2023). Studies have shown a mixed response of microbats to EMF with some actively avoiding high EMFs and others unimpacted (Froidevaux *et. Al.* 2023, Nicholls B. & Racey P.A. 2007). Froidevaux *et al.* (2023) power monitoring showed certain microbat species alter foraging habits around high-voltage transmission line pylons or cables based on humidity levels despite high voltage EMF radiation possibly just in response to changing invertebrate activity impacted by humidity.

Indirect impact	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences	Evidence-based justification for predictions of impacts (including any limitations to data, assumptions and predictions)
							Globally, the predictiveness and effectiveness of bird transmission 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). Mitigation for EMF impacts are best implemented by transmission line structures designs that discourage birds from building nest on them. As an important priority for maintenance of transmission lines to ensure that nesting birds do not constitute a risk to power delivery, transmission line structures being considered are currently designed to discourage their use by birds.

C6 Mitigation measures

A summary of the proposed mitigation measures is provided in Table C.11 below. Further details on the mitigation measures can be found in Chapter 9 of the BDAR. In addition, Chapter 8 of the BDAR sets out the avoidance measures undertaken to minimise impacts on listed species and ecological communities during the projects design.

Table C.11 Summary of proposed mitigation and management measures for residual impacts (direct and indirect)

Mitigation number (BDAR)	Mitigation measure	Method/technique	Timing	Frequency	Likely efficacy (including risk of failure)	MNES (when relevant)
B01	Impacts to matters of biodiversity conservation significance will be avoided to the greatest extent practicable during finalisation of the design and construction methodology for the project.	Micro-siting of the transmission line infrastructure and associated construction areas and other areas of disturbance will occur to avoid impacts wherever practicable. Site features with the highest biodiversity conservation significance, in particular, threatened ecological communities, threatened species recorded and their habitat will be given the highest priority. Spatial data (species polygons for species credit species) and buffered threatened species locations will be provided to the design and construction teams and considered in detailed design planning. Associated mapping will be included on sensitive area plans and provided to the construction workforce.	Detailed Design	To occur prior to finalisation of designs.	Efficacy: Moderate. Risk of failure: Moderate. Design team must consider sensitive areas in final designs.	All MNES impacted by the project
B02	Assess changes to biodiversity impacts due to design refinements, construction methods or field surveys as required.	If refinements to the project design and construction methodology or additional field surveys result in increased impacts to biodiversity which are not included in this BDAR, these will be assessed in accordance with the requirements of the BAM by an accredited assessor. For refinements to the project design and construction methodology considered to be "minor design refinement" (defined as <0.5 ha in area and immediately adjoining biodiversity study area), the assessment by an accredited assessor may consider the representative survey and assessment within the BDAR to inform the qualification of impact to biodiversity against the approved impacts and clearing limits within the BDAR. Impacts outside of the biodiversity study area not considered to be 'minor design refinement' will be subject to field survey an assessment in accordance with the requirements of the BAM by an accredited assessor.	Detailed design and Construction	To occur prior to finalisation of designs.	Efficacy: Moderate. Risk of failure: Moderate. Design team must consider sensitive areas in final designs.	All MNES impacted by the project
B03	Impacts will be located in areas of existing disturbance/low biodiversity value during finalisation of the design and construction methodology for the project.	Opportunities to locate facilities associated with construction compounds and combined temporary worker accommodation facilities in areas of limited biodiversity value (e.g. cleared land or areas of native vegetation where offsets are not required) will be prioritised during finalisation of the design and construction methodology.	Detailed design	To occur prior to finalisation of designs.	Efficacy: Moderate. Risk of failure: Moderate. Design team must consider sensitive areas in final designs.	All MNES impacted by the project
B04	Minimise access track construction and biodiversity impacts as a result of access track remediation works	Existing access tracks and clearings will be used, where possible, to limit the construction of new access tracks. Where this is not possible, the design will seek to minimise impacts to native vegetation, including cut and fill, as a priority.	Detailed design and Construction	As required, prior to set up of each construction area.	Efficacy: Low. Risk of failure: High.	All MNES impacted by the project
B05	Transmission line transmission line structures will be located and constructed to minimise impact to vegetated riparian corridors	Design and construction of transmission line structures will minimise riparian vegetation clearing and disturbance of watercourses within the subject land. This will include micro-siting of temporary infrastructure (including break and winch sites, site offices, construction compounds, temporary worker accommodation facilities and access tracks), away from riparian areas, locating waterway crossings at narrow width locations where required and minimising the quantity of cut and fill activities.	Detailed design Construction	Prior to design finalisation and as required, prior to set up of each construction area.	Efficacy: Low. Risk of failure: High.	All MNES impacted by the project

Mitigation number (BDAR)	Mitigation measure	Method/technique	Timing	Frequency	Likely efficacy (including risk of failure)	MNES (when relevant)
B06	Apply use of bird diversion techniques near sensitive habitats to minimise strike risk	Conductor line-marking techniques will be implemented during design refinement to minimise bird strike. Use of bird diverters, most likely consisting of the "flapper" variety, will be implemented. Positioning and exact diverter model will be finalised during design refinement and developed as part of a Connectivity Strategy and with reference to any preliminary findings of the current Transgrid sponsored Bird Strike study with Charles Sturt University. At minimum these will be used within 1 km of wetland/riverine habitats or recorded raptor nests to reduce impacts on aerial fauna species from collision and allow safer passage within these areas.	Detailed design and Construction	Must remain installed and be maintained throughout the construction phase and during early phases of operation	Efficacy: High. Risk of failure: Moderate, subject to implementation and ongoing monitoring/adaptive management.	Australasian Bittern Curlew Sandpiper Pink Cockatoo Blue-winged Parrot Superb Parrot
B07	Establish connectivity corridors around key woodland habitats surrounding the transmission line corridor	A series of 20-metre-wide connectivity corridors will be established near transmission line structures locations that occur in woodland vegetation. These will occur at strategic locations which will be developed as part of a Connectivity Strategy, targeting the following locations (wherever practicable): — key riparian crossings — areas of the alignment joining state forest and or conservation reserve estate — areas of identified Squirrel Glider habitat (including under transmission line glider poles) These connectivity corridors will involve native vegetation retention up to the 10 metre or 20 metre wide (for 330 kV and 500 kV lines, respectively). Vegetation heights to be retained will be determined in accordance with vegetation clearing requirements at each location. Any biodiversity credit liabilities related to retained vegetation such as the connectivity corridors will be considered in final BAM calculations.	Detailed design	Prior to design finalisation	Efficacy: High. Risk of failure: Low, subject to implementation	Southern Whiteface Brown Treecreeper South-eastern Hooded Robin Koala Pink-tailed Worm-Lizard Grey Snake Painted Honeyeater Diamond Firetail Growling Grass Frog / Southern Bell Frog
B08	Provide effective compensatory habitat strategy for hollow dependant fauna.	A strategy for compensatory habitats will be provided that directly addresses the projects impacts to nesting habitat for threatened fauna displaced during construction. The strategy will include the following requirements: — survey of tree hollows and nests within the proposed clearing extents and evaluation of hollow utilisation and resource availability. — Investigation into strategic and optimal placement of hollows for the targeted species within the locality/region — Investigating new and emerging monitoring — Funding of targeted research that contributes to effective compensatory habitat measures relevant to the project impacts; and — measures to address and manage nests (such as raptor nests) prior to clearing	Detailed design and Construction	Prior to the commencement of clearing works in each construction area.	Efficacy: Moderate. Risk of failure: Low, subject to the implementation of ongoing management.	Southern Whiteface Gang-Gang Cockatoo Brown Treecreeper (South-eastern) Pink Cockatoo Superb Parrot

Mitigation number (BDAR)	Mitigation measure	Method/technique	Timing	Frequency	Likely efficacy (including risk of failure)	MNES (when relevant)
B09	Pre-clearing surveys will be completed prior to clearing at each location by a suitability qualified ecologist.	The proposed clearing extents will be marked out on site prior to the pre-clearing surveys. During the surveys, the ecologist will: — survey the proposed clearing extent — identify any fauna that will require relocation prior to clearing — confirm the location and mark out the extents of any biodiversity exclusion zones — confirm that hollow-bearing trees within and adjacent to the clearing extents are prominently marked/tagged; and — confirm that compensatory habitat for hollow dependant fauna species are in place (where required) in suitable locations adjacent to areas to be cleared, or suitable locations for installation have been identified — survey and confirm the presence of raptor nests within and adjacent to the clearing extents.	Detailed design at relevant sites	Prior to the commencement of clearing works in each construction area.	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project
B10	Accurately map sensitive areas in vicinity of disturbance footprint.	Where required the results of the pre-clearing surveys will be used to update and verify sensitive area maps within the BDAR.	Detailed design	Prior to the commencement of clearing works	Efficacy: Moderate. Risk of failure: Moderate.	All MNES impacted by the project
B11	Map and confirm biodiversity exclusion zones for retained vegetation.	Biodiversity exclusion zones for retained vegetation will be confirmed by a suitably qualified ecologist and identified as 'No disturbance' zones prior to the commencement of clearing or any site activity that could damage the vegetation within the exclusion zone. 'No disturbance' zones will consider: — identified Plains-wanderer habitat — identified threatened flora populations — threatened ecological communities — connectivity corridors, and — known habitat for threatened frogs and reptiles. Biodiversity exclusion zones will be physically marked and demarcated, and included on sensitive area maps, prior to clearing.	Detailed design	Prior to design finalisation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project
B12	Map and confirm biodiversity sensitive areas in the partial clearing zones.	Biodiversity sensitive areas to be demarcated by a qualified ecologist for areas subject to partial clearing zones prior to the commencement of clearing. 'Biodiversity sensitive area' will consider: — identified Plains-wanderer habitat — identified threatened flora populations — threatened ecological communities — connectivity corridors — known habitat for threatened fauna species. Biodiversity sensitive areas will be physically marked and demarcated, and included on sensitive area maps, prior to clearing.	Detailed design	Prior to design finalisation	Efficacy: High. Risk of failure: Moderate	All MNES impacted by the project

Mitigation number (BDAR)	Mitigation measure	Method/technique	Timing	Frequency	Likely efficacy (including risk of failure)	MNES (when relevant)
B13	Implement training around specific Plains-wanderer protocols for the project	A Plains-wanderer specific protocol will be developed to ensure that all construction workers are aware of the sensitivities around this critically endangered species and to ensure that all specific requirements in relation to protection, avoidance, management and observation of individual Plains-wanderers are considered. This protocol will be implemented during all project activities in Plains-wanderer habitat.	Detailed design	Inductions and training is to be completed once prior to commencing work. Toolbox talks will be undertaken daily or as required.	Efficacy: High. Risk of failure: Low.	Plains-wanderer
B14	Ecology inductions, toolbox talks, targeted training	All relevant construction workers will be trained on biodiversity management protocols and the requirements for the project, through inductions, toolbox talks and targeted training and provided with sensitive area maps (showing clearing boundaries and exclusion zones) and updates as required. Additional inductions will be required for access to Special Biodiversity Protection Zones.	Construction	Inductions and training are to be completed once prior to commencing work. Toolbox talks will be undertaken daily or as required.	Efficacy: High. Risk of failure: Low.	All MNES impacted by the project
B15	Monitor clearing of native vegetation areas to ensure impacts areas are not greater than anticipated	The predicted clearing area of native vegetation by the project will be monitored against the recorded clearing area. A revised BAM-C calculation on the project's final project disturbance post construction will be completed and any changes to the credit liability identified will be reflected in the biodiversity offset requirements within the biodiversity offset package.	Construction	Monitoring will require ongoing implementation throughout the process of construction/ vegetation clearing.	Efficacy: Moderate. Risk of failure: Moderate. Requires ongoing monitoring	All MNES impacted by the project
B16	Monitor partial impacts to native vegetation to ensure impact are not greater than anticipated in BDAR	The partial clearing outcomes will be verified within 12 months of clearing occurring to confirm future vegetation integrity. If partial clearing impacts are shown to be greater than the BDAR predictions, adaptive management practices will be implemented within easement to achieve predicted vegetation integrity (VI).	Construction	Monitoring will require ongoing implementation throughout the process of construction/vegetation clearing.	Efficacy: Moderate. Risk of failure: Moderate. Requires ongoing monitoring	All MNES impacted by the project
B17	Minimise residual impacts to riparian areas and aquatic environments	Activities within vegetated riparian zones (within the definition of the Controlled activities – Guidelines for riparian corridors on waterfront land (DPE, 2022c)) will be managed to minimise impacts to native riparian understorey vegetation and aquatic environments. Riparian areas subject to disturbance will be progressively stabilised and rehabilitated to minimise impacts to aquatic habitats, water quality from sedimentation and erosion. Where possible vegetation clearing will be limited to the tree stratum only, with trunk bases being retained in-situ.	Construction/ post-construction	Will require ongoing implementation throughout the process of construction/vegetation clearing. Rehabilitation of disturbed areas to occur post-construction	Efficacy: Moderate. Risk of failure: Moderate. Requires ongoing monitoring	All MNES impacted by the project
B18	Implement threatened species unexpected finds protocol	A species unexpected finds protocol will be implemented if threatened ecological communities, flora and fauna species, not identified as candidate species in the biodiversity assessment, are identified in the disturbance area. Where pre-clearing surveys identify additional areas of threatened ecological communities, flora and fauna species assessed within the approved biodiversity assessment in accordance with BAM, existing mitigation controls, including Biodiversity exclusion zones will be implemented.	Construction	Will require ongoing implementation throughout the life of the project	Efficacy: Moderate. Risk of failure: High.	All MNES impacted by the project
B19	Develop and implement Vegetation clearing Procedure	Develop and implement Vegetation Clearing Procedure as part of the BMP. Methods and techniques could include: — pre-clearing survey methodology and reporting requirements — consideration of density, species and maximum height — two stage clearing protocol — clearing methods for partial clearing areas to maintain target vegetation condition (integrity) — methods for soft felling methods habitat trees.	Construction	Will require ongoing implementation throughout the life of the project	Efficacy: Moderate. Risk of failure: High.	All MNES impacted by the project

Mitigation number (BDAR)	Mitigation measure	Method/technique	Timing	Frequency	Likely efficacy (including risk of failure)	MNES (when relevant)
B20	Implement construction methodology approach for special biodiversity protection zone - Natural Grasslands of the Murray Valley Plains.	Special biodiversity protection zone - Natural Grasslands of the Murray Valley Plains. A bespoke construction methodology will be employed which will minimise impacts as far as practical to the mapped Natural Grasslands of the Murray Valley Plains – Critically Endangered TEC (as shown on Figure 15.9). This methodology will include at a minimum: — pre-clearing induction of all contractors that work in this area to discuss this special biodiversity protection zone — during clearing, an ecologist shall be on site at all times to monitor activities within this special biodiversity protection zone — access being prioritised using existing access tracks — clearing being restricted to the identified transmission line structures worksite locations and short new perpendicular access track or alternative track locations that further reduce impacts to the special biodiversity protection zone. Access tracks will provide access between the existing access track along the project alignment and the transmission line structures and worksite locations — alternative line installation techniques which do not require clearing of disturbance area A (centreline) The final clearing methodology will be developed in accordance with the commitment in mitigation measure B1.	Construction	Ongoing implementation required throughout the process of construction/vegetation clearing in identified area.	Efficacy: Moderate. Risk of failure: High.	Natural Grasslands of the Murray Valley Plains
B21	Implement construction methodology approach for special biodiversity protection zone SAII TECs -*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* and *Allocasuarina luehmanii Woodland in the Riverina and Murray-Darling Depression Bioregions*	Special biodiversity protection zone - 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. Transmission line structures require a bespoke construction methodology that will be employed to minimise impacts as far as practical to the mapped SAII TECS and EPBC TECs (as shown on Figure 15.9). This methodology will include at a minimum: — pre-clearing induction of all contractors that work in this area to discuss this special biodiversity protection zone — during clearing an ecologist shall be on site at all times to monitor activities within this special biodiversity protection zone — access being prioritised from existing tracks — clearing being restricted to the identified transmission line structures worksite locations and short new perpendicular access track or alternative track locations that further reduce impacts to the special biodiversity protection zone. Access tracks will provide access between the existing access tracks along the project alignment and the transmission line structures and worksite locations The final clearing methodology will be developed in accordance with the commitment in mitigation measure B1.	Construction	Ongoing implementation required throughout the process of construction/vegetation clearing in identified area.	Efficacy: Moderate. Risk of failure: High.	*White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* and *Allocasuarina luehmanii Woodland in the Riverina and Murray-Darling Depression Bioregions*

Mitigation number (BDAR)	Mitigation measure	Method/technique	Timing	Frequency	Likely efficacy (including risk of failure)	MNES (when relevant)
B22	Implement construction methodology approach for special biodiversity protection zone - Plains-wanderer	Special biodiversity protection zone – Plains-wanderer A bespoke construction methodology will be employed which will avoid and minimise impact as far as practicable to the species' habitat (as shown on Figure 15.11b). This methodology will include at a minimum: — pre-clearing induction of all contractors that work in this area to discuss this special biodiversity protection zone — during clearing an ecologist shall be on site at all times to monitor activities within this special biodiversity protection zone — access being prioritised from existing tracks — clearing being restricted to the identified transmission line structures worksite locations and short new perpendicular access track or alternative track locations that further reduce impacts to the special biodiversity protection zone. Access tracks will provide access between the existing access tracks along the project alignment and the transmission line structures and worksite locations — alternative line installation techniques which do not require clearing of disturbance area A (centreline). The final clearing methodology will be developed in accordance with the commitment in mitigation measure B1.	Construction	Ongoing implementation required throughout the process of construction/vegetation clearing in identified area.	Efficacy: Moderate. Risk of failure: High.	Plains-wanderer
B23	Transgrid to spatially record features of high biodiversity conservation significance	Features of high biodiversity conservation significance within the operational easement, including biodiversity exclusions zones identified during construction and retained habitat for threatened species, will be recorded in Transgrid's GIS. The GIS information will be reviewed during the planning of all maintenance or other future activities that could cause disturbance.	Operation	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project
B24	Develop and implement guidelines and procedures for operation and maintenance of the project	Develop and implement guidelines and procedures for operation and maintenance of the project that address the following: — vegetation clearing and maintenance commitments in the BDAR and EIS — avoiding disturbance in biodiversity exclusion zones identified during the construction — minimise access and disturbance in areas of high biodiversity conservation significance; and — avoiding maintenance of vegetation that does not need to be maintained during operation. Provide training to relevant Transgrid operational personnel and vegetation maintenance contractors regarding the operational and maintenance guidelines and procedures.	Operation	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project

Mitigation number (BDAR)	Mitigation measure	Method/technique	Timing	Frequency	Likely efficacy (including risk of failure)	MNES (when relevant)
Aquatic mitigation measures						
A1	Instream works for access tracks and relevant construction compounds	The following factors will be considered during the detailed design and micro siting process for waterway crossings or the layout of the Cunninyeuk Road, Cunninyeuk construction compound (western option 2) to minimise potential impacts to aquatic environments, wherever practicable: — Any existing crossings will be re-used or upgraded in preference to establishing new crossings. — Disturbance to waterways (bed, banks and associated riparian zones), will be avoided or minimised. — The crossing design and construction work sites will minimise disturbance to any native vegetation, including native instream, fringing, and riparian vegetation within the access track alignment. — Watercourse crossings will be constructed perpendicular to the flow of the water and be positioned away from channel bends (where erosive forces are typically greatest). Preferably crossings will be located in straight stream sections with well-defined channel geometries and shallow stream gradients, in stable dry reaches. — Micro-siting will avoid direct and indirect (erosion or sedimentation) impacts to riverine features such as riffles and rapids and sensitive habitat features (i.e. snags, coarse woody debris, instream macrophytes). — All works within watercourse will be completed outside spawning periods of fish that inhabit the stream, which is typically spring through autumn. — Where instream structures are required, considerations to potential flooding and erosive effects will be made in the design and construction of the crossing. If dewatering is required during works NSW Department of Primary Industries is to be notified 7 days prior to any dewatering activities to organise potential fish rescue.	Detailed design	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project
A2	Impacts to Key Fish Habitat, threatened species and communities	Pre-construction survey will be carried out for any watercourse identified as being Key Fish Habitat and/or indicative distribution for threatened species that would be directly impacted by project infrastructure to determine: — the Type and Class of watercourses in accordance with Policy and guidelines for fish habitat conservation and management (Update 2013) (NSW Department of Primary Industries, 2013) — the presence/absence or likelihood of threated aquatic species occurring — determine any additional mitigation measures e.g. timing of works — recommendations as to micro-siting and design in order to minimise potential impacts to threatened aquatic species. This will include consideration of watercourses connected to Dillions Swamp.	Detailed design	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project
A3	Instream works associated with watercourse crossings	Watercourse crossings will be designed, microsite and constructed in accordance with *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull & Witheridge 2003) and will include maintaining existing nominal flow velocity where possible or at less than 0.3 m/sec to avoid damage to aquatic habitats. Any temporary watercourse crossings will be removed and rehabilitated at the completion of their operational use.	Detailed design	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project

Mitigation number (BDAR)	Mitigation measure	Method/technique	Timing	Frequency	Likely efficacy (including risk of failure)	MNES (when relevant)
A4	Offsets for residual impacts to key fish habitat	As per the *Policy and guidelines for fish habitat conservation and management (Update 2013)* (NSW Department of Primary Industries, 2013) habitat compensation for aquatic habitats must be completed on a minimum 2:1 basis for all key fish habitat (including type 1–3). During the detailed design and micro siting process potential impacts to key fish habitat will be minimised wherever practicable and where residual impacts are identified these will be quantified and offsets at a 2:1 basis win consultation with NSW Department of Primary Industries.	Detailed design and construction	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project
A5	Instream works and bank stabilisation for watercourse crossings	Any sections of stream or watercourse banks that are impacted or modified by the project will be reformed or remediated to resemble the pre-work condition and form wherever possible or alternatively to a stable design form, as appropriate following the completion of construction work	Construction	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project
A6	Biosecurity risks at watercourse crossings	Disinfect all vehicles and personal protective gear (PPE) prior to entering a watercourse. Clean, drain, and dry any equipment used in the water before storing or moving it to a different body of water. All sands and sediments used as infill shall be clean and have not been previously used in another watercourse. Do not release invasive aquatic species into watercourses or drainages.	Construction and operation	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project
A7	Reinstatement of lost fish habitat	Post- instream works the site should be reinstated to its original state this will include: — if aquatic or riparian vegetation is removed, similar species shall be planted. If invasive species were removed revegetate the riparian and aquatic area with native varieties. — if required, fill for watercourse beds and banks will be the same as the substrate removed (i.e.. boulders, cobble, sediment) Habitat features removed during construction (snags, boulders, aquatic vegetation etc.) shall be reinstated. If permitted by NSW Department of Primary Industries, it is recommended that felled trees within the project footprint be used as instream habitat in the form of woody debris.	Post construction	Ongoing throughout project operation	Efficacy: High. Risk of failure: Moderate.	All MNES impacted by the project

C7 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 11and 12 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 a significant residual impact to two threatened ecological community and 10 threatened species.

The Australian Government has endorsed the NSW Biodiversity Offsets Scheme (BOS). This means that offsets for MNES can be compensated for under the NSW BOS. Chapter 12 of the BDAR sets out the Biodiversity credit report, a summary of the required credits in provided in the following tables.

Not all species requiring species credits were determined to have a significant residual impact under the EPBC Act. In addition, some species under the NSW BOS would require ecosystem credits. Ecosystem credits would also account for those species that are only listed under the EPBC Act, as the ecosystem credits aims 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 C.12 and species credit requirements for EPBC listed threatened species are summarised in Table C.13.

Table C.12 Summary of the total ecosystem credits required for EPBC threatened species and ecological communities

Threatened species and ecological communities	Significant residual impact	Impact area (ha)	Ecosystem credits
Listed ecological communities			
The Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	No	3.50	9
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	No	0.84	11
Seasonal Herbaceous Wetlands	No	0.17	9
Weeping Myall Woodlands	Yes	92.65	3123
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native	No	3.36	92
Natural Grasslands of the Murray Valley Plains	Yes	101.69	4889
Listed threatened species			
Aphelocephala leucopsis (Southern Whiteface)	No	1430.26	25639
Botaurus poiciloptilus (Australasian Bittern)	No	239.00	2633
Calidris acuminata (Sharp-tailed Sandpiper)	No	7.19	9*
Climacteris picumnus victoriae (Brown Treecreeper (eastern subspecies))	No	49.18	113
Gallinago hardwickii (Latham's Snipe)	No	7.19	9*
Grantiella picta (Painted Honeyeater)	No	753.80	6981
Hirundapus Caudacutus (White-throated Needletail)	No	951.64	15078
Melanodryas cucullata cucullata (South-eastern Hooded Robin)	No	761.00	7056
Neophema chrysostoma (Blue-winged Parrot)	No	1336.57	25211
Nyctophilus corbeni (Corben's Long-eared Bat)	No	37.46	744
Pteropus poliocephalus (Grey-headed Flying fox)	No	44.54	101
Stagonopleura guttata (Diamond Firetail)	No	732.97	10705
Tringa nebularia (Common Greenshank)	No	7.19	9*

(*) These species are not associated within any PCTs. They are known to use wetland habitats including riparian areas but may also use the grassland habitat. For the purpose of this assessments the credits are based on PCT 47 Swamp grassland wetland of the Riverine Plain.

Table C.13 Summary of the total species credits required

Scientific name	Common name	Significant residual impact	Impact Area (ha/count)	Credits required
Threatened flora				
Amphibromus fluitans	River Swamp Wallaby-grass	No	0.43	11
Austrostipa metatoris	-	No	1.24	26
Austrostipa wakoolica	-	No	29.11	595
Brachyscome muelleroides	Mueller Daisy	No	1.04	78
Brachyscome papillosa	Mossgiel Daisy	Yes	141.26	6,941
Eleocharis obicis	Spike Rush	Yes	157.31	6,705
Lepidium monoplocoides	Winged Peppercress	No	80.54	2,373
Maireana cheelii	Chariot Wheels	Yes	156.79	7,051
Sclerolaena napiformis	Turnip Copperburr	No	43.39	1,336
Swainsona murrayana	Slender Darling-pea	No	340.46	13,995
Swainsona plagiotropis	Red Darling-pea, Red Swainson-pea	No	45.67	1,448
Swainsona recta	Small Purple-pea	No	2.08	60
Threatened fauna species				
Litoria raniformis	Southern Bell Frog	No	10.25	286
Aprasia parapulchella	Pink-tailed Worm-lizard	No	1.82	9
Hemiaspis damelii	Grey Snake	No	190.31	6577
Callocephalon fimbriatum	Gang-gang Cockatoo	No	48.04	5
Lophochroa leadbeateri	Pink Cockatoo	Yes	771.08*	1800
Pedionomus torquatus	Plains Wanderer	Yes	92.15	70
Polytelis swainsonii	Superb Parrot	Yes	706.42*	704
Phascolarctos cinereus	Koala	No	149.77	3,462

*Species is dual credit and additional habitat is provided via ecosystem credits for this species

APPENDIX C-1
Likelihood of occurrence

Threatened flora

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood
Ammobium craspedioides	Yass Daisy	V	VU	BAM-C	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Found from near Crookwell on the Southern Tablelands to near Wagga Wagga on the South Western Slopes. Most populations are in the Yass region.	266, 277 & 343	**Low** Subject land occurs outside the known or predicted distribution of this species and no known records within the locality. Unlikely to occur.
Amphibromus fluitans	Floating Swamp Wallaby-grass	V	VU	BAM-C PMST	*Amphibromus fluitans* grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile, and which have some bare ground, conditions which are produced by seasonally fluctuating water levels. Habitats in south western NSW include swamp margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with *Potamogeton* and *Chamaeraphis* species.	2, 11, 17, 47 & 160	**Moderate.** Records associated with the Murray River and tributaries. Habitat occurs in the subject land.
Austrostipa metatoris	A spear-grass	V	VU	BAM-C PMST BioNet	Grows in sandy areas of the Murray Valley; habitats include sandhills, sandridges, undulating plains and flat open mallee country, with red to red-brown clay-loam to sandy-loam soils. Most records occur in the Murray Valley with sites including Cunninyeuk Station, Stony Crossing, Kyalite State Forest (now part of Murrumbidgee Valley Regional Park) and Lake Benanee. Scattered records also occur in central NSW including Lake Cargelligo, east of Goolgowi, Condobolin and south west of Nymagee. Otherwise only known from near Bordertown in south east South Australia, where it may be locally extinct.	7, 19 & 28	**Moderate.** Records associated with the Murray River Valley. Not recorded within the subject land during targeted seasonal surveys. However, presence has been assumed where targeted surveys were not possible.
Austrostipa wakoolica	A spear-grass	E	EN	BAM-C PMST BioNet	Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of lignum swamps with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine Forest on low sandy range; and a low, rocky rise.	17, 26, 28, 70 & 237	**Moderate.** Records associated with the Murray River and tributaries. Not recorded within the subject land during targeted seasonal surveys. However, presence has been assumed where targeted surveys were not possible.
Brachyscome muelleroides	Mueller Daisy	V	VU	BAM-C, PMST	Grows in damp areas on the margins of claypans in moist grassland with *Pycnosorus globosus*, *Agrostis avenacea* and *Austrodanthonia duttoniana*. Also, recorded from the margins of lagoons in mud or water, and in association with *Calotis anthemoides*. The Claypan Daisy occurs in the Wagga Wagga, Narranderra, Tocumwal and Walbundrie areas.	44, 45, 46 & 47	**Moderate.** Habitat for the species is present within the subject land.
Brachyscome papillosa	Mossgiel daisy	V	VU	BAM-C, PMST, BioNet	Recorded primarily in clay soils on Bladder Saltbush (*Atriplex vesicaria*) and Leafless Bluebush (*Maireana aphylla*) plains, but also in grassland and in Inland Grey Box (*Eucalyptus microcarpa*) – Cypress Pine (*Callitris* spp.) woodland. The Mossgiel Daisy is endemic to NSW and chiefly occurs within the Riverina Bioregion, from Mossgiel in the north, Murrumbidgee Valley (Yanga) National Park in the south west to Urana in the south east. Sites are scattered across this Bioregion including the Jerilderie area, the Hay Plain (Maude and Oxley) and around Darlington Point. In addition, there are a number of records from the Willandra Lakes World Heritage Area (including Mungo National Park) with a north-western outlier at Byrnedale Station, north of Menindee. The only known site on South Western Slopes is Ganmain Reserve.	13, 15, 24, 44, 45, 46, 157, 159, 160, 163, 164 & 216	**Recorded.** Known populations within 5 km and extensive suitable habitat within 5 km of the subject land.
Caladenia arenaria	Sand-hill Spider Orchid	E	EN	BAM-C	Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine (*Callitris glaucophylla*). Sand-hill Spider Orchid is restricted to the Riverina in NSW and only occurs in five locations between Urana and Narranderra that are severely fragmented. There are no records within proposed subject land.	28	**Low.** Vegetation associated with this species does not meet the geographic restrictions for this species.

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood
Calotis moorei	A Burr Daisy	E	EN	BAM-C BioNet	The species grows in sandy soil and appears to be associated with Acacia woodlands and chenopod shrublands. At Mt Mulyah, *Calotis moorei* grows in an area cleared of original *Acacia cambagei* woodland and subsequently invaded by *Dodonaea viscosa* subsp. *angustissima* which repressed the growth of herbaceous species.	23, 157 & 170	**Low.** Based on the species profile (SPRAT), the subject land occurs outside of the species distribution range.
Eleocharis obicis	A spike rush	V	VU	N/A	Grows in ephemerally wet situations such as roadside mitre drains and depressions, usually in low-lying grasslands. Found near Condobolin and Hay, as well as being known from an old collection from the Barrier Range near Broken Hill. Found near Condobolin and Hay, as well as being known from an old collection from the Barrier Range near Broken Hill. The later collection was made on the Lachlan River floodplain at Micabil, near Condobolin.	10, 11, 13, 17, 24, 47, 157, 159, 160, 163, 164, 216 & 237	**Recorded.** A population of this species was recorded during preliminary WSP surveys in an inundated gilgai on light grey clays in chenopod shrublands.
Euphrasia arguta	–	CE	CR	BAM-C	Historic records of the species noted the following habitats: 'in the open forest country around Bathurst in sub humid places', 'on the grassy country near Bathurst', and 'in meadows near rivers'. Plants from the Nundle area have been reported from eucalypt forest with a mixed grass and shrub understorey; here, plants were most dense in an open disturbed area and along the roadside, indicating the species had regenerated following disturbance. *Euphrasia arguta* was rediscovered in the Nundle area of the NSW north western slopes and tablelands in 2008. Prior to this, it had not been collected for 100 years. Historically, *Euphrasia arguta* has only been recorded from relatively few places within an area extending from Sydney to Bathurst and north to Walcha. The Royal Botanic Gardens Specimen Register records an additional location reported and vouchered in 2002 from near the Hastings River; and *Euphrasia arguta* was also recorded from the Barrington Tops in 2012.	Nil	**Low.** Most of the known records include Nundle NSW in the north western slopes and tablelands. Another record in Barrington Tops in 2012. Both location are >500kms from the subject land..
Grevillea wilkinsonii	Tumut Grevillea	CE	CE	BioNet	The Tumut Grevillea has a highly restricted distribution in the NSW South-west Slopes region. Its main occurrence is along a 6 km stretch of the Goobarragandra River approximately 20 km east of Tumut where about 1,000 plants are known. The other occurrence is a small population that straddles the boundary of two private properties at Gundagai where only eight mature plants survive. There are no habitat constraints listed. At the Goobarragandra River sites the species generally grows in close proximity to the water, at altitudes between 310 and 340 m. The population at Gundagai is growing on the upper slope of a steep hill on Serpentinite rock. The species recruits most readily where there is some bare ground.	266	**Low.** Based on the species profile (SPRAT), the subject land occurs outside of the species distribution range.
Indigofera efoliata	Leafless Indigo	E	E	BioNet	The Leafless Indigo is very rare and was presumed extinct with the last known collection made in 1955 with three unvouchered reports from Goonoo State Forest in 1963. In spring 2021 the species was rediscovered near Geurie. Its known only from a few collections in the Dubbo area. Known sites were located along the Dubbo to Minore railway line and road, on Wallaringa and Geurie properties and in Goonoo State Forest. Herbarium records note the species as growing on slight rises amongst ironstone formation in stony red-brown sandy loam.	Nil	**Low.** Based on the species profile (SPRAT), the subject land occurs outside of the species distribution range.

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood
Lepidium aschersonii	Spiny Peppercress	V	VU	PMST	Found on ridges of gilgai clays dominated by Brigalow (*Acacia harpophylla*), Belah (*Casuarina cristata*), Buloke (*Allocasuarina luehmanii*) and Grey Box (*Eucalyptus microcarpa*). In the south has been recorded growing in Bull Mallee (*Eucalyptus behriana*). Often the understorey is dominated by introduced plants. The species grows as a component of the ground flora, in grey loamy clays. Vegetation structure varies from open to dense, with sparse grassy understorey and occasional heavy litter. Not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the south western plains). In the north of the State recent surveys have recorded a number of new sites including Brigalow Nature Reserve, Brigalow State Conservation Area, Leard State Conservation Area and Bobbiwaa State Conservation Area. Also known from the West Wyalong in the south of the State. Records from Barmedman and Temora areas are likely to be no longer present. Approximately 50% of the total *Lepidium aschersonii* recorded for Australia occurs in NSW.	26	**Low.** Nearest recorded population occurs to the north of the Murrumbidgee River which is over 50 km from the subject land.
Lepidium monoplocoides	Winged Peppercress	E	EN	BAM-C, PMST, BioNet	Occurs on seasonally moist to waterlogged sites, on heavy fertile soils, with a mean annual rainfall of around 300–500 mm. Predominant vegetation is usually an open woodland dominated by *Allocasuarina luehmannii* (Bulloak) and/or eucalypts, particularly *Eucalyptus largiflorens* (Black Box) or *Eucalyptus populnea* (Poplar Box).	13, 15, 24, 26, 45, 46, 47, 159, 160, 163, 170, 216 & 237	**Recorded.** Recorded from WSP surveys. Extensive suitable habitat within the subject land and known populations within the locality.
Maireana cheelii	Chariot Wheels	V	VU	BAM-C, PMST, BioNet	Usually found on heavier, grey clay soils with *Atriplex vesicaria* (Bladder Saltbush). Recorded on the Hay Plain in *Atriplex vesicaria, Maireana aphylla* and *Acacia homalophylla* shrublands. Soils include heavy brown to red-brown clay-loams, hard cracking red clay, other heavy texture-contrast soils. Tends to grow in shallow depressions, often on eroded or scalded surfaces, and does not extend to the higher soils in the habitat. It has been found on the edges of bare, windswept claypans, in shallow depressions of eroded surfaces where rainwater collects and on a “shelf” in the crabhole complex of heavy grey soils. Associated species include *Atriplex vesicaria, Maireana pentagona, M. excavata, M. ciliata, Cressa cretica, Avena fatua* and *Acacia homalophylla*.	26, 44, 46, 157 & 164	**Recorded.** Recorded from WSP surveys. Extensive suitable habitat within the subject land and known populations within the locality.
Myriophyllum porcatum	Ridged Water-milfoil	–	VU	PMST	Occurs in shallow, ephemeral and seasonal wetlands, including lakes, swamps, rock pools in granite outcrops, waterholes in claypans and highly modified habitat including farm dams and drainage lines (EPBC listing advice).	Nil	**Low.** Nearest known population occurs south of the Murray River in Victoria and is greater than 50 km from the subject land.
Prasophyllum petilum *(Prasophyllum sp. Wybong)*	Tarengo Leek Orchid	E	EN	BAM-C, PMST	Grows in patchy woodland in fertile soils. More specifically, grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock *Poa labillardieri*, Black Gum *Eucalyptus aggregata* and tea-trees *Leptospermum* spp. near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT).	Nil	**Low.** Based on the species profile (SPRAT), the subject land occurs outside of the species distribution range.
Pterostylis despectans	–	CE	EN	BAM-C	The species occurs as very small, fragmented populations in NSW, central Victoria and SA. In NSW, the only known population is restricted to a small area within the Yellow Water Hole to Barnes Crossing Travelling Stock Reserve (TSR Riverina 120) approximately 10km north-east of Moama. The NSW population occurs in natural forb-rich grassland on flat alluvial plains in *Acacia pendula* woodland. The grassland is dominated by *Austrodanthonia* sp., *Austrostipa aristiglumis* and *Austrostipa scabra*.	20, 44 & 86	**Low.** Based on the species profile (SPRAT), the subject land occurs outside of the species distribution range.
Sclerolaena napiformis	Turnip Copperburr	E	EN	BAM-C PMST	Confined to remnant grassland habitats on clay-loam soils. Grows on level plains in tussock grassland of *Austrostipa nodosa* and *Chloris truncata*, in grey cracking clay to red-brown loamy clay. Sites are roadside travelling stock routes and reserves subject to sheep grazing. Associated species include *Austrodanthonia duttoniana, Enteropogon acicularis, Austrostipa nodosa, Chloris truncata, Lolium rigidum, Swainsona murrayana, S. plagiotropis, S. procumbens, Rhodanthe corymbiflora, Calotis scabiosifolia, Microseris lanceolata, Acacia pendula* and various chenopods.	26, 44 & 46	**Moderate.** Potential habitat present within the subject land. Not recorded within the subject land during targeted seasonal surveys. However, presence has been assumed where targeted surveys were not possible.

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood
Senecio behrianus	Stiff Groundsel, Behr's Groundsel	Extinct	EN	PMST	Species grows on swampy soil and sandy clay in seasonally inundated areas on flats or close to riverbanks. *Senecio behrianus* was endemic to south-eastern Australia, where it once occurred in South Australia, New South Wales and Victoria. It is presumed extinct in South Australia and New South Wales and is now only known only from 5 wild and 2 reintroduced populations in Victoria.	Nil	**Low.** The species is considered extinct in NSW, although there are historic records along the Murray River in Victoria. The species was not recorded in the subject land despite targeted surveys during optimum season,
Senecio macrocarpus	Large-fruit Fireweed, Large-fruit Groundsel	–	VU	PMST	Found in woodland, grassland, and sedgeland. In NSW, known to occur in Tablelands east and north of the Australian Capital Territory. Also occurs in Victoria and South Australia.	Nil	**Low.** No suitable habitat recorded within the subject land.
Solanum karsense	Menindee Nightshade	V	VU	BAM-C	Grows in occasionally flooded depressions with heavy soil, including level river floodplains of grey clay with Black Box and Old Man Saltbush, and open treeless plains with solonized brown soils. Habitats are generally lake beds or floodplains of heavy grey clays with a highly self-mulching surface. Also found on sandy floodplains and ridges and in calcareous soils, red sands, red-brown earths and loamy soils.	13, 15, 17, 24, 159, 160 & 166	**Low.** The species was not recorded in the subject land despite targeted surveys.
Swainsona murrayana	Slender Darling Pea	V	VU	BAM-C, PMST, BioNet	The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with *Maireana* species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated.	15, 23, 26, 28, 44, 45, 46, 157, 163, 164 & 216	**Recorded.** Recorded from WSP surveys. BioNet records indicate multiple populations within the subject land. Additionally, extensive suitable habitat has been identified by SVTM.
Swainsona plagiotropis	Red Darling Pea	V	VU	BAM-C, PMST, BioNet	Grows on flat grassland and in heavy red soil, often on roadsides and especially in table drains. Soils are derived from quaternary sediments and are usually red-brown clay-loams. The species is absent from black low-lying soils. Recorded from roadsides, rail reserves, stock routes and areas of lightly grazed unimproved pasture comprising *Austrodanthonia*, *Enteropogon acicularis* and *Austrostipa* grassland communities.	26, 44, 45 & 46	**Moderate.** Potential habitat present within the subject land. Not recorded within the subject land during targeted seasonal surveys. However, presence has been assumed where targeted surveys were not possible.
Swainsona pyrophila	Yellow Swainson-pea	V	VU	PMST	Grows in mallee scrub on sandy or loamy soil, usually found only after fire. Sites include cleared and burnt mallee scrub on red loam to sand, previously burnt *Eucalyptus dumosa* mallee, disturbed woodland in sheltered aspects, a bulldozed firebreak adjacent to wheat paddocks, roadsides, claypans and at the edge of fire ash.	Nil	**Low.** No associated habitat within the subject land.
Swainsona recta	Small Purple-pea	E	EN	BAM-C, PMST	Before European settlement Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum *Eucalyptus blakelyi*, Yellow Box *E. melliodora*, Candlebark Gum *E. rubida* and Long-leaf Box *E. goniocalyx.* Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, poa tussocks *Poa* spp. and spear-grasses *Austrostipa* spp. Small Purple-pea was recorded historically from places such as Carcoar, Culcairn and Wagga Wagga where it is probably now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement. It is also known from the ACT and a single population of four plants near Chiltern in Victoria.	266 & 277	**Moderate.** Potential habitat present within the subject land. Not recorded within the subject land during targeted seasonal surveys. However, presence has been assumed where targeted surveys were not possible.

(1) Indicated a species is listed V= Vulnerable, E = Endangered or CE = Critically Endangered under the Biodiversity Conservation Act 2016.

(2) Indicates a species is listed VU = Vulnerable, EN = Endangered or CR = Critically Endangered under the Environmental Protection and Biodiversity Conservation Act 1999.

Threatened fauna

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood of occurrence
Crinia sloanei	Sloane's Froglet	V	EN	BAM-C, PMST	Associated with periodically inundated areas in grassland, woodland and disturbed habitats. Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with most records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. **Habitat constraints** Semi-permanent/ephemeral wet areas containing relatively shallow sections with submergent and emergent vegetation, or within 500 m of wet area Within 500 m of swamps Within 500 m of waterbody.	76, 237	**Low.** Marginal potential habitat within the subject land but not recorded during targeted surveys.
Litoria booroolongensis	Booroolong Frog	E	EN	BAM-C	Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. The species would also occur on or near cobble banks and other rock structures within stream margins.	343	**Low.** The specific microhabitats desired by this species are absent from the subject land.
Litoria raniformis	Growling Grass Frog, Southern Bell Frog	E	VU	BAM-C, PMST, BioNet	Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha Swamps, and River Red Gum swamps or billabongs along floodplains and river valleys. Rivers, tributaries, and irrigation channels form habitat.	2, 7, 10, 11, 13, 17, 24	**Recorded.** This species has been recorded from WSP surveys within the subject land.
Anthochaera phrygia	Regent Honeyeater	CE	CR	BAM-C, PMST	The species inhabits dry open forest and woodland, particularly Box-Ironbark forests and woodland and prefers wet, fertile sites such as along creek flats, broad river valleys and foothills. Riparian forests with *Casuarina cunninghamiana* and *Amyema cambagei* are important for feeding and breeding. Important food trees include *Eucalyptus sideroxylon* (Mugga Ironbark), *E. albens* (White Box), *E. melliodora* (Yellow Box) *and E. leucoxylon* (Yellow Gum).	2, 7, 266, 277, 319	**Low.** In NSW the distribution is very patchy and mainly confined to the breeding areas and surrounding fragmented woodlands. There are no records from locality and no known breeding areas in the vicinity of the subject land.
Aphelocephala leucopsis	Southern Whiteface	V	VU	PMST, BioNet	Southern whiteface occur across most of mainland Australia south of the tropics, from the north-eastern edge of the Western Australian wheatbelt, east to the Great Dividing Range. Southern whitefaces live in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains.	7, 10, 11, 13, 15, 17, 20, 23, 24, 26, 28, 44, 45, 46, 58, 70, 76, 157, 159, 160, 163, 164, 170, 216, 237, 266, 277	**Recorded.** This species has been recorded from WSP surveys within the subject land.
Botaurus poiciloptilus	Australasian Bittern	E	EN	BAM-C, PMST, BioNet	In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.). Breeding occurs in summer from October to January; nests are built in secluded places in densely vegetated wetlands on a platform of reeds.	10, 11, 13, 17, 24, 160	**Moderate.** Habitat within the subject land is considered suitable for this species, and it has been recorded within the locality.
Calidris acuminata	Sharp-tailed Sandpiper	–	VU, Mi, Mr	PMST	Occurs in a variety of habitats: tidal mudflat, mangrove swamps, saltmarshes, shallow fresh, brackish, salt inland swamps and lakes; flooded and irrigated paddocks, sewage farms and commercial saltfields.	N/A	**Moderate.** This species has been recorded within various habitat types and consistently throughout the locality when conditions are favourable. Although not associated with any present PCTs officially, habitats present may be considered suitable based on this species diverse habitat preferences.

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood of occurrence
Calidris ferruginea	Curlew Sandpiper	E	CR, Mi, Mr	BAM-C, PMST	Occur around the coasts and are also quite widespread inland, though in smaller numbers. Mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes, and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters and are occasionally recorded around floodwaters.	24, 47	**Low.** This species is predominantly coastal and preferred microhabitats are not present within the subject land. No records in locality.
Calidris tentuirostris	Great Knot	V	V, Mi	BAM-C,	Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms. Migrates to Australia from late August to early September.	N/A	**Low.** Although some associated PCTs are present within the subject land, preferred habitat for this species is not present and there are no records within the locality.
Callocephalon fimbriatum	Gang-gang Cockatoo	V	EN	BAM-C. PMST	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In spring and summer, generally found in tall mountain forests and woodlands, particularly 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 often found in urban areas.	343	**Moderate**. This species has associated habitat within the subject land which has been assumed suitable in unsurveyed areas.
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	VU	BAM-C, PMST	Glossy Black-cockatoos are uncommon although widespread throughout suitable forest and woodland habitats, from the 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. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species). Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. *Allocasuarina littoralis* and *A. torulosa* are important foods. Inland populations feed on a wide range of sheoaks, including *A. diminuta*, and *A. gymnathera*. *Casuarina cristata* is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak but also recorded in open woodlands dominated by Belah. Dependent on large hollow-bearing eucalypts for nest sites.	70, 237, 343	**Low.** This species has associated, PCTs present within the subject land, however, no appropriate habitat was found through targeted surveys.
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	V	VU	PMST, BAM-C, BioNet	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and *Eucalyptus camaldulensis* forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell, intergrading along this line with *C. picumnus picumnus* which occupies the remainder of the state.	76, 237, 266, 277, 343	**Recorded.** Recorded from WSP surveys. BioNet records have identified individuals of this species within the subject land. Additionally, suitable habitat for this species occurs within the subject land.
Falco hypoleucos	Grey Falcon	V	VU	PMST	Sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range is now mostly confined to arid parts of the range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	10, 11, 13, 15, 17, 19, 20, 23, 24, 26, 28, 44, 45, 46, 47, 58, 70, 157, 159, 160, 163, 164, 170, 216, 237	**Low.** Primarily restricted to arid and semi-arid regions to the west of the subject land. Any individuals occurring would likely be rare vagrants.

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood of occurrence
Gallinago hardwickii	Latham's Snipe	–	VU, Mi, Mr	PMST	Occurs in freshwater or brackish wetlands generally near protective vegetation cover. This species feeds on small invertebrates, seeds and vegetation. It migrates to the northern hemisphere to breed.	Nil.	**Moderate.** This species has been recorded throughout the locality when conditions are favourable. Although not associated with any present PCTs officially, habitats present may be considered suitable based on this species diverse habitat preferences.
Grantiella picta	Painted Honeyeater	V	VU	PMST, BAM-C, BioNet	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria, and southern Queensland. Inhabits Boree/Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema.	2, 7, 10, 11, 13, 15, 20, 23, 26, 28, 58, 70, 76, 86, 237, 266, 277, 319, 343	**Moderate** Potential habitat for this species within the subject land and BioNet records within locality.
Hirundapus caudacutus	White-throated Needletail	–	VU, Mi, Mr	PMST, BAM-C, BioNet	Widespread in eastern and south-eastern Australia. In eastern Australia, it is recorded in all coastal regions of QLD and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. The species is widespread in Victoria, but there are few records in Western VIC outside The Grampians and the South West. It is almost exclusively aerial, from heights of less than 1m up to more than 1000m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps. When flying above farmland, they are more often recorded above partly cleared pasture, plantations, or remnant vegetation at the edge of paddocks.	2, 7, 10, 11, 13, 15, 17, 24, 26, 44, 45, 46, 47, 70, 76, 157, 159, 160, 216, 237, 266, 277, 319, 343	**Moderate** Extensive suitable habitat for this species occurs within the subject land, likely to occur in airspace above the subject land.
Lathamus discolor	Swift Parrot	E	CR, Mr	PMST, BAM-C, PMST, BioNet	Migrates to the Australian south-east mainland between February and October. Occurs on the mainland in areas where Eucalypts are flowering profusely or where there is abundant lerp infestations. Favoured trees include *Eucalyptus robusta*, *Corymbia maculata*, *C. gummifera*, *E. tereticornis*, *E. sideroxylon*, and *E. albens*. Commonly used lerp infested trees include *E. microcarpa*, *E. moluccana*, *E. pilularis*, and *E. melliodora*.	2, 7, 9, 10, 11, 13, 15, 24, 26, 70, 237, 319, 343	**Moderate** The subject land contains potential foraging habitat for migrating individuals.
Leipoa ocellata	Malleefowl	E	VU	PMST, BAM-C	The stronghold for this species in NSW is the mallee in the south west centered on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300–450 mm mean annual rainfall) areas.	343	**Low.** Although one PCT within the subject land is associated with this species, generally the subject land is not considered suitable as this species prefers mallee communities found further west than the subject land.
Limosa limosa	Black-tailed Godwit	V	EN, Mi, Mr	PMST	Primarily a coastal species, usually found in sheltered bays, estuaries, and lagoons with large intertidal mudflats and/or sandflats. Further inland it can also be found on mudflats and in water less than 10 cm deep, around muddy lakes and swamps. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed.	Nil	**Low.** While marginal potential habitat for this species is present within the subject land, species is primarily coastal and no records occur within the locality.
Lophochroa leadbeateri	Pink Cockatoo	V	EN	PMST, BAM-C, BioNet	Found across the arid and semi-arid inland, including north-west VIC. In NSW it is found regularly as far east as the locality of Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines.	2, 7, 10, 11, 13, 15, 19, 20, 23, 26, 28, 45, 58, 70, 76, 159, 163, 170, 237, 346	**High.** Individuals were recorded in close proximity to the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land.

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood of occurrence
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	E	EN	PMST, BioNet	The south-eastern form of Hooded Robin (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *M. c. picata*. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	2, 7, 10, 11, 13, 15, 19, 20, 23, 26, 28, 58, 70, 76, 86, 170, 237, 266, 277, 319, 343	**Moderate**. The subject land contains habitat suitable for this species and is within the known distribution of this species.
Neophema chrysostoma	Blue-winged Parrot	V	VU, Mr	PMST, BioNet	Blue-winged parrots are partial migrants, variable numbers of birds migrate across Bass Strait in winter but breed on mainland Australia south of the Great Dividing Range in southern Victoria. During the non-breeding period, from autumn to early spring, birds are recorded from northern Victoria, eastern South Australia, south-western Queensland and western New South Wales, with some birds reaching south-eastern New South Wales. The species tends to favour grasslands and grassy woodlands and are often found near wetlands, both near the coast and in semi-arid zones. The species has also been seen in altered environments such as paddocks, airfields, and golf courses.	2, 7, 11, 13, 15, 17, 24, 26, 28, 44, 45, 46, 58, 157, 159, 160, 163, 164, 170, 216,	**Recorded.** This species has been recorded from WSP surveys within the subject land.
Pedionomus torquatus	Plains-wanderer	E	CR	BAM-C, PMST, BioNet	The western Riverina of southern NSW is currently considered a stronghold for habitat for Plains-wanderer, with the vast majority (>99%) of records of Plains-wanderer in NSW over the past 30 years coming from the area. Plains-wanderer live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. Habitat structure appears to play a more important role than plant species composition. Preferred habitat of the Plains-wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses.	44, 46	**Recorded.** One individual of the species was recorded 3.16 km west of the intersection of the alignment with Wouldurah Road. BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land.
Polytelis anthopeplus monarchoides	Regent Parrot (eastern)	E	VU	BAM-C, PMST	The species nests within River Red Gum forests along the Murray, Wakool and lower Murrumbidgee Rivers, and possibly the Darling River downstream of Pooncarie. Typical nest trees are large, mature healthy trees with many spouts (though dead trees are used) and are usually located close to a watercourse.	2, 10, 11, 13, 15	**Low.** The subject land is not within the known distribution for this species.
Polytelis swainsonii	Superb Parrot	V	VU	BAM-C, PMST, BioNet	The Superb Parrot inhabits Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box.	7, 10, 11, 13, 26, 28, 45, 46, 70, 237, 343	**High.** BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land.
Rostratula australis	Australian Painted Snipe	E	EN, Mr	PMST	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	2, 7, 10, 11, 13, 17, 24, 47, 160	**Low.** Although vegetation communities associated within this species are present within the subject land, this species is not a frequent vagrant to the region and has not been recorded within the locality, if individuals were to occur, they would be a rare vagrant.
Stagonopleura guttata	Diamond Firetail	V	VU	PMST, BAM-C, BioNet	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (Eucalyptus pauciflora) Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities.	2, 7, 10, 11, 13, 19, 20, 23, 26, 28, 44, 45, 46, 58, 70, 76, 86, 170, 237, 266, 277, 319, 343	**High.** Previously recorded in subject land (BioNet record). Extensive potential habitat within subject land.

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood of occurrence
Tringa nebularia	Common Greenshank	–	EN, Mi, Mr	PMST	Occurs in a range of inland and coastal environments. Inland, it occurs in both permanent and temporary wetlands, billabongs, swamps, lakes floodplains, sewage farms, saltworks ponds, flooded irrigated crops. On the coast, it occurs in sheltered estuaries and bays with extensive mudflats, mangrove swamps, muddy shallows of harbours and lagoons, occasionally rocky tidal ledges. It generally prefers wet and flooded mud and clay rather than sand.	Nil.	**Moderate.** This species has been recorded throughout the locality when conditions are favourable. Although not associated with any present PCTs officially, habitats present may be considered suitable based on this species diverse habitat preferences.
Chalinolobus dwyeri	Large-eared Pied Bat	V	EN	BAM-C	Found 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. Roosts in caves, crevices in cliffs, old mine workings and in disused Fairy Martin mud nests, frequenting low to mid-level elevation dry open forest and woodland close to these features.	70	**Low.** Although the subject land contains some associated habitat in the form of PCT 70, the subject land lacks the specific microhabitats suitable for this species, no suitable roosting habitat is expected to be present.
Dasyurus maculatus	Spotted-tailed Quoll	V	EN	PMST, BAM-C	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites.	2, 266, 277, 343	**Low.** Although some associated habitats are present within the subject land, this species is typically distributed along coastal NSW and near the ranges. They are rarely known to occur within the Riverina area and would be considered a rare vagrant if occurring within subject land.
Nyctophilus corbeni	Corben's Long-eared Bat	V	VU	PMST	Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin, with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke (*Allocasuarina leuhmannii*) and box eucalypt dominated communities, 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 NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.	2, 10, 28, 86, 266	**Moderate.** This species is associated with numerous PCTs of the Murray Fans IBRA subregion found within the subject land. As this species occurs in varied habitat types, the subject land is considered suitable.
Petaurus australis	Yellow-bellied Glider	V	V	BAM-C	The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. This species occurs in tall mature eucalypt forests, generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	76, 266, 277	**Low.** Although vegetation communities associated within this species are present within the subject land, this species is not a frequent vagrant to the region and has not been recorded within the locality, if individuals were to occur, they would be a rare vagrant.
Petrogale penicillata	Brush-tailed Rock-wallaby	E	VU	BAM-C	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. However, the distribution of the species across its original range has declined significantly in the west and south and has become more fragmented. 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. The species occupies rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north.	70, 276	**Low.** Known distribution is predominantly east of the subject land and no suitable habitat in the subject land, in the form of rocky areas.

Scientific name	Common name	BC Act[1]	EPBC Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood of occurrence
Phascolarctos cinereus	Koala	E	EN	BAM-C, PMST	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 would select preferred browse species. Some preferred species include Forest Red Gum, Grey Gum. In coastal areas, Tallowwood and Swamp Mahogany are important food species, while in inland areas White Box, Bimble Box and River Red Gum are favoured.	2, 7, 10, 11, 13, 15, 17, 19, 24, 26, 28, 70, 157, 159, 160, 216, 237, 319, 343	**Moderate** Potential habitat occurs within the subject land.
Pteropus poliocephalus	Grey-headed Flying Fox	V	VU	BAM-C	Typically found within 200 km of the Eastern coast of Australia, from Rockhampton, QLD to Adelaide, SA, but may be found in unusual locations in times of natural resource shortages. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths, and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	70	**Moderate.** Marginal potential foraging habitat for this species is present on the subject land.
Aprasia parapulchella	Pink-tailed Worm-lizard	V	VU	BAM-C, PMST	Inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by Kangaroo Grass (*Themeda australis*). Commonly found beneath small, partially embedded rocks and appear to spend considerable time in burrows below these rocks. Sites are typically well-drained, with rocky outcrops or scattered, partially buried rocks.	157, 159, 164, 216, 319	**Moderate.** Marginal potential microhabitats (rocky outcrop) may be present within associated PCT 319 in the subject land which would be suitable habitat for this species.
Delma impar	Striped Legless Lizard	V	VU	BAM-C, PMST	Predominantly found in Natural Temperate Grassland and nearby secondary grassland, occasionally in open Box-Gum Woodland, but has also been found in grasslands with a high exotic component. Habitat is where grassland is dominated by perennial, tussock-forming grasses, sometimes with surface rocks or cow pats that can be used for shelter.	277	**Low.** Distribution for this species is predominantly east of the subject land and minimal associated habitat available. No records within locality.
Hemiaspis damelii	Grey Snake	E	EN	PMST	The Grey Snake has a wide overall range from inland southern NSW to central Queensland. In NSW the species occupies five geographically discrete subpopulations, predominantly associated with the lower reaches of major westerly flowing rivers, including the Gwydir, Namoi, Castlereagh, Macquarie, Lachlan, and Murrumbidgee River systems. In NSW, the Grey Snake's habitat includes the margins of ephemeral wetlands within River Red Gum (*Eucalyptus camaldulensis*) and Black Box (*E. largiflorens*) vegetation communities and Tangled Lignum (*Duma florulenta*) swamps. Heavy clay soils are also a key feature for the species.	7, 10, 11, 13, 15, 17, 19, 24, 46,	**Moderate**. This species is known to occur within the Riverina region and has been recorded in habitat types similar to some of the communities present within subject land.
Keyacris scurra	Key's Matchstick Grasshopper	E	EN	PMST	Typically recorded in native grasslands and grassy woodland but it has also been recorded in other vegetation associations usually containing a native grass understory (especially *Themeda triandra*) and known food plants (particularly Asteraceae).	266, 277	**Low.** Although this species is known to occur in the inland slopes IBRA subregion, it is scarcely occurring within the locality of the subject land. The habitats present within the inland slopes subregion are located within modified agricultural land and unlikely to be of a condition considered suitable for this species.
Synemon plana	Golden Sun Moth	V	VU		Historically the distribution of Golden Sun Moth extended from central NSW, through to central and western VIC, and into eastern SA. Now, the NSW populations of the species are found between Queanbeyan, Gunning, Young, and Tumut. Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which ground layer is dominated by wallaby grasses *Austrodanthonia* spp.	266, 277	**Low.** Based on the species profile (SPRAT), the subject land occurs outside of the species distribution range.

(1) Indicates a species is listed V = Vulnerable, E = Endangered, or CE = Critically Endangered under the Biodiversity Conservation Act 2016.

(2) Indicates a species is listed VU = Vulnerable, EN = Endangered, CR = Critically Endangered, Mi = Migratory and/or Mr = Marine under the Environmental Protection and Biodiversity Conservation Act 1999 (*EPBC Act*). The controlling provision for the EPBC referral is listed threatened species and ecological communities. Therefore, where a listed threatened species is also identified as migratory and/or marine, it has only been considered under the threatened species status i.e., Endangered.

Threatened aquatic species

Below is the likelihood of occurrence for associated aquatic species identified through appropriate database searches. Refer to Appendix M – Aquatic Assessment for the significant impact assessments of the species below.

Scientific name	Common name	EPBC Act[1]	FM Act[2]	Source	Habitat description and constraints	Associated PCTs present	Likelihood of occurrence
Bidyanus bidyanus	Silver Perch	EN	V	PMST	This species exists in the primarily within the northern and southern extent of the Murray-Darling Basin, with smaller population scattered in between. Silver Perch inhabit free-flowing riverine environments containing clear water. Silver Perch displays no preference for instream microhabitats (i.e. woody debris, instream rocks, riparian vegetation types) and can be found reaches that contain limited instream habitat features (Department of Climate Change, Energy, the Environment and Water, 2024a)	–	**High.** Previously recorded near the project footprint (ALA, 2025)
Craterocephalus fluviatilis	Murray Hardyhead	EN	CE	PMST	This species is endemic to the mid and lower Murray-Darling River system in south-eastern Australia. They are commonly found in open water habitats, particularly in highly saline wetlands, floodplains and lakes (Fishes of Australia , 2025). During the dry season Murray Hardyhead are confined to isolated waterbodies and floodplains. For their reproductive success, Murray Hardyhead depend on eel grass, which they deposit their eggs when they spawn (Fishes of Australia , 2025).	–	**Moderate.** The project footprint intersects with key fish habitat for this species; however, the known populations of this species do not occur in NSW.
Galaxias rostratus	Flathead Galaxias	CR	CE	PMST	This species exists in the southern half of the Murray-Darling Basin system in various habitats such as billabongs, lakes, swamps and rivers, with a preference for still or slow flowing waters (Threatened Species Scientific Committee, 2016) Flathead Galaxias habitat prefer habitats containing coarse sand or mud substrate and aquatic vegetation (NSW Department of Primary Industries, 2014).	–	**Moderate.** The project footprint with key fish habitat for this species, however, there have been no records since 1995.
Maccullochella macquariensis	Trout Cod	EN	E	PMST	Only one known “natural” breeding population of Trout Cod are known to occur within NSW, which is downstream of the Yarrawonga Weir between Yarrawonga and Barmah (Trout Cod Recovery Team, 2008). This species is known to inhabit deeper rivers that contain a high surface velocity which contain large quantities of woody debris (Trout Cod Recovery Team, 2008).	–	**Moderate.** Potential for stocked fish to inhabit the larger watercourses within project footprint.
Maccullochella peelii	Murray Cod	VU	–	PMST	Murray Cod inhabit all major catchments within the Murray-Darling Basin that contain warmer waters. Murray Cod prefer habitats that contain large rocks, woody debris and undercut banks with overhanging vegetation (Fishes of Australia, 2025).	–	**High.** Previously recorded near the project footprint (ALA, 2025).
Macquaria australasica	Macquarie Perch	EN	E	PMST	This species is primarily located within the upstream reaches of the Murray-Darling Basin including Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW. Macquarie Perch prefer habitats with copious cover including aquatic vegetation, woody debris, boulders and overhanging banks (NSW Department of Primary Industries and Regional Development, 2025).	–	**Low.** Outside known range.

(1) Indicates a species is listed VU = Vulnerable, EN = Endangered, CR = Critically Endangered, Mi = Migratory and/or Mr = Marine under the Environmental Protection and Biodiversity Conservation Act 1999 (*EPBC Act*). The controlling provision for the EPBC referral is listed threatened species and ecological communities. Therefore, where a listed threatened species is also identified as migratory and/or marine, it has only been considered under the threatened species status i.e., Endangered.

(2) Indicates a species is listed VU = Vulnerable, EN = Endangered or CE = Critically Endangered under the Fisheries Management Act 1994 (NSW) (*FM Act*).

APPENDIX C-2
Significant impact assessment

Significant impact assessment

The Significant Impact Guidelines 1.1 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*' is defined by the Significant Impact Guidelines as 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.

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.

APPENDIX C-3
Threatened ecological communities

Threatened ecological communities

The project likely to have an impact on four of the six communities recorded within the subject land.:

- The Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions – Endangered
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – Endangered
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered
- Weeping Myall Woodlands – Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered (Box Gum woodlands).

Assessment of significance have been undertaken for these TECs in accordance with the significant impact guidelines 1.1.

The Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions

The Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions (hereafter referred to as Buloke Woodlands) is listed as an endangered ecological community under the EPBC Act.

Description

The threatened ecological community occurs within two IBRA bioregions, distributed widely across each bioregion as tracts or patches. Clayey and alkaline sub-soils are a common feature of the TEC. The ecological community is characterized as woodland or open woodland with a well-developed ground stratum consisting of grass, shrubs and herbs. Buloke is common to all variants, but *Callitris gracilis* (slender cypress-pine) and *Eucalyptus macrocarpa* (grey box) may be structurally dominant in some locations. This is due to ongoing disturbance events, introduced plant species are frequently abundant, including *Lolium ridigum* (Wimmera rye grass), *Chondrilla* juncea (skeleton weed) and *Lepidium africanum* (common pepper-cress). The ecological community is extremely important for temperate woodland birds including the threatened Victorian Temperate Woodland Bird Community.

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:

- Conservation Advice: "*Approved Conservation Advice for the Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions*" (DSEWPC, 2023).
- Listing Advice: "Commonwealth Listing Advice on Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions" (DSEWPC, 2000).
- Recovery Plan: "*National recovery plan for the Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions"*. (Department of Sustainability and Environment 2011). In effect under the EPBC Act from 12-Feb-2012.
- Threat Abatement Plan: "Threat abatement plan for competition and land degradation by rabbits" (DSEWPC, 2016).

Specific impacts

The Buloke – Moonah – Black Box open woodland on sandy rises of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (PCT 20) within the subject land is considered consistent with the EPBC Act Buloke Woodlands. The community within the subject land is considered to be in is highly modified in thinned and derived condition.

The project is estimated to impact upon of 3.50 ha of the Buloke Woodlands.

Significant impact criteria

- ***reduce the extent of an ecological community***

The complete extent of Buloke Woodlands is uncertain across the community's distribution due to extensive degradation and clearing. The project would result in the loss of 3.50 ha Buloke Woodlands. Given the extent of the TEC, it is unlikely the loss of 3.50 ha would significantly reduce the extent of the Buloke Woodlands.

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

Fragmentation is an ongoing threat to Buloke Woodlands across the extent of the ecological community. This is due to extensive clearing and improper regeneration techniques. Given the severely fragmented distribution of the TEC, scale and nature of the project (i.e. string of the overhead transmission lines and minor clearance for towers and access) it is unlikely the project would lead to further fragmentation of the community.

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

No critical habitat has been identified under the EPBC Act. 'Habitat critical to the survival of an ecological community' refers to areas that are necessary:

- for the long-term maintenance of the 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 ecological community.

The Buloke Woodlands within the subject land is currently fragment and is considered to be in is highly modified in thinned and derived condition. Given the poor condition of the TEC, it is unlikely it would represent habitat critical to the survival of the ecological community. Therefore, loss of 3.50 ha associated with the project is unlikely to have an adverse impact on habitat critical to the survival of the 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 require the removal of up to 3.50 ha of Buloke Woodlands. Construction of the access roads and towers may require some excavation works; however, these are not expected to alter groundwater levels or substantial change surface water drainage patters to an extent that would impact the community's survival. Furthermore, mitigation measures would 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, the project is considered unlikely to substantially modify or destroy these abiotic factors.

- ***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***

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 because of 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 would be put in place to limit indirect impacts of the project on the surrounding vegetation. Therefore, it is considered unlikely the project would result in the decline or loss of a functionally important species or to substantially change the species composition of the retained vegetation, or to 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.***

Given the previous agriculture use there may be some mobilisation of fertilisers chemical or other pollutants as part of any excavation works. However, excavation activities would not be ongoing and mitigation measures would be in place to ensure sedimentation and run-off is managed and minimised.

The condition of the TEC various across the subject and with a number of invasive species already present within the landscape. Mitigation measures including weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment, and control measures would be implemented, therefore it is unlikely the project would result in invasive species that are harmful to the TEC becoming established.

Given the small area to be impacted and nature of the project combined with the implementation of mitigation measures it is unlikely that the project would substantially reduce the quality or integrity of the TEC project.

- ***interfere with the recovery of an ecological community***

There is no current recovery plan for Buloke Woodlands, the approved conservation advice for the TECs list a number of conservations action to assist with the recovery of the community, including:

- protection of the ecological community through preventing impacts on native vegetation, fauna, hydrology and soil structure from developments and activities
- minimizing impacts to existing habitat by retaining important habitat features such as mature trees with potential hollows, and
- preventing further weed invasion through a reduction in invasive weed spread and prevention of the spread of feral animals within the regions associated with Buloke Woodlands.

The project would involve clearing of this TEC, however the loss of 3.50 ha of the TEC is unlikely to substantially interfere with the recovery of the Buloke Woodlands.

Conclusion

Buloke Woodlands within the subject land is fragmented, highly modified in thinned and derived condition. The project would result in the loss of 3.50 ha of the Buloke Woodlands within the subject land. Given the nature and scale of the project it is unlikely the project would have a significant residual impact on the Buloke Woodlands community.

Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (hereafter Grey Box Woodlands) is listed as an endangered ecological community under the EPBC Act.

Description

The Grey Box Woodlands occupies a transitional position between temperate woodlands and forests of the lower sloped and tablelands of south-eastern Australia, and semi-arid communities further inland (DCCEEW, 2012). The community occupies drier sites of grassy woodlands, with a rainfall zone of 375 – 700 mm/year. A typical canopy within this ecological community is dominated by *Eucalyptus macrocarpa* (grey box), and a sparse shrub layer with a species-rich ground layer of grass and herbs. Within drier parts of the threatened ecological community range, chenopods are often present under the canopy story. Distribution of the ecological community ranges from the Narrabri district in central New South Wales through northern Victoria into South 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 community is as follows:

- Conservation Advice: "*Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*" (DSEWPC 2010).
- Listing Advice: "Commonwealth Listing Advice on Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia" (DSEWPC 2010).

Specific impacts

One associated vegetation type, PCT 237 – Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone was recorded in the subject land and is consistent with the EPBC Grey Box Woodlands listing based on condition criteria. The Grey Box Woodlands within the subject land is considered to be in moderate to good condition.

The project is estimated to impact upon of 0.84 ha of the Grey Box Woodlands.

Significant impact criteria

- ***reduce the extent of an ecological community***

There is a significant gap in the knowledge about the historical and current extent of the Grey Box Woodlands due to limited mapping in parts of the community's larger range. The project is likely to result in the loss 0.84 ha of Grey Box Woodlands, which represents less than 0.0002% of the national extent of the community. Given the scale of the impacts, it is unlikely the project would reduce the extent of the Grey Box Woodlands.

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

Grey Box Woodland has a significantly fragmented distribution due to vegetation clearing and other human-induced practices. The project would utilise existing tracks and clearings, where possible, to limit the construction of new tracks. Where this is not possible, the design would seek to minimise impacts to native vegetation, including cut and fill, as a priority. The construction of line towers would be micro-sited to further minimise vegetation clearing. The project is likely to result in the loss 0.84 ha of Grey Box Woodlands, as such, it is unlikely the project would result in substantial fragmentation across the subject land.

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

To date, no recovery plan has been developed by the Department of Agriculture, Water, and the Environment for Grey Box Woodlands critical habitat for the Grey Box Woodland Threatened Ecological Community within the listing advice (DSEWPC 2010).

'Habitat critical to the survival of an ecological community' refers to areas that are necessary:

- for the long-term maintenance of the 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 ecological community.

Habitat critical has not been defined in the approve conservation advice for the community. While the TEC is of moderate to good condition and may represent habitat critical, it is unlikely the loss of less than 0.0002% of the national extent of the TEC, would be essential for the maintaining genetic diversity or the long-term maintenance and /or recovery of the community. It is unlikely the project would result in an adversely affect habitat critical to the survival of the TEC.

- ***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 0.84 ha of Grey Box Woodlands. Construction of the access roads and towers may require some excavation works; however, these are not expected to alter groundwater levels or substantial change surface water drainage patters to the extent that would impact the community's survival. Furthermore, mitigation measures would 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). It is unlikely the project would modify or destroy factors necessary for an ecological community's survival.

- ***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***

The project would require the removal and/or disturbance to 0.84 ha Grey Box Woodlands within areas of existing disturbance. The project would require ongoing maintenance under within the string corridor; however, this is expected to be minor in scale and nature and unlikely to result in a change in the species composition of the ecological community. Therefore, the proposed action 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.***

Given the previous agriculture use there may be some mobilisation of fertilisers chemical or other pollutants as part of any excavation works. However, excavation activities would not be ongoing and mitigation measures would be in place to ensure sedimentation and run-off is managed and minimised.

The condition of the TEC various across the subject and with a number of invasive species already present within the landscape. Mitigation measures including weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment, and control measures would be implemented, therefore it is unlikely the project would result in invasive species that are harmful to the TEC becoming established.

Given the small area to be impacted and nature of the project combined with the implementation of mitigation measures it is unlikely that the project would substantially reduce the quality or integrity of the TEC project.

- ***interfere with the recovery of an ecological community***

No current recovery plan has been established for the Grey Box Woodlands. The approved conservation advice for the community sets out a number of conservation priorities including:

- reducing habitat loss, disturbance and modification through managing threats to remnants of the ecological community and implementing management regimes
- controlling invasive species by managing sites for prevention of further spread and the introduction of landscape-scale control programs
- enabling the recovery of additional sites to maintain and improve the connectivity of remnants.

Given the small scale and nature of the project, it is unlikely to loss of 0.84 ha of Grey Box Woodlands would substantially interfere with the TECs recovery.

Conclusion

The subject land is predicated to remove 0.84 ha of Grey Box Woodland, which represents less than 0.0002% of the extent of the community nationally. Given the small scale and nature of the impacts it is unlikely the project would have a significant residual impact on the Grey Box Woodland.

Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains

Seasonal Herbaceous Wetlands (freshwater) of the Temperate Lowland Plains (hereafter Seasonal Herbaceous Wetlands) is listed as critically endangered ecological community under the EPBC Act.

Description

This threatened ecological community describes temporary freshwater wetlands which are inundated seasonally before drying out. Structurally, the vegetation is predominantly treeless and dominated by an herbaceous ground layer that consists of species common to wetter locations (DCCEEW, 2012). The Seasonal Herbaceous Wetlands ecological community exhibit the following key diagnostic characteristics:

- a landscape consisting of flat plains grading into slopes and fertile, but poor draining clay soils
- rainfall is the main source of seasonal inundations of water to the ecological community during winter-spring, which dries late summer
- trees and shrubs are sparse to absent, mainly occurring as fringing or scattered individuals. At least one native wetland forb species must be present after inundation of the community with water, however a range of forbs can be found within the locality.

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 threatened ecological community is as follows:

- Conservation Advice: "*Approved Conservation Advice for the Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains.*" (DSEWPC 2012). In effect under the EPBC Act from 27-Mar-2012.
- Listing Advice: "Commonwealth Listing Advice on Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains" (DSEWPC 2012).

Specific impacts

The Swamp grassland wetland of the Riverine Plain- PCT 47 is considered consistent with the EPBC Act Seasonal Herbaceous Wetlands listing. The project is estimated to impact upon of 0.17 ha of Seasonal Herbaceous Wetlands.

Significant impact criteria

- ***reduce the extent of an ecological community***

The list advice for the Seasonal Herbaceous Wetlands TEC notes that the area of occupancy is approximately 30,000 ha. The project would result in the loss of 0.17 ha of Seasonal Herbaceous Wetlands, which represents 0.0006% of the community's occurrence. Therefore, it is unlikely the project would reduce the extent of the ecological community.

- ***fragment or increase fragmentation of an ecological community***

The project involves the installation of a new transmission line including the construction of towers and stringing of the transmission line. The TEC occurs in the landscape as small and naturally fragmented patches. Given the nature (string transmission lines) and scale (0.17 ha) of the impact, it is unlikely the project would result in further fragmentation of the community.

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

The listing advice for Seasonal Herbaceous Wetlands (DSEWPC 2012) does not map or describe any habitats or areas critical to the survival of this community.

'Habitat critical to the survival of an ecological community' refers to areas that are necessary:

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

Seasonal Herbaceous Wetlands recorded within the subject land occurs as fragmented patches. These areas are unlikely to be habitat critical for the community based on the above criteria given the current disturbed condition. It is unlikely the project would adversely impact habitat critical to the survival of the Seasonal Herbaceous Wetlands.

- ***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 0.17 ha of Seasonal Herbaceous Wetlands. Construction of the towers may require some excavation works; however, these are not expected to alter groundwater levels or substantial change surface water drainage patters to an extent that would impact the community's survival. Furthermore, mitigation measures would 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***

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 because of 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 would be put in place to limit indirect impacts of the project on the surrounding vegetation. Therefore, it is considered unlikely the project would result in the decline or loss of a functionally important species or to substantially change the species composition of the retained vegetation, or to 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.***

Seasonal Herbaceous Wetlands within the subject land are currently subject to weed and pest invasion, reflecting the threat of invasive weeds across the whole distribution.

There is potential for the mobilisation of fertilisers, herbicides or other chemicals or pollutants to impact on the remaining area of the ecological community during excavation activities. The project includes mitigation measures to minimise sedimentation and hydrological impacts (water-sensitive urban design) to minimise potential indirect impacts resulting from altered soil or drainage patterns would be implemented.

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 Department of Climate Change, Energy, the Environment and Water (DCCEEW) A for the Seasonal Herbaceous Wetlands. The approved conservation advice for the TEC includes a numbers of priority actions, including:

- ensure that development activities minimise direct impacts to the ecological community and indirect effects on its ecological function
- avoid clearance of native vegetation within the ecological community and its surrounds to reduce the threat of habitat loss, disturbance and modification. Ensuring networks of wetlands serving as linkages for wildlife and their habitat is maintained must also be considered
- prevent and manage any changes to hydrology that may result in changes to natural patterns of inundation and overland flows, water table levels, salinity, algal blooms, sedimentation/turbidity or pollution
- mitigate impacts from weed invasions through eradicating or managing weed infestations within the ecological community using appropriate methods, especially at wetlands where new weed incursions are establishing.

The project would result in the loss of 0.17 ha of Seasonal Herbaceous Wetlands. Whilst this is inconsistent with the priority actions it is unlikely to result in fragmentation or impact the hydrology within the subject land. In addition, mitigation measure such as hygiene controls would be implemented to minimise invasive species. Therefore, it is unlikely the project would substantially interfere with the recovery of the Seasonal Herbaceous Wetlands.

Conclusion

The project would lead to a direct impact of 0.17 ha of Seasonal Herbaceous Wetlands. Based on the assessment above it is unlikely the project would result in a significant residual impact on the Seasonal Herbaceous Wetlands.

Weeping Myall Woodlands

Weeping Myall Woodland is an endangered ecological community listed under the EPBC Act.

Description

Weeping Myall Woodlands ranges from an open woodland to woodland, generally four to 12 m high. The overstorey is dominated by Weeping Myall (*Acacia pendula*) trees and in some cases this species may be the only tree canopy species. Weeping Myall Woodlands typically occurs on textured red or brown alluvial soils that received approximately 375–500 mm mean annual rainfall.

This community occurs as scattered remnants within the alluvial plains of the Murray-Darling River system within the Local Government Areas of Berrigan, Bland, Bogan, Carrathool, Conargo, Coolamon, Coonamble, Corowa, Forbes, Gilgandra, Griffith, Gwydir, Inverell, Jerilderee, Lachlan, Leeton, Lockhart, Moree Plains, Murray, Murrumbidgee, Narrabri, Narranderra, Narromine, Parkes, Urana, Wagga Wagga and Warren.

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 for Weeping Myall Woodlands ecological community (Department of the Environment, Water, Heritage and the Arts 2008). In effect under the EPBC Act from 07-Jan-2009.
- Commonwealth Listing Advice on Weeping Myall Woodlands (TSSC 2009). In effect under the EPBC Act from 07-Jan-2009.

Specific impacts

Plant community type 26 (Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion) is the only PCT recorded in the subject land that meets the EPBC Act Weeping Myall Woodland listing criteria. The TEC was considered to be in moderated to good condition. The project is estimated to impact upon of 92.65 ha of the Weeping Myall Woodland.

Significant impact criteria

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

- ***reduce the extent of an ecological community***

This community occurs in the northeastern section of the project corridor from Dinawan substation to slightly east of Carathool Road. The project would result in a reduction of the extent of the Weeping Myall Woodland through the direct clearing of vegetation associated with this TEC. Approximately 92.65 ha of this Weeping Myall Woodlands would be impacted by the project. This potential impact is considered to reduce the extent of the community within the region.

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

The project involves the installation of a new transmission line and would require the removal and/or disturbance to 92.65 ha Weeping Myall Woodland within areas of existing disturbance. Weeping Myall Woodland generally occurs within a fragmented landscape, caused by impacts such as agriculture. The project would increase fragmentation of Weeping Myall Woodland within the area.

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

No critical habitat has been listed for the Weeping Myall Woodland ecological community under the *Environment Protection and Biodiversity Conservation Act 1999* (Department of Agriculture, Water and the Environment (2020).

Habitat critical to the survival of ecological communities also refers to areas that are necessary:

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

Weeping Myall Woodland recorded within the subject land occurs as fragmented patches. These areas are unlikely to be habitat critical for the community based on the above criteria given the current disturbed condition.

- ***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 92.65 ha of Weeping Myall Woodland. Any large-scale excavation that occurs in close proximity to Weeping Myall Woodland or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the project is considered unlikely to substantially modify or destroy these abiotic factors.

- ***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 would require the removal and/or disturbance to 92.65 ha Weeping Myall Woodland within areas of existing disturbance. Furthermore, Weeping Myall Woodland generally occurs in a highly modified condition as a result of existing disturbance practices in the area. This has resulted in the modification of the communities structurally integrity i.e. absence of one or more strata. Any further modifications are unlikely to cause a community to no longer meet condition thresholds. Therefore, the project is considered unlikely to substantially change the species composition of an occurrence of this community.

- ***will the action 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.***

Weeping Myall Woodland within the subject land is currently subject to weed and pest invasion. Furthermore, the majority 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's occurrence or significantly increase the spread of invasive species.

Mitigation measures are recommended in the EIS to minimise the likelihood of spread of weeds, or pathogens into the site and as well as sedimentation and hydrological impacts.

- ***interfere with the recovery of an ecological community***

To date, no recovery plan has been developed by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for Weeping Myall Woodlands. The approved conservation advice for Weeping Myall Woodlands recognises the main ongoing threats to this Endangered Ecological Community are land clearing and ongoing degradation, over grazing regimes; weed invasion; and herbivory by caterpillars of the Bag-shelter Moth (Department of the Environment Water, Heritage and the Arts (2008).

The project would result in clearing 92.65 ha of this Community and therefore would interfere with the recovery of this endangered ecological community.

Conclusion

This community occurs in the northeastern section of the project corridor from Dinawan substation to slightly east of Carathool Road. Vegetation occurs in various condition states including intact woodland. The project would clear 92.65 ha of this community and is likely to fragment this community and reduce the extent within the locality. Where possible the clearing of this community would be avoided, and mitigation measures would be recommended in the EIS such as weed control to reduce impacts.

However, despite these mitigation measures, the project is expected to result in a reduction in the extent this TEC within the locality, may marginally increase fragmentation at the local scale and would therefore interfere with the recovery of the community. Therefore, the project is likely to have a significant residual impact on Weeping Myall Woodland.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is a Critically Endangered Ecological Community listed under the EPBC Act.

Description

The threatened ecological community describes an area broadly distributed in an arc along the western slopes and tablelands of the Great Dividing Range from Southern Queensland through NSW and ACT, to Victoria. The community is known to occur on hilly to undulating landscaped in area with soils of moderate fertility; occurring in areas where the average rainfall is between 400 and 900 mm per year (DEECCWW, 2011). The structure of the ecological community varies across the distribution, with the tree cover and shrub density varying substantially. Characteristic understory includes scattered to sparse shrubs with a diverse ground layer mix of grasses and herbs. Species including *Eucalyptus abens* (white box), *E. melliodora* (yellow box) and *E. blakelyi* (Blakely's red gum) are dominant. Shrub cover is usually scattered, with possible dominant patches in some localities. The most plant species richness is found within the ground layer, with a dominance of tussock grasses being a key feature.

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 Threatened Ecological Community is as follows:

- Approved Conservation Advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Department of the Environment, Water, Heritage and the Arts 2008). In effect under the EPBC Act from 31-Aug-2023.
- Commonwealth Listing Advice on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (TSSC 2006). In effect under the EPBC Act from 18-May-2006.

Specific impacts

The following vegetation types recorded within the subject land were considered consistent with the EPBC Act White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland listing:

- PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
- PCT 277 – *Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion*.

The project is estimated to impact upon of 3.36 ha of the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, within the subject land.

Significant impact criteria

- ***reduce the extent of an ecological community***

The Box-gum woodland is broadly distributed in an arc along the western slopes and tablelands of the Great Dividing Range from Southern Queensland through NSW and ACT, to Victoria. The Box-gum within the subject land also occurs in fragmented patches.

In NSW an estimated 250,729 ha of the community is thought to remain, which equates to only seven percent of the estimated pre-1970 area (3,717,366 ha), and nationally 416,325 hectares is thought to remain (8% of the pre-1750 area. The removal of this community associated with the subject land would represent 0.0001% of the estimated extent of the remaining community within NSW (Threatened Species Scientific Committee 2006), and 0.0008% of the estimated extent nationally.

The loss of 3.38 ha associated with the project is unlikely to reduce the extent of this threatened ecological community.

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

This ecological community is known to be highly fragmented, with the remaining extent being distributed in small, isolated patches. The project involves construction of a transmission line across 3.38 ha of Box-Gum Grassy Woodland. However, mitigation measures would be implemented to minimise impacts to the TEC including prioritizing existing tracks access, and clearing being restricted to the identified tower. Given the community is already fragmented within the subject land, and the mitigation measures, it is unlikely that the loss of 3.38 ha would result in further mitigation of the Box-Gum Grassy Woodland.

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

The approved conservation advice for the TEC states that 'Given the currently highly fragmented and degraded state of this ecological community, all areas of Box-Gum Grassy Woodland which meet the minimum condition criteria should be considered critical to the survival of this ecological community.'

The project is likely to impact on habitat critical to the survival of the community. Nevertheless, the project would impact only a very small portion of the TEC representing 0.00008% of the community nationally. Therefore, it is unlikely the project would adversely impact habitat critical to the survival of the species.

- ***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 3.38 ha of Box-gum woodland. Construction of the towers may require some excavation works; however, these are not expected to alter groundwater levels or substantial change surface water drainage patters to an extent that would impact the community's survival. Mitigation measures would 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***

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 as a result of shifting of edge effects and weed dispersal may result in a reduction in the quality or integrity on the edge of the retained areas of the ecological community. Mitigation measures would be implemented to minimise sedimentation and hydrological impacts during construction and bushfire management plans would be in place in accordance with the regulatory requirements for the project. It is unlikely the project would result in the decline or loss of a functionally important species or to substantially change the species composition to the ecological

- ***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.***

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) to minimise potential indirect impacts resulting from altered soil or drainage patterns would be implemented. 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***

The National Recovery Plan for Box-Gum Woodlands (Department of Environment Climate Change and Water 2010) outlines the following recovery actions:

- establish agreed protocols across jurisdictions for the assessment of Box-gum woodland condition in Year 1 of the recovery plan implementation and apply these on an ongoing basis
- share data and reporting between jurisdictions, government, and nongovernment agencies
- investigate the occurrence of Box-gum woodland in South Australia
- collate existing survey and mapping data relating to Box-gum woodland into a central, updatable repository for use by stakeholder government agencies in mapping extent, protected areas, and priority areas. Update repository on an annual basis
- identify gaps in survey and mapping data across the predicted distribution of Box-gum woodland and engage communities and conduct future surveys to fill these gaps
- investigate the further use of remote sensing and other assessment techniques
- establish and apply protocols for non-technical monitoring of remnant areas
- identify gaps in current monitoring to ensure the geographic range and ecological variation within the ecological community is represented, and to coordinate implementation and analysis of all monitoring
- improve baseline knowledge of condition and generate benchmark data against which sites can be assessed for management actions and cost effectiveness of revegetation ranked.

The project is unlikely to interfere with any of the recovery actions outlined.

Conclusion

The subject land has been previously disturbed and is subjected to ongoing grazing pressure, and this is evident in the moderate to poor condition of the Box-gum woodland. The project would result in the loss of 3.38 ha Box-gum woodland. This represents would represent 0.00001 % of the estimated extent of the remaining community within NSW (Threatened Species Scientific Committee 2006), and 0.0008% of the estimated extent nationally (416,325 ha).

It is considered unlikely that the project would have a significant residual impact on the long term persistence of the community within the subject land.

Natural Grasslands of the Murray Valley Plains

Natural Grasslands of the Murray Valley Plains (hereafter Murray Valley Grasslands) is listed as a critically endangered ecological community under the EPBC Act.

Description

The Murray Valley Grasslands ecological community occurs predominately across the southern parts of the Riverina bioregion and extends into parts of the Murray Darling Depression and NSW South-Western Slopes bioregions. This landscape consists of a mosaic of woodlands interspersed with grasslands, wherever soil textures are heavier and less well-drained, and ephemeral or seasonal wetlands on depressions and drainage lines (DSE, 2010).

The community is characterised by:

- grey self-mulching (cracking) clays are widespread and can occur in association with minor occurrences of red and brown cracking clays (DSEWPC 2012)
- usually occur on level to gently undulating gilgai plains (DSEWPC 2012)
- most occurrences of the Murray Valley Grasslands are associated with Quaternary alluvial sediments (including the Shepparton formation), consisting of calcareous clay loams and clays on wetter sites, including self-mulching (cracking) clays (DSE, 2010)
- dominance of perennial tussock grasses, a lack of woody plants and the presence of broad-leaved herbs in the inter-tussock spaces. This ecological community may also be dominated or co-dominated by a range of forb species depending on seasonal conditions and management history. Hence, the ecological community ranges from open to closed tussock grassland dominated by one or more of *Rytidosperma spp.* (wallaby-grasses), *Austrostipa spp.* (spear-grasses) and *Enteropogon ramosus* or *E. acicularis* (curly windmill grass, spider grass). In areas where grasses are sparse it may be a herbland/forbland (DSEWPC 2012).

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 threatened ecological community is as follows:

- Conservation Advice: "*Approved Conservation Advice for Natural Grasslands of the Murray Valley Plains ecological community*" (DSEWPC 2012).
- Listing Advice: "Commonwealth Listing Advice on Natural Grasslands of the Murray Valley Plains" (DSEWPC 2012).

Specific impacts

The following vegetation types recorded within the subject land were considered consistent with the EPBC Murray Valley Grasslands TEC listing based on condition criteria:

- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 46 – Curly Windmill Grass – spear grass – wallaby grass grassland on alluvial clay and loam on the Hay plains, Riverina Bioregion.

Based on these assessments, the project is estimated to impact upon 101.69 ha of the Murray Valley Grasslands TEC.

Significant impact criteria

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

- ***reduce the extent of an ecological community***

The EPBC listing advice for the Murray Valley Grasslands TEC notes that there has been a decline in the TEC extent of about 86% to 87.5% across its range. Given the project is located at the northern limit of the extent of the TEC, the loss of 101.63 ha would reduce the extent of the Murray Valley Grasslands TEC.

- ***fragment or increase fragmentation of an ecological community***

The project would require the removal and/or disturbance of up to 101.63 ha of Murray Valley Grasslands TEC within areas of varying disturbance. This community generally occurs within a fragmented landscape affected by other impacts such as agriculture. Disturbance of this community would in general be in a linear configuration and while avoidance of the community would be undertaken as far as practical, some patches would be bisected. Therefore, the project would marginally increase fragmentation of Murray Darling Grasslands TEC within the area.

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

Murray Darling Grasslands TEC within the subject land occurs as fragmented patches with a variety of condition types. The Listing Advice on Murray Darling Grasslands (DSEWPC 2012) does not map or describe any habitats or areas critical to the survival of this community.

'Habitat critical to the survival of an ecological community' refers to areas that are necessary:

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

Widespread occurrence of this community occurs across the region in a scattered nature of patches intersected by the project. Furthermore, the communities within the subject land are not likely to maintain the genetic diversity of the area or contribute to long-term maintenance based on community condition. Thus, areas impacted by the project are not considered likely to be habitat critical to the survival of this 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***

Any large-scale excavation that occurs in close proximity to the community or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. The project also involves minimal disturbance to the ground level based on stringing transmission lines across areas of the TEC. Therefore, the project is considered unlikely to substantially modify or destroy these abiotic factors.

- ***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 would require the removal and/or disturbance Murray Darling Grasslands TEC within a variety of condition classes, including modified patches. Additionally, the community generally occurs in a variety of modified conditions as a result of existing disturbance practices in the area. This has resulted in the modification of the communities structurally integrity i.e. areas of lower species diversity and varying dominance of exotic flora.

The project would not involve regular burning or flora and fauna harvesting, and outside of the proposed clearing areas, the project is considered unlikely to substantially change the species composition of an occurrence of this community.

- ***will the action 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.***

Given the previous land use (i.e. agricultural and rural infrastructure), invasive weeds species are already present within the Landscape and in the Murray Darling Grasslands TEC within the subject land. It is therefore considered unlikely that the project would substantially reduce the quality or integrity of the community's occurrence through increasing the spread of invasive species.

Additionally, mitigation measures would be implemented, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures, to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures would aid in reducing potential impacts associated with the project that may otherwise result in the further reduction of the community's quality.

- ***interfere with the recovery of an ecological community***

The approved conservation advice for Murray Darling Grasslands TEC includes a number of priority actions for the conservation of the TEC, including:

- protect and conserve remnants of the ecological community. Further clearance, disturbance and fragmentation of this ecological community should be avoided
- identify remnants of high conservation priority, with a focus on small scale linkages and habitat connectivity as many grasslands fauna and flora are unable to move across larger landscape-scale barriers
- ensure infrastructure works, maintenance activities (e.g. road works) or development activities involving substrate or vegetation disturbance in areas where the Natural Grasslands of the Murray Valley Plains TEC occurs do not adversely impact on known occurrences.

The project is predicted to remove 101.63 ha of the TEC, which would interfere with the above priority actions and thus interfere with the recovery of the TEC.

Conclusion

An estimated 101.63 ha of the Muray Darling Grasslands TEC is predicted to be removed by the project, which would reduce the extent of Muray Darling Grasslands TEC, increase fragmentation and potentially interfere with the recovery of this community. Therefore, it is considered likely that the project would have a significant residual impact on the Murray Darling Grasslands TEC.

APPENDIX C-4
Threatened flora

Threatened flora

Database searches (BioNet, BAM-C and PMST) alongside Appendix A of the SEARs identified a list of 27 threatened flora species under the EPBC Act with predicted habitat or identified known habitat within the subject land. Four threatened species were recorded during the ecological surveys, with a further nine species considered to have moderate to high likely of occurrence with the project area (see Table C.14).

Table C.14 Threatened flora species listed under the EPBC Act considered for assessment within the project area

Scientific name	Common name	EPBC Act[1]	Likelihood of occurrence
Amphibromus fluitans	Floating Swamp Wallaby-grass	V	Moderate
Austrostipa metatoris	-	V	Moderate
Austrostipa wakoolica	-	E	Moderate
Brachyscome muelleroides	Mueller Daisy	V	Moderate
Brachyscome papillosa	Mossgiel daisy	V	Recorded
Eleocharis obicis	A spike rush	V	Recorded
Lepidum monoplocoides	Winged Peppercress	E	Recorded
Maireana cheelii	Chariot Wheels	V	Recorded
Sclerolaena napiformis	Turnip Copperburr	E	Moderate
Swainsona murrayana	Slender Darling Pea	V	Recorded
Swainsona plagiotropis	Red Darling-pea, Red Swainson-pea	V	Moderate
Swainsona recta	Small Purple-pea	E	Moderate

(1) Indicates a species is listed V= Vulnerable, E = Endangered under the Environmental Protection and Biodiversity Conservation Act 1999.

Assessments of significance have been undertaken in accordance with the EPBC Significant Impact Guidelines 1.1 for all species recorded during the ecological survey or those identified as having a moderate to high likelihood of occurrence within the subject land.

Amphibromus fluitans (Floating Swamp Wallaby-grass)

Amphibromus fluitans is listed as vulnerable under the EPBC Act.

Description

Amphibromus fluitans occurs in southern, NSW. Victoria, South Australia and Tasmania. It also occurs in New Zealand. In NSW, it is recorded in the Albury region, near Narrandera and near Mathoura (Department of Environment Water Heritage and the Arts, 2008a). *Amphibromus fluitans* is an aquatic or semi-aquatic perennial grass up to 0.8m tall. The species is slender in stature with arching flowering stems which sit half submerged under the water. The flowering portion of the stalk stands erect at 35mm long, and flowering typically occurs between November and March. The species is essentially aquatic (NSW DCCEEW, 2025b).

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 for this species: "Approved Conservation Advice for *Amphibromus fluitans* (River Swamp Wallaby-grass)" (Department of Environment Water Heritage and the Arts, 2008a). In effect under the EPBC Act from 26-Mar-2008
- The Commonwealth listing advice for this species: "Commonwealth Listing Advice on *Amphibromus fluitans* (River Swamp Wallaby-grass)" (Threatened Species Scientific Committee, 2012). In effect under the EPBC Act from 29-Jun-2012.

Specific impacts

Amphibromus fluitans has not been recorded within the subject land to date, however, has been assumed present based on suitable habitat (semi-permanent or ephemeral wetlands or periodically inundated sites) and associated PCTs within the Murray Fans IBRA subregion. The following associated PCTs have been mapped or recorded within the subject land:

- PCT 2 – River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
- PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 47 – Swamp grassland wetland of the Riverine Plain
- PCT – 160 Nitre Goosefoot shrubland wetland on clays of the inland floodplains.

Targeted survey in March (within the prescribed survey season of December to March) is proposed to detect the presence or absence of this species. For the purpose of this assessment, the species has been assumed present within associated habitats in the subject land. Associated habitat impacts from the project total 0.43 ha for *Amphibromus fluitans.*

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment, 2013b) the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery.

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
- at or near the limit of the species range.

No important populations have been listed for this species under the EPBC Act and there is a paucity of data available on existing population sizes and trends. Within NSW, populations are known from the Albury region, near Narrandera and near Mathoura (Department of Environment Water Heritage and the Arts, 2008a). If present within the subject land, it is likely that a population of *Amphibromus fluitans* would be at the western extent of the species range and given the minimal records for this species within NSW, any existing populations would be potentially significant for genetic diversity, or dispersal. Consequently, it is presumed any population within the subject land is likely to be an important population.

Significant impact criteria

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

Amphibromus fluitans has specific habitat requirements with preferred habitat comprising of permanent swamps and wetlands which are at least moderately fertile and which contain bare ground, produced by seasonally fluctuating water levels (Threatened Species Scientific Committee, 2012).
The project is likely to remove up to 0.43 ha of assumed habitat for this species in the form of associated PCTs. The associated PCTs are well represented within the immediate vicinity of the subject land, with approximately 27645.68 ha of associated habitat found within a 10 km buffer of the subject land. Given the lack of records and small area to be impacted, it is unlikely that the project would lead to a long-term decrease in the size of an important population of this species.

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

The project is likely to remove up to 0.43 ha of assumed habitat for this species in the form of associated PCTs. Although the project occurs at the at the western extent of the known range of the species, given the extent of habitat within the immediate vicinity of the subject land (27645.68 ha) it is unlikely the project to reduce the area of occupancy would be reduced for an important population.

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

The project is likely to impact on up to 0.43 ha of assumed habitat for this species. It is possible there would be marginal localised fragmentation of habitat due to the linear nature of the project, however, much of the vegetation within the project corridor has been subjected to historical land clearing and agricultural intensification and occurs in an existing fragmented state. In addition the project will largely avoid or implement mitigation measures to protect and reduce the impacts on waterways and riparian habitats. The species has not been recorded in the subject land, however if the species was to occur it is unlikely the project would result fragment an existing population in two or more populations.

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

There is currently no listed habitat critical to the survival of this species under the EPBC Act (Commonwealth DCCEEW, 2025a). 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 (Department of the Environment, 2013b).

Amphibromus fluitans requires habitat that includes natural or man-made waterbodies, with most populations known to grow in areas with moderately fertile soils with some bare ground; conditions that are caused by seasonally fluctuating water levels. Assumed habitat has been recorded for this species within the subject land, within 0.43 ha of associated PCTs being directly impacted. It is considered that habitat to be directly impacted within the subject land is unlikely to be of sufficient size to be important for the species long-term maintenance, genetic diversity or dispersal or suitable for the reintroduction of the species. Therefore, habitat within the subject land is not considered to be habitat critical to the survival of the species. The project will not result in an adverse impact on habitat critical to the survival of *Amphibromus fluitans*.

- ***disrupt the breeding cycle of an important population***

Amphibromus fluitans requires periodic flooding of habitat to maintain wet conditions (Commonwealth DCCEEW, 2025a), which would not be impacted by the project. The project would result in a loss of 0.43 ha of assumed habitat for the species, represents 0.02 % of the available associated PCTs within a 10 km buffer of the subject land

Given the lack of species records, scale (0.43 ha) and nature of the impacts (unlikely to impact flooding) it is unlikely the project would disrupt the breeding cycle of an important population, as no important populations

- ***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 remove up to 0.43 ha of associated habitat for the species, of which it is likely that only a marginal extent would be suitable to meet the ecological requirements of the species. Mitigations would be implemented for the project to minimise impacts to remaining habitats including controls for hydrological impacts, sedimentation and runoff, therefore, it is unlikely that the quality of retained habitat for the species would be significantly impacted. Within a 10 km buffer of the project footprint, 27645.68 ha of associated habitat for *Amphibromus fluitans* would not be impacted. While the project would have a small, localised impact on associated habitat it is unlikely it 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 condition of associated vegetation for this species varies across the subject and with a number of invasive species (weeds and exotic herbivorous mammals) already present within the landscape. Mitigation measures including weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment, and control measures would be implemented, therefore it is unlikely the project would result in the introduction or spread of further invasive species that are harmful to *Amphibromus fluitans* becoming established.

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

There are no known diseases to which *Amphibromus fluitans* is susceptible under current guidelines and policy information. Biosecurity measures would be implemented to reduce the likelihood of introducing the disease or pathogens that may contribute to the decline of the species.

- ***interfere substantially with the recovery of the species***

There are currently no made recovery plan for the *Amphibromus fluitans*. However, the approved conservation advice for the species identifies a number of local and regional priority actions to assist in recovery including:

- minimising habitat loss, disturbance and modification through managing disruptions to waterflows, and managing threats to areas of vegetation of high priority.

Managing known threats to the species including invasive weeds trampling and grazing, increasing ecological, population and distributional knowledge of the species, increasing public awareness and managing known occurrences(Department of Environment Water Heritage and the Arts, 2008a).

The project would have marginal impacts on vegetation associated with this species however, it is unlikely to substantially interfere with the recovery of the species.

Conclusion

The project is likely to remove up to 0.43 ha of assumed habitat for this species in the form of associated PCTs. The loss of habitat would represent 0.02% of the available habitat within a 10 km buffer of the project footprint. The project would implement a number of controls to minimise and mitigate any impacts to riparian or aquatic habitats within the project footprint This will include micro-siting of temporary construction infrastructure away from riparian areas, locating waterway crossings at narrow width locations where required and minimising the quantity of cut and fill activities. Riparian understorey impacts will be avoided where possible and riparian areas subject to disturbance will be progressively stabilised and rehabilitated to minimise impacts to aquatic habitats, water quality from sedimentation and erosion. Given the small area of habitat to be impacted and the control measures taken to minimise impacts, it is unlikely that the project would have a significant impact on *Amphibromus fluitans.*

Austrostipa metatoris

Austrostipa metatoris is listed as Vulnerable under the EPBC Act.

Description

Austrostipa metatoris is a perennial spear-grass that grows in tussocks to one metre tall. It occurs in NSW, along the Murray Valley near Balranald and the central-western slopes near Lake Cargelligo (DEWHA, 2008).

Habitat for *Austrostipa metatoris* includes sandhills, sand ridges, undulating plains and flat open Mallee landscapes, with red to red-brown clay-loam to sandy-loam soils. Associated species include Bimble Box (*Eucalyptus populnea*), Gum Coolibah (*E. intertexta*), White Cypress Pine (*Callitris glaucophylla*), Belah (*Casuarina cristata*), Sweet Quandong (*Santalum acuminatum*), Sticky Hopbush (*Dodonaea viscosa*), *Hakea ivoryi*, and the grasses *Austrostipa drummondii* and *A. eremophila* (DEWHA, 2008).

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

The relevant Commonwealth statutory document for this the Approved Conservation Advice for *Austrostipa metatoris*(DEWHA, 2008). In effect under the EPBC Act from 03-Jul-2008.

Specific impacts

Austrostipa metatoris has not been recorded within the subject land, however, has been assumed present based on the presence of suitable habitat and associated PCTs within the Murray Fans IBRA subregion. The following associated PCTs have been mapped or recorded within the subject land:

- PCT 7 – River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
- PCT 19 – Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
- PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone.

For the purpose of this assessment, the species has been assumed present within associated habitats in the subject land. The project would impact 1.24 ha of assumed habitat for *Austrostipa metatoris*.

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (DEWHA, 2013) the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

No important populations have been listed for this species under the EPBC Act. Sites in NSW include Condobolin, Goolgowi, Cunninyeuk Station, Stony Crossing, Kyalite State Forest, Lake Cargelligo, south-west of Nymagee, and a ridge above Lake Benanee (DEWHA, 2008). The subject land does not occur at the limit of the species known range and given the small extent of assumed habitat for this species within the subject land (1.24 ha) the project is not expected to

contain a population of suitable size to be significant for dispersal or genetic viability. Considering this, the subject land is unlikely to contain an important population of *Austrostipa metatoris*.

Significant impact criteria

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

The project is not expected to lead to a long-term decrease in the size of an important population of *Austrostipa metatoris* as there are no known important populations for the species within the subject land. In addition , the mitigation measures such as micro-sited towers would be implemented to reduce habitat impacts..

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

The project is not expected to reduce the area of occupancy of an important population of *Austrostipa metatoris*. As there are no important populations were identified within the subject land.

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

No important populations for the species was identified in the subject land. Therefore, it is unlikely the project would fragment an existing population in two or more. In addition mitigation measure including micro siting the towers will be implemented to further minimise impacts on assumed habitat for the species.

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

To date, there is no listed habitat critical to the survival of this species under the EPBC Act (Commonwealth DCCEEW, 2025a). 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 (DEWHA, 2013).

The species is not known to occur within the subject land, and assumed habitat is considered to be marginal. Therefore, it is unlikely habitat within the subject land would represent habitat critical to the survival of the species.

The project would impact on less than 0.003 % of the assumed habitat within 10 km buffer of the subject land. Given the small area to be impacted, and habitat is not considered critical to the survival of the species, it is unlikely the project would adversely impact habitat critical to the survival of *Austrostipa metatoris*.

- ***disrupt the breeding cycle of an important population***

No important populations of *Austrostipa metatoris* were identified within the subject land, therefore the project is not expected 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***

The project would impact 1.24 ha of assumed habitat for *Austrostipa metatoris*. However, mitigation measures such as micro-sited towers and management of invasive species would be implemented to reduce habitat impacts. The potential to impact upon 1.24 ha of associated habitat is insignificant in comparison to the 36472.76 ha of associated habitat found within a 10 km buffer of the project footprint. Given the small extent of impact to assumed habitat, the project is not expected 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***

Invasive pest species including feral rabbits are considered a potential threat to *Austrostipa metatoris* (DEWHA, 2008). Mitigation measures including weed and pest management plans, vegetation clearing protocols and installation of vehicle wash stations would be implemented to reduce the spread or introduction of invasive weed species. Given these mitigation measures, the project is not expected to result in the further spread or introduction of invasive species that are harmful to *Austrostipa metatoris*.

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

There are no known diseases to which *Austrostipa metatoris* is susceptible under the current approved conservation advice (DEHWA, 2008). Mitigation measures such as biosecurity protocols would be implemented to reduce the spread or introduction of disease and pathogens that can result in species decline. Given these protocols, the project is not expected to introduce disease that may cause the species to decline.

- ***interfere substantially with the recovery of the species***

To date, there is no recovery plan for *Austrostipa metatoris*. However, the approved conservation advice for the species identifies a number of local and regional priority actions to assist in recovery including:

- minimise and/or manage habitat loss, disturbance and modification
- manage trampling, browsing and grazing of stock
- manage fire regimes
- promote conservation information and raise awareness
- enable recovery of additional sites and/or populations.

The project would impact 1.24 ha of assumed habitat for *Austrostipa metatoris*, however it is not expected to substantially interfere with the recovery of the species.

Conclusion

The project would impact 1.24 ha of assumed habitat for *Austrostipa metatoris*. However, due to the lack of records in this area, the habitat associated PCTs are considered to be an over-representation of suitable habitat. Mitigation measures including micro-sited towers, weed and pest management plans, vegetation clearing protocols and biosecurity protocols would be implemented to reduce habitat loss and spread of invasive species. Given the small extent of associated habitat, lack of records and extent of available habitat in the immediate vicinity of the subject land , it is unlikely the project would result in a significant residual impact on o *Austrostipa metatoris*.

Austrostipa wakoolica

Austrostipa wakoolica is listed as Endangered under the EPBC Act.

Description

Austrostipa wakoolica is a tufted, perennial spear-grass that grows to one metre tall. This species is confined to the floodplains of the Murray River tributaries of central-western and south-western NSW, with localities including Manna State Forest, Matong, Lake Tooim, Merran Creek, Tulla, Cunninyeuk and South West Woodland Nature Reserve (DEH, 2025).

Austrostipa wakoolica grows in open woodland, on grey silty clay or sandy loam soils. Recorded habitats include the edge of a lignum swamp in brown loam with box and mallee, creek banks in grey silty clay, mallee and lignum sandy loam flat, open cypress pine forest on low range in sandy soil and a low rock rise fenced off from stock for about 18 months. Associated species include *Callitris glaucophylla, Eucalyptus microcarpa, Eucalyptus populnea, Austrostipa eremophila, Austrostipa drummondii, Austrodanthonia eriantha, Einadia nutans, Hyalosperma glutinosum subsp. glutinosum* and *Crassula* species (Department of the Environment, 2014).

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 for this species: “Approved Conservation Advice for *Austrostipa wakoolica* (a spear grass)” (Department of the Environment, 2014). In effect under the EPBC Act from 29-Apr-2014.

Specific impacts

Austrostipa wakoolica has not been recorded within the subject land, however, has been assumed present based on the presence of suitable habitat and associated PCTs within the Murray Fans and Murrumbidgee IBRA subregions. The following associated PCTs have been mapped or recorded within the subject land:

- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW Southwestern Slopes Bioregion
- PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
- PCT 70 – White Cypress Pine woodland on sandy loams in central NSW wheatbelt
- PCT 237 – Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone.

For the purpose of this assessment, the species has been assumed present within associated habitats in the subject land. The project would impact 29.11 ha of assumed habitat for *Austrostipa wakoolica*.

Significant impact criteria

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

A total population size of at least 1,000,000 has been identified for this species since it was listed, of which a large proportion occurs in state forests and/or locations with few threats to long-term viability (Department of the Environment, 2014).

The species was not recorded within the project area, although habitat for the species was identified within a number of PCTs. Approximately 62041.45 ha of available assumed habitat is located within 10 km of the project footprint. The project will result in the loss of 29.11 ha of assumed habitat for the species, which is a very small proportion of locally available habitat for the species (~0.05%).

Given the lack of records within the subject land an extent of habitat within the immediate vicinity , it is unlikely the project would lead to a long-term decrease in the size of an important population of *Austrostipa wakoolica*. Furthermore mitigation measures such as micro-sited towers would be implemented to reduce impacts to assumed habitat.

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

The area of occupancy is unknown for this species. The subject land occurs within the species known distribution, which is the floodplains of the Murray River tributaries of central-western and south-western NSW. The project would result in the loss of 29.11 ha of assumed habitat for the species, which is a very small proportion of locally available habitat for the species.

Given the location of the project and extent of habitat within the locally it is unlikely the project would reduce the area of occupancy of an important population of *Austrostipa wakoolica*.

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

It is possible there would be marginal localised fragmentation of habitat due to the linear nature of the project, however, much of the vegetation within the project corridor has been subjected to historical land clearing and agricultural intensification and occurs in an existing fragmented state. Given the small extent of impact, and mitigation measures to be implemented i.e. micro-sited towers, locating temporary construction impacts in areas of lower biodiversity values and threatened species unexpected finds procedures, the project is not expected to fragment an existing important population into two or more populations.

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

To date, there is no listed habitat critical to the survival of this species under the EPBC Act (Commonwealth DCCEEW, 2025a). 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 (DEWHA, 2013).

The vegetation within the project corridor has been subjected to historical land clearing and agricultural intensification Given the lack of records in this area, and condition of the habitat it is unlikely the habitat would be essential for dispersal or maintaining the genetic diversity of the species or likely to aid int eh recovery of the species. Therefore, habitat within the subject land is not considered to represent habitat critical to the survival of the *Austrostipa wakoolica*.

- ***disrupt the breeding cycle of an important population***

Austrostipa wakoolica flowers in response to rain and has been recorded flowering from October to December. Seed dispersal is via wind, rain and flood events, of which the awn and sharp point of the floret appear to be an adaptation to bury the seed into the soil. The grass seeds are believed to be viable for three to five years (Department of the Environment 2014).

Given that the species is dependent on weather factors i.e. wind, rain and flood events for seed dispersal, and *wakoolica* was not recorded in within the subject land, the project is not expected 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***

The project would impact 29.11 ha of assumed habitat for *Austrostipa wakoolica*. Approximately 62041.45 ha of available assumed habitat is located within 10 km of the project footprint. Given the small area to be impacted and extent of available habitat in the immediate vicinity, 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. In addition, mitigation measures such as micro-sited towers and management of invasive species would be implemented to reduce impact on the assumed habitat for the species,

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

Invasive species including exotic grasses are considered a potential threat to *Austrostipa wakoolica* (Department of the Environment, 2014). Mitigation measures including weed and pest management plans, vegetation clearing protocols and installation of vehicle wash stations would be implemented to reduce the spread or introduction of invasive weed species. Given these mitigation measures, the project is not expected to result in the further spread or introduction of invasive species that are harmful to *Austrostipa wakoolica*.

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

There are no known diseases to which *Austrostipa wakoolica* is susceptible under the current approved conservation advice (Department of the Environment, 2014). Mitigation measures such as biosecurity protocols would be implemented to reduce the spread or introduction of disease and pathogens that can result in species decline. Given these protocols, the project is not expected to introduce disease that may cause the species to decline.

- ***interfere substantially with the recovery of the species***

To date, there is no recovery plan for *Austrostipa wakoolica*. This species has been allocated to the 'Keep Watch' management stream, meaning that the relevant experts have decided that the species is likely to be secure (with 95% confidence) over 100 years without any direct intervention and/or management (Department of the Environment, 2014).

The approved conservation advice for the species outlines priority actions for recovery including:

- fence sites where feasible or discourage access of herbivores
- survey for new populations
- weed control in habitat areas
- annual monitoring of fenced areas to determine the influence of different grazing animals
- conduct weed control at 5 selected sites and monitor benefit
- prevent further loss of extant populations
- monitor mining proposals in the vicinity and ameliorate potential damage
- collect seed for NSW Seedbank. Develop collection program in collaboration with Botanic Gardens and Domain Trust – multiple provenances
- conduct ecological research into specific germination and disturbance requirements and limitations
- identify two targeted populations (per year over initial three years) and focus recovery actions there, applying adaptive management strategies to determine and ameliorate threats (Department of the Environment, 2014).

The project would impact 29.11 ha of assumed habitat for *Austrostipa wakoolica*, however it is not expected to any of the recovery actions outlined.

Conclusion

The project would impact 29.11 ha of assumed habitat for *Austrostipa wakoolica*. Mitigation measures including micro-sited towers, weed and pest management controls, vegetation clearing protocols and biosecurity protocols would be implemented to minimise the impacts on assumed habitat for the species. Given the small scale of the impact, extent of habitat in the immediate vicinity of the subject land and lack of records for the species, it is considered unlikely the project would result in a significant residual impact on *Austrostipa wakoolica*.

Brachyscome muelleroides (Mueller Daisy)

Brachyscome muelleroides is listed as vulnerable under the EPBC Act.

Description

Brachyscome muelleroides is endemic to south-eastern Australia, being restricted to the Murray and Murrumbidgee Rivers. Five population sites have been surveyed with precise location details, four of which being on Morundah Station, NSW. The overall distribution of the Mueller Daisy is uncertain due to lack of survey effort, the species inconspicuous nature, alongside the environmental factors the species relies on to grow annually. The Mueller Daisy occurs in shallow depressions, swamp margins, heavy grey cracking clays, to grassy woodland habitats, all restricted to locations with seasonally damp situations. The species has a habitat constraint of floodplains on grey-brown or red-brown clays and claypans, alongside permanent or ephemeral wet areas (Lucas, 2010).

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:

- National recovery plan for this species: "National Recovery Plan for the Mueller Daisy *Brachyscome muelleroides*" (Lucas, 2010), in effect under the EPBC from 13-Aug-2010.

Specific impacts

Brachyscome muelleroides has not been recorded within the subject land to date, however, has been assumed present based on the presence of suitable habitat (floodplains on grey-brown or red-brown clays and claypans. Semi-permanent/ephemeral wet areas) and associated PCTs within unsurveyed areas. The following associated PCTs have been recorded or mapped within unsurveyed areas of the subject land:

- PCT 44 – Forb –rich Spear grass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW Southwestern Slopes Bioregion
- PCT 46 – Curly Windmill Grass – spear grass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
- PCT 47 – Swamp grassland wetland of the Riverine Plain.

Associated habitat impacts from the project total 1.04 ha for *Brachyscome muelleroides.*

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment, 2013b) the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

No important populations have been listed for this species under the EPBC Act (Commonwealth DCCEEW, 2025b) and there is little information on the current location and status of the species. The species has been recorded from about 20 locations since 1900, only about 13 locations since 1930 and only eight locations since 1990. The most important site appears to be Morundah Station in NSW, a Commonwealth Department of Defence property leased for grazing, which has almost all currently recorded plants (Lucas, 2010).

Taking a precautionary approach, any additional populations occurring within the subject land would potentially be at the southern or western extent of the species known range, and given the small number of populations, would likely be important for dispersal or genetic diversity. Given this, any population occurring within the subject land has been presumed to be an important population.

Significant impact criteria

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

Little is currently known about the locations and status of *Brachyscome muelleroides*. Historically the species is known was known to occur at 20 locations in 1900, and only 13 locations in 1930 and eight in 1989. The species was not recorded in within the subject land despite targeted surveys undertaken in appropriate seasonal conditions.

The project is likely to remove up to 1.04 ha of assumed habitat for this species. This represent less than 0.0007% of the available assumed habitat within a 10 km buffer of the subject land. Given the slack of species records, and small scale of the impacts it is unlikely that 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 project occurs within the known distribution range of the species. The project would result in the loss of 1.04 ha of assumed habitat which represents less than 0.0007% of the available habitat within a 10 km buffer of the subject land . Given the scale of the impacts and extent of habitat within the immediate vicinity of the subject land, it is unlikely that the project would reduce the area of occupancy of an important population.

- ***fragment an existing important 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. In addition, the towers will be micro-sited to avoid and minimise impacts to threatened species.

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

No critical habitat for the species has been listed under the EPBC Act (Commonwealth DCCEEW, 2025b). 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 (Department of the Environment, 2013b).

Known habitat for this species includes seasonally damp areas such as shallow depressions and around the margins of swamps, lagoons and claypans, on heavy grey cracking clays to lighter clay loam soils, in grassland, grassy woodland and open forest habitats, growing in association with various grasses and seasonal aquatic plants such as Marsilea species. Density of groundcover vegetation may vary, being sparser when the depressions are flooded or have dried out, and quite dense when soil moisture remains high in between wetting and drying cycles. Where trees are present, these are typically *Eucalyptus camuldulensis* or, less commonly, *E. macrocarpa*. Limited to habitat on floodplains on grey-brown or red-brown clays and claypans, and permanent or ephemeral wet areas (Lucas, 2010).

Although no habitat critical to the survival has been identified it is assumed that those areas where the above habitat is present and/or the species is known to occur would represent habitat critical to the survival of the species.

Habitat within the subject land is assumed only, as the species were recorded despite extensive targeted surveys during the appropriate seasonal conditions. The habitat has been subjected to historical land clearing and agricultural practices and is fragmented. Given the lack of records and condition of the habitat it is unlikely to represent habitat critical to the survival of the species.

- ***disrupt the breeding cycle of an important population***

Little ecological information is available on the breeding cycle of this species. It appears that sufficient autumn rainfall that results in localised soil waterlogging, or periodic flooding, is required to initiate seed germination and plant growth. Flowering typically occurs from September to November (Lucas, 2010). The species has not been recorded within the subject land to date. The project is unlikely to impacts rainfall within the local region or change the hydrology so that the species would be unable to breed. In addition, the loss of 1.04 ha of habitat represents only 0.0075 of the available habitats within the subject land. Therefore, 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 1.04 ha of assumed habitat for *Brachyscome muelleroides* would be directly impacted within the subject land. The species has specific microhabitat requirements, however and preferred habitat includes seasonally damp areas on heavy clay and clay loam soils. This habitat is well represented within the immediate vicinity of the subject land with approximately 154900.55 ha of area within a 10 km buffer of the subject land. Given the lack of records and extent of habitat locally, it is it is unlikely 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 vulnerable species becoming established in the vulnerable species' habitat***

The condition of associated vegetation for this species varies across the subject and with a number of invasive species (weeds and exotic herbivorous mammals) already present within the landscape. Mitigation measures including weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment, and control measures would be implemented, therefore it is unlikely the project would result in the introduction or spread of further invasive species that are harmful to *Brachyscome muelleroides* becoming established.

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

There are no known diseases to which *Brachyscome muelleroides* is susceptible under current guidelines and policy information. Biosecurity measures would be implemented to reduce the likelihood of introducing the disease or pathogens that may contribute to the decline of the species.

- ***interfere substantially with the recovery of the species***

Within the approved national recovery plan for *Brachyscome muelleroides*, a number of key recovery actions have been identified for the species including:

- undertake surveys to determine the area and extent of populations, the number, size and structure of populations, and inference or estimation of population change
- survey known habitat and collect floristic and environmental information relevant to community ecology and condition
- identify and survey potential habitat, using ecological and bioclimatic information that may indicate habitat preference
- protect populations on public land
- protect populations on private land

- control threats from pest plants
- clarify and appropriately address threats from grazing
- evaluate current reproductive status, seed bank status, longevity, fecundity and recruitment levels
- identify key stimuli for seed germination requirements
- identify optimal flooding regimes to maintain habitat
- measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data
- identify opportunities for community involvement in the conservation of the *B. muelleroides*.

The recovery plan for the species identifies a number of populations where the species is known to occur. The project will not impact on these populations. Given the lack of record in the project area, small impact area at the local scale (0.007%), it is unlikely the project would substantially interfere with the recovery of the species. ..

Conclusion

Brachyscome muelleroides has not been recorded within the subject land to date and only 1.04 ha of assumed habitat for the species will be impacted by the project, representing approximately 0.0007% of the available habitat within the local area. Therefore it is unlikely the project would result in a significant residual impact on *Brachyscome muelleroides*.

Brachyscome papillosa (Mossgiel Daisy)

Brachyscome papillosa is listed as vulnerable under the EPBC Act.

Description

The *Brachyscome papillosa* is a multi-stemmed, perennial herb that is endemic to NSW and chiefly occurs within the Riverina Bioregion, from Mossgiel in the north, Murrumbidgee Valley (Yanga) National Park in the south west to Urana in the south east. Sites are scattered across this Bioregion including the Jerilderie area, the Hay Plain (Maude and Oxley) and around Darlington Point. In addition, there are a number of records from the Willandra Lakes World Heritage Area (including Mungo National Park) with a north-western outlier at Byrnedale Station, north of Menindee. The only known site on south western Slopes is Ganmain Reserve.

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

The relevant Commonwealth statutory document available for this species is the Approved Conservation Advice for Brachyscome papillosa *(Mossgiel Daisy)*" (DEWHA 2008), in effect under the EPBC Act from 03-Jul-2008.

Specific impacts

Populations of this species were recorded on light grey or grey, heavy clay soils in depressions associated with ephemeral waterways and red to red brown flat alluvial plains associated with PCT 15, PCT 46, PCT 163 and PCT 164. Habitat for the species occurs across the subject land, in the following vegetation types:

- PCT 13 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
- PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone
- PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion.

The project would involve the clearing of approximately 141.26 ha of known or assumed habitat for the species.

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts, 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

The population size of *Brachyscome papillosa* is currently unknown and the species is not considered adequately reserved in conservation areas. The species was recorded within the subject land and given the restricted distribution of the species it is consider that the population 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***

The project is likely to remove approximately 141.26 ha (12.67 ha of confirmed habitat and 128.59 of assumed habitat) of habitat for *Brachyscome papillosa*. The species was recorded within the subject land and given the restricted distribution, there is a real chance or possibility that the subject land could be a key source population or necessary for maintaining genetic diversity.

The habitat to be removed represent 0.004% of available habitat within 10 km of buffer of the subject land and 0.04% of assumed habitat. Given the extent of habitat within the immediate vicinity it is unlikely the project would lead to a long-term decrease in the size of the population of *Brachyscome papillosa*.

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

The distribution of the species is restricted to the Riverina bioregion, with most records occurring from the Mossgiel to Urana districts form Jerilderie, Darlington Point, Willandra Lakes and north to Ivanhoe (DEWHA, 2008). Approximately 345,725.62 ha of associated habitat is present within a 10 km buffer of the subject land. The loss of 141.26 ha associated with the project is unlikely to result in a minor reduction in the area of occupancy for *Brachyscome papillosa*, however this habitat represents just 0.004% of the available habitat within the locality.

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

Given the linear nature of the project and impact on recorded individuals, the project would result in a small, localised fragmentation for this species. However, mitigations would be in place to ensure towers would be micro-sited and transmission lines strung across tracts of habitat. Given the extent of available habitat and opportunistic records of species within the locality, it is unlikely that this would significantly fragment a larger 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 *Brachyscome papillosa* 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).

The habitat to be impacted also represents a small proportion (0.04%) of locally available habitat for the species. Mitigation measures such as micro-sited towers, locating temporary construction impacts in areas of lower biodiversity values and threatened species unexpected finds procedures would be put in place to further minimise impacts to habitat. However, given the limited information available on the species populations or distribution, it is possible that the proportion of individuals or habitat to be impacted represents habitat critical for dispersal, reintroduction or long-term maintenance of the species. Taking a precautionary approach, the project may adversely habitat critical to the survival of *Brachyscome papillosa.*

- ***disrupt the breeding cycle of an important population***

The project is likely to result in direct impact to individuals occurring within the subject land 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, though these impacts are likely to be localised.

- ***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 141.26 ha of habitat for the species. The loss of habitat predicted to occur is in comparison to 345,725.62 ha of associated habitat that is present within a 10 km buffer of the project footprint. Mitigation measures will be implemented including micro-siting towers and biosecurity measures to minimise the impacts on the species habitat. Therefore, given the extent of habitat within the immediate vicinity and providing mitigation measure are implemented, it is unlikely the project would remove 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***

Adhering to mitigation measures which would be put in place for the project such as weed control, would prevent potentially harmful invasive weeds establishing in *Brachyscome papillosa* 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***

There are no known diseases causing potential species decline to *Brachyscome papillosa.* Biosecurity measure would be implemented to reduce the likelihood of introducing the disease or pathogens that may contribute to the decline of the species.

- ***interfere substantially with the recovery of the species***

There is currently no recovery plan required for *Brachyscome papillosa*. The approved conservation advice for the species states priority actions including:

- design and implement a monitoring program, including surveying for additional populations and species response to disturbance
- ensure infrastructure or development activities in areas where *Brachyscome papillosa* occurs does not adversely impact on known populations
- prevent grazing pressures at known sites through exclusionary barriers.

The project would result in the loss of 141.26 ha of known habitat for the species. The loss of this habitat is likely to interfere with known populations of *Brachyscome papillosa*. Therefore, the project may interfere with the recovery of the species.

Conclusion

Based on the assessment above the project is likely to have a significant residual impact *Brachyscome papillosa* due to the loss of 141.26 ha. Despite the presence of 345,752.62 ha of associated habitat within 10 km of the project footprint, the project is likely to have localised impacts from fragmentation and disruption of the life cycle of an important population and directly impact on the recovery of species. Considering the highly restricted distribution of *Brachyscome papillosa* and limited data available on existing populations, taking a precautionary approach it is possible the project would have a significant impact on the species.

Eleocharis obicis (Spike rush)

Eleocharis obicis is listed as vulnerable under the EPBC Act.

Description

Eleocharis obicis is a small, tufted perennial sedge that occurs in north-west Victoria and central south-west NSW growing in ephemerally wet environments including low-lying grasslands, roadside drains and depressions. NSW populations are known to occur on floodplains in heavy clay soils, claypans and red sandy soil atop clay. Flowering has been recorded in November.

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:

- The *Approved Conservation Advice for Eleocharis obicis.* (Department of the Environment, Water, Heritage and the Art). In effect under the EPBC Act from 01-Oct-2008.
- *Commonwealth Listing Advice on Eleocharis obicis (a spike rush).* (Department of Sustainability, Environment, Water, Populations and Communities, 2012). In effect under the EPBC Act from 29-Jun-2012.

Specific impacts

Within the subject land, *Eleocharis obicis* was recorded in recently inundated gilgais, within chenopod shrublands (PCT 164) and freshwater wetlands (PCT 24).

Additional associated habitat for the species within the subject land includes the following PCTs:

- PCT 10 – River Red Gum – Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- PCT 47 – Swamp grassland wetland of the Riverine Plain PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- PCT 159 – Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
- PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone
- PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
- PCT 237 – Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone.

The project would result in the loss of 157.31 ha of habitat for the species (13.21 ha of recorded and 144.10 ha of assumed).

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts, 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

The species is known to occur in ephemerally wet situations such as roadside mitre drains and depressions, and gilgais. The approved conservation advice notes that *Eleocharis obicis* is locally frequent to abundant in western NSW. However, based on the DCCEEW Species Profile and Threat Database the known areas of occurrences are patchy and isolated. Therefore, given the species was recorded within the subject land, the species within the subject land are considered a likely key source and necessary for maintaining the genetic diversity of *Eleocharis obicis.* The subject land is likely to represent 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***

Given the restricted species distribution, it is likely the subject land could be necessary for maintaining genetic diversity or dispersal across the region. Therefore, the loss of 157.31 ha of habitat would lead to a long-term decrease in the size of an important population.

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

The distribution for the species is known on the Lachlan River floodplains near Condobolin in NSW and far northeast of Victoria. The project does not occur at the extent of the known range of the species, however the current extent and distribution is limited within NSW. Given the project would be impacting on known occurrences of the species it is likely the project would result in a slight reduction to the area of occupancy for the species.

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

The species can be found in fragment environments including ephemerally wet areas such as roadside, drains and depressions. However, given nature of impacts (157.31 ha) and the linear infrastructure, the project may result in some localised fragmentation to existing populations.

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

No habitat critical to the survival of the species is currently listed under the EPBC Act. '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 habitat to be impacted also represents a small proportion of locally available habitat for the species. Mitigation measures such as micro-sited towers, locating temporary construction impacts in areas of lower biodiversity values and threatened species unexpected finds procedures would be put in place to further minimise impacts to habitat. However, given the limited information available on the species populations or distribution, it is possible that the proportion of individuals or habitat to be impacted represents habitat critical for dispersal, reintroduction or long-term maintenance of the species. Taking a precautionary approach, and given the occupied habitat will be impacted within the subject land it is possible these habitats represent habitat critical to the survival of the species.

- ***disrupt the breeding cycle of an important population***

Details of the ages of sexual maturity, life expectancy and natural mortality of this species are currently unknown, though the species relies on ephemerally wet situations such as roadside mitre drains and depressions, usually in low-lying grasslands to complete its life cycle. The project would result in the loss of 157.31 ha of habitat for the species. Given the minor fragmentation impacts and impacts to occupied habitat, it is possible this would impact on the breeding cycle of an *Eleocharis obicis* population. Therefore, the project may 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 DCCEEW Species Profile and Threat Database shows known areas of occurrences to be patchy and isolated. The species was recorded within the subject land, therefore given the small patches of occurrence it is likely the loss of habitat associated with the project would, 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 would 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 *Eleocharis obicis*. Mitigation measures would be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These would 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 currently no approved recovery plan for this species, however the approved conservation advice priority action for the conservation of the species including minimizing adverse impacts to known sites; managing threats such invasives species. *Eleocharis obicis* was recorded within the subject land and the project would result in the loss of 157.31 ha of associated habitat for the species. Therefore, it is likely the project would interfere with the recovery of the species.

Conclusion

Based on the assessment above, and considering the limited available information on the species distribution, populations and life cycle, there is a real chance or possibility that the project would have a significant residual impact on *Eleocharis obicis* through impacts on habitat and known populations. It is possible that the project could have a significant impact on *Eleocharis obicis.*

Lepidium monoplocoides (Winged Peppercress)

Lepidium monoplocoides is listed as endangered under the EPBC Act.

Description

Lepidium monoplocoides is a small annual herb that occurs widely across the inland plains of south-eastern Australia, occurring from northern New South Wales to western Victoria (DCCEEW, 2010). The species occurs in a range of habitats on heavy clay or clay-loam soils within sparsely vegetated sites. Associated vegetation communities include grasslands, wetlands and floodplain woodlands dominated by *Eucalyptus coolabah*, and chenopod shrublands dominated by *Atriplex, Maireana* or *Nitraria* species.

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

The relevant Commonwealth guidelines and policy statements available for this species is the *National Recovery Plan for the Winged Peppercress Lepidium monoplocoides (DSE, 2010)*, in effect under the EPBC Act from 13-Aug-2010.

Specific impacts

State Vegetation Type Mapping shows that *Lepidium monoplocoides* may occur in PCT 13, 15, 16, 24, 26, 45, 46, 159, 160, 163, 170, 216, and 237. Furthermore, one individual of *Lepidium monoplocoides* was recorded within the Murrumbidgee IBRA sub-region during targeted surveys. The associated vegetation community types for *Lepidium monoplocoides* cover a significant amount of the subject land area. Significant identified threats to the species includes the widespread clearing of grassland and grassy woodland habitats which associated to *Lepidium monoplocoides*. Other identified threats include weed invasion across all surveyed sites and altered hydrology whereby prolonged drought or water inundation reduces quality habitat. Physical damage is also considered a threat due to both vehicle tracks and off-road vehicle movement.

Significant impact criteria

An action is likely to have a significant impact on 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***

All identified populations are identified as important to the conservation of the *Lepidium monoplocoides*. The species is currently known within 13 populations, seven being within New South Wales. The population size is estimated to be less than 3,000 plants within New South Wales; however, fluctuations occur annually based on hydrological cycles. The project would result in the loss of 80.54 ha (80.49 ha of assumed and 0.05 ha of confirmed), this would represent 0.04% of the available habitat for the species within the 10 km buffer of the subject land. Given the habitat is well represented in the immediate vicinity and mitigation measures including micro-siting towers and biosecurity protocols it is unlikely the project would lead to a long-term decline in the size of a population.

- ***reduce the area of occupancy of a population***

Lepidium monoplocoides is known to inhabit the Murray Darling Depression, Riverina, Darling Riverine Plains and Cobar Peneplain Bioregions. Within New South Wales, the species is known to occur on several locations across the Hay Plain, Urana Nature Reserve, Lake Cargelligo and Micabil. The subject land is located centrally within the wider distribution of the *Lepidium monoplocoides*, meaning the limit of distribution would not be impacted. Therefore, the species area of occupancy would not be affected by the project.

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

Identified important populations are not known to be significantly affected by fragmentation or isolation. Large-scale clearing in the past has been identified as a threat to the species. However, towers would be micro sited to minimise impacts and the nature transmission line will span large tracts of habitat for the species. Thus, it is unlikely the project would fragment the population into two or more.

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

No habitat critical to the recovery of *Lepidium monoplocoides* has been identified within the approved recovery plan. The species may occur in a range of habitats involving sparsely vegetated sites on heavy clay or clay-loam soils. This is reflected by the extensive area in the subject land with vegetation types associated with *Lepidium monoplocoides*. Despite one record of the species being identified during targeted surveys, it is unlikely the loss of 80.49 ha of assumed habitat would adversely affect habitat critical to the survival of the species.

- ***disrupt the breeding cycle of a population***

The specific method of seed dispersal is unknown for *Lepidium monoplocoides*. There is an association between the hydrology of the habitat and seed germination, where a regular wetting and drying cycle is required. Impacts on the hydrology in the subject land are not expected, riparian and watercourses would largely be avoided, and towers would be micro sited. Further, 199,634.18 ha of associated habitat within 10 km of the project footprint would not be impacted. Therefore, it is unlikely the project would impact to the breeding cycle would be brought about by the project.

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

The *Lepidium monoplocoides* is associate with numerous plant community types found across the subject land. Such associated habitats cover a large amount of area, both within the subject land and extending out into the wider 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 vulnerable species becoming established in the vulnerable species' habitat***

Weed invasion from exotic annual grass species such as *Vulpia, Bromus, Lolium* and *Avena* species is an identified threat to the species. Grazing by high densities of rabbits is also suggested to somewhat impact some identified populations of *Lepidium monoplocoides*. Grazing inhibits seed dispersal through defoliation of individuals during critical flowering times. Due to past land uses, invasive species are already present within the subject land. Mitigation measures would 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 causing potential species decline to *Lepidium monoplocoides*. Mitigation measures would be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These would help to minimise the likelihood of introduction or spread of pathogens into the site.

- ***interfere substantially with the recovery of the species***

The national recovery plan for the *Lepidium monoplocoide* identifies a number of objectives for the conservation and recovery of the species including:

- determining the distribution, abundance and population structure of the species, where ten populations are mapped for size, condition and habitat
- determine habitat requirements for the Winged Peppercress through surveying potential habitat, and testing a developed predictive model at five sites

- managing identified threats to populations across the distribution, including pest plants, human activity and grazing pressures.

The project is likely to result in the loss of 80.54 ha of habitat for *Lepidium monoplocoides*. It is unlikely the loss of this habitat would substantially interfere with the recovery of the species. Furthermore, mitigation measures would be implemented such as marking boundary of works, as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control to minimise indirect impacts on the *Lepidium monoplocoides* or its habitat.

Conclusion

One *Lepidium monoplocoides* was recorded on the subject land during targeted surveys. The project would result in the loss of 80.54 ha of habitat for the species. This represents 0.04% of the available habitat within the immediate vicinity (10 km buffer of the subject land). The project will implement a range of mitigation measure including biosecurity controls, and micro-siting of the towers. Given the nature of the project (transmission line spanning large tract of habitat) mitigation measures and extent of available habitat it is unlikely the project would result in a significant residual impact upon *Lepidium monoplocoides*.

Maireana cheelii (Chariot Wheels)

Maireana cheelii is listed as vulnerable under the EPBC Act.

Description

Maireana cheelii is restricted to the southern Riverina region of NSW, mainly in the area between Deniliquin and Hay. The species also has a limited distribution in Victoria where it is very rare. NSW collections have mainly been from the Moulamein, Deniliquin and Hay districts, including Tchelery and Zara Stations. The species is usually found on heavier grey soils and tends to grow in shallow depressions. Associated species include *Atriplex vesicaria, Maireana pentagona, M. excavate, M. ciliata, Cressa cretica, Avena fatua* and *Acacia homalophylla*.

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

The relevant Commonwealth guidelines and policy statements available for this is the approved *Conservation Advice for* Maireana cheelii (*chariot wheels*) (DEWHA 2008), in effect under the EPBC Act from 20-Aug-2024.

Specific impacts

Maireana cheelii was recorded throughout the subject land on primarily grey and red-brown clays. All habitat consisted of scalded, wind-swept clays where moisture had historically pooled. Populations of this species were typically recorded from red to red-brown clay soils in scalded surfaces or claypans where water pooled. Vegetation types associated with this habitat includes PCTs:

- PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
- PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone.

The project would result in the loss of 4.19 ha of confirmed habitat and 152.60 ha of assumed habitat, a total potential impact of 156.79 ha for the species.

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts, 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

The approved conservation advice for the species notes that all naturally occurring populations are considered important to the persistence of this 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***

As all defined populations of *Maireana cheelii* are considered to be important populations, and specimens have been previously recorded during surveys in the subject land. Considering the highly restricted distribution of this species, and the impact on occupied habitat it is likely the project would result in a decrease in the size an important population.

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

The approved conservation advice for the species notes that in NSW, the species mostly occurs between Hay and Deniliquin but extends as far west as Moulamein. The eastern extent of *Maireana cheelii* distribution is not well known but it is likely to occur up until the Newell highway between Jerilderie and Morundah. Noting the project is located near the NSW limit of the species distribution, and the project would impact on habitat containing recorded individuals, the loss of 156.79 ha of habitat would reduce the area of occupancy for the *Maireana cheelii.*

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

Maireana cheelii are identified as having highly fragmented populations overall. Given the linear nature of the project, there is likely to be some minor, localised fragmentation of habitat for the species, though towers would be micro sited to minimise impacts. It is noted that within 10 km of the project footprint 273,294.799 ha of associated habitat for *Maireana cheelii* occurs, which would not be impacted, so fragmentation impacts are likely to be minor.

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

The approved conservation advice for the species notes habitat critical to the survival of *Maireana cheelii* includes all the area of occupancy of known subpopulations and area of similar adjoining habitat. Given the species was recorded within the subject land it is likely the habitat would represent habitat critical to the survival of the species. The loss of 156.79 ha would adversely impact habitat critical to the survival of the species

- ***disrupt the breeding cycle of an important population***

Maireana cheelii a hemicryptophyte, whereby the plant enters a dormancy phase in summer to early autumn to protect itself from desiccation. Following its dormancy phase, adult plants resprout from ground level or aerially. Chariot wheels may display chemically induced seed dormancy, with seed inundation during small flooding events thought to trigger the end of seed dormancy. The mechanisms for seed dispersal are uncertain but is likely to be carried out by insects, particularly ants, and wind dispersal (DCCEEW, 2013). The project is likely to have impacts on known populations of this species and would have localised impacts on the breeding cycle of the important population as a result. However, it is unlikely the project would create a barrier or impact dispersal of the species within the locality, considering the dispersal mechanism for this species. Therefore, while the project would disrupt the breeding cycle of an important population, these impacts may be minor within the locality.

- ***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 located near the NSW limit of the species distribution. Considering this and the highly restricted distribution of the species, the loss of 156.79 ha of habitat (including occupied habitat) would decrease the availability to the extent the species may decline.

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

Invasive weed species known to impact *Maireana cheelii* include pasture grasses such as *Vulpia spp.* And *Avena spp.* (oat grasses). Mitigation measures would 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 causing potential species decline to *Maireana cheelii.* Mitigation measures would be used, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures. These would help to minimise the likelihood of introduction or spread of pathogens into the site.

- ***interfere substantially with the recovery of the species***

There is no current recovery plan for *Maireana cheelii*, however, the approved conservation advice for the species lists a number of priority actions for the recovery of the species including conservation, survey and research priorities with the primary objective that "*Within ten years, all subpopulations of chariot wheels are protected, maintained, and enhanced, and all known sites are monitored*."

The project would remove 156.79 ha of habitat for the species including occupied habitat, therefore may interfere with the recovery of *Maireana cheelii*.

Conclusion

Based on the assessment above, it is likely the loss of 156.79 ha (4.19 ha of confirmed habitat and 152.60 ha of assumed habitat) would result in a significant residual impact *Maireana cheelii.*

Sclerolaena napiformis (Turnip Copperburr)

Sclerolaena napiformis is listed as Endangered under the EPBC Act.

Description

Sclerolaena napiformis is a small perennial chenopod shrub to about 30 cm high with slender branches covered with short, curled hairs. It is known from a few small populations in remnant grassland in the southern Riverina of NSW and north-central Victoria. NSW populations are confined to the area between Jerilderie and Moama on travelling stock routes and road reserves (DEH, 2025).

Sclerolaena napiformis occurs on inland plains in native grasslands and grassy woodlands on clay-loam soils. In NSW, the species occurs in Knotty Spear-Grass (*Austrostipa nodosa*) and Windmill Grass (*Chloris truncata*) tussock grasslands on grey to red-brown cracking clays and clay loams. Other common species in these habitats include wallaby-grasses (*Austrodanthonia* species), Spider Grass (*Enteropogon acicularis*), Paper Sunray (*Rhodanthe corymbiflora*), several Swainson-peas (*Swainsona* species) and several chenopod species.

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:

- National recovery plan for this species: "National Recovery Plan for the Turnip Copperburr (*Sclerolaena napiformis*)" (Department of Sustainability and Environment (DSE), 2010). In effect under the EPBC Act from 13-Aug-2010.

There is no approved Conservation Advice for *Sclerolaena napiformis*.

Specific impacts

Sclerolaena napiformis has not been recorded within the subject land, however, has been assumed present based on the presence of suitable habitat and associated PCTs within the Murray Fans and Murrumbidgee IBRA subregions. The following associated PCTs have been mapped or recorded within the subject land:

- PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- PCT 44 – Forb–rich Spear grass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 46 – Curly Windmill Grass – spear grass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion.

For the purpose of this assessment, the species has been assumed present within associated habitats in the subject land. The project would impact 43.49 ha of assumed habitat for *Sclerolaena napiformis*.

Significant impact criteria

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

Six populations of *Sclerolaena napiformis* have been identified in NSW, of which are confined to the area between Jerilderie and Moama on travelling stock routes and road reserves (DSE, 2010; DEH, 2025). Mitigation measures such as micro-sited towers would be implemented to reduce habitat impacts. Further, the assumed habitat that would be impacted by the project only represents 0.02% of the total associated habitat within 10 km of the project footprint. Given the lack of records within the subject land, extent of habitat in their immediate vicinity, mitigation measures it is not expected to lead to a long-term decrease in the size of a population of *Sclerolaena napiformis*.

- ***reduce the area of occupancy of the species***

There are an estimated several hundred to several thousand *Scleroalaena napiformis* plants in NSW (DSE, 2010). Given that the populations of this species are located further south of the subject land, the project is not expected to reduce the area of occupancy of *Sclerolaena napiformis*.

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

Habitat loss and degradation due to land clearing or grazing of domestic stock is a threat to *Sclerolaena napiformis* (DSE, 2010). Habitat degradation is a major threat to populations on roadsides, due to activities such ploughing, road maintenance, vehicle movement, utilities installation and maintenance and firebreak construction maintenance. Due to the nature of the project, it is not expected to impact on roadside habitat for *Sclerolaena napiformis*. It is possible there would be marginal localised fragmentation of habitat due to the linear nature of the project. however, much of the vegetation within the project corridor has been subjected to historical land clearing and occurs in an existing fragmented state. Given the lack of records in the subject land, the existing fragmented state and that no roadside habitat is expected to be impacted, the project is not expected to fragment an existing population into two or more populations.

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

To date, there is no listed habitat critical to the survival of this species under the EPBC Act (Commonwealth DCCEEW, 2025a). 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 (DEWHA, 2013).

Marginal potential habitat to be impacted has been assumed for this species in 43.39 ha of associated PCTs within the subject land. Given the lack of records in this area, the habitat associated PCTs are considered to be an over-representation of suitable habitat. Therefore, habitat within the subject land is not considered to be habitat critical to the survival of the *Sclerolaenaea napiformis*.

- ***disrupt the breeding cycle of a population***

This species becomes senescent in autumn and dies back to a thick taproot in the autumn and winter, shooting again in late spring. Viability of seed remains high (80%) after two years of storage, suggesting that seed may remain viable in the soil during unfavourable conditions (i.e. drought), with germination occurring when sufficient moisture becomes available (DSE, 2010). Given that the species is dependent on abiotic factors i.e. sufficient moisture, and since no populations of *Sclerolaena napiformis* were identified within the subject land, the project is not expected 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 would impact 43.39 ha of assumed habitat for *Sclerolaena napiformis*. However, mitigation measures such as micro-sited towers and management of invasive species would be implemented to reduce habitat impacts to assumed impacted habitat and 166,510.20 ha of associated habitat occurring within 10 km of the project footprint. Given the relatively small extent of impact to assumed habitat, the project is not expected 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***

Invasive weed species including Wild Oats (*Avena* species), Paterson's Curse (*Echium plantagineum*), Annual Beard-grass (*Polypogon monsperliensis*) and various introduced pasture grasses are considered a potential threat to *Sclerolaena napiformis* (DSE, 2010). Mitigation measures including weed and pest management plans, vegetation clearing protocols and installation of vehicle wash stations would be implemented to reduce the spread or introduction of invasive weed species. Given these mitigation measures, the project is not expected to result in the further spread or introduction of invasive species that are harmful to *Sclerolaena napiformis*.

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

There are no known diseases to which *Sclerolaena napiformis* is susceptible under the current approved conservation advice (DSE, 2010). Mitigation measures such as biosecurity protocols would be implemented to reduce the spread or introduction of disease and pathogens that can result in species decline. Given these protocols, the project is not expected to introduce disease that may cause the species to decline.

- ***interfere substantially with the recovery of the species***

Within the approved National Recovery Plan for *Sclerolaena napiformis* (DSE, 2010), a number of recovery objectives have been identified for the species, including:

- determine distribution, abundance and population structure
- determine habitat requirements
- manage threats to populations
- identify key biological characteristics
- determine life history and viability of populations
- establish an ex situ collection in cultivation
- build community support for its conservation.

The project would impact 43.39 ha of assumed habitat for *Sclerolaena napiformis*, however it is not expected to substantially interfere with the recovery of the species, given the extent of habitat in the locality (166,510.20 ha) and known populations of this species are located further south of the subject land.

Conclusion

The project would impact 43.49 ha of assumed habitat for *Sclerolaena napiformis*. Mitigation measures including micro-sited towers, weed and pest management controls, vegetation clearing protocols and biosecurity protocols would be implemented to reduce habitat loss and spread of invasive species. Given the lack of records in the subject land, extent of habitat in the locality (166,510.20 ha and mitigations measures will be implemented to reduce habitat loss and degradation, significant impacts to *Sclerolaena napiformis* are considered unlikely.

Swainsona murrayana (Slender Darling Pea)

Swainsona murrayana is listed as vulnerable under the EPBC Act.

Description

Swainsona murrayana is a prostrate, ascending to erect perennial herb/forb growing up to 25 cm tall with densely pubescent stems. It is found throughout NSW and has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill as well as various localities between Dubbo and Moree.

This species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. It grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with *Maireana* species. The species has also been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated. Plants produce winter-spring growth, flower in spring to early summer and then die back after flowering. They re-shoot readily and often carpet the landscape after good cool-season rains. It is thought that *Swainsona murrayana* may require some disturbance and has been known to occur in paddocks that have been moderately grazed or occasionally cultivated.

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 for *Swainsona murrayana* (Slender Darling-pea) (DEWHA 2008), in effect under the EPBC Act from 01-Oct-2008.

Specific impacts

Swainsona murrayana was recorded throughout the subject land. The population spanned several vegetation types across the subject land including PCT 15, PCT 23, PCT 26, PCT 28, PCT 44, PCT 45, PCT 46, PCT 76, PCT 157, PCT 163, PCT 164 & PCT 216.

Populations of this species were recorded from red, red-brown, light grey and grey clay soils and is not typically associated with any form of microhabitat. Due to design refinements and alterations, several areas of the subject land lack adequate survey effort and habitat was assumed for these areas where associated PCTs were present. The project would result in the loss of 340.46 ha of habitat (168.51 ha of confirmed habitat and 171.95 ha of assumed habitat).

Is this part of an important population?

An important population of a vulnerable species is defined in the Significant Impact Guidelines 1.1 (DOE, 2013) as a population that is necessary for a species long term survival and recovery. An important population can be identified in a species recovery plan and/or defined as:

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

In New South Wales, most recent records are from the South Western Plains in the Lockhart-Jerilderie-Deniliquin area and further north up to Hay and West Wyalong including Conargo Road and Urana Road, 16 km to the north-east of Jerilderie, where it was common in 1993 (MEL); Moulamein Road, north-north-west of Deniliquin (NSW, 1995 record); Hay (NSW, 1989 record); and 21 and 34 km west of Quandialla towards West Wyalong (NSW, 1996 and 1998 records). The Atlas of Living Australia (2015) has a number of isolated records in the north and west of the state.

Plant abundance is generally described as locally common to abundant in New South Wales, with counts ranging from single plants to at least 1000 plants made at various sites. Small numbers appear to represent incidental records, with potential population sizes likely to be much larger (NSW SC 2008b). Up to 200 000 individuals could occur within the 60 subpopulations in New South Wales (NSW SC 2008b). However, there is limited specific information available on population size and distribution of this species (Department of Environment Water Heritage and the Arts, 2008b).

Swainsona murrayana has been recorded sporadically across the state with a significant cluster between Moulamein, Urana and Hay. There are five database records of this species within the subject land. The species was recorded across the subject land during the targeted surveys. Given the limited data available on population size and distribution and taking a precautionary approach, it is considered that the species would represent an important population within the subject land.

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***

Scattered records of this species were identified in the subject land. The project would result in the loss of 168.51 ha of confirmed habitat and a further 171.95 ha of assumed habitat. The loss of habitat would represent 0.1 % of the available habitat within the locality. Additional individuals were also opportunistically recorded in the wider locality. Considering this, and given the extent of existing habitat within the immediate vicinity, it is unlikely the project would lead to a long-term decrease in the size of the important population within the locality.

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

The national extent of occupancy for the *Swainsona murrayana* is estimated at 1 200 000 km^2, incorporating the disjunct records from South Australia and Queensland. In NSW the extent of occupancy is estimated at 520 000 km^2 (based on a geographic range of 980 km from the Victorian border to northern-most NSW localities). The project would result in the loss of 0.0003 % of the national extent of occupancy and 0.0006% of the NSW area of occupancy. Considering that the population within the subject land is likely to be part of an important population, the project is likely to result in a small decrease in the extent of an important population. However, considering the broad extent of occurrence for the species and the additional habitat available locally, it is noted that this decrease is likely to be of a small, localised nature.

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

Records of the species are already fragmented within the landscape. Given the nature of the project, towers would be micro sited to minimise impacts and the nature of transmission line spanning habitat. Such measures would mitigate impact to 344850.03 ha of associated habitat found within 10 km of the subject land; thus. Nevertheless, considering the linear nature of the projects and the records of the species within the subject land the project is likely to result in small, localised fragmentation of this important population.

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

No critical habitat or habitat critical to the survival of the species has been identified for this 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 (DEWHA, 2013).

The project is not considered at the limit of the species distribution. The species abundance is generally described as locally common to abundant in New South Wales, with counts ranging from single plants to at least 1000 plants made at various sites. Small numbers appear to represent incidental records, with potential population sizes likely to be much larger . Given the population within the subject land is not at the limit of the species range and appears to be part of a wider population (based on opportunistic observations) it is unlikely that the impacted population is likely to be significant for population dispersal or reintroduction, though if part of a larger population, these plants may be important for maintaining genetic diversity and long-term maintenance of the species. Considering the additional population and extent of habitat within the locality it is unlikely that the subject land would represent habitat critical to the survival of the species.

- ***disrupt the breeding cycle of an important population***

The SPRAT profile for the species note it is largely perennials, resprouting in suitable conditions from a persistent rootstock. The project would result in the loss of 340.46 ha of confirmed and assumed habitat, including minor excavation works that could impact the ability for the species to may impact the species ability to resprout. Considering this, along with the linear nature of the project (resulting in localised fragmentation and increased movement required for pollinators), it is possible 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 project would result in the loss of 168.51 ha of confirmed habitat (including recorded individuals) and a further 171.95 ha of assumed habitat. The species is likely to occur more broadly within the locality and the loss of habitat would represent 0.1 % of the available habitat within the locality. Therefore, it is unlikely it would modify, destroy, remove 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 are already present in the landscape. Mitigation measures including weed and pest management plans, vegetation clearing protocols and installation of vehicle wash stations would be implemented to reduce the spread or introduction of invasive weed species. It is unlikely the project would result in further invasive species becoming established in habitat for *Swainsona murrayana.*

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

There are no known diseases causing potential species decline to *Swainsona murrayana.* Mitigation measures such as biosecurity protocols would be implemented to reduce the spread or introduction of disease and pathogens that can result in species decline. Given these protocols, the project is not expected to introduce disease that may cause the species to decline.

- ***interfere substantially with the recovery of the species***

The approved conservation advice (2008) for the species lists a number of priorities for the recovery of the species including:

- monitor known populations to identify key threats
- monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary
- ensure road widening and maintenance activities involving substrate or vegetation disturbance in areas where Slender Darling-pea occurs do not adversely impact on known populations
- identify populations of high conservation priority
- develop and implement a stock management plan for roadside verges and travelling stock routes manage sites to prevent introduction of invasive weeds, which could become a threat to the species, using appropriate methods.

The project would impact on known habitat and an important population of *Swainsona murrayana* and therefore is likely to impact on the priority action to ensure road widening and maintenance activities involving substrate or vegetation disturbance in areas where Slender Darling-pea occurs do not adversely impact on known populations.

Conclusion

Plant abundance is generally described as locally common to abundant in New South Wales though data on population size and distribution is highly variable. The project is on known and assumed habitat for the species which is locally extensive and impacts represent just 0.1% of available habitat in the locality. The project is linear and likely to result in small, localised fragmentation which may have a minor impact on the life cycle of local plants, though impacts are not expected to result in decline of the species. The project would interfere with one recovery action (to avoid impacts on known populations) so the project should seek to avoid impacts the would remove plants or rootstock in areas of identified habitat where possible. Nevertheless, considering the extent of the species distribution throughout the region and the extent of available habitat within the locality, it is unlikely the project would result in a significant residual impact on *Swainsona murrayana*.

Swainsona plagiotropis (Red Darling-pea, Red Swainson-pea)

Swainsona plagiotropis is listed as Vulnerable under the EPBC Act.

Description

Swainsona plagiotropis is a small prostrate, perennial forb to 30 cm high, with densely white-downy stalks and reddish-purple to bright red pea-like flowers. This species is endemic to the riverine plains of inland south-eastern Australia, occurring in the upper Murray River Valley in NSW and Victoria. Records of this species suggests the existence of two large and extensive 'subpopulations'; one centred on Jerilderie in southern NSW, and the second between Echuca and Serpentine in northern Victoria. In addition, there are three disjunct occurrences: near Warren in central western NSW, Willandra National Park in western NSW, and near Warracknabeal in western Victoria (DCCEEW, 2024).

Swainsona plagiotropis occurs in native grassland and unimproved pasture. It favours seasonally waterlogged heavy red soils, including those in depressions and table drains in road reserves. It occurs in red-brown clay and clay loam soils but is absent from black low-lying soils. Habitat is dominated by perennial native grasses including *Austrodanthonia* spp. (wallaby grasses), *Austrostipa* spp. (spear grasses) and *Enteropogon acicularis* (spider grass), often with scattered small shrubby bluebushes such as *Maireana pentagona*, *M. excavata* and *M. humillima*.

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 for this species: “Approved Conservation Advice for *Swainsona plagiotropis*” (DCCEEW, 2024). In effect under the EPBC Act from 20-Aug-2024.

Specific impacts

Swainsona plagiotropis has not been recorded within the subject land, however, has been assumed present based on the presence of suitable habitat and associated PCTs within the Murrumbidgee IBRA subregion. The following associated PCTs have been mapped or recorded within the subject land:

- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW Southwestern Slopes Bioregion
- PCT 44 – Forb–rich Spear grass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW Southwestern Slopes Bioregion
- PCT 46 – Curly Windmill Grass – spear grass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion.

For the purpose of this assessment, the species has been assumed present within associated habitats in the subject land. The project would impact 45.67 ha of assumed habitat for *Swainsona plagiotropis*.

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (DEWHA, 2013) the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species’ long-term survival and recovery. 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
- at or near the limit of the species range.

There are two important subpopulations of *Swainsona plagiotropis* in NSW; one located 35 km north-west of Warren and one located within Willandra National Park (DCCEEW, 2024). As the project is located about 200 km south of the nearest important subpopulation, it is not expected to impact on an important population of *Swainsona plagiotropis*.

Significant impact criteria

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

There are two important subpopulations of *Swainsona plagiotropis* in NSW; one located 35 km north-west of Warren and one located within Willandra National Park (DCCEEW, 2024). However, the project is located about 200 km south of the nearest important subpopulation. Further, mitigation measures such as micro-sited towers would be implemented to alleviate impacts to 170,827.69 ha of associated habitat occurring within 10 km of the project footprint. Therefore, the project is not expected to lead to a long-term decrease in the size of an important population of *Swainsona plagiotropis*.

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

Over 60 subpopulations of the *Swainsona plagiotropis* are known. In 2010 the total number of mature plants was estimated to be 240,700, however the number of plants fluctuate in response to seasonal conditions. Most subpopulations and plants occur on freehold land or in vulnerable locations such as road reserves, with a small proportion of plants occurring in conservation reserves (DCCEEW, 2024). The nearest subpopulation of *Swainsona plagiotropis* is centred in Jerilderie, located about 35 km south of the subject land, and is not considered to be an important subpopulation. Therefore, the project is not expected to reduce the area of occupancy of an important population of *Swainsona plagiotropis*.

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

Historic degradation of native grassland habitat through grazing, tilling, cropping and sowing pasture grasses has resulted in extensive habitat loss and fragmentation of subpopulations, of which are now small and isolated (DCCEEW, 2024). Mitigation measures, such as micro-sited towers, would be implemented to reduce habitat loss. Given these mitigation measures, lack of records within the subject land and the existing fragmented state of *Swainsona plagiotropis*, the project is not expected to fragment an existing important population into two or more populations.

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

To date, there is no listed habitat critical to the survival of this species under the EPBC Act (Commonwealth DCCEEW, 2025a). 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 (DEWHA, 2013).

Marginal potential habitat has been assumed for this species in 45.67 ha of associated PCTs within the subject land. Given the lack of records in this area, the habitat associated PCTs are considered to be an over-representation of suitable habitat. Therefore, habitat within the subject land is not considered to be habitat critical to the survival of the *Swainsona plagiotropis*.

- ***disrupt the breeding cycle of an important population***

Swainsona plagiotropis flowers from August to November, with fruit maturing in November. Seeds have a hard coating, and fire, soil disturbance and prolonged wet conditions increase germination (DCCEEW, 2024). Given that the species is dependent on abiotic factors i.e. fire and wet conditions, and since no important subpopulations of *Swainsona plagiotropis* were identified within the subject land, the project is not expected 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***

The project would impact 45.67 ha of assumed habitat for *Swainsona plagiotropis*. However, mitigation measures such as micro-sited towers and management of invasive species would be implemented to reduce habitat impacts. Given the small extent of impact to assumed habitat, the project is not expected 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***

Invasive weed species including introduced pasture grasses, particularly canary grasses (*Phalaris* spp.), are considered a potential threat to *Swainsona plagiotropis* (DCCEEW, 2024). Mitigation measures including weed and pest management plans, vegetation clearing protocols and installation of vehicle wash stations would be implemented to reduce the spread or introduction of invasive weed species. Given these mitigation measures, the project is not expected to result in the further spread or introduction of invasive species that are harmful to *Swainsona plagiotropis*.

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

There are no known diseases to which *Swainsona plagiotropis* is susceptible under the current approved conservation advice (DEHWA, 2008). Mitigation measures such as biosecurity protocols would be implemented to reduce the spread or introduction of disease and pathogens that can result in species decline. Given these protocols, the project is not expected to introduce disease that may cause the species to decline.

- ***interfere substantially with the recovery of the species***

To date, there is no recovery plan for *Swainsona plagiotropis*. However, the approved conservation advice for the species identifies a number of local and regional priority actions to assist in recovery including:

- minimise and/or manage habitat loss, disturbance and modification
- manage impacts of domestic stock
- manage invasive species
- manage fire and other disturbance
- promote conservation information and raise awareness
- conduct further survey, monitoring and research.

The project would impact 45.67 ha of assumed habitat for *Swainsona plagiotropis*, however it is not expected to substantially interfere with the recovery of the species.

Conclusion

The project would impact 45.67 ha of assumed habitat for *Swainsona plagiotropis*. However, due to the lack of records in this area, the habitat associated PCTs are considered to be an over-representation of suitable habitat. Further, mitigation measures including micro-sited towers, weed and pest management plans, vegetation clearing protocols and biosecurity protocols would be implemented to reduce habitat loss and spread of invasive species. Such mitigation measures would aid in maintaining the extensive (170,827.69 ha) associated habitat occurring within 10 km of the project footprint. Given the lack of records in the subject land, that the project is not expected to impact an important subpopulation and the mitigations measures implemented to reduce habitat loss and degradation, significant impacts to *Swainsona plagiotropis* are considered unlikely.

Swainsona recta (Small Purple-pea)

Swainsona recta is listed as Endangered under the EPBC Act.

Description

Swainsona recta is a slender, erect perennial herb growing to 30 cm tall. The leaves are divided into up to six pairs of 10 mm long, very narrow leaflets, each with a pointed tip. There is also a single leaflet at the end of each divided leaf.

Swainsona recta occurs in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum (*Eucalyptus blakelyi*), Yellow Box (*E. melliodora*), Candle bark Gum (*E. rubida*) and Long-leaf Box (*E. goniocalyx*). It has been historically recorded in Carcoar, Culcairn and Wagga Wagga, where it is likely now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas, with over 80% of the southern population growing on a railway easement (DEH, 2025).

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 for *Swainsona recta* (Small Purple-pea) (DCCEEW, 2023), in effect under the EPBC Act from 31-Aug-2023.

Specific impacts

Swainsona recta has not been recorded within the subject land, however, is assumed present based on the presence of suitable habitat and associated PCTs within the Inland Slopes IBRA subregion. The following associated PCTs have been mapped or recorded within the subject land:

- PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
- PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion.

For the purpose of this assessment, the species has been assumed present within associated habitats in the subject land. The project is expected to impact on 2.08 ha of potential habitat for *Swainsona recta*.

Significant impact criteria

An action is likely to have a significant impact on 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***

All identified populations are identified as important to the conservation of the *Swainsona recta*. However, given the small amount of potential habitat to be impacted (2.08 ha), the project is unlikely to lead to a long-term decrease in the size of a population.

- ***reduce the area of occupancy of a population***

Swainsona recta is known to occur in several locations in NSW, with a combined area of occupancy of about 34 ha (DCCEEW, 2023). Given the species was not recorded within the subject land and the small amount of potential habitat to be impacted (2.08 ha), the project is unlikely to significantly reduce the area of known occupancy for this species.

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

Swainsona recta is known to be highly fragmented due to pasture improvement and other agricultural pressures, resulting in small, isolated populations of this species. Large-scale clearing in the past has been identified as a threat to the species, however mitigation measures including micro-sited towers, would be implemented to minimise impacts. Further, 1762.97 ha of associated habitat is known to occur within 10 km of the project footprint, in comparison to the 2.08 ha of habitat to be impacted.

Given the already highly fragmented populations of this species and the small amount of impact to potential habitat, the project is unlikely to fragment an existing population into two or more populations of *Swainsona recta*.

- ***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 for *Swainsona recta* (DCCEEW, 2023).

As *Swainsona recta* has not been recorded within the subject land and given the small area of potential habitat (2.08 ha), the project is unlikely to adversely affect habitat critical to the survival of a species.

- ***disrupt the breeding cycle of a population***

Swainsona recta flowers in spring, peaking in a 2-3 week period during October, the seed ripens in December and plants then die back to the perennial rootstock, until resprouting again the following autumn (DEH, 2025).

Given the extent and nature (i.e. micro-sited towers) of impacts to potential habitat, 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 would impact on 2.08 ha of potential Swainsons recta habitat. Given that the species has not been recorded within the subject land and small extent of potential habitat to be impacted, the project is unlikely to modify, destroy, remove or isolate or decrease the availability of quality of habitat to the extent that the species is likely to decline.

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

Weed invasion is an identified threat to *Swainsona recta*. Mitigation measures detailed in the project BDAR would be implemented to limit the spread of weeds during construction and operation. Given these measures, the project is unlikely to significantly contribute to the introduction or spread of invasive species.

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

There are no known diseases causing potential species decline to *Swainsona recta*.

- ***interfere substantially with the recovery of the species***

A current recovery plan is required for *Swainsona recta*. The existing National Recovery Plan for Small Purple-pea (*Swainsona recta*) (OEH, 2012) outlines the following recovery actions required for the species:

- Undertake additional survey in vicinity of recently recorded sites
- Monitor all known sites
- Weed control
- Undertake ecological burns
- Negotiate improved management and/or formal protection of sites
- Continue research into the biological / ecological effects of fire (burning frequency and season of burning) on Small Purple-pea and its habitat
- Investigate potential sites suitable for enrichment planting or re-establishment of Small Purple-pea populations and undertake translocation projects
- Investigate genetic variation within and between surviving populations to identify source and target populations for translocation and restoration. Measure the effects of habitat fragmentation and reduced population size on the long-term viability of Small Purple-pea
- Increase community awareness and involvement in the Small Purple-pea recovery effort.

The project would impact on 2.08 ha of potential *Swainsona recta* habitat. However, the project is unlikely to interfere substantially with the listed recovery actions and subsequently the recovery of the species.

Conclusion

Swainsona recta was not recorded within the subject land during seasonal surveys. Despite this, where targeted surveys were not possible in areas of suitable habitat, the species has been assumed present and would impact on 2.08 ha of potential species habitat. Given that the extent of habitat to be impacted is small in terms of habitat available in the broader landscape and is not expected to impact an important population, the project is unlikely to significantly impact on *Swainsona recta*.

APPENDIX C-5
Threatened fauna

Threatened fauna

Appendix A of the SEARs outlines an initial list of EPBC Act listed threatened fauna species likely to be impacted by the action. Combined with database searches (BioNet, BAM-C and PMST), there is predicted habitat or identified known habitat within the subject land for 45 threatened fauna species listed under the EPBC Act. Of these four species were recorded within the subject land with a further 21 threatened fauna identified as having a were identified as having a moderate or higher likelihood of occurrence (Table C.15). 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).

Table C.15 Threatened fauna species considered for assessment

Scientific name	Common name	EPBC Act	Likelihood of occurrence
Amphibians			
Litoria raniformis	Growling Grass Frog, Southern Bell Frog	V	Recorded
Birds			
Aphelocephala leucopsis	Southern Whiteface	V	Recorded
Botaurus poiciloptilus	Australasian Bittern	E	Moderate
Calidris acuminata	Sharp-tailed Sandpiper	V	Moderate
Callocephalon fimbriatum	Gang-Gang Cockatoo	E	Moderate
Climacteris picumnus victoriae	Brown Treecreeper (South-eastern)	V	Recorded
Gallinago hardwickii	Latham's Snipe	V	Moderate
Granitella picta	Painted Honeyeater	V	High
Hirundapus caudacutus	White-throated Needletail	V	High
Lophochroa leadbeateri	Pink Cockatoo	E	High
Melanodryas cucullata cucullata	Hooded-Robin (south-eastern)	E	Moderate
Neophema chrysostoma	Blue-winged Parrot	V	Recorded
Pedionomus torquatus	Plains-wanderer	CE	Recorded
Polytelis swainsonii	Superb Parrot	V	High
Stagonopleura guttata	Diamond Firetail	V	High
Tringa nebularia	Common Greenshank	E	Moderate
Mammals			
Nyctophilus corbeni	Corben's Long-eared Bat	V	Moderate
Phascolarctos cinereus	Koala	E	Moderate
Reptiles			
Aprasia parapulchella	Pink-tailed Worm-lizard	V	Moderate
Hemiaspis damelii	Grey Snake	E	Moderate

(1) Threat status under the EPBC Act: V = vulnerable, E = endangered, CE = critically endangered

Litoria raniformis (Southern Bell Frog)

The Southern Bell Frog is listed a vulnerable under the EPBC Act.

Description

Southern Bell Frog is one of the largest frog species in Australia. Historically recorded across a wide range of south-east Australia, this species' current range within NSW and the ACT is centred on the Murray and Murrumbidgee River valleys and their tributaries. Preferred habitat includes emergent vegetation in or at the edges of still too slow-flowing water bodies such as swamps, lakes and farm dams. It is known to float in warmer waters between 18–25°C. Additionally it is known to occur on well-watered sandy soils or clays, open grassland, open forest, and ephemeral or permanent non-saline swamps and marshes.

Breeding occurs during the warmer months and is triggered by flooding or a significant rise in water levels. The species has been known to breed anytime from early spring through to late summer/early autumn (Sept to April) following a rise in water levels.

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

A summary of the relevant Commonwealth guidelines and policy statements considered in undertaking the assessment on the Southern Bell Frog include:

- The relevant Conservation Advice for this species is "Approved Conservation Advice for *Litoria raniformis* (southern bell frog)" (DEWHA 2024), in effect under the EPBC Act from 20-Aug-2024.
- The *National Recovery Plan for the Southern Bell Frog Litoria raniformis* (Clemann and Gillespie, 2012)
- The Background Paper to the EPBC Act Policy Statement 3.14: Significant Impact Guidelines for the vulnerable growling grass frog (*Litoria raniformis*) (Department of the Environment Water Heritage and the Arts, 2009a) was reviewed as part of this assessment.
- The *EPBC Act Policy Statement 3.14: Significant impact guidelines for the vulnerable growling grass frog (Litoria raniformis)* (Department of the Environment Water Heritage and the Arts, 2009b) was reviewed as part of this assessment.
- Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (Commonwealth of Australia, 2016).
- Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines 6.3 (Department of the Environment Water Heritage and the Arts, 2010c).

Specific impacts

Southern Bell Frog has been recorded within the subject land with 10.25 ha of confirmed habitat and potential habitat in the form of associated PCTs 2, 7, 10, 11, 13, 15, 17, 28, 44, 86, 160, 163 and 237. Habitat within and around waterbodies within the subject land would generally be avoided, with the maximum impact limited to the removal or trimming of the tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Nevertheless, this assessment has been completed as a precautionary measure as this species is known to occur within the project corridor.

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts, 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

Scattered records for the species exist within the indicative disturbance footprint and the broader locality (Department of Planning Industry and Environment, 2021a). Any breeding population in NSW would be likely be considered important for breeding and maintaining genetic diversity. Therefore, the population subject to this assessment is part of an important population given the limited range and the fragility 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 of a species***

Habitat for the species exists within the indicative subject land in the form of associated PCTs, as well as swamps, rivers, and marginal habitat for this species recorded within the broader locale. Impact associated with the project would be limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian area.

As there would be no direct impacts to permanent water bodies that are likely to provide suitable breeding habitat for this species, the project is considered unlikely to significantly decrease the size of any important population. Furthermore, mitigation measures would be implemented to prevent indirect impacts to retained subject land with potential habitat in the form of associated PCTs.. As such, the project is considered unlikely to significantly reduce the area of the occupancy of any important population.

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

The subject land encompasses some of the northern extent of the known distribution of Southern Bell Frog, which is largely associated with the Murray River and the mid-lower Murrumbidgee floodplain. However, whilst the alignment will cross over these habitats :;aquatic

Considering these measures, it is unlikely that the project would reduce the area of occupancy of an important population.

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

Records of this species are found at a number of locations within subject land and the broader locality, within the vicinity of large water bodies and rivers. No fragmentation of water bodies or adjacent riparian habitats is proposed, and the maximum aquatic impact likely to occur would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas, with any potential indirect impacts managed through mitigation measures. Consequently, any important population is unlikely to be fragmented into 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, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts, 2013).

No critical habitat has been listed for this species under the EPBC Act (Department of Agriculture Water and the Environment, 2021). Habitat critical to the survival of the Southern Bell Frog differs throughout its range and the species is known to inhabit a wide range of still waterbodies including lagoons, swamps, lakes, ponds, farm dams, irrigation channels and quarries. In disturbed areas it commonly occurs in artificial waterbodies such as farm dams, irrigation channels, irrigated rice crops and disused quarries; particularly where natural habitat is no longer available (Department of the Environment Water Heritage and the Arts, 2009a). The subject land contains habitat for this species; however, this habitat is not likely to be directly impacted by the project and larger areas of higher quality habitat are available within the locality. Consequently, the habitat within the subject land is unlikely to be considered critical to the survival of this species.

- ***disrupt the breeding cycle of an important population***

Southern Bell Frogs generally breed between November and March, following local flooding and a marked rise in water levels from rain, which triggers calling in breeding males. Breeding usually occurs in still or slow-moving water. Most breeding sites located in recent surveys in NSW are overflow areas, for example, billabongs or levee swamps.

No overflow areas would be directly impacted by the project; therefore, it is considered unlikely that the project would disrupt the breeding cycle of any important population of the species. Mitigation measures, such as sediment, erosion and hygiene controls including wash down protocols would be implemented to minimise indirect impacts on the species habitat.

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

The subject land provides habitat for this species. The maximum aquatic impacts likely to occur would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Given nature of the impacts and extent of habitat for the species in the locality it is unlikely the project would result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures would also be implemented to minimise indirect impacts to the species habitat.

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

This species is susceptible to predation from Plague Minnow (*Gambusia holbrooki*), mitigation measures would aim at controlling and preventing the introduction of exotic fish species into in Southern Bell Frog habitat. The project largely occurs within an agricultural landscape containing existing weeds and pests. Therefore, it is unlikely the project would significantly increase the presence of pests or weeds above that currently present in the landscape. There is potential for indirect impacts during the construction stage however, mitigation measures such as weed, and pathogen controls would be put in place to minimise the likelihood of invasive species becoming established during construction.

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

This species is susceptible to Amphibian Chytrid Fungus (*Batrachochytrium dendrobatidis*), which has been identified as the cause of population decline for this species and many others along the eastern ranges. Mitigation measures would be implemented as part of the Project works, including wash down areas and hygiene protocols to prevent contamination and minimising the spread of disease.

- ***interfere substantially with the recovery of the species***

The *National Recovery Plan for the Southern Bell Frog Litoria raniformis* (Clemann and Gillespie, 2012) outlines the following specific objectives for recovery of the Southern Bell Frog:

- secure extant populations of Southern Bell Frogs, particularly those occurring in known breeding habitats, and improve their viability through increases in size and/or area of occurrence
- determine distribution, biology and ecology of the Southern Bell Frog, and identify causes of the decline of the species across its geographic range
- address known or predicted threatening processes and implement appropriate management practices where possible to ensure that land use activities do not threaten the survival of the Southern Bell Frog
- increase community awareness of and support for Southern Bell Frog conservation.

The project is unlikely to substantially interfere with any of the recovery actions, thus the recovery of the species.

Conclusion

Southern Bell Frog has been recorded within subject land and at various locations within the broader locality. The species has associated PCTs within the subject land and potential habitat in the form of lakes, swamps and rivers. Overall, the project is considered unlikely to impact upon habitats in which this species is most likely to occur. Habitat within and around waterbodies would largely be avoided, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Mitigation measures would be implemented to minimise indirect impacts on the species habitat. Therefore, it is unlikely the project would result in a significant residual impact on the species.

Southern Whiteface (*Aphelocephala leucopsis*)

Southern Whitefaces is listed as vulnerable under the EPBC Act.

Description

The Southern Whiteface is a small, thornbill-like bird that occurs in a large distribution across most of mainland Australia south of the tropics, from the north-eastern edge of the Western Australian wheatbelt, east to the dividing range (DCCEEW, 2023). The preferred habitat includes a wide range of open woodlands and shrublands with an understory consisting of predominantly grasses and shrubs. Such areas usually include acacia or eucalyptus on ranges foothills and lowlands. This coincides with a foraging habitat for the whiteface to be exclusively on the ground, favouring habitats with herbaceous understories and low tree density.

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

The relevant Commonwealth guidelines and policy statements available for this species the *Approved Conservation Advice for* Aphelocephala leucopsis *(Southern whiteface).* (DEWHA 2023), in effect under the EPBC Act from 31-Mar-2023.

Specific impacts

Southern Whiteface has been recorded within subject land and broader locale, with potential habitat in the form of associated PCTs 7, 10, 11, 13, 15, 17, 20, 23, 24, 26, 28, 44, 45, 46, 58, 70, 76, 157, 159, 160, 163, 164, 170, 216, 237, 266 & 277. The project would result in the loss of 1410.66 ha of habitat for this species.

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts, 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

The Southern Whiteface has extensive distribution across mainland Australia in a range of woodland and shrubland habitats. The species was recorded in the subject land and is also known to occur in the locality. The species habitat within the subject land is unlikely to represent an important population for the Southern Whiteface for the following reasons:

- it is well represented within the locality (430,707.43 ha of associated habitat occurring within 10 km of the subject land, resulting in the loss of 0.3% of potential species habitat)
- is not considered to be at the limit of the species distribution, and
- given the range of the species, it is unlikely the habitat within the subject land would be considered necessary for maintaining a species genetic diversity or a key source population for breeding.

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 unlikely to lead to a long-term decrease in an important population, as the species is not considered to represent an important population within the subject land. In addition, further habitat for the species is well represented within the subject land and surrounding locality with 430,707.43 ha of associated habitat occurring within 10 km of the subject land.

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

The project is unlikely to reduce the area of occupancy of an important population, as the species is not considered to represent an important population within the subject land. In addition, the estimated area of occupancy for the Southern Whiteface is 80,000 km^2, habitat to be removed within the subject land only represent 0.02% of the area of occupancy for the Southern Whiteface.

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

The Southern Whiteface is not considered an important population within the subject land. Therefore, it is unlikely the project would fragment an existing important population into two or more populations. In addition, given the nature of the project it is unlikely the project would create a barrier to the species movement.

- ***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. approved conservation advice for the species notes that habitat critical to the survival for the Southern Whiteface includes areas of:

- relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both
- habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat;
- living and dead trees with hollows and crevices which are essential for roosting and nesting.

Based on the definition above, some habitat within the subject land is considered to be habitat critical to the survival of the species. However, the project is unlikely to reduce the effectiveness of the available habitat for the species, therefore it is unlikely the project would adversely affect habitat critical survival of the Southern Whiteface.

- ***disrupt the breeding cycle of an important population***

The project is unlikely to disrupt the breeding cycle of an important population, as the species is not considered to represent an important population within the subject land.

- ***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 largely occurs within an agricultural landscape containing existing weeds and pests. The project would result in the loss of habitat for the species; however the project represents a minor fragment of the extent and availability of habitat within the subject land, locality and regions for the species. 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 vulnerable species becoming established in the vulnerable species' habitat***

Invasive species likely to prey or degraded habitat for the species include rabbits, cats and foxes. Given past land uses these species are already present in the landscape. Mitigation measures would be implemented to minimise the impacts of the invasive species on the Southern Whiteface habitat.

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

There are no known diseases causing potential species decline to the Southern Whiteface.

- ***interfere substantially with the recovery of the species***

There is no adopted or made recovery plan for the Southern Whiteface, the species approved conservation advice sets out several actions for the conservation and recovery of the species, including ceasing clearing of habitat critical to the survival of the species. The project would result in the loss of habitat critical to the survival of the species. However, this represents 0.02% of the available habitat within the subject land with further habitat available in locality. Therefore, it is unlikely the project would 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 the Southern Whiteface.

Australasian Bittern (*Botaurus poiciloptilus*)

The Australasian Bittern is listed as endangered under both the EPBC Act and the BC Act.

Description

The Australasian Bittern is a heron-like bird, that occurs in Australia, New Zealand and New Caledonia. In Australia, they occur from south-east Queensland to south-east Australia, Tasmania and the south-west of Western Australia. The Australian population size is estimated at between 250 and 800 individuals (2010 data).

Preferred habitat includes wetlands with tall vegetation, including permanent and seasonal freshwater habitats dominated by sedges, rushes, reeds, or cutting grass are preferred, with species such as *Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus, and Gahnia* growing over a muddy or peaty substrate (Threatened Species Scientific Committee, 2011). The Australasian Bittern forages in still, shallow water up to 0.3 metres deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water (Threatened Species Scientific Committee, 2011). This species is cryptic and primarily solitary and sedentary, occasionally dispersing nocturnally. Solitary pairs breed in deep, densely vegetated swamps, building a nest just above the water level typically in shrubs standing in water within screening reeds (Morcombe *et al.,* 2011).

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:

- The *Approved Conservation Advice Botaurus poiciloptilus Australasian Bittern* (Threatened Species Scientific Committee, 2019a) was reviewed as part of this assessment.
- The *Commonwealth Listing Advice on Botaurus poiciloptilus (Australasian Bittern)* (Threatened Species Scientific Committee, 2011) provides a similar habitat description was reviewed as part of this assessment.
- The *National Recovery Plan for the Australasian Bittern* (Botaurus poiciloptilus) (Department of Climate Change, Energy, the Environment and Water 2022) in effect under the EPBC Act from 24-Feb-2023.
- Threat abatement plan for predation by feral cats (Department of the Environment, 2015b).
- Threat abatement plan for predation by the European red fox (Department of the Environment Water Heritage and the Arts, 2008).
- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts, 2010a).

Specific impacts

Habitat Australasian Bittern have been recorded within the project's broader locale, with potential habitat associated PCTs within the subject land including PCTs 10, 11, 13, 17, 24 & 160. The majority of wetland habitats associated with the subject land are unlikely to be used for breeding purposes, however, Australasian Bitterns may occasionally use those wetlands during migratory movements when they hold water.

There is also a risk of powerline strike, as north south movements through the region have been recorded in recent years through satellite tracking studies. The species has been identified as high risk for powerline strikes, based on flight elevation and local movements. However, mitigation measures implemented to reduce such risk. Such measures include the installation of bird diverters as a form of conductor line-marking to reduce bird strike risk during construction phase and early operation phases. Further, the location of diverters would be focused on areas within one kilometre of wetland/ riverine habitats, reducing the species strike risk when using wetlands during migratory movements.

Thus, due to the infrequency of the species movements through the greater area, and extensive risk mitigation, the project is unlikely to have a significant impact on existing populations within the locality. However, this assessment has been completed as a precautionary measure as the species has the potential to use habitat within the wider locale.

Significant impact criteria

An action is likely to have a significant impact on an Endangered or 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 *Action Plan for Australian Birds 2010* (Garnett *et al*. 2011) suggested there were less than 1,000 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.

Aquatic habitats most likely to be used by the species are unlikely to be directly impacted by the project (the maximum impact likely to occur would be the removal or trimming of tree canopy on riverbanks). Intermittent north-south movements have been recorded in recent years, so the species may be at an increased risk of powerline strike from the project during migratory flights. However, due to the infrequency of these movements through the region, the project is unlikely to significantly effect a population or cause long-term decrease for the species.

In addition, conductor line-marking techniques would be implemented during design refinement to minimise bird strike. To reduce strike risk, bird diverter models would be implemented. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas.

- ***reduce the area of occupancy of the species***

The area of occupancy for Australasian Bittern is estimated to be approximately 1,150 km^2, which equates to an area of 115,000 hectares. Aquatic habitats most likely to be used by the species are unlikely to be directly impacted by the project (the maximum impact likely to occur would be the removal or trimming of tree canopy on riverbanks). No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Given the species mobility and extent of habitat within the subject land, 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 south–eastern and south–western subpopulations. This species is highly mobile and capable of long-distance flight across other habitats to move between suitable wetland habitats. The transmission lines may create a barrier to movement for the species. However, mitigation measure would be implemented to reduce risk of collision and to create connectivity in the landscape for avian species. The mitigation measures would be further refined as part of the connectivity strategy and include

- conductor line-marking techniques and bird diverters to alleviate the risk of bird strike with powerlines. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas
- connectivity corridors involving native vegetation retention up to the 10 metre or 20 metre (for 330 kV and 500 kV lines, respectively) wide temporary construction centreline clearing zone to better facilitate woodland connectivity. Vegetation heights to be retained would be determined in accordance with vegetation clearing requirements at each location.

Extensive mitigation measures in place during planning, construction and operation reduce the risk of bird strike when the species is completing migratory movements between wetland habitats. The focus of diverters around wetlands would further promote movement through the project easement for the species. Therefore, it is considered unlikely that the project would introduce a barrier to movement, which would result in the south-eastern 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.

Both permanent and temporary waterbodies exist within the subject land, which may be used by the species. Therefore, the habitat within the subject land is likely to represent habitat critical to the survival of the species. However, no direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Any potential indirect impacts to these habitats would be managed through mitigation measures. Consequently, it is unlikely that the project would adversely affect habitat critical to the survival of 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 cm above the water level. The species was not recorded during the ecological surveys and no evidence of nesting was observed. The project may result in an increased risk of powerline strike from the project during migratory flights. However, due to the infrequency of these movements through the region, the project is unlikely to significantly effect a population or cause long-term decrease for the species.

In addition, conductor line-marking techniques would be implemented during design refinement to minimise bird strike. Use of bird diverters would be implemented. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas. Therefore, it is unlikely the project would it disrupt the breeding cycle of the Australasian Bittern.

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

No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Therefore, the project is considered unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

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

Invasive species are 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. In addition, mitigation measures such as hygiene protocols would be undertaken to minimise further invasive species from becoming established in the species habitat.

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

There are no known diseases causing potential species decline to the Australasian Bittern. Mitigation measures including weed and pathogen controls would be put in place for the project which would minimise the introduction of any potential diseases.

- ***interfere substantially with the recovery of the species***

The National Recovery Plan for the Australasian Bittern (*Botaurus poiciloptilus*), Commonwealth of Australia 2022'sets out a number of strategies for the recovery of this species including:

- implement management actions that mitigate or reduce threats to Australasian Bittern and their habitat
- enhance the quality, extent and protection of suitable 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.

It is unlikely the project would substantially interfere with any of these recovery objectives. Furthermore, the project does not occur within priority management areas for this species as outlined under the NSW Saving Our Species recovery strategy and would not directly impact the species habitat. Indirect and indirect impacts would be controlled through mitigation measures. As such, the project is unlikely to substantially interfere with the recovery of the species.

Conclusion

No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Noting the species ability for movement and habitat within the surrounding locality, and region, it is unlikely this impact would significantly impact the species. The implementation of mitigation measures would further minimise impacts on the species habitat. Therefore, it is considered unlikely the project would result in a significant residual impact on the Australasian Bittern.

Vulnerable listed woodland birds Treecreeper (south-eastern) (*Climacteris picumnus victoriae*)

Woodland birds

The following three bird species have been grouped together as they have similar woodland habitat requirements and listing status:

- Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*)
- Diamond Firetail (*Stagonopleura guttata*)
- Painted Honeyeater (*Grantiella picta*).

The Diamond Firetail is a large finch endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia Description. The species habitat includes grassy eucalypt woodlands, open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities.

The Brown Treecreeper is a grey-brown bird with a pale face and streaking on the lower breast and belly. The species is endemic to eastern Australia, occurring in eucalypt forests and woodlands or inland slopes and plains of the Great Dividing Range.

The Painted Honeyeater inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. It is a specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias and prefers mistletoes of the genus *Amyema.*

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, 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, 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, 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, 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, in effect under the EPBC Act from 24-December-2024.

Specific impacts

Habitat for these woodland bird species occurs across the subject land and is widely distributed throughout the locality. Associated PCTs and impacts are shown in the table below.

Table C.16 Woodland bird habitat and impacts within the subject land

Woodland bird	Habitat within the subject land (associated PCTs)	Direct impact (clearing in ha)
Brown Treecreeper	PCTs 76, 237, 266, 277 & 343.	49.18
Diamond Firetail	PCTs 2, 7, 10, 11, 13, 19, 20, 23, 26, 28, 44, 45, 46, 58, 70, 76, 86, 170, 237, 266, 277, 319 & 343.	762.97
Painted Honeyeaters	PCTs 2, 7, 10, 11, 13, 15, 20, 23, 26, 28, 58, 70, 76, 86, 237, 266, 277, 319 & 343.	753.80

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 bird's 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 important population into two or more 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 are 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 would result in the loss of habitat critical for the survival of the Brown treecreeper and Diamond Firetail. However, given the habitat to be impacted is a minor fragment of the extent and available habitat in the locality it is unlikely the project would adversely impact habitat critical to the survival of for the Brown treecreeper and Diamond Firetail the 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 populations.

- ***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 clear habitat for the woodland bird species; however, the project is considered a minor fragment of the extent and available habitat within the locality, and region. Within the greater area, associated habitat for the three woodland bird species is known to occur within 10 km of the project footprint, comprising:

- 13,395.31 ha for Brown Treecreeper (south-eastern)
- 257,161.42 for Diamond Firetail
- 112,484.69 for Painted Honeyeater.

Therefore, it is unlikely 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 proposal 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 habitat for the species, however given the extent of available habitat in the locality it is unlikely to substantially interfere with the recovery of the and therefore may interfere with the recovery of the Brown Treecreeper, Diamond Firetail or Painted Honeyeater.

Conclusion

While the project would result in the loss of a large portion of habitat, this habitat is not considered to be limiting in the locality of the subject land. Given the nature of the project and species mobility it is unlikely to result in a significant residual impact on the Brown Treecreeper (south-eastern), Diamond Firetail or Painted Honeyeater.

Hooded Robin (south-eastern) (*Melanodryas cucullata cucullata*)

The Hooded Robin (south-eastern) is listed as endangered under the EPBC Act and BC Act.

Description

The south-eastern subspecies of the Hooded Robin occurs in south-eastern Australia from far south-east Queensland to Yorke Peninsula, South Australia, intergrading with *M. c. pictata* in the southern Murray-Darling basin. The subspecies is now absent from many formerly occupied sites, particularly in the wetter areas of the south and east.

The Hooded Robin (south-eastern) prefers dry eucalypt and acacia woodland and shrublands with an open understorey, some grassy areas and a complex ground layer. They avoid woodlands with tall trees or dense tree cover but sometimes occur in tall, dense heaths with scattered open areas. While they can occur in patches as small as 2.9 ha in agricultural landscapes, they prefer larger patches greater than 10 ha with moderately deep to deep soils. Birds tend to forage on insects and small lizards taken from the ground, and the subspecies builds nests in a tree fork or crevice, from less than 1 m to 5 m above the ground.

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:

- Department of Climate Change, Energy, the Environment and Water (2023). Conservation Advice for *Melanodryas cucullata cucullata* (hooded robin (south-eastern)). In effect under the EPBC Act from 31-Mar-2023.
- Department of Climate Change, Energy, the Environment and Water (2024). Threat abatement plan for predation by feral cats 2024. Canberra: Commonwealth of Australia. In effect under the EPBC Act from 24-Dec-2024.

Specific impacts

The Hooded Robin was not recorded during the targeted surveys, however suitable habitat for the species is present in association with PCTs 2, 7, 10, 11, 13, 15, 19, 20, 23, 26, 28, 58, 70, 76, 86, 170 237, 266, 277, 319 & 343. The project is predicted to result in the loss of 745.12 hectares of habitat for the species. However, further habitat for is well represented with 114,629.01 ha of associated habitat occurring within 10 km of the subject land, resulting in the loss of 0.6% of associated habitat for this species.

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 of possibility that it will:

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

Recent estimates of the Hooded Robin (south-eastern) population size is approximately 68,000 mature individuals with a declining trend of more than 50 % over the last 10 years. Decline of the sub-species thus far has been attributed to habitat loss and fragmentation amongst other factors. The loss of some habitat (0.6%) due to the project is considered unlikely to contribute to a long-term decrease in the size of the population.

- ***reduce the area of occupancy of the species***

The sub-species currently has a widespread distribution with an extent of occurrence of 1,200,000 km^2 and an area of occupancy of 30,000 km^2. The loss of habitat represents 0.025% of the area of occupancy. Given the lack of records and extent of habitat within the surrounding locality, it is unlikely the project would significantly reduce the area of occupancy of the species.

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

The approved conservation advice for the subspecies states that the population is not currently severely fragmented, however fragmented populations do occur in some areas, which are presumed to be genetically isolated. The project does not occur at the edge of the species range, and as the species is mobile it is unlikely that the clearance associated with the project would result in a barrier to dispersal and genetic exchange creating two or more populations.

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

The approved conservation advice for the Hooded Robin (south-eastern) identifies habitat critical to the survival as areas of:

- dry eucalypt and acacia woodlands and shrublands remnants with an open understorey, 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
- moderately deep to deep soils, rocks and fallen timber which provides essential foraging habitat

The approved conservation advice states that this habitat should not be cleared, fragmented or degraded. Any known of likely habitat should also be considered critical to the survival. The project would result in the loss of some habitat critical to the survival of the species.

- ***disrupt the breeding cycle of a population***

Hooded Robins use tree forks or crevices to build their nests in and typically return to the same breeding site each season. It is likely that in removing areas of suitable habitat for the subspecies breeding sites/habitat would also be lost alongside foraging habitat, which may impact the breeding success of the local 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 predicted to cause a loss of 745.12 ha of assumed habitat for the subspecies. There may also be further decreases in habitat quality due to indirect effects of factors such as fragmentation. These impacts could contribute to decline of the subspecies.

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

Invasive weeds are listed as a suspected threat to the subspecies in the approved conservation advice. This is because they have the potential to change the floristic and structural characteristics of habitats which in turn may affect resource availability. Some weeds can also increase bushfire risk. Invasive animal species such as cats and foxes are also listed as a suspected threat due to the vulnerability of woodland bird species to predation. 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. Provided such measures are followed effectively, there is a low probability that the project would result in invasive species that are harmful to the subspecies becoming established in the habitat.

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

There are currently no specific diseases identified as a threat to the south-eastern Hooded Robin. The project is required to implement best practice hygiene protocols as part of the construction environmental management plan to prevent the introduction or spread of pathogens. A such, the project is not considered likely to increase the prevalence of or introduce new diseases to the species.

- ***interfere substantially with the recovery of the species***

There is currently no official recovery plan in place for the subspecies, however a number of conservation and management priorities are listed in the approved conservation advice. These include the following objectives:

- cease all land clearing of habitat critical for the survival of Hooded Robin (south-eastern)
- retain and restore all remnant woodland patches in areas of habitat critical for the survival of Hooded Robin (south-eastern)
- ensure populations remain connected by avoiding gaps greater than 100 m between habitat patches and along linear remnants. Eliminate gaps through revegetation (either corridors or stepping stone plantings), focusing on important movement pathways.

The project has the potential to interfere with these conservation objectives as it is likely to clear habitat critical to the survival of the subspecies, and the easement width is expected to exceed 100 m in some areas creating gaps between habitat patches.

Conclusion

With the predicted loss of 745.12 ha of assumed habitat for the south-eastern Hooded Robin, including areas likely to be classed as critical to the survival of the species, it is considered that the project could have a significant impact on the subspecies.

White-throated Needletail (Hirundapus caudacutus)

White throated Needletail is listed as vulnerable under the EPBC Act.

Description

The White-throated Needletail (subsp. *caudacutus*) breeds in northern Japan west to central and eastern Siberia and occurs in Australia during the non-breeding season, usually between September and April. In NSW the species has been recorded in all coastal regions extending inland to the western slopes of the Great Dividing Range and occasionally onto the adjacent inland plains. White-throated Needletail is a large swift with a thickset, cigar-shaped body, stubby tail and long pointed wings (20 cm in length and approximately 115–120 g in weight). It is mostly aerial, from heights of less than 1 m up to more than 1000 m above the ground. Although they occur over most types of habitats, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly below the canopy between trees or in clearings. White-throated Needletail has been recorded eating a wide variety of insects in Australia including beetles, cicadas, flying ants, bees, wasps, flies, termites, moths, locusts and grasshoppers. It is most often seen in eastern Australia before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. These conditions are often used by insects to swarm (e.g. termites and ants) or tend to lift insects away from the surface which favours sighting of White-throated Needletails as they feed (Threatened Species Scientific Committee, 2019b).

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:

- The approved conservation advice for the species "Conservation Advice *Hirundapus caudacutus* White-throated Needletail" (Threatened Species Scientific Committee, 2019b). In effect under the EPBC Act from 04-Jul-2019.
- The "Draft referral guideline for 14 birds listed as migratory species under the EPBC Act" (Department of the Environment, 2015a) [Admin guideline].

Specific impacts

White-throated Needletail has been assessed as highly likely to occur due to the existence of records from BioNet within the subject land, in addition to the presence of extensive suitable habitat for the species within the subject land. This species is associated with the following PCTs: 2, 7, 10, 11, 13, 15, 17, 24, 26, 44, 45, 46, 47, 76, 157, 160, 216, 237, 266, 277, 319 & 343 (associated habitat impacts total 941.18 ha within the subject land). Additional specific impacts to this species related to the project include the loss of loss of potential roosting sites (old, hollow bearing trees) and reduction of invertebrate prey. Collision-strike risk from overhead wires are also an identified threat for this species in the conservation advice (Threatened Species Scientific Committee, 2019b) – however this risk is likely to decrease over time as the species becomes habituated to the presence of the alignment.

Is this part of an important population?

No important populations have been defined for this species under the EPBC Act. In accordance with the Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (Department of the Environment, 2013b) the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitats, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps.

The "Draft referral guideline for 14 birds listed as migratory species under the EPBC Act" outlines that "an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it would seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species." Based on this guideline, an ecologically significant proportion of the White-throated Needletail population is 1% internationally (100 individuals) or 10% nationally (10 individuals) (Department of the Environment, 2015a).

While the project is expected to impact on associated habitat for this species, the project does not contain key resources for breeding or dispersal, does not occur at the limit of the species distribution range and is unlikely to be necessary for maintaining genetic diversity. Consequently, any individuals which may occur are not considered to form part of an 'important population'. Collision with overhead wires has the potential for short-term injury or mortality to migrating individuals – however this impact is expected to decrease over time as birds become better habituated to the presence of the infrastructure. It is unlikely that the project would significantly impact on an ecologically significant proportion of the population nationally or internationally.

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 is considered unlikely to contain an important population of this species. Factors related to the project which may impact on White-throated Needletail individuals including habitat loss, indirect impacts from prey reduction and collisions from overhead wires. These impacts may have short-term implications for the species, however given the species is predominantly coastal, it is unlikely the project would contribute to a long-term decrease in the size of an important population.

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

The area of occupancy of the White-throated Needletail within Australia has been estimated at >18,000 km^2 (Threatened Species Scientific Committee, 2019b). Existing records and Commonwealth guidelines/policy statements indicate that there is a low density of birds using inland areas of Australia and as such the removal of small fragments of vegetation within a wider landscape of those habitats is not expected not limit species, particularly considering the wide-ranging movement patterns (Department of the Environment, 2015a, Threatened Species Scientific Committee, 2019b, NSW DCCEEW, 2025a).

Consequently, the project is likely to have a localised impact to available habitat resources for the species but is unlikely to have a significant impact on the area of occupancy any important populations.

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

The project may create a barrier due to movement due to the transmission line. However, mitigation measures would be implemented to minimise the impacts, including bird diverters would be implemented. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one km of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas. In addition, 269637.16 ha of associated habitat occurs within 10 km of the subject land that would not be impacted. The species is highly mobile, therefore it is not considered that any habitat fragmentation caused by the project would result in population fragmentation of the White-throated Needletail.

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

No 'habitat critical to the survival' of this species has been formally identified for this species under the EPBC Act. 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 (Department of the Environment, 2013b).

The draft referral guideline for 14 birds listed as migratory species under the EPBC Act" outlines the following regarding important habitat for White-throated Needletail: "large tracts of native vegetation, particularly forest, may be a key habitat requirement for species. Found to roost in tree hollows in tall trees on ridge-tops, on bark or rock faces." (Department of the Environment, 2015a). Whilst there would be removal of grassland and woodland habitat (including hollow-bearing trees) to facilitate the project, this would constitute small portions of these habitats within the wider landscape, and these habitats do not fall within the key range of the species within Australia, which is predominantly coastal. As such, it is not considered that there would be a significant adverse impact on habitat critical to the survival of this species within Australia.

- ***disrupt the breeding cycle of an important population***

This species does not breed in Australia and therefore breeding would not be impacted.

- ***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 removal and modification of areas up to 951.64 ha of associated habitat within the subject land, however a smaller proportion of this is likely to be of sufficient quality to represent important habitat for the species (Department of the Environment, 2015a). Considering the broad range of movement for the species, the aerial nature of foraging and the availability of similar habitat within the wider area, it is not expected 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 vulnerable species becoming established in the vulnerable species' habitat***

There are no invasive species that are specifically listed as a threat to White-throated Needletail under the Commonwealth guidelines (Threatened Species Scientific Committee, 2019b, Department of the Environment, 2015a). Vertebrate pests which may predate on native birds such as cats are foxes are currently present within the landscape and mitigations such as biosecurity controls and control of imported materials would be put in place to minimise the introduction and spread of invasive species. Consequently, it is unlikely that the project would result in an invasive species becoming established in White-throated Needletail habitat.

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

There are no known diseases to which White-throated Needletail is susceptible under current guidelines and policy information. Biosecurity measures would be implemented to reduce the likelihood of introducing the disease or pathogens that may contribute to the decline of the species.

- ***interfere substantially with the recovery of the species***

There is no approved recovery plan for the species. The approved conservation advice for the species identifies a number of key conservation and management priorities to address habitat loss and modification for the species including:

- 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 (Threatened Species Scientific Committee, 2019b). .

The project is not expected to interfere with any of the recovery actions listed.

Conclusion

The White-throated Needletail is a non-breeding temporary migrant to Australia which occurs in higher densities in coastal areas but may occasionally be found in more inland areas. It feeds aerially on insects and therefore can be associated with a wide variety of habitats. The project is expected to result in the removal of up to 951.64 ha of associated habitat within the subject land for this species and an increase in risk of collision with powerline/tower structures. Despite this, the project does not occur within the core range of the species within Australia and given the wide-ranging movement patterns and similar habitats remaining within the broader region, the density of individuals utilising the impact area is not expected to be high enough for the project to cause significant impacts to existing populations of the species.

Pink Cockatoo (*Lophochroa leadbeateri leadbeateri*)

Listed as endangered under the EPBC Act.

Description

The Pink Cockatoo is found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. It inhabits a wide range of tree and treeless inland habitats, always within easy reach of water, normally found in pairs or small groups, though flocks of hundreds may be found where food is abundant. Pink Cockatoos feed mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. They nest in tree hollows throughout the second half of the year; nests are at least 1 km apart, with no more than one pair every 30 km^2.

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

The relevant Commonwealth guidelines and policy statements available for this species is the *Approved Conservation Advice for* Lophochroa leadbeateri leadbeateri *(eastern Major Mitchell's cockatoo*). Canberra 2023: Department of Climate Change, Energy, the Environment and Water

Specific impacts

Whilst Pink Cockatoos have not been recorded in subject land, the subject land is within the known distribution of this species. Associated PCTs of the Pink Cockatoo within the subject land include: 2, 7, 9, 10, 11, 13, 15, 19, 20, 23, 26, 28, 45, 58, 70, 76, 159, 163, 170, 237, 346. The project would result in the loss of 771.08 ha of assumed habitat for the Pink Cockatoo. A portion of this impact includes potential impact associated with risk of collision with lines and EMF impacts with new infrastructure as noted in section 9.2.3 of the BDAR.

Significant impact criteria

An action is likely to have a significant impact on an endangered or 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 for the species notes that the species population is at 15,000 mature individuals. The project would result in the loss of 771.08 ha of habitat for the species. The habitat to be removed within the subject land represents a small proportion (0.5%) of available habitat for the species in the surrounding locality (160,057.06 ha within 10 km of the project footprint). However, given much of this habitat is assumed, and the project may impact on critical habitats for the Pink Cockatoo, including large tracts of connected habitat and large, hollow-bearing trees, it is possible for the loss of this habitat to lead to a long-term decline on the Pink Cockatoo population.

- ***reduce the area of occupancy of a population***

The area of occupancy for the Pink Cockatoo covers 225,000 km^2. The area of occupancy includes the Murray-Darling, Eyre and Bulloo River basins including Queensland, western NSW, South Australia (near the NSW/Victorian border) and north-west Victoria. Pink Cockatoo's are likely to occupy 20-30% of the previous range (DCCEEW 2023). The species is highly reliant on intact wooded areas for traversing through the landscape and are extremely common within the region due to the presence of intact, vegetated corridors, particularly associated with riparian habitats. The loss of habitat associated with the project represents just 0.003% of associated habitat found within 10 km of the subject land. Considering the small extent of local habitat to be removed and the mobile nature of the species, it is unlikely that the project would significantly reduce the area of occupancy of the Pink Cockatoo.

- ***disrupt the breeding cycle of a population***

Pink Cockatoo's require hollow bearing trees for breeding and the home range for each breeding pair is 30 km^2. The species requires hollow bearing trees (hollows >10 cm in diameter) across its range and connectivity within the landscape to ensure adequate connectivity for foraging. A compensatory habitat strategy for hollow dependant fauna would be provided that directly addresses the project impacts to nesting habitat for threatened fauna displaced during construction.

The strategy would include the following requirements:

- survey of tree hollows and nests within the proposed clearing extents and evaluation of hollow utilisation and resource availability.
- investigation into strategic and optimal placement of hollows for the targeted species within the locality/region
- investigating new and emerging monitoring
- funding of targeted research that contributes to effective compensatory habitat measures relevant to the project impacts; and
- measures to address and manage nests (such as raptor nests) prior to clearing

Nevertheless the project is likely to impact on large, hollow-bearing trees suitable for the breeding of Pink Cockatoo. These trees take a long time to form and are considered to form part of critical habitat for the species, particularly where these occur in large, intact remnants of woodland. Given the extent of habitat to be removed including potential (unsurveyed) habitat, it is possible that the project could disrupt the breeding cycle of a local population of 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 ha, and the easement width of the transmission line would be a maximum of approximately 200 m wide corridor which allows for micro-siting of the transmission line easement and transmission towers to avoid significant environmental constraints. The project would implement mitigation measures to reduce the risk of collision and barriers associated with the transmission lines. These include:

- conductor line-marking techniques would be implemented during design refinement to minimise bird strike
- bird diverter models would be implemented to reduce strike risk. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas.

These measures will be undertaken to minimise strike risk to the species, however considering the linear nature of the project and diversion of flight paths, it is expected that the project would result in some localised fragmentation of habitat for the species and result in altered movement pathways. Considering the species is highly reliant on intact vegetation corridors for travel, feeding, roosting and nesting and taking a precautionary approach, it is possible that the project would result in some localised fragmentation for the species. However considering the mobile nature of the species and extent of occurrence, it is unlikely to 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 (Department of Climate Change Energy the Environment and Water 2023). The approved conservation advice for the species identifies habitat critical for the survival of the Pink Cockatoo as:

- arid and semi-arid woodlands dominated by mulga (*Acacia aneura*), mallee and box eucalypts, slender cypress pine (*Callitris gracilis*) or belah (*Casuarina cristata*)
- known habitat containing suitable attributes, including potential habitat for the subspecies (see Map 1), especially where there are large mature trees with suitable hollows; and
- surrounding matrix of these areas for the role of providing movement corridors for dispersal across the landscape.

The subject land contains known habitat within the habitat area map for the species and contains large, mature trees with suitable hollows for the species. Considering this, and the extent of habitat to be removed it is likely that the project will adversely affect habitat critical to the survival 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 loss of habitat for this species and the species is likely to occur broadly throughout the region based on local records. This habitat has been previously modified, and similar habitat occurs in the surrounding locality. The habitats would mostly be spanned by wires and the micro-siting process undertaken before construction begins which would further minimise impacts to the greatest extent possible.

The habitat to be removed is likely to represent important habitat for the species. However, 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 Pink Cockatoo would likely decline.

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

Pest faunal 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. As such the project is considered unlikely to result in invasive species that are harmful to an 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 is no current Recovery Plan for this species. The approved conservation advice outlines a number of conservation and recovery actions for the species. The primary conservation objectives outlined are to:

— Arrest the current decline and achieve a stable or increasing population trend and

— Increase nesting habitat availability within the subspecies' range, and improve connectivity

The project is likely to remove 771.08 ha of potential habitat for this species including intact remnant vegetation and potential breeding habitat. Considering this, it is likely that the project would interfere with the recovery of the species.

Conclusion

The project will aim to mitigate impacts to threatened species through micro-siting of impacts, minimising impacts to riparian habitats and providing compensatory breeding habitats. Nevertheless the project is likely to impact on potential breeding habitat for the species, would impact on habitat critical to the survival of the species and may impact on the recovery objectives of the species as outlined in the approved conservation advice. Considering this, it is possible that the project would have a significant residual impact on Pink Cockatoo.

Blue-winged Parrot (*Neophema chrysostoma*)

- Blue-winged Parrot *(Neophema chrysostomy*) is listed as vulnerable under the EPBC Act.

Description

The Blue-winged Parrot is a slender parrot weighing less than 50 g and up to 24 cm in length. A yellow facial patch extends back to the eye alongside a narrow, dark blue band running from eye to eye across the forehead. A large dark blue patch also extends down the wings of the species. The Blue-winged Parrot is a partial migrant species, breeding on mainland Australia south of the Great Dividing Range and variable numbers migrating across the Bass Strait in winter (DCCEEW, 2023). During the non-breeding period from autumn to early spring, birds inhabit northern Vicotria, eastern South Australia, south-western Queensland and western New South Wales. The species inhabit habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. Favourable habitats include grasslands, grassy woodlands and wetlands. Eucalypt forests and woodlands are favourable during the breeding season, due to the presence of hollows in live or dead trees or stumps.

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 these species is as follows:

- Conservation Advice "Approved Conservation Advice for *Neophema chrysostoma* (Blue-winged parrot)" (DEWHA 2023), in effect under the EPBC Act from 31-Mar-2023.

Specific impacts

The species was recorded within the subject land with extensive habitat in both the subject land, locality and region. The habitat within the subject land is associated with the 2, 7, 11, 13, 15, 17, 24, 26, 28, 44, 45, 46, 58, 157, 159, 160, 163, 164, 170 & 216. The project would result in the loss of 1,320.94 ha of habitat within the subject land for this species.

Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts, 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

The Blue-winged Parrot was recorded in the subject land and is also known to occur in the locality. The species habitat within the subject land is well represented within the locality, is not considered to be at the limit of the species distribution, and given the range of the species it is unlikely the habitat within the subject land would be considered necessary for maintaining a species genetic diversity or a key source population for breeding. In addition, the species breeding range is exclusive to Tasmania and southern Victoria. Therefore, it is not considered that the Blue-winged Parrot would represent an important population within the subject land.

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 unlikely to lead to a long term decrease in an important population, as the species is not considered to represent an important population within the subject land. In addition, further habitat for the species is well represented within the subject land and surrounding locality, with 404,823.17 ha of associated habitat occurring within a 10 km buffer of the project footprint.

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

The project is unlikely to reduce the area of occupancy of an important population, as the species is not considered to represent an important population within the subject land. In addition, the extent of occurrence for this species is estimated to be 170,000 km^2. The loss of habitat within the subject land only represents 0.008% of the area of occupancy for the species.

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

The Blue-winged Parrot is not considered an important population within the subject land. Therefore, it is unlikely the project would fragment an existing important population into two or more populations. In addition, given the nature of the project it is unlikely the project would create a barrier to the species movement.

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

Identified habitat critical to the survival of the Blue-winged Parrot includes live and dead trees and stumps with suitable hollows within the breeding range are necessary, and foraging and staging habitats in coastal, sub-coastal and semi-arid zones, preferring grasslands and grassy woodlands. The Blue-winged Parrot encompasses Tasmania, coastal south-eastern South Australia and southern Victoria. The subject land contains foraging resources for the species, which would represent habitat critical to the survival of the species. The project is a minor fragment of the extent and available foraging habitat for the Blue-winged Parrot; therefore, it is unlikely the project would adversely impact habitat critical to the survival of the species.

- ***disrupt the breeding cycle of an important population***

The project would not disrupt a breeding cycle of an important population as the Blue-winged Parrot is not considered an important population within the subject land. In addition, the breeding range for the Blue-winged Parrot encompasses Tasmania, coastal south-eastern South Australia and southern Victoria. As such, large amounts of the breeding range for the species are outside of the subject land.

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

Habitat within the subject land has been previously modified, and similar habitat occurs in the surrounding locality. habitats would mostly be spanned by wires and the micro-siting process undertaken before construction begins which would further minimise impacts to the greatest extent possible. The project would result in 0.008 % of the habitat within the species are of occupancy. Given the mobility of the species, additional habitat within the locality, and the 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 Blue-winged Parrot would likely decline.

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

Due to past land uses invasive weeds and vertebrate pests such as rabbits, cats and foxes are already established within the landscape. Therefore, it unlikely the project would result in invasive species that are harmful to species becoming established, In addition mitigation measures such as weed controls and hygiene protocols would be implemented to further minimise the impact of invasive species on habitat for the Blue-winged Parrot.

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

The Blue-winged Parrot is affected by Psittacine Beak and Feather Disease (PBFD) across the species entire distribution. 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 Blue-winged Parrot to decline.

- ***interfere substantially with the recovery of the species***

There is currently no recovery plan for the Blue-winged Parrot, the approved conservation advice for the species identifies actions for the conservation and recovery of the species, including:

- establish new habitat patches in area where native vegetation cover is lacking.
- developing site-based fire management strategies with local authorities which considers the ecological needs of the species
- develop and implement strategies to increase hollow availability, including the protection of existing nesting habitat, developing nest box programs and the humane control of introduced species.

The project would result in the loss of hollow-bearing trees, however given the extent of habitat for the species in the subject land and locality it is unlikely to substantially interfere with the recovery of the species. In addition, a strategy for compensatory habitats for hollow dependent species would be prepared and implemented to minimise the impacts to the loss of hollows for the species. The strategy would include the following requirements:

- survey of tree hollows and nests within the proposed clearing extents and evaluation of hollow utilisation and resource availability.
- Investigation into strategic and optimal placement of hollows for the targeted species within the locality/region
- Investigating new and emerging monitoring
- Funding of targeted research that contributes to effective compensatory habitat measures relevant to the project impacts; and
- measures to address and manage nests (such as raptor nests) prior to clearing

Conclusion

Based on the assessment above it is unlikely that the project would have significant impact on the Blue-winged Parrot.

Plains-wanderer (*Pedionomus torquatus*)

- Plains-wanderer is listed as critically endangered under the EPBC Act.

Description

Plains-wanderers are ground dwelling birds living in semi-arid, lowland native grasslands that typically occur on hard red-brown soils in Queensland, New South Wales, Victoria and South Australia. Habitat structure appears to play a more important role than plant species composition. Preferred grassland habitat of the Plains Wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses (TSSC, 2015). Surveys indicate that Plains Wanderers appear to avoid being in close proximity to living or dead trees, with no records of any birds within 300 m of trees of 10m or greater in height across their strongholds in New South Wales and Victoria. In the Riverina region, the home range of individual Plains Wanderers vary in size from 7–21 hectares (DEWNR, 2016).

They feed on a mixture of seeds, leaves and invertebrates, with seeds and leaves accounting for nearly 60% of the annual diet. Seeds and leaves are taken from grasses (including native species of *Austrostipa, Sporobolus, Panicum, Austrodanthonia,* and *Eragrostis* and occasionally exotic species of *Vulpia*), chenopods (including species of *Atriplex, Maireana, Chenopodium* and *Sclerolaena*) and other plants (such as native species of *Asperula, Galium,* and *Euphorbia* and possibly exotic species of *Spergularia* and *Carthamus*). They occasionally occur in other types of habitats such as in stubble; amongst low cereal crops; and in low, sparse chenopod shrubland (DEWNR, 2016).

Plains Wanderers breed in solitary pairs, although may be polyandrous, and create nests in the ground in the form of a scrape lined with grass, amongst native grasses and herbs and sometimes crops (TSSC, 2015).

Threats to this species include:

- habitat loss and fragmentation as a result of land conversion for the cultivation of crops, including the introduction of pasture species, weeds, and woody vegetation
- inappropriate grazing, including both over and under grazing by domestic livestock and rabbits.
- low population size, which increases the risk of extinction
- predation by foxes, cats, and birds of prey
- pesticide use, particularly for the historical control of the Australian plague locust
- planting and natural recruitment of trees in or near native grasslands.

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:

- Conservation Advice *Pedionomus torquatus* plains-wanderer (DoE 2015). In effect under the EPBC Act from 08-Jul-2015
- National Recovery Plan for the Plains-wanderer (DoE & DEWNR, 2016). In effect under the EPBC Act from 28-Jun-2016.

Specific impacts

Plains Wanderer was recorded within the subject land and habitat for this species is associated with PCTs 44 and 46. The Plains Wanderer is a dual credit species and as a candidate species credit, has a habitat constraint restricted to Important Habitat Mapping in areas within the indicative disturbance footprint. Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. The project would result in the loss of 92.15 ha of habitat for the species.

Significant impact criteria

An action is likely to have a significant impact on an endangered or 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 recovery plan for the Plains-Wanderer notes that the species is thought to occur in a single widely-dispersed population, rather than in multiple populations. The size of the Plains-Wanderer population is considered to vary with seasonal conditions. The recovery plan notes that data collected between 2001 and 2014 shows an overall decline of 93% across the species range. The project would remove 92.15 ha of foraging and breeding habitat for the species. Given the sedentary nature of the species and small home range (approximately 7-21 ha), it is likely the project would lead to a long-term decrease in the size of the Plains Wanderer population.

- ***reduce the area of occupancy of a population***

Plains Wanderer distribution was historically Queensland, NSW, South Australia and extending into Victoria. The extent of occurrence is estimated to be 930 000 km^2. However, the area of occupancy has been significantly reduced to 330 km^2 and a continuing decline. The species is found mainly in northern Victorian and Southern NSW, south western Queensland ad Northeast South Australia. The project would remove 92.15 ha of foraging and breeding habitat for the species. Given the sedentary nature of the species and small home range, it is likely the project would lead to a long-term decrease in the size of the Plains Wanderer population.

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

The recovery plan for the Plains-Wanderer notes that the species is thought to occur in a single widely-dispersed population, rather than in multiple populations. Given the nature of the project (transmission lines spanning habitat) it is unlikely the project would present a barrier to movement for the species. 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***

The recovery plain for the specie identifies habitat critical to the survival of the species as any regions where the species is likely to occur and newly discovered location that extend the likely range of the species. The Plains Wanderer is known to occur within the subject land; therefore, the project would impact on habitat critical to the survival of the species.

- ***disrupt the breeding cycle of a population***

The nest is a hollow or 'scrape' that is scratched into the ground and lined with grass, with nests placed amongst native grasses and herbs, or rarely amongst crops. Breeding success is often linked to environmental conditions i.e. no breeding during drought. The project would result in the loss of 92.15 ha of habitat that may including breeding resources for the species. Therefore, there is a real chance or possibility that it the breeding cycle may be disrupted.

- ***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 remove 92.15 ha of foraging and breeding habitat for the species. This is in comparison to 148,624.870 ha of associated habitat within 10 km of the project footprint that would not be impacted. Given the sedentary nature of the species and small home range (approximately 7-21 ha), there is potential for the project would decrease the availability of to the extent that the species may decline.

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

European foxes, feral cats and native birds of prey, such as the Spotted Harrier and Black Falcon are all potential predators of the Plain Wanderer. While most of these species are likely to be present within the landscape, the project does have the potential to increase the numbers of raptors (Falcon) that may prey on the species. The construction of transmission towers may provide artificial roost and breeding habitat in parts of the subject land that are largely treeless.

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

There are no known diseases causing potential species decline to the Plains Wanderer.

- ***interfere substantially with the recovery of the species.***

The recovery plan for the Plains Wanderer identifies six strategies to determine actions and priorities for recovery for the species. The project has the potential to interfere with Strategy 3 which is to '*Enhance protection, improve the quality and increase the extent of habitat suitable for the plains-wanderer' (*DEWNR, 2016).

Conclusion

Based on the assessment above, the loss habitat for the Plains Wanderer is likely to result a significant residual impact on the Plains Wanderer.

Gang-gang Cockatoo (*Callocephalon fimbriatum*)

The Gang-gang Cockatoo is listed as endangered under the EPBC Act.

Description

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 south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. 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, the Gang-gang Cockatoo is generally found in tall mountain forests and woodlands, particularly 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 often found in urban areas. The species may also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests. It favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 7 cm in diameter or larger in eucalypts and 3 m or more above the ground.

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 for *Callocephalon fimbriatum* (Gang-gang Cockatoo). (Department of Agriculture, Water and the Environment, 2022)" In effect under the EPBC Act from 02-Mar-2022.
- Threat abatement plan for predation by feral cats 2024. (Department of Climate Change, Energy, the Environment and Water, 2024)." In effect under the EPBC Act from 24-Dec-2024.

Specific impacts

The Gang-gang Cockatoo has been assessed as moderately likely to occur within the subject land as the associated PCT 266, 277 and 343 occur within the subject land and are considered in a suitable condition to support the species. The associated plant community types cover 48.04 ha of the subject land that would be impacted.

Specific 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 current number of mature individuals in the wild is estimated to be 25,300 (range 17,600 – 35,200). The species is distributed across south-eastern Australia and is common within higher elevations and more southern latitudes. The loss of habitat and the risk of collision may impact on the species population. Given the mobility of the species, it is unlikely the loss of habitat (48.04 ha) would impact the carrying capacity of the habitats to the point that food density would be detrimentally impacted, and the habitat was no longer viable for Gang-gang Cockatoos.

In addition, the project would implement mitigation measures to reduce the risk of collision and barriers associated with the transmission lines. These include:

- conductor line-marking techniques would be implemented during design refinement to minimise bird strike
- bird diverter models would be implemented to minimise bird strike risk. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas.

Such mitigation measures would alleviate impacts to 4528.742 ha of associated habitat located within 10 km of the project footprint. Therefore, 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 area of occupancy for the Gang-gang Cockatoo is stable and is estimated to be at 30,000 km^2. The project would result in the loss of 48.04 ha of habitat for the species, which represents less than 0.00001% of the national area of occupancy for the species The project is unlikely to reduce the area of occupancy for the Gang-gang Cockatoo.

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

The Gang-gang Cockatoo is not deemed to be severely fragmented both within the locality of the project and the wider distribution. However, the project may create a barrier to movement associated with the transmission lines. The project would implement mitigation measures to minimise the impacts, including:

- conductor line-marking techniques would be implemented during design refinement to minimise bird strike
- bird diverters would be implemented to minimise the risk of bird strike. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas.

Given this species ability 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***

Habitat critical to the survival of the Gang-gang Cockatoo includes foraging habitat during both breeding and non-breeding seasons. This includes tall mountain forests and woodlands in summer months, and drier open eucalypt forests and woodlands during winter. Hollow-bearing trees is another necessary feature for the species, which must occur around 7.5 meters above the ground. A strategy for compensatory habitats for hollow dependant fauna species would be prepared and implemented to minimise the impacts to the loss of hollows for the species. The strategy would include the following requirements:

- survey of tree hollows and nests within the proposed clearing extents and evaluation of hollow utilisation and resource availability.
- Investigation into strategic and optimal placement of hollows for the targeted species within the locality/region
- Investigating new and emerging monitoring
- Funding of targeted research that contributes to effective compensatory habitat measures relevant to the project impacts
- measures to address and manage nests (such as raptor nests) prior to clearing.

Provided the above measures are implemented it is unlikely the project would adversely affect habitat critical to the survival of the species.

- ***disrupt the breeding cycle of a population***

The Gang-gang Cockatoo prefer nesting territory within old-growth forest, due to the availability of hollow-bearing trees. Nesting also occurs in proximity to water, as hollow bearing trees are more common in such locations. The main threat associated with the project would be removal of current and potential nesting sites for the species. A compensatory habitat strategy for hollow dependant fauna would be provided that directly addresses the project impacts to nesting habitat for threatened fauna displaced during construction.

The strategy would include the following requirements:

- survey of tree hollows and nests within the proposed clearing extents and evaluation of hollow utilisation and resource availability.
- investigation into strategic and optimal placement of hollows for the targeted species within the locality/region
- investigating new and emerging monitoring
- funding of targeted research that contributes to effective compensatory habitat measures relevant to the project impacts; and
- measures to address and manage nests (such as raptor nests) prior to clearing

Therefore, providing the mitigation measures are implemented it is unlikely the breeding cycle of the species would be disrupted.

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

Gang-gang Cockatoos have a distribution across temperate eucalypt forests and woodlands of south-east Australia. Habitat associated with the species ranges from summer to winter months, including mature, wet sclerophyll forest to more open woodland areas. The subject land would interfere with 48.04 ha of vegetation associated with the species, which occurs in a range of condition classes. The habitat is well represented in the locality with 4,528.74 ha of associated habitat occurring within 10 km of the subject land. It is unlikely that the project would interfere with habitat for the species to the extent that the Gang-gang Cockatoo is likely to decline.

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

No invasive species is identified as a threat to the Gang-gang Cockatoo. Within the subject land, invasive species are already present due to past disturbance events and would not likely increase because of the project.

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

Psittacine beak and feather disease (PBFD) is a disease currently known to affect a subpopulation within the Hornsby area in New South Wales. The prevalence of the disease across the rest of the range is unknown. Despite this, it is unlikely that the project would lead to the introduction of PBFD into populations found on the subject land, or wider locality.

- ***interfere with the recovery of the species.***

Approved Conservation and recovery actions for the Gang-gang Cockatoo include the following:

- develop, implement and monitor nest box programs as well as introduce control programs for native and invasive species to reduce competition for nest hollows
- conduct long-term, regular and ongoing monitoring to assess population and subpopulation trends
- make a recovery plan for the Gang-gang Cockatoo to provide additional conservation benefits.

The project is unlikely to interfere with conservation and management actions in place for the species. The removal of potential habitat for the Gang-gang Cockatoo would occur, however mitigation measures would be in place to reduce associated impacts. The recovery of the species would not be significantly interfered with.

Conclusion

Based on the assessment above it is unlikely the project would result in a significant residual impact on the on the Gang-gang Cockatoo providing mitigation measures are implemented.

Common Greenshank (*Tringa nebularia*)

The Common Greenshank is listed as endangered under the EPBC Act.

Description

The Common Greenshank is a migratory species which does not breed in Australia; however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia (Higgins & Davies 1996). In NSW, the species has been recorded in most coastal regions. It is widespread west of the Great Dividing Range, especially between the Lachlan and Murray Rivers and the Darling River drainage basin, including the Macquarie Marshes, and north-west regions (Higgins & Davies 1996).

The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and saltflats. It would also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores. The edges of the wetlands used are generally of mud or clay, occasionally of sand, and may be bare or with emergent or fringing vegetation, including short sedges and saltmarsh, mangroves, thickets of rushes, and dead or live trees. It was once recorded with Black-winged Stilts (*Himantopus himantopus*) in pasture but are generally not found in dry grassland (Higgins & Davies 1996).

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:

- The relevant Conservation Advice for this species is: “Conservation Advice for *Tringa nebularia* (common greenshank). (Department of Climate Change, Energy, the Environment and Water, 2024)” In effect under the EPBC Act from 05-Jan-2024.
- There is a Marine Bioregional Plan in effect for this species: “ Marine bioregional plan for the North-west Marine Region (Department of the Environment, 2015)” In effect under the EPBC Act from 27-Aug-2012.

Specific impacts

Suitable habitat for the Common Greenshank has been assessed as moderately likely to occur within the subject land as the species has been recorded throughout the locality when conditions are favourable. Although it is not officially associated with any PCTs present within the subject land, habitats present may be considered suitable based on this species diverse habitat preferences No direct impact to waterbodies or adjacent riparian habitats is expected, as aquatic impact would be largely restricted to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. However, for the purpose of the assessment a precautionary maximum, disturbance of 7.19 ha has been considered. The project would avoid impacts to wetland and riparian habitats, however the species may be suspectable to increase risk of collision associated with the transmission lines.

Specific impact criteria

An action is likely to have a significant impact on an endangered or 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 current population of Common Greenshank is estimated to be 23,700 mature individuals. Population trends suggest that the species is in decline, and the decline may be accelerating. Aquatic habitats most likely to be used by the species are unlikely to be directly impacted by the project (the maximum impact likely to occur would be the removal or trimming of tree canopy on riverbanks). However, there may be at an increased risk of powerline strike from the project during migratory flights. The project would implement mitigation measures including conductor line-marking techniques and bird diverters would be implemented during design refinement to minimise bird strike.

Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas.

Therefore, it is unlikely the project would lead to a long term decline in the size of the species populations.

- ***reduce the area of occupancy of the species***

Area of occupancy for the Common Greenshank is estimated at 13,000 km^2 and is deemed to be stable. Aquatic habitats most likely to be used by the species are unlikely to be directly impacted by the project (the maximum impact likely to occur would be the removal or trimming of tree canopy on riverbanks).Given the species mobility, nature and scale of the impacts it is unlikely the project would reduce an area of occupancy for the species.

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

The Common Greenshank population is not deemed to be severely fragmented. This species is highly mobile and capable of long-distance flight across other habitats to move between suitable habitats. The transmission lines may create a barrier to movement for the species. However, mitigation measure would be implemented to reduce risk of collision and to create connectivity in the landscape for avian species. The mitigation measures would be further refined as part of the connectivity strategy and include:

- conductor line-marking techniques would be implemented during design refinement to minimise bird strike
- to mitigate bird strike risk, bird diverters would be implemented. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas,
- connectivity corridors involving native vegetation retention up to the 10 m or 20 m (for 330 kV and 500 kV lines, respectively) wide temporary construction centreline clearing zone to better facilitate woodland connectivity. Vegetation heights to be retained would be determined in accordance with vegetation clearing requirements at each location.

Therefore, it is considered unlikely that the project would introduce a barrier to movement, which would result in the south-eastern subpopulation being fragmented into two or more populations.

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

Habitat critical to the survival of the Common Greenshank encompasses both foraging and roosting habitats. This includes freshwater, marine and artificial wetlands, however, no specific habitat critical to the survival of the Common Greenshank has been identified. Therefore, the habitat within the subject land is likely to represent habitat critical to the survival of the species. However, no direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Any potential indirect impacts to these habitats would be managed through mitigation measures. Consequently, it is unlikely that the project would adversely affect habitat critical to the survival of the species.

- ***disrupt the breeding cycle of a population***

As Common Greenshank only occur in the subject land during the non-breeding season, the project would not 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***

No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Therefore, the project is considered unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

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

The invasion of coastal habitats by mangroves and cordgrass is identified within approved conservation advice for the species. These habitats occur outside of the subject land. As such the project is considered unlikely to result in invasive species that are harmful to a species becoming established in the endangered species' habitat. In addition, mitigation measures such as hygiene protocols would be undertaken to minimise further invasive species from becoming established in the species habitat.

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

There are no known diseases causing potential species decline to the Common Greenshank. Mitigation measures including weed and pathogen controls would be put in place for the project which would minimise the introduction of any potential diseases.

- ***interfere with the recovery of the species.***

Within approved conservation advice for the Common Greenshank, conservation and recovery actions include:

- minimizing further loss of critical habitat across Australia and prevent further decline in the species population
- unify international management plans for the migratory species and standardize documentation for future management plans
- survey northern and inland Australia for migratory shorebird populations and identify important habitats.

The project would not significantly interfere with conservation and recovery actions put forth for the Common Greenshank.

Conclusion

No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Noting the species ability for movement and habitat within the surrounding locality, and region, it is unlikely this impact would significantly impact the species. The implementation of mitigation measures would further minimise impacts on the species habitat. Therefore, it is considered unlikely the project would result in a significant residual impact on the Common Greenshank.

Superb Parrot (*Polytelis swainsonii*)

Superb Parrot is listed as vulnerable under the EPBC Act.

Description

The Superb Parrot is a distinctive large, bright grass-green parrot with a long, narrow tail and sharply back-angled wings in flight. The Superb Parrot is found throughout central to south-eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. Superb Parrots inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) in mainly tall riparian River Red Gum Forest or Woodland between September and January. This species typically forages up to 10 km from nesting sites, primarily in grassy Box-Gum Woodland.

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 these species is as follows:

- Conservation Advice *Polytelis swainsonii* superb parrot (TSSC 2016). In effect under the EPBC Act from 02-May-2016
- National Recovery Plan for the Superb Parrot (*Polytelis swainsonii*), Commonwealth of Australia 2021.

Specific impacts

The species was not recorded within the subject land, however BioNet records have identified individuals of this species within the subject land. Additionally, extensive suitable habitat for this species occurs within the subject land in association with PCTs 7, 10, 11, 13, 23, 26, 28, 45, 46, 70, 76, 237, 266, 277 & 343. The project is expected to clear It is predicted that a total of 706.42 ha of suitable habitat for the species.

Is this part of an important population?

This species has previously been recorded within the subject land and is highly likely to use habitats for foraging and breeding, though no individuals were observed across the extended survey seasons. Areas of the project, particularly at the eastern extent of the project near to Wagga Wagga, sit within close proximity to important breeding locations on the Murrumbidgee River. Furthermore, the project sits within two important breeding populations and considering the distribution of records is likely to support individuals dispersing between the two breeding sites. Such individuals would be important for maintaining genetic diversity across the population. It is therefore considered that an important population of the species may be supported by habitats within the project.

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***

Most recent estimates of population size for Superb Parrot range from 10,000-20,000 mature individuals across NSW and Victoria. As the project is predicted to remove 706.42 ha of suitable habitat for the species (of which an important population has been considered present on site), including that which is likely to support individuals dispersing between breeding sites, it is possible that the project could contribute to a long-term decrease in the size of an important population.

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

The most recent estimates for the area of occupancy for the Superb Parrot is around 5,000 km^2. The project is predicted to remove 706.42 ha of suitable habitat for the species, including in the Wagga-Gugaa section of the projection which sits in close proximity to a known breeding location (Murrumbidgee River). As such, it is a possibility that the removal of habitats caused by the project could contribute to a reduction in the area of occupancy for the species.

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

The population of the Superb Parrot is already highly fragmented in this area, with core breeding areas separated by vast areas of agricultural land. The removal of small fragments of suitable habitat within an already heavily fragmented landscape is therefore not expected to increase levels of population fragmentation in this area.

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

Habitat critical to the survival of the Superb Parrot is divided into the following in the National Recovery Plan:

- Breeding habitat:
  - riverine forests in the Riverina / box-gum woodlands in tablelands and slopes of Victoria, NSW and ACT
  - any known breeding colonies + 10 km where feasible
  - trees with DBH ~113 cm and height 12–24 m, containing hollows with: diameter 8–12 cm, depth 59–122 cm, floor diameter 15–22 cm, and located on a branch or stem with a diameter of 36–49 cm.
- Foraging habitat: All preferred foraging habitat during both breeding and non-breeding season. This does not include exotic feeding grounds such as agricultural lands and non-native feeding grounds.
- Habitat for the long-term maintenance of the species:
  - all KBAs (Key Biodiversity Areas) with the Superb Parrot as a Trigger species
  - any potential suitable foraging and breeding habitats within the projected south-eastward range shift (Manning et al. in review).

The Wagga-Gugaa section of the project sits within the South-west Slopes of NSW KBA (Birdlife Australia, 2025). This section of the project is also within 10 km of a known important breeding location for the species (Murrumbidgee River). As such, the project works within this area have the potential to adversely affect habitat critical to the survival of the Superb Parrot.

- ***disrupt the breeding cycle of an important population***

The project (Wagga-Gugaa) is situated within 10 km of a known breeding area for Superb Parrot (Murrumbidgee River) and is likely to also support individuals dispersing between two breeding locations. As such, habitat destruction and disruption across the project has the potential 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***

Habitats within the subject land meet the requirements for Superb Parrot, i.e., hollow bearing trees, including *E. camaldulensis* and *E. macrocarpa* with hollows greater than 5 cm diameter, that are greater than 4 m above ground on trees with a DBH of over 30 cm, are present in the subject land within the Murray Fans and Murrumbidgee IBRA subregions. The location of this habitat, however, is within an already highly disturbed and fragmented landscape, and considering the fact this this habitat loss would occur in small fragments across the corridor rather than clearing whole habitat patches, it is considered unlikely 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 within these subregions.

Habitats within project located the Inland Slopes, however, sit with close proximity to a known breeding location for Superb Parrot. Suitable PCTs have been identified within the subject land in this subregion from SVTM mapping as surveys have not yet been conducted. The project would result in a 706.42 ha loss in potential Superb Parrot habitat in the Inland Slopes IBRA subregion which has the potential to contribute to species decline.

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

Invasive species are not currently listed as a threat to this species.

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

The Superb Parrot may be susceptible to diseases such as Beak and Feather Disease. This can be spread between individuals and increased due to increased competition for nest hollows. The project may increase competition for nest hollows if there are individuals breeding within areas of suitable habitat which are to be subject to clearing to facilitate the project. However, as such areas sit well outside the main breeding areas for the species, it is not considered likely that this would be a significant effect leading to decline of the species.

- ***interfere substantially with the recovery of the species***

The following strategies are listed in the National Recovery Plan for the Superb Parrot:

- identify, protect, manage and strategically restore Superb Parrot breeding, foraging and movement habitats, at the local, regional and landscape scales
- define, monitor, reduce and manage threats to the Superb Parrot at the local, regional and landscape scales
- expand and sustain ecologically meaningful monitoring to track changes in Superb Parrot distribution, habitat use and population size, including developing and applying techniques to measure the success of recovery actions
- improve understanding of Superb Parrot movement ecology across multiple scales to better target protection and restoration measures
- engage local communities and stakeholders in Superb Parrot conservation
- coordinate, review and report on Superb Parrot recovery progress.

The project has the potential to interfere with the protection of superb parrot breeding, foraging and movement habitats at the local scale, as well as the reduction of threats to Superb Parrot at the local scale.

Conclusion

The Superb Parrot is considered highly likely to occur within the subject land, due to the presence of records and suitable habitat. Much of the subject land sits in-between two important breeding populations within a heavily fragmented and disturbed agricultural landscape, however the Wagga-Wagga section of the project is located within 10 km of a known breeding location on the Murrumbidgee River. It is considered possible that the impacts of habitat loss and fragmentation caused by the project, particularly within the Wagga-Wagga section, have the potential to result in a significant impact to the species.

Sharp-tailed Sandpiper (*Calidris acuminata*)

Listed as vulnerable under the EPBC Act.

Description

The Sharp-tailed Sandpiper spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. Most of the population migrates to Australia, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage. They are widespread in most regions of New South Wales (NSW) and Victoria, especially in coastal areas, but they are sparse in the south-central Western Plain and east Lower Western Regions of NSW, and north-east and north-central Victoria.

In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. They tend to occupy coastal mudflats mainly after ephemeral terrestrial wetlands have dried out, moving back during the wet season. They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands, and coastal areas with much beachcast seaweed. Sometimes they occur on rocky shores and rarely on exposed reefs.

They forage at the edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water. They also forage among inundated vegetation of saltmarsh, grass or sedges. They forage in sewage ponds, and often in hypersaline environments. After rain, they may forage in paddocks of short grass, well away from water.

Roosting occurs at the edges of wetlands, on wet open mud or sand, in shallow water, or in short sparse vegetation, such as grass or saltmarsh. Occasionally, they roost on sandy beaches, stony shores or on rocks in water. They have also been recorded roosting in mangroves.

The Sharp-tailed Sandpiper forages on seeds, worms, molluscs, crustaceans and insects. They are also reported to eat arachnids and dead fish.

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:

- The relevant Conservation Advice for this species is “Conservation Advice for *Calidris acuminata* (sharp-tailed sandpiper) (Department of Climate Change, Energy, the Environment and Water, 2024).” In effect under the EPBC Act from 05-Jan-2024.
- The relevant Threat Abatement Plan for this species is: “Threat abatement plan for predation by feral cats 2024. (Department of Climate Change, Energy, the Environment and Water, 2024).” In effect under the EPBC Act from 24-Dec-2024.

Specific impacts

The Sharp-tailed Sandpiper has been assessed as moderately likely to occur within the subject land as it has been recorded within various habitat types and consistently throughout the locality when conditions are favourable. Although it is not associated with any present PCTs officially, habitats present may be considered suitable based on this specie’s diverse habitat preferences. No direct impact to waterbodies or adjacent riparian habitats is expected, as aquatic impact would be largely restricted to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. However, for the purpose of the assessment a precautionary maximum, disturbance of 7.19 ha has been considered. The species may also be at risk of collision associated with the transmission line.

Is this part of an important population?

In accordance with the Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

The Sharp-tailed Sandpiper only occurs in Australia during non-breeding seasons, where the distribution of the species spans the entire mainland and surrounding islands. Any population found within the subject land would not be associated with breeding or occurring close to ay limit of the species range. The species is more likely to occur in coastal regions along New South Wales, although would occur further inland. Therefore, no important population of Sharp-tailed Sandpiper are likely to occur within the subject land.

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 would not disrupt a breeding cycle of an important population as the Sharp-tailed Sandpiper, as no important population were identified within the subject land. While there a risk of collision with the transmission lines mitigation measure will be implemented to minimise the risk including the implementation of bird diverters during the construction and beginning of operation phase.

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

The project would not reduce the area of occupancy of an important population, as the Sharp-tailed Sandpiper is not considered an important population within the subject land. In addition, the area of occupancy for the species is 13,000 km^2 s and extends across all of mainland Australia. This area of occupancy would extend far past the subject land and would not impact upon and important population.

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

The project would not fragment an existing important population, as the Sharp-tailed Sandpiper is not considered an important population within the subject land. In addition, mitigation measure would be implemented to reduce risk of collision and to create connectivity in the landscape for avian species. The mitigation measures would be further refined as part of the connectivity strategy and include:

- conductor line-marking techniques would be implemented during design refinement to minimise bird strike
- bird diverters, which reduce the risk of bird strikes, would be implemented. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas
- connectivity corridors involving native vegetation retention up to the 10 metre or 20 metre (for 330 kV and 500 kV lines, respectively) wide temporary construction centreline clearing zone to better facilitate woodland connectivity. Vegetation heights to be retained would be determined in accordance with vegetation clearing requirements at each location.

Therefore, it is considered unlikely that the project would introduce a barrier to movement, which would result in the south-eastern subpopulation being fragmented into two or more populations.

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

No habitat associated with the species has been identified as habitat critical to the survival of Sharp-tailed Sandpiper. The species is known to be flexible in habitat when compared to other shorebirds; being associated with costs and inland wetlands. The species has also been observed in grassy vegetation, mudflats, mangroves and beaches. Aquatic habitats most likely to be used by the species are unlikely to be directly impacted by the project (the maximum impact likely to occur would be the removal or trimming of tree canopy on riverbanks). Therefore, it is unlikely the project would adversely impact habitat critical to the survival of the species. In addition, mitigation measures such as marking out the construction zone and implementing hygiene protocols would minimise impacts on the species habitats.

- ***disrupt the breeding cycle of an important population***

Sharp-tailed Sandpipers would only be present on the subject land during the non-breeding season. As no direct impact would occur from potential clearing for the project, the breeding cycle of the Sharp-tailed Sandpiper would not be impacted.

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

Sharp-tailed Sandpiper occupy numerous habitats during the non-breeding season, across both fresh and hypersaline environments. Foraging habitats span mudflats, inland wetlands and sewerage ponds. Roosting occurs in freshwater and inland saltwater habitats. No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Therefore, the project is considered unlikely to result in the modification, removal, isolation, or decreased 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***

Within approved conservation advice, it is stated that invasive flora species may affect coastal saltmarshes and mangroves. As the subject land is situated inland, invasive species would not pose a significant threat to the Sharp-tailed Sandpiper. Furthermore, invasive species are already present on the subject land, and appropriate mitigation measures would be suggested in the EIS to mitigate further impact. Thus, an increase on invasive species is not likely to occur.

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

There are no known diseases causing potential species decline to Sharp-tailed Sandpiper.

- ***interfere substantially with the recovery of the species***

Conservation and recovery actions put forth in approved conservation advice for the Sharp-tailed Sandpiper include:

- the identification of important habitat within Australia to reduce habitat loss and maintain functional connectivity during migration
- monitor the spread of Cordgrass and mangroves throughout Australia to control invasive species
- continue survey efforts in inland Australia for migratory shorebird subpopulations and identify important habitats.

No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. As such, the project is unlikely to substantially interfere with the recovery of the species.

Conclusion

Based on the assessment above it is unlikely the project would result in a significant residual impact on the Sharp-tailed Sandpiper.

Latham’s Snipe (*Gallinago hardwickii*)

Listed as vulnerable under the EPBC Act.

Description

Latham's Snipe is a non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia (i.e. it travels through northern Australia to reach non-breeding areas located further south). 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.

Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies), however, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity.

Latham's Snipe is an omnivorous species that feeds on seeds and other plant material (mainly from species in families such as Cyperaceae, Poaceae, Juncaceae, Polygonaceae, Ranunculaceae and Fabaceae), and on invertebrates including insects (mainly flies and beetles), earthworms and spiders and occasionally molluscs, isopods and centipedes.

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:

- The relevant Conservation Advice for this species is “Conservation Advice for *Gallinago hardwickii* (Latham's snipe) (Department of Climate Change, Energy, the Environment and Water (2024). In effect under the EPBC Act from 05-Jan-2024.
- The relevant Threat Abatement Plans for this species are:
  - “Threat abatement plan for predation by feral cats 2024. (Department of Climate Change, Energy, the Environment and Water, 2024).” In effect under the EPBC Act from 24-Dec-2024.
  - “Threat abatement plan for predation by the European red fox. (Department of Climate Change, Energy, the Environment and Water, 2024)” In effect under the EPBC Act from 01-Oct-2008.

Specific impacts

Latham’s Snipe has been assessed as moderately likely to occur within the subject land as the species has been recorded throughout the locality when conditions are favourable. Although not associated with any present plant community types officially, habitats present may be considered suitable based on this species diverse habitat preferences. No direct impact to waterbodies or adjacent riparian habitats is expected, as aquatic impact would be largely restricted to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. However, for the purpose of the assessment a precautionary maximum, disturbance of 7.19 ha has been considered.

Is this part of an important population?

In accordance with the Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

The subject land does not occur in an area near or on the species range, as Latham's Snipe occurs across all of eastern Australia. The species breeds in Japan, and Far eastern Russia, and habitat within the subject land is widespread and therefore not considered necessary or important for genetic diversity. Therefore, the subject land would not contain an important population of Latham's snipe.

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 would not lead to a long-term decrease in the size of an important population as the no important populations were identified in the subject land. Furthermore, the species is not known to breed in Australian and foraging resources would not be significant impacted. Although here is an increased risk of collision, the project would implement mitigation measure to minimise the impacts including:

- conductor line-marking techniques would be implemented during design refinement to minimise bird strike
- bird diverters would be implemented. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas.

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

As no important population is present on the subject land and the extent of occupancy is not close to the subject land.

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

The project would not fragment an important population of the species as not important populations were identified in the subject land. In addition, as the species is highly mobile and capable of long-distance the transmission lines may create a barrier to movement for the species. However, mitigation measure would be implemented to reduce risk of collision and to create connectivity in the landscape for avian species. The mitigation measures would be further refined as part of the connectivity strategy and include:

- conductor line-marking techniques would be implemented during design refinement to minimise bird strike
- bird diverters would be implemented to reduce bird strikes. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas
- connectivity corridors involving native vegetation retention up to the 10 metre or 20 metre (for 330 kV and 500 kV lines, respectively) wide temporary construction centreline clearing zone to better facilitate woodland connectivity. Vegetation heights to be retained would be determined in accordance with vegetation clearing requirements at each location.

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

No critical habitat for the species has been defined within approved conservation advice. Within Australia, the species usually inhabit open, freshwater wetlands with dense vegetation. No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Any potential indirect impacts to these habitats would be managed through mitigation measures. Consequently, it is unlikely that the project would adversely affect habitat critical to the survival of the species

- ***disrupt the breeding cycle of an important population***

Breeding for the migratory Latham's Snipe does not occur in Australia, being restricted to Japan and Russia. As such, the breeding cycle of the species would not be impacted.

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

The extent of associated habitat for the Latham's Snipe across the subject land is not known. The species forage in shallow water and mudflats, while roosting in wetlands with dense cover. No direct impact to waterbodies or adjacent riparian habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Any potential indirect impacts to these habitats would be managed through mitigation measures. Therefore, the project is considered unlikely to result in the modification, removal, isolation, or decreased 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***

Both feral cats and foxes are identified as being minor threats to the species within more open habitat ranges. As well as this, grasslands in Cape York are being disrupted by broad-leaved tea-trees, which is not applicable to the subject land. Invasive species are already present on the subject land from previous disturbances, and the project would not lead to a significant increase in such species.

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

There are no known diseases causing potential species decline to Latham's Snipe.

- ***interfere substantially with the recovery of the species***

No recovery plan has been made for Latham's Snipe, however approved conservation advice for the species sets out management priorities include the following:

— identify important habitat for the species to decrease habitat loss caused by residential and commercial development

— development of a habitat model to improve research into the future

— mitigate habitat degradation caused by high-intensity grazing.

The project would not significantly impact upon management strategies put forth for Latham's Snipe, and thus, the overall recovery of the species.

Conclusion

Based on the assessment above and providing mitigation measures are implemented, it is unlikely the project would have a significant residual impact on the Latham's Snipe.

Corben’s Long-eared Bat (*Nyctophilus corbeni)*

Listed as vulnerable under the EPBC Act.

Description

Corben's Long-eared Bat (*N. corbeni*) distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species.

Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, 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 NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark. Slow flying agile bat, utilising the understorey to hunt non-flying prey – especially caterpillars and beetles – and would even hunt on the ground. Mating takes place in autumn with one or two young born in late spring to early summer.

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:

- The relevant Conservation Advice for this species is “Conservation Advice *Nyctophilus corbeni* south-eastern long-eared bat (Threatened Species Scientific Committee, 2015). In effect under the EPBC Act from 01-Oct-2015.
- Listing advice for the species is: “Commonwealth Listing Advice on ten species of Bats. (Threatened Species Scientific Committee, 2001)” In effect under the EPBC Act from 04-Apr-2001.
- The relevant Threat Abatement Plans for this species is: “Threat abatement plan for predation by feral cats 2024. (Department of Climate Change, Energy, the Environment and Water, 2024).” In effect under the EPBC Act from 24-Dec-2024.

Specific impacts

Corben’s Long-eared Bat is associated with numerous plant community types found within the subject land, including:

- PCT 2: River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
- PCT 10: River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 28: White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
- PCT 86 - Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
- PCT 266: White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.

Associated plant communities to the species covers 37.46 ha of the subject land. Threats specific to the project include a reduced area of occupancy due to habitat loss particularly in New South Wales, as well as habitat degradation from altered fire regimes and predation by invasive species.

Is this part of an important population?

In accordance with the Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

Approximately 50 % of the species distribution occurs in inland NSW with a strong hold in the Piliga scrub region. The subject land is near the limit of the species distribution. Although habitat within the locality is widely distributed and the species was not identified despite strategy surveys. Therefore, it is unlikely species would represent an important population within the subject land.

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 populations of Corben's Long-eared bat have been identified in the subject land. Therefore, it is unlikely the project would lead to a long-term decrease in the size of an important population of Corben's Long-eared bat is not known.

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

No important populations of Corben's Long-eared bat have been identified in the subject land; therefore, it is unlikely the project would reduce the area of occupancy of an important population of Corben's Long-eared bat ese woodland bird species.

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

It is unlikely the project would fragment an existing important population into two or more populations, as no important populations was identified. It is noted that the transmission lines may create a barrier to movement for the species. However, mitigation measure would be implemented to reduce risk of collision and to create connectivity in the landscape for bat species. The mitigation measures would be further refined as part of the connectivity strategy and include

- conductor line-marking techniques would be implemented during design refinement to minimise bird strike and impacts to other aerial fauna.
- bird diverter models would be implemented. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of a Connectivity Strategy. At minimum these would be used within one kilometre of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas.
- connectivity corridors involving native vegetation retention up to the 10 metre or 20 metre (for 330 kV and 500 kV lines, respectively) wide temporary construction centreline clearing zone to better facilitate woodland connectivity. Vegetation heights to be retained would be determined in accordance with vegetation clearing requirements at each location.

Such mitigation measures would alleviate impacts to extensive associated habitat (52799.822 ha within 10 km of the project footprint) found in the project locality. Therefore, it is considered unlikely that the project would introduce a barrier to movement, which would result in the south-eastern subpopulation being fragmented 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.

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 for large areas of land, some area within the subject land may represent habitat critical to the survival of the species. The project would result in the loss of 37.46 ha of habitat for the species, in comparison to 52799.822 ha of associated habitat found within 10 km of the project footprint. 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 it is unlikely the project would adversely affect impact habitat critical to the survival of the species.

- ***disrupt the breeding cycle of an important population***

No important populations of Corben's Long-eared bat have been identified in the subject land; therefore, it is unlikely 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***

The project would result in the loss of 37.46 ha of habitat for the species. The project is a minor fragment of the extent and available habitat within the locality and region. Therefore, given the extent of habitat for the species it is unlikely the project would adversely affect impact habitat critical to the survival of the species.

- ***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 and weed, and pest species are both currently present throughout the landscape. Therefore, with the implementation of biosecurity measures and pest controls it is considered unlikely that the proposal 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 disease likely to impact this species, given the impacts are well know 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 approved conservation advice for the species set out a number of conservation actions for the recovery of the species including:

- protect known and potential 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.

The species was not recorded within the subject land, and there are no known populations. While the project would result in the loss 37.46 ha habitat for the species, protocols and mitigation measures would 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

Based on the assessment above it is unlikely the project would result in a significant residual impact on Corben's Long-eared Bat.

Koala (*Phascolarctos cinereus*)

Listed as endangered under the EPBC Act

Description

The range of the Koala differs slightly between the biological species range and listed species range. The biological species range extends from north-eastern Queensland to the south-east corner of South Australia. Several sub-populations of the biological species occur outside this range in south-eastern South Australia (i.e., Kangaroo Island) and some parts of Victoria, due to translocations. The listed species range extends from north-eastern Queensland to the Victorian border. Distribution of the Koala is influenced by altitude (generally limited to <800 metres above sea level) 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 (Department of Agriculture Water and the Environment, 2021e).

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 (Department of Planning Industry and Environment, 2021c). 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 (Department of Agriculture Water and the Environment, 2021e). 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 (Department of Agriculture Water and the Environment, 2021e).

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: No threat abatement plan has been identified as being relevant for this species.
- 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).

Specific impacts

The Koala was not recorded during the targeted surveys, however habitat for the species is associated with PCT 7, 10, 11, 13, 15, 26, 28, 76, 237, 319 & 343. The project would result in the loss of 149.77 ha of habitat for the species.

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 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 New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, 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 project would involve mitigation measures such micro-sting towers to minimise impacts and transmission towers would span spanning large tract of habitat for the species. Such mitigation measures would alleviate impacts to 148,697.312 ha of associated habitat found within 10 km of the project footprint. Therefore, it is unlikely the project would represent a barrier to movement for the species. Given habitat within the subject land represents a minor fragment of the extent and available habitat within the locality it is unlikely the project would reduce the resources within the locality such that it would lead to a long-term decline in the size of the 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. The project would result in the loss of habitat, representing 0.007% of the species area of occupancy. Given the liner nature of the project, it is unlikely it would reduce the area of occupancy for the species.

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

Koalas do utilise agricultural land and would 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 would be micro-sited, avoidance of riparian areas and transmission lines would span large area of vegetation), the current level of landscape permeability for Koala would not likely be impacted. The powerline corridor would be highly permeable and would not provide a barrier to Koala movement. There is a limited likelihood that 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 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.

The species was not recorded within the project area, and habitat within the subject land is not limiting, therefore unlikely to be habitat in the subject land would represent habitat critical to the survival of the species.

- ***disrupt the breeding cycle of a population***

The project would result in the loss of Koala habitat. Although the project is unlikely to create a barrier to movement, it may reduce foraging resources for the species that could impact on the species ability to breed. Therefore, 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***

The project represents a minor fragment of the extent and available habitat within the locality. Therefore, given the species mobility it is 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 an endangered species becoming established in the 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 would 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 would 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 unlikely the loss Koala habitat would result in a significant residual impact on the Koala.

Pink-tailed Worm-Lizard (*Aprasia parapulchella*)

The Pink-tailed Worm-lizard is listed as vulnerable under the EPBC Act.

Description

The Pink-tailed Worm-lizard is primarily known from the Central and Southern Tablelands and the South Western Slopes, with a confirmed outlier record on the Hay Plains north of Hay. There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. This species is also found in the Australian Capital Territory.

The Pink-tailed Worm-lizard inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. They are commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites. The species feeds on the larvae and eggs of the ants with which it shares its burrows. It is thought that this species lays 2 eggs inside the ant nests during summer; the young first appear in March. Not all sites are rocky. For instance, on the Hay Plains the species has been recorded from a disturbed ants nest in chenopod shrubland and the West Wyalong population occurs in mallee woodland.

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:

- The relevant conservation advice for this species is: "Conservation Advice *Aprasia parapulchella* Pink-tailed worm-lizard (Threatened Species Scientific Committee, 2015)" In effect under the EPBC Act from 01-Oct-2015.
- The relevant Threat Abatement Plans for this species are:
  - "Threat abatement plan for predation by feral cats 2024. (Department of Climate Change, Energy, the Environment and Water, 2024)." In effect under the EPBC Act from 24-Dec-2024.
  - "Threat abatement plan for competition and land degradation by rabbits. (Department of the Environment and Energy, 2016)" In effect under the EPBC Act from 07-Jan-2017.

Specific impacts

The Pink-tailed Worm Lizard is associated with the following plant community types:

- PCT 319: Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion.

The project would result in the loss of 1.82 ha of habitat for the species.

Is this part of an important population?

In accordance with the Matters of National Environmental Significance – Significant Impact Guidelines 1.1 (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

The species was not recorded during the targeted survey and no important populations are known to occur within the subject land. The distribution of the species is not considered to be at the limit of the species distribution. Therefore, it is unlikely the subject land would support 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***

No important population of the Pink-tailed Worm-lizard has been identified in the subject land. Therefore, it is unlikely the project would lead to a long-term decrease in the size of an important population of Pink-tailed Legless Lizard.

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

No important population of the Pink-tailed Worm-lizard 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 important population into two or more populations***

It is unlikely the project would fragment an existing important population into two or more populations, as no important population of Pink-tailed Worm-lizard are known to occur within the subject land. In addition, given the nature of the project (i.e. transmission lines spanning would span across large tracts of habitat) it is unlikely to create a movement barrier for the species. The project impacting 1.82 ha of habitat is in comparison to the 103,603.06ha of associated habitat found within a 10 km buffer of the project footprint.

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

No critical habitat to the species has been identified within approved conservation advice. The species habitat includes primary and secondary grassland, grassy woodland and woodland communities. Further field surveys are required to determine habitat classed as being critical to the survival of the Pink-tailed Worm-lizard and if any is present within the subject land.

- ***disrupt the breeding cycle of an important population***

No important population of Pink-tailed Worm-lizard are known to occur within the subject land. Therefore, the project would not disrupt the breeding cycle of an important population. In addition, the Pink-tailed Worm-lizard is an oviparous species and produces a clutch size of two within ant nests. The nature of the project would involve moderate land clearing and minimal impacts to ground level vegetation and features such as ant nests.

- ***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 1.82 ha of assumed habitat for the Pink-tailed Legless Lizard. The species was not recorded within the subject land, the nearest record is east of Wagga Wagga, at Mundarlo. Given the lack of records, it is unlikely the loss of 1.82 ha of 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***

Both feral cats and red foxes are identified to be invasive species which prey on the Pink-tailed Legless Lizard. Invasive species are already present in the landscape. Therefore, the project would not lead to an increase in invasive species for the Pink-tailed Legless Lizard.

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

There are no known diseases causing potential species decline to the Pink-tailed Legless Lizard.

- ***interfere substantially with the recovery of the species***

There is no adopted or made recovery plan for the species, however, conservation actions are put forth within approved conservation advice, including:

- managing habitat loss, disturbance and modifications through identifying unprotected habitat sites and implement approaches to reduce the removal of rock necessary for the species
- implementing low-impact monitoring at key locations to evaluate the effectiveness of management regimes
- determine the genetic relationships of current known populations to understand the impacts of habitat fragmentation.

Given lack of records and small are to be impacts (1.82 ha) it is unlikely the project would substantially interfere the recovery of the Pink-tailed Legless Lizard.

Conclusion

Based on the assessment above, the loss of 1.82 ha is unlikely to result a significant impact on the Pink-tailed Legless Lizard.

Grey Snake (*Hemiaspis damelii*)

Grey Snake is listed as endangered under the EPBC Act.

Description

The Grey Snake has a wide overall range from inland southern NSW to central Queensland, though the distribution is not continuous across this full range and consists of several isolated subpopulations. In NSW the species occupies five geographically discrete subpopulations, predominantly associated with the lower reaches of major westerly flowing rivers, including the Gwydir, Namoi, Castlereagh, Macquarie, Lachlan, and Murrumbidgee River systems.

Floodplains and ephemeral wetlands associated with heavy clay soils are key habitat features for the Grey Snake. In NSW, the Grey Snake's habitat includes the margins of ephemeral wetlands within River Red Gum (Eucalyptus camaldulensis) and Black Box (E. largiflorens) vegetation communities and Tangled Lignum (Duma florulenta) swamps. The species shelters in soil cracks, rocks, logs, flood debris, and abandoned burrows within these habitats. The Grey Snake has not been sighted in dry phase wetlands, suggesting its detectability and activity patterns may be related to wetland inundation regimes and suitable weather conditions. Grey Snakes are viviparous, giving birth to 4–16 live young. The species is crepuscular to nocturnal, where they are active for 1–2 hours after dusk. The diet of the Grey Snake is primarily composed of ground-dwelling frogs. However, tree frogs and, rarely, skinks also form part of the species' diet. Cracks in clay soils are used in the species' hunting strategy, where it travels along cracks searching for ground-dwelling frogs, which are often found between these cracks.

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:

- The relevant conservation advice for this species is: "Conservation Advice for *Hemiaspis damelii* (grey snake). (Department of Climate Change, Energy, the Environment and Water, 2022)" In effect under the EPBC Act from 05-Oct-2022.
- The relevant Threat Abatement Plan for this species is: "Threat abatement plan for predation by feral cats 2024. (Department of Climate Change, Energy, the Environment and Water, 2024)." In effect under the EPBC Act from 24-Dec-2024.

Specific impacts

As the species is newly listed, the associated vegetation communities within the subject land cannot be determined. There are five geographically discrete populations of the species across New South Wales, where the associated habitat includes margins of ephemeral wetlands within River Red Gum (*Eucalyptus camaldulensis*) and Black Box (*E. largiflorens*) vegetation communities and Tangled Lignum (*Duma florulenta*) swamps. Thus, further fieldwork is required to determine the extent of associated vegetation that would be impacted by the project. Other associated impacts include improper water management leading to reduced environmental water flow, an increased frequency of high severity fire, as well as invasive species.

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***

No data on the number of mature individuals are available for the Grey Snake, however, adult populations are likely to exceed 1000 individuals across the species range. The species is at risk of further decline as a result of associated threats, including reduction in habitat. The nature of the project being a single transmission line reduces the extent of land clearing of potentially associated habitat. It is unlikely that the project would lead to a long-term decrease of a population.

- ***reduce the area of occupancy of the species***

It is suggested that the species geographic distribution is restricted, where the area, extent and quality of the distribution is affected. The area of occupancy has declined for the Grey Snake from a historical value of 464 square kilometres, to an estimate area of 164 square kilometres. As the project is located towards the southern extent of distribution, it is possible that the area of occupancy of the Grey Snake would be reduced.

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

The current known population and subpopulations of the Grey Snake are severely fragmented. As such, populations are considered isolated due to land clearing, water diversion and unsuitable habitats between locations. A significant cause of fragmentation to the species is land clearing from agricultural practices, and dispersal is facilitated through flooding and environmental flows. As the project would not significantly interfere with abiotic factors on the ground level, including hydrology, it is unlikely for fragmentation to increase as a result of the project.

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

No habitat critical to the survival of the Grey Snake has been listed, however key attributes of the habitat include floodplains and ephemeral wetlands, alongside heavy clay soils to facilitate hunting and shelter. It is uncertain the extent of associated habitat that would be affected by the project. The effect on critical habitat to the survival of the Grey Snake cannot be determined without further field survey.

- ***disrupt the breeding cycle of a population***

The Grey Snake is a viviparous species, where females give birth to an average of 10 young between January and March. The project may result in a decrease of potential habitat for the species to breed, however a significant impact to the species is unlikely.

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

In association to the subject land, the Grey Snake occurs in margins of ephemeral wetlands within River Red Gum and Black Box vegetation communities as well as Tangled Lignum swamps. Aside from proposed land clearing for the construction of the transmission lines, minimal impact to potential habitat would occur within the subject land and the broader locality.

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

Invasive species which are known to impact the Grey Snake include poisoning by ingestion of cane toads (*Rhinella marina*), alongside predation by feral pigs (*Sus scrofa*), cats (*Felis catus*) and Foxes (*Vulpes vulpes*). Cane Toad distribution does not extend south to the extent of the subject land. Invasive species are already present in the subject land, and the project is unlikely to exacerbate the impacts of such invasive species for the Grey Snake. The project would not result in an increase of invasive species associated with the Grey Snake. Mitigation measures would be recommended in the EIS to mitigate any potential increase in invasive species such as feral pigs, cats and foxes.

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

There are no known diseases causing potential species decline to the Grey Snake.

- ***interfere with the recovery of the species.***

There is no adopted recovery plan for the Grey Snake, however, approved conservation advice suggests conservation and management priorities, including:

- undertaking surveys to identify viable subpopulations and undertake population monitoring across the species distribution
- investigating habitat loss, disturbance and modification impacts by incorporating the species hydrological requirements in management plans
- reducing the impact of invasive species by implementing appropriate control measures.

The project is not likely to significantly interfere with the recovery of the Grey Snake. Aside from potential habitat loss due to land clearing, no approved conservation advice would be affected. Appropriate mitigation measures would also be implemented in the EIS to reduce threats to the associated Grey Snake populations. Such mitigation measures would alleviate impacts to 162,474.64 ha of associated habitat located within 10 km of the project footprint. As such, no significant impact on the recovery of the grey snake would occur.

Conclusion

The Grey Snake is an Endangered species under the EPBC Act and occurs within the subject land in a number of habitats. These habitats include River Red Gum and Black Box vegetation communities as well as Tangled Lignum swamps. It is undetermined how much of the impacted land covers habitat associated with the species. It is determined that the area of occupancy may be reduced due to the project occurring close to the limit of distribution. No significant impact is likely to occur to the population size, breeding cycle or recovery of the species. Overall, it is unlikely for the project to significantly impact the Grey Snake.

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Appendix D

Vegetation survey data

D1 Murray Fans IBRA

D1.1 PCT 7 – River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion (Moderate_good)

VNI_DR20

Date	30/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	758712
Plot Name	VNI_DR20		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6092367
PCT	7		10	10	1	0	2	7	0	0	0	0		Orientation	275
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	37.7	37.7	10	0	10.2	17.5	0	0	0	0		Attributes 20x50m plot	
Eucalyptus camaldulensis	10	25	TG		10									Stem classes	
Paspalidium jubiflorum	10	100	GG				10							80+	2
Centipeda cunninghamii	15	200	FG					15						50-79	1
Senecio sp.	0.1	10	FG					0.1						30-49	7
Cynodon dactylon	0.2	20	GG				0.2							20-29	Yes
Wahlenbergia communis	0.1	5	FG					0.1						10-19	Yes
Chrysocephalum apiculatum	0.1	5	FG					0.1						5-9	Yes
Alternanthera denticulata	2	100	FG					2						<5	Yes
Euphorbia dallachyana	0.1	5	FG					0.1						Hollows	3
Centipeda crateriformis subsp. crateriformis	0.1	5	FG					0.1						Length logs (m)	62
														Attributes 1x1 plot (%)	
														Litter (%)	21

VNI_DR46

Date	6/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	764032
Plot Name	VNI_DR46		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6117315
PCT	7		7	7	1	0	1	5	0	0	0	0		Orientation	270
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	26.9	26.9	10	0	15	1.9	0	0	0	0		Attributes 20x50m plot	
Eucalyptus camaldulensis	10	6	TG		10									Stem classes	
Paspalidium jubiflorum	15	200	GG				15							80+	6
Alternanthera denticulata	1	200	FG					1						50-79	0
Centipeda cunninghamii	0.5	30	FG					0.5						30-49	1
Centipeda crateriformis subsp. compacta	0.2	10	FG					0.2						20-29	yes
Dysphania pumilio	0.1	5	FG					0.1						10-19	yes
Rumex brownii	0.1	5	FG					0.1						5-9	yes
														<5	yes
														Hollows	6
														Length logs (m)	12
														Attributes 1x1 plot (%)	
														Litter (%)	45

VNI_DR93

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	758983
Plot Name	VNI_DR93		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6092240
PCT	7		23	17	1	0	2	14	0	0	6	0		Orientation	260
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	39.2	38.5	10	0	15.2	13.3	0	0	0.7	0		Attributes 20x50m plot	
Eucalyptus camaldulensis	10	7	TG		10									Stem classes	
Paspalidium jubiflorum	15	200	GG				15							80+	1
Centipeda minima	5	800	FG					5						50-79	0
Wahlenbergia fluminalis	0.2	200	FG					0.2						30-49	3
Senecio quadridentatus	0.1	30	FG					0.1						20-29	Yes
Alternanthera denticulata	5	200	FG					5						10-19	Yes
Pseudognaphalium luteoalbum	1	50	FG					1						5-9	Yes
*Sonchus oleraceus**	0.1	20	EX								0.1			<5	Yes
Einadia nutans subsp. nutans	0.4	20	FG					0.4						Hollows	1
*Solanum nigrum**	0.2	5	EX								0.2			Length logs (m)	62
*Cirsium vulgare**	0.1	1	EX								0.1				
Vittadinia gracilis	0.5	30	FG					0.5						Attributes 1x1 plot (%)	
Centipeda crateriformis	0.5	30	FG					0.5						Litter (%)	38
Euphorbia drummondii	0.1	10	FG					0.1							
*Fumaria capreolata**	0.1	10	EX								0.1				
*Lolium perenne**	0.1	20	EX								0.1				
Vittadinia cuneata var. hirsuta	0.1	5	FG					0.1							
Juncus flavidus	0.2	20	GG				0.2								
Daucus glochidiatus	0.1	5	FG					0.1							
*Lepidium africanum**	0.1	5	EX								0.1				
Rhodanthe corymbiflora	0.1	5	FG					0.1							
Brachyscome ciliaris	0.1	5	FG					0.1							
Einadia nutans subsp. linifolia	0.1	10	FG					0.1							

VNI_NM033

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM033		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	7		21	18	2	0	9	7	0	0	3	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	41.8	41.5	21	0	19.8	0.7	0	0	0.3	0	
Eucalyptus camaldulensis	20	30	TG		20								
Eucalyptus microcarpa	1	1	TG		1								
Paspalidium jubiflorum	5	50	GG				5						
Cynodon dactylon	5	50	GG				5						
Alternanthera denticulata	0.1	20	FG					0.1					
Juncus aridicola	2	50	GG				2						
Juncus flavidus	0.5	50	GG				0.5						
*Sonchus oleraceus**	0.1	10	EX								0.1		
Eleocharis acuta	2	50	GG				2						
*Lolium perenne**	0.1	20	EX								0.1		
Juncus holoschoenus	0.1	20	GG				0.1						
Centipeda cunninghamii	0.1	20	FG					0.1					
Cyperus exaltatus	0.1	20	GG				0.1						
Paspalum distichum	5	50	GG				5						
Lachnagrostis filiformis	0.1	20	GG				0.1						
Wahlenbergia fluminalis	0.1	10	FG					0.1					
Pseudognaphalium luteoalbum	0.1	20	FG					0.1					
Eclipta platyglossa	0.1	20	FG					0.1					
Senecio quadridentatus	0.1	10	FG					0.1					
Cirsium vulgare	0.1	10	EX								0.1		
Euphorbia dallachyana	0.1	10	FG					0.1					

Easting	760709
Northing	6083631
Orientation	110
Plot size	20 X 20 X 50
AM Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	9
20-29	Yes
10-19	Yes
5-9	No
<5	Yes
Hollows	3
Length logs (m)	111
AM Attributes 1x1 plot (%)	
Litter (%)	62

VNI_NM037

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM037		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	7		27	20	2	1	5	12	0	0	7	2	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	31.2	29.6	21	1	1.4	6.2	0	0	1.6	0.2	
Eucalyptus largiflorens	1	1	TG		1								
Eucalyptus camaldulensis	20	50	TG		20								
Haloragis aspera	0.2	50	FG					0.2					
Vittadinia gracilis	5	200	FG					5					
Cynodon dactylon	1	50	GG				1						
*Sonchus oleraceus**	0.1	50	EX								0.1		
*Lolium rigidum**	1	500	EX								1		
*Hypochaeris glabra**	0.1	50	EX								0.1		
Wahlenbergia spp.	0.1	50	FG					0.1					
*Vulpia bromoides**	0.1	100	EX								0.1		
Euphorbia drummondii	0.1	20	FG					0.1					
Senecio quadridentatus	0.1	20	FG					0.1					
Cotula australis	0.1	10	FG					0.1					
Pseudognaphalium luteoalbum	0.1	20	FG					0.1					
Eclipta platyglossa	0.1	10	FG					0.1					
Centipeda minima	0.1	20	FG					0.1					
Cyperus spp.	0.1	20	GG				0.1						
Rytidosperma setaceum	0.1	20	GG				0.1						
Paspalidium jubiflorum	0.1	10	GG				0.1						
Duma florulenta	1	20	SG			1							
Eclipta platyglossa	0.1	20	FG					0.1					
Alternanthera denticulata	0.1	10	FG					0.1					
*Xanthium spinosum**	0.1	10	HT									0.1	
Rhodanthe corymbiflora	0.1	50	FG					0.1					
Eleocharis acuta	0.1	20	GG				0.1						
*Phyla canescens**	0.1	20	HT									0.1	
*Cirsium vulgare**	0.1	10	EX								0.1		

Easting	760871
Northing	6083477
Orientation	300
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	1
Length logs (m)	118
Attributes 1x1 plot (%)	
Litter (%)	58

D1.2 PCT 10 – River Red Gum – Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Derived_LCV)

VNI_MP50

Date	20/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP50		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		20	11	0	1	5	5	0	0	9	3	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	20.1	11.7	0	0.1	6.2	5.4	0	0	8.4	3.6	
Austrostipa scabra subsp. falcata	1	30	GG				1						
Rytidosperma caespitosum	2	50	GG				2						
Solanum esuriale	5	500	FG					5					
Sclerolaena muricata	0.1	5	SG			0.1							
*Xanthium spinosum**	0.5	10	HT									0.5	
*Heliotropium europaeum**	0.5	30	EX								0.5		
*Lolium spp.**	3	100	EX								3		
*Carthamus lanatus**	3	100	HT									3	
*myriocarpus**	1	10	EX								1		
*Bromus diandrus**	0.1	5	HT									0.1	
Cressa australis	0.1	2	FG					0.1					
Vittadinia cuneata	0.1	1	FG					0.1					
*Cirsium vulgare**	0.1	5	EX								0.1		
Dysphania pumilio	0.1	10	FG					0.1					
*Echium plantagineum**	0.1	20	EX								0.1		
*Sonchus asper**	0.1	5	EX								0.1		
Wahlenbergia spp.	0.1	3	FG					0.1					
Enteropogon acicularis	0.1	10	GG				0.1						
Walwhalleya proluta	0.1	2	GG				0.1						
Rytidosperma setaceum	3	150	GG				3						

Easting	760514
Northing	6071891
Orientation	205
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	2.6

VNI_MP51

Date	20/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP51		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		16	9	0	1	4	4	0	0	7	1	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	11.1	8.1	0	0.1	7.2	0.8	0	0	3	2	
Austrostipa scabra subsp. falcata	0.1	10	GG				0.1						
Sclerolaena muricata	0.1	10	SG			0.1							
Solanum esuriale	0.5	20	FG					0.5					
*Chenopodium album**	0.1	2	EX								0.1		
*Heliotropium europaeum**	0.5	25	EX								0.5		
*Lolium spp.**	0.1	20	EX								0.1		
*Carthamus lanatus**	2	200	HT									2	
*myriocarpus**	0.1	3	EX								0.1		
Cressa australis	0.1	20	FG					0.1					
*Cirsium vulgare**	0.1	1	EX								0.1		
Dysphania pumilio	0.1	5	FG					0.1					
*Sonchus asper**	0.1	10	EX								0.1		
Wahlenbergia spp.	0.1	1	FG					0.1					
Enteropogon acicularis	2	20	GG				2						
Walwhalleya proluta	0.1	10	GG				0.1						
Rytidosperma setaceum	5	500	GG				5						

Easting	760457
Northing	6071583
Orientation	102
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	1

D1.3 PCT 10 – River Red Gum – Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Derived)

VNI_NM040

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	763090
Plot Name	VNI_NM040		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6111936
PCT	10		21	13	1	5	2	5	0	0	8	0		Orientation	215
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	86.8	23.2	1	11.2	10.1	0.9	0	0	63.6	0		Attributes 20x50m plot	
Eucalyptus largiflorens	1	1	TG		1									Stem classes	
*Bromus rubens**	1	50	EX								1			80+	0
*Hordeum leporinum**	50	2000	EX								50			50-79	0
Sclerolaena muricata	5	30	SG			5								30-49	0
*Medicago praecox**	5	500	EX								5			20-29	No
Maireana brevifolia	1	30	SG			1								10-19	No
Rytidosperma setaceum	10	100	GG				10							5-9	Yes
*Vulpia bromoides**	5	500	EX								5			<5	No
Solanum esuriale	0.1	20	FG					0.1						Hollows	0
Austrostipa scabra	0.1	20	GG				0.1							Length logs (m)	53
Crassula colorata	0.1	100	FG					0.1							
*Marrubium vulgare**	1	20	EX								1			Attributes 1x1 plot (%)	
Rhagodia spinescens	5	30	SG			5								Litter (%)	4
*Cotula bipinnata**	0.5	100	EX								0.5				
Rhodanthe corymbiflora	0.1	50	FG					0.1							
Einadia nutans	0.5	100	FG					0.5							
*Sisymbrium irio**	0.1	10	EX								0.1				
*Lolium rigidum**	1	100	EX								1				
Sida corrugata	0.1	20	FG					0.1							
Chenopodium nitrariaceum	0.1	1	SG			0.1									
Atriplex leptocarpa	0.1	10	SG			0.1									

VNI_NM041

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	763251
Plot Name	VNI_NM041		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6111686
PCT	10		16	10	0	4	3	3	0	0	6	0		Orientation	43
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	83.1	21.8	0	20.3	1.2	0.3	0	0	61.3	0		Attributes 20x50m plot	
Nitraria billardierei	0.1	1	SG			0.1								Stem classes	
Sclerolaena muricata	20	200	SG			20								80+	0
*Hordeum leporinum**	50	3000	EX								50			50-79	0
*Medicago praecox**	10	500	EX								10			30-49	0
Rhodanthe corymbiflora	0.1	200	FG					0.1						20-29	No
Solanum esuriale	0.1	50	FG					0.1						10-19	No
Rytidosperma setaceum	1	200	GG				1							5-9	No
*Cotula bipinnata**	0.1	200	EX								0.1			<5	No
Oxalis perennans	0.1	20	FG					0.1						Hollows	0
Enteropogon acicularis	0.1	10	GG				0.1							Length logs (m)	0
*Lolium rigidum**	1	100	EX								1				
Rytidosperma caespitosum	0.1	10	GG				0.1							Attributes 1x1 plot (%)	
Maireana brevifolia	0.1	10	SG			0.1								Litter (%)	0
*Erodium cicutarium**	0.1	10	EX								0.1				
Rhagodia spinescens	0.1	10	SG			0.1									
*Schismus barbatus**	0.1	10	EX								0.1				

D1.4 PCT 10 – River Red Gum – Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Thinned)

VNI_MP41

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP41		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		22	14	2	5	2	5	0	0	8	1	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	30.4	18.4	2	14	1.1	1.3	0	0	12	0.1	
Eucalyptus camaldulensis	1	1	TG		1								
Eucalyptus largiflorens	1	1	TG		1								
Duma florulenta	2	5	SG			2							
Chenopodium nitrariaceum	0.5	5	SG			0.5							
*Lolium rigidum**	10	100	EX								10		
Goodenia pinnatifida	0.1	25	FG					0.1					
Atriplex semibaccata	10	30	SG			10							
Sclerolaena muricata	0.5	10	SG			0.5							
Vittadinia cuneata	0.5	50	FG					0.5					
*Lactuca serriola**	0.1	25	EX								0.1		
*Sonchus oleraceus**	0.5	30	EX								0.5		
Einadia nutans	0.5	20	FG					0.5					
*Hordeum leporinum**	1	50	EX								1		
Maireana brevifolia	1	25	SG			1							
*Marrubium vulgare**	0.1	5	EX								0.1		
*Avena fatua**	0.1	20	EX								0.1		
*Xanthium spinosum**	0.1	1	HT									0.1	
Walwhalleya proluta	0.1	10	GG				0.1						
*Medicago praecox**	0.1	20	EX								0.1		
Euphorbia drummondii	0.1	5	FG					0.1					
Alternanthera spp.	0.1	10	FG					0.1					
Rytidosperma setaceum	1	50	GG				1						

Easting	760814
Northing	6083430
Orientation	290
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	38

VNI_MP42

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP42		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		17	13	1	3	2	7	0	0	4	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	37	35.7	15	2.1	17	1.6	0	0	1.3	0	
Eucalyptus camaldulensis	15	12	TG		15								
Duma florulenta	1	2	SG			1							
Rhagodia spinescens	0.1	1	SG			0.1							
Rytidosperma setaceum	15	250	GG				15						
*Lepidium africanum**	0.1	1	EX								0.1		
Euphorbia drummondii	1	25	FG					1					
Atriplex semibaccata	1	15	SG			1							
*Lolium rigidum**	1	50	EX								1		
Enteropogon acicularis	2	20	GG				2						
Vittadinia cuneata	0.1	5	FG					0.1					
*Sonchus asper**	0.1	5	EX								0.1		
Trianthema spp.	0.1	5	FG					0.1					
Sida corrugata	0.1	10	FG					0.1					
*Sonchus oleraceus**	0.1	5	EX								0.1		
Goodenia spp.	0.1	5	FG					0.1					
Einadia nutans	0.1	10	FG					0.1					
Oxalis perennans	0.1	5	FG					0.1					

Easting	760969
Northing	6083215
Orientation	220
Plot size	20 X 50
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
Attributes 1x1 plot (%)	
Litter (%)	30

VNI_MP52

Date	20/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP52		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		16	7	1	2	2	2	0	0	9	1	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	40.4	39.1	2	35.1	1	1	0	0	1.3	0.1	
Eucalyptus camaldulensis	2	15	TG		2								
Solanum esuriale	0.5	100	FG					0.5					
Sclerolaena muricata	35	100	SG			35							
Austrostipa scabra	0.5	50	GG				0.5						
Rytidosperma setaceum	0.5	25	GG				0.5						
*Cirsium vulgare**	0.1	3	EX								0.1		
Dysphania pumilio	0.5	10	FG					0.5					
*Cucumis myriocarpus subsp myriocarpus**	0.1	5	EX								0.1		
*Marrubium vulgare**	0.1	2	EX								0.1		
*Hordeum leporinum**	0.5	50	EX								0.5		
Enchylaena tomentosa	0.1	2	SG			0.1							
*Chenopodium album**	0.1	30	EX								0.1		
*Xanthium spinosum**	0.1	5	HT									0.1	
*Lolium spp.**	0.1	20	EX								0.1		
*Heliotropium europaeum**	0.1	5	EX								0.1		
*Conyza bonariensis**	0.1	1	EX								0.1		

Easting	760153
Northing	6070248
Orientation	0
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	2
50-79	2
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	2
Length logs (m)	6
Attributes 1x1 plot (%)	
Litter (%)	26.4

D1.5 PCT 10 – River Red Gum – Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate_good)

VNI_DR18

Date	17/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR18		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		7	7	2	2	1	1	1	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	26.1	26.1	20	5.8	0.1	0.1	0.1	0	0	0	
Eucalyptus camaldulensis	10	4	TG		10								
Eucalyptus largiflorens	10	8	TG		10								
Duma florulenta	5	50	SG			5							
Marsilea drummondii	0.1	2	EG						0.1				
Euphorbia drummondii	0.1	10	FG					0.1					
Chenopodium nitrariaceum	0.8	1	SG			0.8							
Paspalidium jubiflorum	0.1	1	GG				0.1						

Easting	758302
Northing	6087834
Orientation	250
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)	85
Attributes 1x1 plot (%)	
Litter (%)	32

VNI_MP07

Date	9/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		14	10	1	5	0	4	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	94.4	7.4	1	5.1	0	1.3	0	0	87	0	
Eucalyptus camaldulensis	1	1	TG		1								
*Hordeum leporinum**	35	250	EX								35		
*Malva parviflora**	1	10	EX								1		
*Lolium rigidum**	50	500	EX								50		
*Sisymbrium irio**	1	25	EX								1		
Mariana brevifolia	1	50	SG			1							
Sclerolaena tricuspis	1	5	SG			1							
Duma flurolenta	1	1	SG			1							
Sclerolaena stelligera	2	25	SG			2							
Atriplex leptocarpa	0.1	1	SG			0.1							
Vittadinia cuneata	0.1	1	FG					0.1					
Mariana ciliata	0.1	1	FG					0.1					
Eucalyptus largiflorens	1	1	FG					1					
Cressa australis	0.1	1	FG					0.1					

Easting	758942
Northing	6092344
Orientation	104
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	No
10-19	Yes
5-9	No
<5	No
Hollows	0
Length logs (m)	2
Attributes 1x1 plot (%)	
Litter (%)	1.22

VNI_MP33

Date	14/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP33		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		10	8	2	2	1	3	0	0	2	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	22.8	22.6	22	0.2	0.1	0.3	0	0	0.2	0.1	
Eucalyptus camaldulensis	2	1	TG		2								
Eucalyptus largiflorens	20	8	TG		20								
Ludwigia peploides	0.1	15	FG					0.1					
*Xanthium spinosum**	0.1	5	HT									0.1	
Duma florulenta	0.1	5	SG			0.1							
Juncus spp.	0.1	5	GG				0.1						
Pseudognaphalium luteoalbum	0.1	25	FG					0.1					
Sida corrugata	0.1	5	FG					0.1					
Atriplex leptocarpa	0.1	1	SG			0.1							
*Hordeum leporinum**	0.1	1	EX								0.1		

Easting	759014
Northing	6095336
Orientation	90
Plot size	10 X 100
Attributes 20x50m plot	
Stem classes	
80+	2
50-79	5
30-49	4
20-29	Yes
10-19	No
5-9	No
<5	Yes
Hollows	6
Length logs (m)	56
Attributes 1x1 plot (%)	
Litter (%)	10

VNI_NM032

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM032		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	10		13	9	2	5	0	2	0	0	4	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	53.9	51.3	30	16.2	0	5.1	0	0	2.6	1	
Eucalyptus camaldulensis	20	10	TG		20								
Eucalyptus largiflorens	10	10	TG		10								
*Lycium ferocissimum**	1	1	HT									1	
Einadia nutans	5	20	FG					5					
Rhagodia spinescens	10	50	SG			10							
*Medicago praecox**	1	100	EX								1		
Atriplex semibaccata	5	50	SG			5							
Sclerolaena muricata	1	30	SG			1							
*Sisymbrium irio**	0.1	50	EX								0.1		
Chenopodium nitrariaceum	0.1	10	SG			0.1							
Sida corrugata	0.1	10	FG					0.1					
Enchylaena tomentosa	0.1	10	SG			0.1							
*Marrubium vulgare**	0.5	10	EX								0.5		

Easting	762598
Northing	6112524
Orientation	163
Plot size	20 X 20 X 50
AM Attributes 20x50m plot	
Stem classes	
80+	2
50-79	1
30-49	6
20-29	No
10-19	No
5-9	No
<5	No
Hollows	5
Length logs (m)	76
AM Attributes 1x1 plot (%)	
Litter (%)	56

D1.6 PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate_good)

VNI_DR80

Date	17/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR80		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	11		37	28	1	6	5	15	1	0	9	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	47.7	46.2	5	36.4	1.5	3.2	0.1	0	1.5	0	
Eucalyptus camaldulensis	5	3	TG		5								
Duma florulenta	25	100	SG			25							
Rhodanthe corymbiflora	0.1	20	FG					0.1					
Chenopodium nitrariaceum	10	20	SG			10							
Paspalidium jubiflorum	0.2	20	GG				0.2						
Centipeda minima	0.5	30	FG					0.5					
*Medicago praecox**	0.2	100	EX								0.2		
Oxalis perennans	0.3	100	FG					0.3					
*Sonchus oleraceus**	0.2	20	EX								0.2		
Alternanthera nana	0.1	10	FG					0.1					
*Lolium rigidum**	0.1	10	EX								0.1		
Einadia nutans	1	30	FG					1					
Wahlenbergia communis	0.1	20	FG					0.1					
*Hordeum leporinum**	0.1	10	EX								0.1		
Vittadinia cuneata var. cuneata	0.1	10	FG					0.1					
Austrostipa scabra subsp. scabra	0.1	5	GG				0.1						
Daucus glochidiatus	0.1	5	FG					0.1					
Goodenia fascicularis	0.1	20	FG					0.1					
Asperula gemella	0.3	10	FG					0.3					
Eragrostis parviflora	1	20	GG				1						
Ranunculus sessiliflorus var. pilulifer	0.1	5	FG					0.1					
*Sisymbrium orientale**	0.5	30	EX								0.5		
*Cirsium vulgare**	0.1	5	EX								0.1		
*Helminthotheca echioides**	0.1	5	EX								0.1		
Alternanthera denticulata	0.1	5	FG					0.1					
Pseudognaphalium luteoalbum	0.1	5	FG					0.1					
*Marrubium vulgare**	0.1	5	EX								0.1		
Marsilea drummondii	0.1	20	EG						0.1				
Senecio runcinifolius	0.1	5	FG					0.1					
Euphorbia dallachyana	0.1	5	FG					0.1					
Atriplex semibaccata	1	20	SG			1							
*Solanum nigrum**	0.1	5	EX								0.1		
Rytidosperma caespitosum	0.1	10	GG				0.1						
Sclerolaena muricata var. semiglabra	0.2	10	SG			0.2							
Eleocharis pallens	0.1	10	GG				0.1						
Sclerolaena brachyptera	0.1	5	SG			0.1							
Atriplex pseudocampanulata	0.1	5	SG			0.1							

Easting	763674
Northing	6117316
Orientation	130
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	2
50-79	4
30-49	1
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	3
Length logs (m)	167
Attributes 1x1 plot (%)	
Litter (%)	20

D1.7 PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Derived_LCV)

VNI_MP05

Date	3/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP05		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		18	10	0	3	1	6	0	0	8	1	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	47.5	12.1	0	10.6	0.1	1.4	0	0	35.4	0.1	
Atriplex pseudocampanulata	10	100	SG			10							
*Hordeum leporinum**	15	2000	EX								15		
*Lolium perenne**	5	500	EX								5		
*Cotula bipinnata**	10	1000	EX								10		
*Medicago praecox**	5	2000	EX								5		
Senecio glossanthus	0.2	100	FG					0.2					
*Spergularia rubra**	0.1	20	EX								0.1		
*Polygonum aviculare**	0.1	10	EX								0.1		
*Sonchus oleraceus**	0.1	20	EX								0.1		
Enchylaena tomentosa	0.5	50	SG			0.5							
Rhodanthe corymbiflora	0.8	50	FG					0.8					
Atriplex leptocarpa	0.1	50	SG			0.1							
Spergularia brevifolia	0.1	20	FG					0.1					
Crassula sieberiana	0.1	50	FG					0.1					
Plantago turrifera	0.1	5	FG					0.1					
Cressa australis	0.1	10	FG					0.1					
*Xanthium spinosum**	0.1	1	HT									0.1	
Rytidosperma caespitosum	0.1	5	GG				0.1						

Easting	762835
Northing	6096097
Orientation	165
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_MP06

Date	9/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP06		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		18	9	0	0	0	9	0	0	9	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	57.9	2.2	0	0	0	2.2	0	0	55.7	0	
*Triticum aestivum**	5	100	EX								5		
*Lolium rigidum**	50	1000	EX								50		
*Medicago praecox**	0.1	10	EX								0.1		
*Echium plantagineum**	0.1	10	EX								0.1		
*Sonchus asper**	0.1	2	EX								0.1		
Senecio glossanthus	0.1	30	FG					0.1					
Senecio quadridentatus	0.1	10	FG					0.1					
Maireana ciliata	0.1	10	FG					0.1					
Vittadinia cuneata	0.1	10	FG					0.1					
Sida corrugata	0.1	20	FG					0.1					
Rhodanthe corymbiflora	1	200	FG					1					
Einadia nutans	0.5	25	FG					0.5					
*Lepidium africanum**	0.1	2	EX								0.1		
Calotis scabiosifolia	0.1	5	FG					0.1					
*Cirsium vulgare**	0.1	5	EX								0.1		
*Spergularia rubra**	0.1	5	EX								0.1		
Bulbine semibarbata	0.1	10	FG					0.1					
*Sisymbrium orientale**	0.1	10	EX								0.1		

Easting	762835
Northing	6096097
Orientation	214
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	0
10-19	0
5-9	0
<5	0
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	1

VNI_MP34

Date	14/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP34		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		14	10	0	3	2	5	0	0	4	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	47.1	33	0	1.2	25.1	6.7	0	0	14.1	0	
Rytidosperma setaceum	25	250	GG				25						
*Lolium rigidum**	4	150	EX								4		
*Hordeum leporinum**	5	150	EX								5		
Atriplex pseudocampanulata	0.1	10	SG			0.1							
Einadia nutans	1	100	FG					1					
*Cotula bipinnata**	0.1	100	EX								0.1		
Rhodanthe corymbiflora	5	150	FG					5					
Atriplex semibaccata	1	100	SG			1							
*Medicago praecox**	5	200	EX								5		
Plantago turrifera	0.5	25	FG					0.5					
Austrostipa scabra	0.1	10	GG				0.1						
Sclerolaena stelligera	0.1	5	SG			0.1							
Vittadinia cuneata	0.1	1	FG					0.1					
Cressa australis	0.1	1	FG					0.1					

Easting	762999
Northing	6095712
Orientation	305
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	1.4

VNI_NM01

Date	3/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		11	5	0	2	0	3	0	0	6	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	50.2	40.5	0	40.2	0	0.3	0	0	9.7	0	
Atriplex pseudocampanulata	40	300	SG			40							
*Hordeum leporinum**	2	500	EX								2		
*Medicago praecox**	2	2000	EX								2		
*Cotula bipinnata**	0.5	500	EX								0.5		
*Lolium perenne**	5	1000	EX								5		
Atriplex leptocarpa	0.2	20	SG			0.2							
Rhodanthe corymbiflora	0.1	20	FG					0.1					
*Spergularia rubra**	0.1	10	EX								0.1		
*Sisymbrium irio**	0.1	10	EX								0.1		
Plantago turrifera	0.1	10	FG					0.1					
Senecio glossanthus	0.1	10	FG					0.1					

Easting	762592
Northing	6096144
Orientation	183
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	0
10-19	0
5-9	0
<5	0
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_NM025

Date	14/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM025		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		20	11	0	3	1	7	0	0	9	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	56.5	22.7	0	10.2	10	2.5	0	0	33.8	0	
Rhodanthe corymbiflora	1	500	FG					1					
Rytidosperma setaceum	10	500	GG				10						
*Lolium rigidum**	20	1000	EX								20		
Senecio glossanthus	0.1	20	FG					0.1					
Atriplex pseudocampanulata	10	100	SG			10							
*Cerastium vulgare**	0.1	10	EX								0.1		
Spergularia brevifolia	0.1	50	FG					0.1					
Plantago turrifera	1	100	FG					1					
*Medicago praecox**	1	100	EX								1		
*Cotula bipinnata**	0.5	100	EX								0.5		
*Sonchus oleraceus**	0.1	10	EX								0.1		
*Vulpia bromoides**	1	500	EX								1		
*Phalaris minor**	1	50	EX								1		
*Hordeum leporinum**	10	500	EX								10		
Vittadinia cuneata	0.1	10	FG					0.1					
Sclerolaena muricata	0.1	10	SG			0.1							
Goodenia pinnatifida	0.1	10	FG					0.1					
Atriplex leptocarpa	0.1	10	SG			0.1							
*Bromus rubens**	0.1	10	EX								0.1		
Cressa australis	0.1	1	FG					0.1					

Easting	762968
Northing	6095536
Orientation	100
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	0
10-19	0
5-9	0
<5	0
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	0

D1.8 PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate_good)

VNI_DR16

Date	17/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR16		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		12	12	1	7	0	3	1	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	14.2	14.2	5	8.8	0	0.3	0.1	0	0	0	
Eucalyptus largiflorens	5	9	TG		5								
Duma florulenta	5	30	SG			5							
Chenopodium nitrariaceum	3	10	SG			3							
Solanum esuriale	0.1	20	FG					0.1					
Atriplex semibaccata	0.2	20	SG			0.2							
Sclerolaena stelligera	0.1	20	SG			0.1							
Maireana decalvans	0.1	2	SG			0.1							
Einadia nutans	0.1	10	FG					0.1					
Calocephalus sonderi	0.1	5	FG					0.1					
Atriplex leptocarpa	0.1	5	SG			0.1							
Sclerolaena muricata var. muricata	0.3	2	SG			0.3							
Marsilea drummondii	0.1	10	EG						0.1				

Easting	757565
Northing	6088900
Orientation	230
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	11
10-19	Yes
5-9	Yes
<5	No
Hollows	0
Length logs (m)	5
Attributes 1x1 plot (%)	
Litter (%)	2

VNI_DR19

Date	17/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR19		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		7	7	1	4	0	1	1	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	12.4	12.4	5	7.2	0	0.1	0.1	0	0	0	
Eucalyptus largiflorens	5	20	TG		5								
Duma florulenta	5	30	SG			5							
Chenopodium nitrariaceum	2	10	SG			2							
Atriplex semibaccata	0.1	20	SG			0.1							
Einadia nutans	0.1	5	FG					0.1					
Marsilea drummondii	0.1	5	EG						0.1				
Sclerolaena stelligera	0.1	5	SG			0.1							

Easting	758643
Northing	6087454
Orientation	5
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	2
20-29	No
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	7
Attributes 1x1 plot (%)	
Litter (%)	8

VNI_MP32

Date	14/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP32		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		26	20	1	7	1	11	0	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	52.5	46.3	40	3.9	0.1	2.3	0	0	6.2	0	
Eucalyptus largiflorens	40	15	TG		40								
Duma florulenta	1	100	SG			1							
Rhodanthe corymbiflora	0.1	2	FG					0.1					
Rytidosperma setaceum	0.1	25	GG				0.1						
Einadia nutans	0.1	25	FG					0.1					
Sclerolaena stelligera	0.5	25	SG			0.5							
Maireana brevifolia	0.1	25	SG			0.1							
Plantago turrifera	0.5	150	FG					0.5					
*Sonchus oleraceus**	0.1	25	EX								0.1		
Sida corrugata	0.1	10	FG					0.1					
*Sisymbrium irio**	0.1	25	EX								0.1		
Atriplex semibaccata	2	50	SG			2							
Goodenia pinnatifida	0.1	30	FG					0.1					
Pseudognaphalium luteoalbum	0.1	5	FG					0.1					
Sclerolaena muricata	0.1	5	SG			0.1							
*Vulpia myuros**	3	100	EX								3		
*Hordeum leporinum**	0.5	150	EX								0.5		
Crassula colorata	0.5	150	FG					0.5					
Calotis scabiosifolia	0.1	20	FG					0.1					
*Limonium lobatum**	0.5	250	EX								0.5		
Nitraria billardierei	0.1	1	SG			0.1							
*Cotula australis**	0.1	5	FG					0.1					
Sclerolaena brachyptera	0.1	5	SG			0.1							
Oxalis perennans	0.1	1	FG					0.1					
*Medicago praecox**	2	100	EX								2		
Bulbine semibarbata	0.5	150	FG					0.5					

Easting	761165
Northing	6094654
Orientation	135
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	7
Attributes 1x1 plot (%)	
Litter (%)	14

VNI_NM038

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM038		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		22	18	1	6	2	9	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	33.2	31.9	20	10.4	0.2	1.3	0	0	1.3	0	
Eucalyptus largiflorens	20	30	TG		20								
Duma florulenta	5	30	SG			5							
*Sisymbrium irio**	0.1	50	EX								0.1		
Rhodanthe corymbiflora	0.5	200	FG					0.5					
Eremophila divaricata	5	2	SG			5							
Senecio glossanthus	0.1	1	FG					0.1					
Atriplex leptocarpa	0.1	20	SG			0.1							
Enchylaena tomentosa	0.1	1	SG			0.1							
*Spergularia rubra**	0.1	50	EX								0.1		
Einadia nutans	0.1	5	FG					0.1					
*Lolium rigidum**	1	500	EX								1		
Nitraria billardierei	0.1	5	SG			0.1							
Goodenia pinnatifida	0.1	5	FG					0.1					
Calocephalus sonderi	0.1	1	FG					0.1					
Sclerolaena stelligera	0.1	1	SG			0.1							
Rytidosperma setaceum	0.1	3	GG				0.1						
Bulbine semibarbata	0.1	30	FG					0.1					
Enteropogon acicularis	0.1	20	GG				0.1						
Plantago turrifera	0.1	20	FG					0.1					
*Vulpia bromoides**	0.1	50	EX								0.1		
Crassula colorata	0.1	50	FG					0.1					
Sclerochlamys brachyptera	0.1	10	FG					0.1					

Easting	757348
Northing	6089905
Orientation	16
Plot size	20 X 20 X 50
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)	33
Attributes 1x1 plot (%)	
Litter (%)	12

VNI_NM039

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM039		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		22	17	1	7	1	8	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	24.3	23.8	20	2.9	0.1	0.8	0	0	0.5	0	
Eucalyptus largiflorens	20	30	TG		20								
Rhodanthe corymbiflora	0.1	50	FG					0.1					
Nitraria billardierei	0.5	20	SG			0.5							
Sclerolaena muricata	1	30	SG			1							
Senecio glossanthus	0.1	50	FG					0.1					
*Cotula bipinnata**	0.1	50	EX								0.1		
*Sisymbrium irio**	0.1	50	EX								0.1		
Duma florulenta	1	20	SG			1							
Eremophila divaricata	0.1	10	SG			0.1							
Goodenia pinnatifida	0.1	30	FG					0.1					
Euphorbia drummondii	0.1	20	FG					0.1					
Einadia nutans	0.1	40	FG					0.1					
Plantago turrifera	0.1	20	FG					0.1					
*Lolium rigidum**	0.1	50	EX								0.1		
Atriplex leptocarpa	0.1	20	SG			0.1							
*Sonchus oleraceus**	0.1	10	EX								0.1		
Sclerochlamys brachyptera	0.1	20	FG					0.1					
Calocephalus sonderi	0.1	20	FG					0.1					
*Spergularia rubra**	0.1	20	EX								0.1		
Enchylaena tomentosa	0.1	10	SG			0.1							
Sclerolaena stelligera	0.1	10	SG			0.1							
Rytidosperma setaceum	0.1	10	GG				0.1						

Easting	757464
Northing	6089987
Orientation	337
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	8
20-29	Yes
10-19	Yes
5-9	No
<5	Yes
Hollows	6
Length logs (m)	61
Attributes 1x1 plot (%)	
Litter (%)	20

D1.9 PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Thinned)

VNI_DR17

Date	17/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		7	7	1	5	0	1	0	0	0	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	52	52	50	1.9	0	0.1	0	0	0	0	
Eucalyptus largiflorens	50	100	TG		50								
Duma florulenta	0.4	5	SG			0.4							
Chenopodium nitrariaceum	0.2	1	SG			0.2							
Maireana decalvans	0.2	20	SG			0.2							
Einadia nutans	0.1	5	FG					0.1					
Sclerolaena stelligera	0.1	5	SG			0.1							
Eremophila divaricata	1	10	SG			1							

Easting	757468
Northing	6089099
Orientation	110
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	1
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	6
Attributes 1x1 plot (%)	
Litter (%)	2.4

VNI_MP10

Date	9/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP10		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		33	24	1	7	1	15	0	0	9	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	11.1	9.2	3	1.6	0.1	4.5	0	0	1.9	0	
Eucalyptus largiflorens	3	3	TG		3								
Sclerochlamys brachyptera	0.1	20	SG			0.1							
Isoetopsis graminifolia	0.1	20	FG					0.1					
Atriplex semibaccata	0.1	20	SG			0.1							
Crassula sieberiana	0.1	300	FG					0.1					
Senecio glossanthus	0.1	200	FG					0.1					
Pogonolepis muelleriana	0.1	10	FG					0.1					
Erodium crinitum	0.1	1	FG					0.1					
Sclerolaena muricata	0.1	10	SG			0.1							
Rhodanthe corymbiflora	0.1	100	FG					0.1					
Spergularia brevifolia	0.2	200	FG					0.2					
*Spergularia rubra**	0.1	20	EX								0.1		
*Cotula bipinnata**	0.2	200	EX								0.2		
Atriplex pseudocampanulata	0.1	10	SG			0.1							
Atriplex leptocarpa	1	50	SG			1							
*Vulpia bromoides**	0.1	50	EX								0.1		
Brachyscome lineariloba	0.1	1	FG					0.1					
Einadia nutans	3	100	FG					3					
Plantago turrifera	0.1	50	FG					0.1					
*Sonchus oleraceus**	0.1	5	EX								0.1		
Sida corrugata	0.1	10	FG					0.1					
Goodenia spp.	0.1	10	FG					0.1					
Duma florulenta	0.1	10	SG			0.1							
Rytidosperma spp.	0.1	50	GG				0.1						
Enchylaena tomentosa	0.1	50	SG			0.1							
Maireana ciliata	0.1	50	FG					0.1					
*Sisymbrium irio**	0.1	50	EX								0.1		
*Lepidium africanum**	0.1	20	EX								0.1		
*Hordeum leporinum**	0.1	50	EX								0.1		
*Lolium rigidum**	1	30	EX								1		
Vittadinia cuneata	0.1	10	FG					0.1					
Brachyscome spp.	0.1	1	FG					0.1					
*Conyza bonariensis**	0.1	5	EX								0.1		

Easting	730005
Northing	6107048
Orientation	237
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	0
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	31
Attributes 1x1 plot (%)	
Litter (%)	18.6

VNI_NM024

Date	14/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM024		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		18	10	1	3	1	5	0	0	8	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	54.1	31.7	20	10.2	0.1	1.4	0	0	22.4	0	
Eucalyptus largiflorens	20	20	TG		20								
*Sisymbrium irio**	1	100	EX								1		
*Chenopodium murale**	0.1	20	EX								0.1		
Atriplex leptocarpa	10	100	SG			10							
*Hordeum leporinum**	10	300	EX								10		
Crassula sieberiana	1	500	FG					1					
Sclerolaena stelligera	0.1	50	SG			0.1							
Sclerolaena muricata	0.1	20	SG			0.1							
Einadia nutans	0.1	20	FG					0.1					
*Malva sp.**	0.1	10	EX								0.1		
*Mesembryanthemum crystallinum**	1	100	EX								1		
*Spergularia rubra**	0.1	20	EX								0.1		
*Lepidium africanum**	0.1	50	EX								0.1		
Senecio glossanthus	0.1	50	FG					0.1					
Rhodanthe corymbiflora	0.1	50	FG					0.1					
Solanum esuriale	0.1	10	FG					0.1					
Rytidosperma setaceum	0.1	20	GG				0.1						
*Hordeum leporinum**	10	300	EX								10		

Easting	215805
Northing	6094615
Orientation	85
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	2
20-29	2
10-19	5
5-9	36
<5	0
Hollows	0
Length logs (m)	33
Attributes 1x1 plot (%)	
Litter (%)	12

D1.10 PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Derived)

VNI_MP53

Date	20/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP53		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		18	15	0	6	6	3	0	0	3	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	53.6	53.3	0	5.9	46.7	0.7	0	0	0.3	0	
Rytidosperma caespitosum	35	100	GG				35						
Maireana brevifolia	5	100	SG			5							
Enteropogon acicularis	10	100	GG				10						
Austrostipa scabra	0.5	20	GG				0.5						
Sclerolaena muricata	0.5	15	SG			0.5							
Chloris truncata	0.1	20	GG				0.1						
Aira spp. *	0.1	10	EX								0.1		
Rytidosperma setaceum	1	100	GG				1						
Sclerolaena stelligera	0.1	5	SG			0.1							
Lolium spp. *	0.1	10	EX								0.1		
Solanum esuriale	0.5	50	FG					0.5					
Walwhalleya proluta	0.1	5	GG				0.1						
Vulpia myuros *	0.1	10	EX								0.1		
Enchylaena tomentosa	0.1	5	SG			0.1							
Euphorbia drummondii	0.1	10	FG					0.1					
Vittadinia cuneata	0.1	1	FG					0.1					
Sclerolaena bicornis	0.1	1	SG			0.1							
Atriplex semibaccata	0.1	1	SG			0.1							

Easting	761313
Northing	6077626
Orientation	7
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	2

VNI_MP54

Date	19/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP54		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		19	15	0	5	6	4	0	0	4	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	56	55.6	0	1.3	52.1	2.2	0	0	0.4	0	
Rytidosperma caespitosum	10	100	GG				10						
Maireana brevifolia	0.1	10	SG			0.1							
Enteropogon acicularis	25	100	GG				25						
Austrostipa scabra	10	100	GG				10						
Sclerolaena muricata	0.5	20	SG			0.5							
Sclerolaena bicornis	0.5	20	SG			0.5							
Chloris truncata	0.1	10	GG				0.1						
Rytidosperma setaceum	5	200	GG				5						
Sclerolaena stelligera	0.1	10	SG			0.1							
Solanum esuriale	1	100	FG					1					
Euphorbia drummondii	0.1	20	FG					0.1					
Enchylaena tomentosa	0.1	5	SG			0.1							
Lolium spp. *	0.1	1	EX								0.1		
Sporobolus caroli	2	100	GG				2						
Sida corrugata	1	50	FG					1					
Medicago praecox *	0.1	10	EX								0.1		
Heliotropium europaeum *	0.1	5	EX								0.1		
Chrysocephalum apiculatum	0.1	1	FG					0.1					
Avena spp. *	0.1	1	EX								0.1		

Easting	762192
Northing	6080595
Orientation	100
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	No data

D1.11 PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Planted Native Vegetation)

VNI_MP54

Date	18/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP48		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		25	13	3	5	3	2	0	0	12	1	
Condition	Planted Native Vegetation		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	94.9	92.5	40	51.6	0.3	0.6	0	0	2.4	0.1	
Eucalyptus camaldulensis	5	2	TG		5								
Eucalyptus largiflorens	25	10	TG		25								
Alectryon oleifolius	10	21	TG		10								
Atriplex nummularia	50	50	SG			50							
Einadia nutans	0.5	10	FG					0.5					
Avena spp. *	0.5	100	EX								0.5		
Rhagodia spinescens	0.5	10	SG			0.5							
Chloris truncata	0.1	10	GG				0.1						
Enteropogon acicularis	0.1	30	GG				0.1						
Austrostipa scabra	0.1	1	GG				0.1						
Sclerolaena muricata	0.5	20	SG			0.5							
Marrubium vulgare *	0.5	40	EX								0.5		
Duma florulenta	0.1	1	SG			0.1							
Enchylaena tomentosa	0.5	10	SG			0.5							
Bromus diandrus *	0.1	50	HT									0.1	
Chenopodium album *	0.1	20	EX								0.1		
Heliotropium europaeum *	0.1	20	EX								0.1		
Solanum esuriale	0.1	20	FG					0.1					
Hordeum leporinum *	0.1	10	EX								0.1		
Aira spp. *	0.1	50	EX								0.1		
Lactuca serriola *	0.1	30	EX								0.1		
Cucumis myriocarpus subsp myriocarpus *	0.1	1	EX								0.1		
Echium plantagineum *	0.1	20	EX								0.1		
Lepidium africanum *	0.1	2	EX								0.1		
Sisymbrium irio*	0.5	100	EX								0.5		

Easting	762392
Northing	6101065
Orientation	300
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	7
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	7
Attributes 1x1 plot (%)	
Litter (%)	30

D1.12 PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Derived_LCV)

VNI_GL01

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	758592
Plot Name	VNI_GL01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6091992
PCT	15		15	12	0	6	2	4	0	0	3	0		Orientation	215
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	21.6	16.4	0	10.4	0.2	5.8	0	0	5.2	0		Attributes 20x50m plot	
Sclerolaena muricata var. semiglabra	5	100	SG			5								Stem classes	
Sclerolaena muricata var. muricata	3	50	SG			3								80+	0
Oxalis perennans	5	200	FG					5						50-79	0
*Medicago minima**	0.1	2	EX								0.1			30-49	0
*Lolium perenne**	5	500	EX								5			20-29	No
*Sonchus oleraceus**	0.1	5	EX								0.1			10-19	No
Solanum esuriale	0.5	20	FG					0.5						5-9	No
Senecio glossanthus	0.2	20	FG					0.2						<5	No
Sporobolus creber	0.1	1	GG				0.1							Hollows	0
Rhodanthe corymbiflora	0.1	3	FG					0.1						Length logs (m)	0
Atriplex semibaccata	0.1	2	SG			0.1									
Chenopodium nitrariaceum	2	5	SG			2								Attributes 1x1 plot (%)	
Duma florulenta	0.2	1	SG			0.2								Litter (%)	0
Sclerolaena stelligera	0.1	1	SG			0.1									
Rytidosperma caespitosum	0.1	1	GG				0.1								

VNI_GL02

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	758220
Plot Name	VNI_GL02		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6091819
PCT	15		16	9	1	3	1	4	0	0	7	0		Orientation	293
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	71.9	0.9	0.1	0.3	0.1	0.4	0	0	71	0		Attributes 20x50m plot	
*Lolium perenne**	40	10000	EX								40			Stem classes	
*Hordeum leporinum**	30	5000	EX								30			80+	0
*Medicago laciniata**	0.5	100	EX								0.5			50-79	0
*Malva parviflora**	0.2	20	EX								0.2			30-49	0
Sporobolus caroli	0.1	1	GG				0.1							20-29	No
Einadia nutans	0.1	1	FG					0.1						10-19	No
Atriplex semibaccata	0.1	1	SG			0.1								5-9	No
*Sonchus oleraceus**	0.1	10	EX								0.1			<5	Yes
Oxalis perennans	0.1	10	FG					0.1						Hollows	0
Rhodanthe corymbiflora	0.1	2	FG					0.1						Length logs (m)	0
Sclerolaena stelligera	0.1	1	SG			0.1									
*Lepidium africanum**	0.1	2	EX								0.1			Attributes 1x1 plot (%)	
Senecio glossanthus	0.1	1	FG					0.1						Litter (%)	0
Atriplex leptocarpa	0.1	1	SG			0.1									
Eucalyptus largiflorens	0.1	1	TG		0.1										
*Sisymbrium orientale**	0.1	1	EX								0.1				

VNI_GL03

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	757721
Plot Name	VNI_GL03		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6090592
PCT	15		9	5	0	2	0	3	0	0	4	0		Orientation	133
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	57.5	5.4	0	5.1	0	0.3	0	0	52.1	0		Attributes 20x50m plot	
*Lolium perenne**	45	10000	EX								45			Stem classes	
*Hordeum leporinum**	2	500	EX								2			80+	0
*Sonchus oleraceus**	5	50	EX								5			50-79	0
Enchylaena tomentosa	5	20	SG			5								30-49	0
Rhodanthe corymbiflora	0.1	5	FG					0.1						20-29	No
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1								10-19	No
Vittadinia cuneata	0.1	10	FG					0.1						5-9	No
*Medicago minima**	0.1	50	EX								0.1			<5	No
Solanum spp.	0.1	1	FG					0.1						Hollows	0
														Length logs (m)	0
														Attributes 1x1 plot (%)	
														Litter (%)	0

VNI_GL04

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_GL04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		11	7	0	2	1	4	0	0	4	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	67.8	2.6	0	2.1	0.1	0.4	0	0	65.2	0	
*Lolium perenne**	60	10000	EX								60		
*Hordeum leporinum**	5	1000	EX								5		
Einadia nutans subsp. nutans	0.1	1	FG					0.1					
*Medicago praecox**	0.1	100	EX								0.1		
Enchylaena tomentosa	2	50	SG			2							
Vittadinia cuneata	0.1	5	FG					0.1					
Rhodanthe corymbiflora	0.1	10	FG					0.1					
*Sonchus oleraceus**	0.1	5	EX								0.1		
Rytidosperma caespitosum	0.1	3	GG				0.1						
Sida trichopoda	0.1	1	FG					0.1					
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1							

Easting	757779
Northing	6090938
Orientation	191
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_MP36

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP36		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		8	5	0	4	1	0	0	0	3	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	73.3	36.2	0	1.2	35	0	0	0	37.1	0	
*Hordeum leporinum**	35	500	EX								35		
Austrostipa nodosa	35	250	GG				35						
*Marrubium vulgare**	0.1	5	EX								0.1		
Sclerolaena muricata	0.5	10	SG			0.5							
Sclerolaena muricata var. semiglabra	0.1	5	SG			0.1							
*Medicago praecox**	2	150	EX								2		
Maireana brevifolia	0.5	20	SG			0.5							
Atriplex leptocarpa	0.1	10	SG			0.1							

Easting	762340
Northing	6115891
Orientation	108
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	1

VNI_DR76

Date	17/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR76		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		10	7	0	4	1	2	0	0	3	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	55	19	0	3.7	15	0.3	0	0	36	0	
Austrostipa nodosa	15	200	GG				15						
Sclerolaena muricata var. semiglabra	1	10	SG			1							
Maireana brevifolia	1	5	SG			1							
*Hordeum leporinum**	25	2000	EX								25		
*Medicago sp.**	10	2000	EX								10		
Enchylaena tomentosa	1	5	SG			1							
Rhodanthe corymbiflora	0.1	10	FG					0.1					
Einadia nutans	0.2	5	FG					0.2					
*Marrubium vulgare**	1	10	EX								1		
Atriplex semibaccata	0.7	5	SG			0.7							

Easting	762315
Northing	6115999
Orientation	175
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D1.13 PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate_good)

VNI_DR22

Date	30/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR22		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		22	18	1	11	1	5	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	32.3	31.6	3	25	0.1	3.5	0	0	0.7	0	
Eucalyptus largiflorens	3	3	TG		3								
Chenopodium nitrariaceum	5	10	SG			5							
Duma florulenta	0.2	10	SG			0.2							
Rhagodia spinescens	0.1	1	SG			0.1							
Sclerolaena muricata var. muricata	10	200	SG			10							
Maireana decalvans	5	50	SG			5							
Sclerolaena stelligera	0.2	20	SG			0.2							
*Conyza sp.**	0.1	5	EX								0.1		
Spergularia brevifolia	0.2	20	FG					0.2					
Atriplex semibaccata	3	20	SG			3							
Atriplex lindleyi	3	40	FG					3					
Salsola australis	0.1	5	SG			0.1							
Rytidosperma setaceum	0.1	5	GG				0.1						
Atriplex eardleyae	1	10	SG			1							
*Cucumis myriocarpus**	0.1	5	EX								0.1		
Calocephalus sonderi	0.1	5	FG					0.1					
Sclerolaena brachyptera	0.2	20	SG			0.2							
*Cirsium vulgare**	0.4	5	EX								0.4		
Einadia nutans	0.1	10	FG					0.1					
Roepera apiculata	0.2	20	SG			0.2							
*Lepidium africanum**	0.1	5	EX								0.1		
Centipeda cunninghamii	0.1	5	FG					0.1					

Easting	757797
Northing	6091182
Orientation	170
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	3
20-29	yes
10-19	no
5-9	no
<5	yes
Hollows	0
Length logs (m)	5
Attributes 1x1 plot (%)	
Litter (%)	9.4

VNI_DR23

Date	30/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR23		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		16	15	1	9	1	4	0	0	1	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	40.8	40.7	5	33.2	0.1	2.4	0	0	0.1	0	
Eucalyptus largiflorens	5	9	TG		5								
Chenopodium nitrariaceum	15	8	SG			15							
Rhagodia spinescens	5	20	SG			5							
Duma florulenta	2	10	SG			2							
Atriplex semibaccata	3	20	SG			3							
Maireana decalvans	4	30	SG			4							
Sclerolaena stelligera	0.8	20	SG			0.8							
Sclerolaena muricata var. semiglabra	2	20	SG			2							
Plantago turrifera	0.1	10	FG					0.1					
Enchylaena tomentosa	1	10	SG			1							
Einadia nutans	2	20	FG					2					
Alternanthera denticulata	0.1	5	FG					0.1					
Rytidosperma caespitosum	0.1	10	GG				0.1						
*Hordeum leporinum**	0.1	10	EX								0.1		
Atriplex leptocarpa	0.4	20	SG			0.4							
Sida trichopoda	0.2	5	FG					0.2					

Easting	758084
Northing	6091610
Orientation	280
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	2
20-29	Yes
10-19	Yes
5-9	No
<5	Yes
Hollows	0
Length logs (m)	33
Attributes 1x1 plot (%)	
Litter (%)	3

VNI_DR94

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR94		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		20	15	1	3	1	10	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	27.7	26.3	20	0.9	1	4.4	0	0	1.4	0	
Eucalyptus largiflorens	20	30	TG		20								
Einadia nutans subsp. nutans	2	100	FG					2					
Paspalidium jubiflorum	1	30	GG				1						
Oxalis perennans	0.1	5	FG					0.1					
Centipeda minima	1	30	FG					1					
Chenopodium nitrariaceum	0.1	2	SG			0.1							
Wahlenbergia fluminalis	0.1	10	FG					0.1					
Centipeda crateriformis	0.4	20	FG					0.4					
Duma florulenta	0.2	1	SG			0.2							
Pseudognaphalium luteoalbum	0.1	5	FG					0.1					
*Fumaria capreolata**	0.1	5	EX								0.1		
Euphorbia drummondii	0.1	5	FG					0.1					
Spergularia brevifolia	0.1	5	FG					0.1					
Vittadinia gracilis	0.1	5	FG					0.1					
*Polygonum aviculare**	0.1	5	EX								0.1		
Sclerolaena muricata var. semiglabra	0.6	2	SG			0.6							
*Lepidium africanum**	1	20	EX								1		
*Sonchus oleraceus**	0.1	5	EX								0.1		
*Cirsium vulgare**	0.1	1	EX								0.1		
Alternanthera denticulata	0.4	20	FG					0.4					

Easting	758851
Northing	6092103
Orientation	335
Plot size	20 X 20 X 50
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	1
Length logs (m)	83
Attributes 1x1 plot (%)	
Litter (%)	56

D1.14 PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Thinned)

VNI_DR21

Date	30/04/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	758667
Plot Name	VNI_DR21		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6092162
PCT	15		14	13	1	9	0	3	0	0	1	0		Orientation	188
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	21.3	21.2	5	15.9	0	0.3	0	0	0.1	0		Attributes 20x50m plot	
Eucalyptus largiflorens	5	6	TG		5									Stem classes	
Chenopodium nitrariaceum	5	4	SG			5								80+	0
Atriplex semibaccata	10	1000	SG			10								50-79	0
Sclerolaena stelligera	0.2	20	SG			0.2								30-49	2
Salsola australis	0.1	2	SG			0.1								20-29	Yes
Einadia nutans	0.1	10	FG					0.1						10-19	Yes
Rhagodia spinescens	0.1	1	SG			0.1								5-9	No
Sclerolaena brachyptera	0.1	5	SG			0.1								<5	No
Maireana decalvans	0.1	5	SG			0.1								Hollows	0
Euphorbia drummondii	0.1	5	FG					0.1						Length logs (m)	0
Solanum esuriale	0.1	1	FG					0.1							
Sclerolaena muricata var. muricata	0.1	1	SG			0.1								Attributes 1x1 plot (%)	
*Heliotropium europaeum**	0.1	10	EX								0.1			Litter (%)	1.8
Atriplex nummularia	0.2	1	SG			0.2									

VNI_DR95

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	758703
Plot Name	VNI_DR95		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6091961
PCT	15		27	17	1	10	0	6	0	0	10	0		Orientation	208
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	41.6	9.9	2	6.3	0	1.6	0	0	31.7	0		Attributes 20x50m plot	
Eucalyptus largiflorens	2	4	TG		2									Stem classes	
Chenopodium nitrariaceum	0.4	5	SG			0.4								80+	0
Duma florulenta	0.1	1	SG			0.1								50-79	0
Salsola australis	0.4	30	SG			0.4								30-49	0
Einadia nutans subsp. nutans	1	30	FG					1						20-29	Yes
Atriplex leptocarpa	0.8	40	SG			0.8								10-19	Yes
*Lepidium africanum**	0.6	20	EX								0.6			5-9	No
Sclerolaena stelligera	1	50	SG			1								<5	Yes
*Lolium perenne**	25	1000	EX								25			Hollows	0
Atriplex semibaccata	2	50	SG			2								Length logs (m)	0
Oxalis perennans	0.2	40	FG					0.2							
*Medicago praecox**	1	1000	EX								1			Attributes 1x1 plot (%)	
Rhodanthe corymbiflora	0.1	5	FG					0.1						Litter (%)	12
*Malva parviflora**	0.6	10	EX								0.6				
*Hordeum leporinum**	4	200	EX								4				
Sclerolaena muricata var. semiglabra	0.7	10	SG			0.7									
*Cotula bipinnata**	0.1	10	EX								0.1				
*Polygonum aviculare**	0.1	10	EX								0.1				
Euphorbia drummondii	0.1	5	FG					0.1							
*Arctotheca calendula***	0.1	5	EX								0.1				
Solanum esuriale	0.1	5	FG					0.1							
*Sonchus asper**	0.1	10	EX								0.1				
Enchylaena tomentosa	0.2	20	SG			0.2									
Sclerolaena muricata var. muricata	0.6	20	SG			0.6									
Rhagodia spinescens	0.1	1	SG			0.1									
*Sonchus oleraceus**	0.1	10	EX								0.1				
Einadia nutans subsp. linifolia	0.1	10	FG					0.1							

VNI_DR96

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR96		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		24	16	1	8	1	6	0	0	8	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	69.5	8.9	1	7.1	0.2	0.6	0	0	60.6	0	
Eucalyptus largiflorens	1	3	TG		1								
Rhagodia spinescens	5	10	SG			5							
Duma florulenta	0.2	1	SG			0.2							
Enchylaena tomentosa	1	30	SG			1							
Sclerolaena muricata var. semiglabra	0.3	10	SG			0.3							
*Lolium perenne**	45	2000	EX								45		
Rhodanthe corymbiflora	0.1	10	FG					0.1					
Sclerolaena stelligera	0.1	10	SG			0.1							
*Sonchus oleraceus**	0.1	10	EX								0.1		
Einadia nutans	0.1	5	FG					0.1					
*Sisymbrium officinale**	0.1	5	EX								0.1		
Maireana decalvans	0.2	10	SG			0.2							
Atriplex semibaccata	0.2	10	SG			0.2							
Oxalis perennans	0.1	20	FG					0.1					
Vittadinia cuneata var. hirsuta	0.1	10	FG					0.1					
*Medicago praecox**	0.1	50	EX								0.1		
*Hordeum leporinum**	15	1000	EX								15		
Rytidosperma caespitosum	0.2	30	GG				0.2						
*Malva parviflora**	0.1	5	EX								0.1		
Leiocarpa panaetioides	0.1	1	FG					0.1					
*Spergularia rubra**	0.1	5	EX								0.1		
Einadia nutans subsp. linifolia	0.1	5	FG					0.1					
Atriplex leptocarpa	0.1	5	SG			0.1							
*Cotula bipinnata**	0.1	5	EX								0.1		

Easting	758095
Northing	6091396
Orientation	210
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	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	3

VNI_DR97

Date	21/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR97		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		15	11	1	6	0	4	0	0	4	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	38.9	16.7	3	12.4	0	1.3	0	0	22.2	0	
Eucalyptus largiflorens	3	2	TG		3								
Rhagodia spinescens	5	20	SG			5							
Chenopodium nitrariaceum	4	10	SG			4							
Maireana decalvans	0.5	20	SG			0.5							
Enchylaena tomentosa	2	30	SG			2							
Einadia nutans subsp. linifolia	1	60	FG					1					
*Sisymbrium orientale**	2	50	EX								2		
Atriplex semibaccata	0.5	10	SG			0.5							
*Lolium perenne**	20	1000	EX								20		
Rhodanthe corymbiflora	0.1	10	FG					0.1					
Sclerolaena muricata var. semiglabra	0.4	10	SG			0.4							
Vittadinia cuneata var. hirsuta	0.1	5	FG					0.1					
*Medicago sp.**	0.1	10	EX								0.1		
*Sonchus oleraceus**	0.1	10	EX								0.1		
Sida trichopoda	0.1	1	FG					0.1					

Easting	757901
Northing	6091021
Orientation	117
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	1
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	13
Attributes 1x1 plot (%)	
Litter (%)	5

D1.15 PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Thinned)

VNI_OZ28

Date	14/04/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_OZ28		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		13	8	0	3	0	5	0	0	5	1	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	26.2	25.6	0	25.1	0	0.5	0	0	0.6	0.1	
Chenopodium nitrariaceum	15	50	SG			15							
Sclerolaena muricata var. semiglabra	10	100	SG			10							
*Hordeum leporinum**	0.1	200	EX								0.1		
*Heliotropium europaeum**	0.1	100	EX								0.1		
*Medicago sp.**	0.1	1000	EX								0.1		
Solanum esuriale	0.1	50	FG					0.1					
Xanthium spinosum	0.1	2	HT									0.1	
Euphorbia drummondii	0.1	2	FG					0.1					
Atriplex leptocarpa	0.1	1	SG			0.1							
Oxalis spp.	0.1	10	FG					0.1					
Einadia nutans	0.1	1	FG					0.1					
Cressa australis	0.1	1	FG					0.1					
Cucumis myriocarpus subsp myriocarpu	0.2	1	EX								0.2		

Easting	763831
Northing	6110864
Orientation	312
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	6.4

D1.16 PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate_good)

VNI_NM035

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	NM035		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	17		20	12	0	7	2	3	0	0	8	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	68.6	62	0	61.5	0.2	0.3	0	0	6.6	0.1	
Duma florulenta	60	100	SG			60							
*Vulpia bromoides**	5	1000	EX								5		
*Hordeum leporinum**	1	500	EX								1		
*Cotula bipinnata**	0.1	100	EX								0.1		
Rytidosperma setaceum	0.1	20	GG				0.1						
Crassula colorata	0.1	50	FG					0.1					
Atriplex leptocarpa	0.1	20	SG			0.1							
Oxalis perennans	0.1	20	FG					0.1					
Sclerolaena muricata	0.1	20	SG			0.1							
Sclerolaena stelligera	0.1	20	SG			0.1							
*Bromus alopecuros**	0.1	10	EX								0.1		
Rhagodia spinescens	1	5	SG			1							
Enchylaena tomentosa	0.1	10	SG			0.1							
Enteropogon acicularis	0.1	10	GG				0.1						
*Bromus diandrus**	0.1	50	HT									0.1	
*Medicago praecox**	0.1	20	EX								0.1		
Atriplex semibaccata	0.1	1	SG			0.1							
*Cirsium vulgare**	0.1	10	EX								0.1		
*Sonchus oleraceus**	0.1	10	EX								0.1		
Rhodanthe corymbiflora	0.1	10	FG					0.1					

Easting	760677
Northing	6083551
Orientation	310
Plot size	20 X 20 X 50
AM Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
AM Attributes 1x1 plot (%)	
Litter (%)	N/A

D1.17 PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (Derived)

VNI_NM030

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM030		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	22		11	2	0	2	0	0	0	0	9	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	72.4	15	0	15	0	0	0	0	57.4	0	
Rhagodia spinescens	10	40	SG			10							
*Hordeum leporinum**	40	2000	EX								40		
*Vulpia bromoides**	10	3000	EX								10		
Enchylaena tomentosa	5	50	SG			5							
*Medicago praecox**	1	100	EX								1		
*Lolium rigidum**	1	100	EX								1		
*Schismus barbatus**	5	100	EX								5		
*Arctotheca calendula**	0.1	10	EX								0.1		
*Marrubium vulgare**	0.1	10	EX								0.1		
*Cucumis myriocarpus subsp myriocarpus**	0.1	10	EX								0.1		
*Sonchus oleraceus**	0.1	10	EX								0.1		

Easting	762028
Northing	6113970
Orientation	190
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D1.18 PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (Derived – Tall Shrubland)

VNI_DR79

Date	17/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR79		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		26	19	1	11	0	7	0	0	7	1	
Condition	Derived - Tall shrubland		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	65.2	62.7	20	39.1	0	3.6	0	0	2.5	0.3	
Alectryon oleifolius subsp. canescens	20	50	TG		20								
Maireana brevifolia	20	60	SG			20							
Chenopodium nitrariaceum	0.5	1	SG			0.5							
Enchylaena tomentosa	10	50	SG			10							
Einadia nutans	2	100	FG					2					
Rhagodia spinescens	3	20	SG			3							
*Hordeum leporinum**	1	200	EX								1		
Maireana aphylla	1	10	SG			1							
*Sisymbrium orientale**	0.7	30	EX								0.7		
Sclerolaena tricuspis	1	20	SG			1							
Nitraria billardierei	2	5	SG			2							
Sclerolaena muricata var. semiglabra	0.5	10	SG			0.5							
Atriplex lindleyi	1	30	FG					1					
Atriplex semibaccata	0.8	20	SG			0.8							
Rhodanthe corymbiflora	0.1	10	FG					0.1					
*Cotula bipinnata**	0.2	40	EX								0.2		
Atriplex leptocarpa	0.1	10	SG			0.1							
Crassula sieberiana	0.1	10	FG					0.1					
*Medicago sp.**	0.1	30	EX								0.1		
Sclerolaena brachyptera	0.2	20	SG			0.2							
*Malva parviflora**	0.1	5	EX								0.1		
Maireana pentagona	0.2	30	FG					0.2					
Spergularia brevifolia	0.1	20	FG					0.1					
Bulbine bulbosa	0.1	5	FG					0.1					
*Marrubium vulgare**	0.1	1	EX								0.1		
*Lycium ferocissimum**	0.3	1	HT									0.3	

Easting	763412
Northing	6117338
Orientation	305
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	No
Hollows	0
Length logs (m)	5
Attributes 1x1 plot (%)	
Litter (%)	39.4

D1.19 PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains (Moderate_good)

VNI_MP39

Date	15/10/2024		**Covers**	**Native**	Trees	Shrubs	Grass	Forb	Fern	Other	**Exotic**	HighThreat	54
Plot Name	VNI_MP39		**# spp**	**Count**	Count	Count	Count	Count	Count	Count	**Count**	Count	
PCT	160		**9**	**5**	0	3	1	0	1	0	**4**	0	
Condition	Moderate-good		**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum	
Species	**Cover**	**Abundance**	**42.8**	**39.7**	0	35.6	4	0	0.1	0	**3.1**	0	
Chenopodium nitrariaceum	35	40	SG			35							
Rhagodia spinescens	0.5	1	SG			0.5							
Juncus spp.	4	100	GG				4						
*Hordeum leporinum**	2	100	EX								2		
Sclerolaena muricata	0.1	5	SG			0.1							
*Vulpia myuros**	0.5	100	EX								0.5		
*Medicago praecox**	0.5	100	EX								0.5		
*Cotula bipinnata**	0.1	10	EX								0.1		
Marsilea drummondii	0.1	5	EG						0.1				

Easting	762072
Northing	6113348
Orientation	184
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D1.20 PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (LCV)

VNI_NM028

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM028		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		18	11	0	5	3	2	0	1	7	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	68.3	31	0	30.4	0.3	0.2	0	0.1	37.3	0	
Sclerolaena muricata	30	200	SG			30							
*Hordeum leporinum**	30	2000	EX								30		
*Marrubium vulgare**	5	30	EX								5		
*Sisymbrium irio**	0.1	20	EX								0.1		
*Medicago praecox**	1	100	EX								1		
Enteropogon acicularis	0.1	20	GG				0.1						
*Schismus barbatus**	0.1	20	EX								0.1		
Austrostipa nodosa	0.1	20	GG				0.1						
Convolvulus erubescens	0.1	10	OG							0.1			
Enchylaena tomentosa	0.1	20	SG			0.1							
*Sonchus oleraceus**	0.1	20	EX								0.1		
Atriplex semibaccata	0.1	10	SG			0.1							
Crassula sieberiana	0.1	50	FG					0.1					
Chloris truncata	0.1	10	GG				0.1						
Atriplex leptocarpa	0.1	20	SG			0.1							
Sclerochlamys brachyptera	0.1	20	FG					0.1					
Rhagodia spinescens	0.1	10	SG			0.1							
*Lolium perenne**	1	50	EX								1		

Easting	762317
Northing	6115676
Orientation	178
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D1.21 PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (Moderate_good)

VNI_MP38

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP38		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		17	9	0	6	1	2	0	0	8	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	90.1	75.8	0	64.7	0.1	11	0	0	14.3	0.1	
Rhagodia spinescens	8	35	SG			8							
Einadia nutans	8	50	FG					8					
Enchylaena tomentosa	0.1	10	SG			0.1							
Nitraria billardierei	55	50	SG			55							
*Lycium ferocissimum**	0.1	1	HT									0.1	
*Vulpia myuros**	0.1	20	EX								0.1		
Rytidosperma setaceum	0.1	10	GG				0.1						
Maireana pentagona	3	500	FG					3					
*Hordeum leporinum**	10	500	EX								10		
*Lolium rigidum**	0.5	100	EX								0.5		
*Medicago praecox**	2	100	EX								2		
Atriplex pseudocampanulata	1	25	SG			1							
*Cotula bipinnata**	0.5	150	EX								0.5		
Sclerolaena muricata	0.5	15	SG			0.5							
*Sonchus oleraceus**	0.1	10	EX								0.1		
*Bromus hordeaceus**	1	15	EX								1		
Maireana brevifolia	0.1	5	SG			0.1							

Easting	761937
Northing	6114114
Orientation	145
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_MP43

Date	16/10/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP43		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		17	12	0	6	2	4	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	30.5	23.3	0	16.3	1.5	5.5	0	0	7.2	0	
Nitraria billardierei	15	8	SG			15							
*Cotula bipinnata**	0.1	150	EX								0.1		
*Lolium rigidum**	2	150	EX								2		
Rhagodia spinescens	0.5	20	SG			0.5							
Maireana ciliata	4	250	FG					4					
Rhodanthe corymbiflora	0.5	100	FG					0.5					
*Hordeum leporinum**	3	150	EX								3		
Austrostipa scabra	0.5	25	GG				0.5						
*Medicago praecox**	2	250	EX								2		
Maireana brevifolia	0.1	10	SG			0.1							
Sida corrugata	0.5	25	FG					0.5					
Rytidosperma setaceum	1	50	GG				1						
Atriplex semibaccata	0.1	25	SG			0.1							
Goodenia pinnatifida	0.5	150	FG					0.5					
Sclerolaena stelligera	0.5	25	SG			0.5							
Sclerolaena brachyptera	0.1	10	SG			0.1							
*Sonchus oleraceus**	0.1	15	EX								0.1		

Easting	757262
Northing	6089429
Orientation	175
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_MP44

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP44		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		15	11	0	7	0	4	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	28.2	21.1	0	16.4	0	4.7	0	0	7.1	0	
Nitraria billardierei	15	50	SG			15							
Rhagodia spinescens	0.5	25	SG			0.5							
Rhodanthe corymbiflora	4	200	FG					4					
Sclerolaena brachyptera	0.5	20	SG			0.5							
*Hordeum leporinum**	2	150	EX								2		
*Lolium rigidum**	2	150	EX								2		
*Medicago praecox**	3	250	EX								3		
Atriplex semibaccata	0.1	10	SG			0.1							
Sclerolaena stelligera	0.1	10	SG			0.1							
Maireana ciliata	0.5	25	FG					0.5					
Maireana brevifolia	0.1	5	SG			0.1							
Sclerolaena muricata	0.1	5	SG			0.1							
Goodenia spp.	0.1	2	FG					0.1					
Oxalis perennans	0.1	1	FG					0.1					
*Cotula bipinnata**	0.1	25	EX								0.1		

Easting	757305
Northing	6089254
Orientation	75
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_NM027

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM027		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		22	14	0	6	3	4	0	1	8	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	88.1	65.7	0	23.2	42	0.4	0	0.1	22.4	0	
Rhagodia spinescens	1	20	SG			1							
Enteropogon acicularis	1	20	GG				1						
*Medicago praecox**	1	100	EX								1		
Austrostipa nodosa	40	200	GG				40						
Sida corrugata	0.1	20	FG					0.1					
Nitraria billardierei	20	30	SG			20							
Convolvulus erubescens	0.1	20	OG							0.1			
*Hordeum leporinum**	10	500	EX								10		
*Vulpia bromoides**	10	500	EX								10		
*Limonium sinuatum**	0.1	20	EX								0.1		
*Lolium perenne**	1	50	EX								1		
Sclerolaena muricata	1	20	SG			1							
Enchylaena tomentosa	1	20	SG			1							
Rytidosperma setaceum	1	50	GG				1						
*Euphorbia sp.**	0.1	20	EX								0.1		
*Marrubium vulgare**	0.1	20	EX								0.1		
Vittadinia cuneata	0.1	10	FG					0.1					
Atriplex pseudocampanulata	0.1	10	SG			0.1							
Crassula colorata	0.1	50	FG					0.1					
Atriplex leptocarpa	0.1	10	SG			0.1							
*Hypochaeris glabra**	0.1	50	EX								0.1		
Maireana pentagona	0.1	10	FG					0.1					

Easting	762180
Northing	6115763
Orientation	126
Plot size	20 X 20 X 50
AM Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
AM Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_NM031

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM031		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		18	12	0	7	1	4	0	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	84.9	52.6	0	37.3	0.1	15.2	0	0	32.3	0	
Nitraria billardierei	30	100	SG			30							
Atriplex lindleyi	5	100	FG					5					
*Hordeum leporinum**	30	2000	EX								30		
Einadia nutans	10	100	FG					10					
Atriplex leptocarpa	1	50	SG			1							
Sclerolaena muricata	1	20	SG			1							
*Medicago praecox**	1	50	EX								1		
Rhagodia spinescens	5	50	SG			5							
Crassula sieberiana	0.1	50	FG					0.1					
*Lolium perenne**	1	100	EX								1		
*Cotula bipinnata**	0.1	50	EX								0.1		
Maireana pentagona	0.1	20	FG					0.1					
Rytidosperma setaceum	0.1	10	GG				0.1						
Sclerolaena tricuspis	0.1	10	SG			0.1							
Sclerolaena stelligera	0.1	10	SG			0.1							
*Vulpia bromoides**	0.1	20	EX								0.1		
Malacocera tricornis	0.1	10	SG			0.1							
*Limonium sinuatum**	0.1	10	EX								0.1		

Easting	761922
Northing	6113780
Orientation	222
Plot size	20 X 20 X 50
M Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
M Attributes 1x1 plot (%)	
Litter (%)	N/A

D1.22 PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (LCV)

VNI_DR74

Date	17/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR74		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		8	2	0	1	1	0	0	0	6	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	83.1	26	0	25	1	0	0	0	57.1	0	
Sclerolaena muricata var. semiglabra	25	100	SG			25							
*Hordeum leporinum**	40	2000	EX								40		
*Medicago sp.**	5	1000	EX								5		
*Lolium rigidum**	10	1000	EX								10		
Sporobolus caroli	1	20	GG				1						
*Sonchus oleraceus**	0.1	5	EX								0.1		
*Cirsium vulgare**	1	2	EX								1		
*Capsella bursa-pastoris**	1	40	EX								1		

Easting	762128
Northing	6115071
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR75

Date	17/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR75		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		11	8	0	4	2	2	0	0	3	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	55.8	20.8	0	19.2	1.4	0.2	0	0	35	0	
Sclerolaena muricata var. semiglabra	15	40	SG			15							
*Hordeum leporinum**	25	1000	EX								25		
*Medicago sp.**	5	1000	EX								5		
Austrostipa scabra subsp. scabra	1	50	GG				1						
*Lolium rigidum**	5	500	EX								5		
Vittadinia cuneata var. cuneata	0.1	5	FG					0.1					
Atriplex semibaccata	0.2	5	SG			0.2							
Enchylaena tomentosa	3	30	SG			3							
Sporobolus caroli	0.4	10	GG				0.4						
Rhodanthe corymbiflora	0.1	5	FG					0.1					
Atriplex pseudocampanulata	1	20	SG			1							

Easting	762191
Northing	6115298
Orientation	145
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR77

Date	17/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR77		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		14	10	0	6	2	2	0	0	4	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	60.1	19.6	0	11.5	3	5.1	0	0	40.5	0	
Sclerolaena muricata var. semiglabra	10	40	SG			10							
Atriplex lindleyi	5	50	FG					5					
*Hordeum leporinum**	30	1000	EX								30		
Sporobolus caroli	1	20	GG				1						
Rhodanthe corymbiflora	0.1	10	FG					0.1					
*Cotula bipinnata**	0.5	100	EX								0.5		
*Medicago sp.**	5	1000	EX								5		
Atriplex semibaccata	0.7	5	SG			0.7							
*Lolium rigidum**	5	500	EX								5		
Enchylaena tomentosa	0.2	1	SG			0.2							
Enteropogon acicularis	2	20	GG				2						
Atriplex pseudocampanulata	0.4	10	SG			0.4							
Sclerolaena brachyptera	0.1	5	SG			0.1							
Osteocarpum acropterum	0.1	5	SG			0.1							

Easting	762526
Northing	6117068
Orientation	205
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_NM026

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM026		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		16	12	0	7	1	4	0	0	4	0	
Condition	Low conservation value		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	72.6	16.5	0	14.2	0.1	2.2	0	0	56.1	0	
Calotis hispidula	1	50	FG					1					
Enchylaena tomentosa	1	20	SG			1							
Sclerolaena muricata	10	100	SG			10							
*Hordeum leporinum**	50	2000	EX								50		
Sclerolaena tricuspis	1	30	SG			1							
Sclerochlamys brachyptera	1	50	FG					1					
*Lolium perenne**	5	100	EX								5		
Rhagodia spinescens	1	20	SG			1							
Atriplex lindleyi	0.1	20	FG					0.1					
Maireana excavata	1	20	SG			1							
*Medicago praecox**	1	100	EX								1		
Austrostipa nodosa	0.1	20	GG				0.1						
Atriplex pseudocampanulata	0.1	20	SG			0.1							
*Schismus barbatus**	0.1	20	EX								0.1		
Malacocera tricornis	0.1	10	SG			0.1							
Oxalis spp.	0.1	10	FG					0.1					

Easting	762402
Northing	6116720
Orientation	62
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D1.23 PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (Moderate_good)

VNI_DR78

Date	19/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR78		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		25	17	0	8	3	6	0	0	8	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	46.1	31.9	0	25.7	2.4	3.8	0	0	14.2	0	
Maireana aphylla	20	50	SG			20							
*Hordeum leporinum**	5	500	EX								5		
Nitraria billardierei	1	5	SG			1							
Sclerolaena brachyptera	0.7	20	SG			0.7							
*Lolium rigidum**	1	200	EX								1		
Atriplex pseudocampanulata	1	30	SG			1							
Maireana pentagona	1	100	FG					1					
*Cotula bipinnata**	0.2	200	EX								0.2		
*Medicago sp.**	2	400	EX								2		
Maireana cheelii	0.1	10	SG			0.1							
Atriplex lindleyi	1	20	FG					1					
Rytidosperma caespitosum	0.4	5	GG				0.4						
*Mesembryanthemum nodiflorum**	0.6	50	EX								0.6		
*Vulpia myuros**	5	1000	EX								5		
Rhagodia spinescens	2	5	SG			2							
Austrostipa elegantissima	1	10	GG				1						
Einadia nutans	1	20	FG					1					
Atriplex semibaccata	0.8	20	SG			0.8							
Austrostipa scabra subsp. scabra	1	30	GG				1						
Rhodanthe corymbiflora	0.1	10	FG					0.1					
*Erodium cicutarium**	0.1	5	EX								0.1		
Oxalis perennans	0.2	20	FG					0.2					
Minuria cunninghamii	0.5	5	FG					0.5					
*Bromus rubens**	0.3	20	EX								0.3		
Sclerolaena tricuspis	0.1	5	SG			0.1							

Easting	763076
Northing	6117212
Orientation	35
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_MP35

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP35		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		17	12	0	5	5	1	1	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	42.6	21.9	0	15.4	6.3	0.1	0.1	0	20.7	0	
Maireana aphylla	15	50	SG			15							
*Hordeum leporinum**	5	250	EX								5		
Austrostipa scabra	1	100	GG				1						
*Lolium rigidum**	15	250	EX								15		
Walwhalleya proluta	5	50	GG				5						
*Medicago praecox**	0.5	150	EX								0.5		
Sclerolaena muricata	0.1	5	SG			0.1							
Atriplex pseudocampanulata	0.1	5	SG			0.1							
Rhodanthe corymbiflora	0.1	15	FG					0.1					
*Vulpia myuros**	0.1	50	EX								0.1		
Atriplex leptocarpa	0.1	5	SG			0.1							
Enteropogon acicularis	0.1	5	GG				0.1						
Rytidosperma setaceum	0.1	50	GG				0.1						
Eragrostis spp.	0.1	5	GG				0.1						
Marsilea drummondii	0.1	5	EG						0.1				
*Bromus hordeaceus**	0.1	10	EX								0.1		
Sclerolaena brachyptera	0.1	1	SG			0.1							

Easting	762333
Northing	6116522
Orientation	194
Plot size	20 X 20
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
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_MP37

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP37		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		20	13	0	7	2	4	0	0	7	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	69.4	61.6	0	59.3	0.2	2.1	0	0	7.8	0	
Maireana aphylla	55	75	SG			55							
Rhagodia spinescens	0.5	5	SG			0.5							
Nitraria billardierei	3	50	SG			3							
Einadia nutans	1	50	FG					1					
Atriplex pseudocampanulata	0.5	20	SG			0.5							
Austrostipa elegantissima	0.1	10	GG				0.1						
*Hordeum leporinum**	2	250	EX								2		
*Vulpia myuros**	3	250	EX								3		
*Sonchus oleraceus**	0.1	50	EX								0.1		
*Medicago praecox**	2	250	EX								2		
*Lolium rigidum**	0.5	100	EX								0.5		
*Limonium lobatum**	0.1	10	EX								0.1		
*Cotula bipinnata**	0.1	100	EX								0.1		
Crassula colorata	0.5	250	FG					0.5					
Plantago turrifera	0.5	100	FG					0.5					
Maireana brevifolia	0.1	10	SG			0.1							
Sclerolaena muricata	0.1	5	SG			0.1							
Rhodanthe corymbiflora	0.1	25	FG					0.1					
Austrostipa nodosa	0.1	5	GG				0.1						
Atriplex semibaccata	0.1	5	SG			0.1							

Easting	761985
Northing	6114581
Orientation	118
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_NM029

Date	15/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM029		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		21	15	0	6	2	7	0	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	101	92.8	0	81.2	10	1.6	0	0	8.2	0	
Maireana excavata	60	100	SG			60							
Rhagodia spinescens	10	50	SG			10							
Einadia nutans	1	50	FG					1					
Nitraria billardierei	10	50	SG			10							
*Medicago praecox**	1	50	EX								1		
*Hordeum leporinum**	5	100	EX								5		
Austrostipa elegantissima	5	100	GG				5						
Rytidosperma setaceum	5	100	GG				5						
Rhodanthe corymbiflora	0.1	50	FG					0.1					
*Lolium rigidum**	1	100	EX								1		
Sclerolaena muricata	1	50	SG			1							
*Sisymbrium irio**	0.1	20	EX								0.1		
*Cotula bipinnata**	0.1	50	EX								0.1		
Spergularia brevifolia	0.1	20	FG					0.1					
Maireana pentagona	0.1	100	FG					0.1					
Sclerochlamys brachyptera	0.1	20	FG					0.1					
Sclerolaena stelligera	0.1	10	SG			0.1							
Senecio glossanthus	0.1	10	FG					0.1					
Crassula sieberiana	0.1	100	FG					0.1					
Malacocera tricornis	0.1	10	SG			0.1							
*Vulpia bromoides**	1	100	EX								1		

Easting	762065
Northing	6114672
Orientation	53
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D1.24 PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (Moderate-good)

VNI_NM036

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM036		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	216		18	12	0	4	4	4	0	0	6	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	88	37.6	0	26.1	10.2	1.3	0	0	50.4	0.1	
Enteropogon acicularis	5	100	GG				5						
*Sonchus oleraceus**	0.1	20	EX								0.1		
Oxalis perennans	0.1	20	FG					0.1					
*Hordeum leporinum**	20	1000	EX								20		
*Lolium rigidum**	30	3000	EX								30		
Atriplex spp.	5	100	SG			5							
Sclerolaena muricata	20	100	SG			20							
*Xanthium spinosum**	0.1	20	HT									0.1	
*Medicago praecox**	0.1	50	EX								0.1		
Enchylaena tomentosa	0.1	20	SG			0.1							
Vittadinia cuneata	1	50	FG					1					
Walwhalleya proluta	0.1	10	GG				0.1						
Rhagodia spinescens	1	20	SG			1							
*Malva sp.**	0.1	20	EX								0.1		
Rytidosperma setaceum	0.1	20	GG				0.1						
Einadia nutans	0.1	20	FG					0.1					
Enteropogon acicularis	5	100	GG				5						
Rhodanthe corymbiflora	0.1	10	FG					0.1					

Easting	760830
Northing	60883278
Orientation	148
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D1.25 PCT 237 – Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone (Moderate_good)

VNI_DR47

Date	6/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR47		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	237		17	13	4	4	1	4	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	60.1	56.8	10	21.4	2	23.4	0	0	3.3	0	
Eucalyptus microcarpa	7	3	TG		7								
Eucalyptus largiflorens	1	1	TG		1								
Eucalyptus camaldulensis	1	0	TG		1								
Chenopodium nitrariaceum	10	20	SG			10							
Einadia nutans	20	500	FG					20					
Atriplex lindleyi	0.4	5	FG					0.4					
*Solanum nigrum**	1	20	EX								1		
Sclerolaena muricata var. semiglabra	10	100	SG			10							
Paspalidium jubiflorum	2	20	GG				2						
Alternanthera denticulata	2	50	FG					2					
Salsola australis	1	20	SG			1							
Acacia salicina	1	5	TG		1								
*Cirsium vulgare**	2	20	EX								2		
Sclerolaena tricuspis	0.4	5	SG			0.4							
*Conyza sp.**	0.1	5	EX								0.1		
Centipeda cunninghamii	1	50	FG					1					
*Sonchus oleraceus**	0.2	10	EX								0.2		

Easting	763881
Northing	6117406
Orientation	280
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	3
50-79	1
30-49	0
20-29	no
10-19	no
5-9	no
<5	yes
Hollows	3
Length logs (m)	65
Attributes 1x1 plot (%)	
Litter (%)	47

VNI_NM034

Date	16/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	NM034		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	237		19	16	2	3	2	8	1	0	3	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	26.5	26.2	21	2.2	2.1	0.8	0.1	0	0.3	0.1	
Eucalyptus camaldulensis	1	5	TG		1								
Eucalyptus microcarpa	20	30	TG		20								
Wahlenbergia spp.	0.1	20	FG					0.1					
Paspalidium jubiflorum	2	30	GG				2						
Cynodon dactylon	0.1	20	GG				0.1						
Pseudognaphalium luteoalbum	0.1	10	FG					0.1					
*Sonchus oleraceus**	0.1	20	EX								0.1		
Eclipta platyglossa	0.1	10	FG					0.1					
Duma florulenta	2	5	SG			2							
Einadia nutans	0.1	1	FG					0.1					
Teucrium spp.	0.1	10	FG					0.1					
*Phyla canescens**	0.1	10	HT									0.1	
Goodenia pinnatifida	0.1	1	FG					0.1					
Marsilea drummondii	0.1	50	EG						0.1				
*Cirsium vulgare**	0.1	1	EX								0.1		
Enchylaena tomentosa	0.1	1	SG			0.1							
Euphorbia drummondii	0.1	10	FG					0.1					
Sclerolaena muricata	0.1	1	SG			0.1							
Vittadinia cuneata	0.1	2	FG					0.1					

Easting	760717
Northing	6083653
Orientation	295
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	9
20-29	Yes
10-19	Yes
5-9	No
<5	No
Hollows	1
Length logs (m)	50
Attributes 1x1 plot (%)	
Litter (%)	92

D2 Murrumbidgee IBRA

D2.1 PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate_good)

VNIOZ_10

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_10		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	13		21	16	1	4	2	8	1	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	36.9	36.4	10	25.2	0.3	0.8	0.1	0	0.5	0	
Eucalyptus largiflorens	10	1	TG		10								
Duma florulenta	15	20	SG			15							
Chenopodium nitrariaceum	10	15	SG			10							
*Cotula bipinnata**	0.1	10	EX								0.1		
Crassula sieberiana	0.1	100	FG					0.1					
*Lolium perenne**	0.1	10	EX								0.1		
Rytidosperma caespitosum	0.1	5	GG				0.1						
Oxalis perennans	0.1	5	FG					0.1					
Marsilea drummondii	0.1	50	EG						0.1				
Sclerolaena tricuspis	0.1	1	SG			0.1							
*Hordeum leporinum**	0.1	5	EX								0.1		
Rhagodia spinescens	0.1	1	SG			0.1							
*Spergularia rubra**	0.1	10	EX								0.1		
Vittadinia cuneata	0.1	2	FG					0.1					
Eragrostis australasica	0.2	5	GG				0.2						
Einadia nutans	0.1	1	FG					0.1					
Rhodanthe corymbiflora	0.1	2	FG					0.1					
Ranunculus spp.	0.1	2	FG					0.1					
*Sonchus oleraceus**	0.1	1	EX								0.1		
Alternanthera nana	0.1	3	FG					0.1					
Vittadinia gracilis	0.1	1	FG					0.1					

Easting	372437
Northing	6123084
Orientation	236
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	1
30-49	15
20-29	Yes
10-19	No
5-9	No
<5	No
Hollows	1
Length logs (m)	5
Attributes 1x1 plot (%)	
Litter (%)	11

D2.2 PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Derived)

VNI_DR66

Date	30/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR66		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		22	15	0	6	3	6	0	0	7	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	78.7	42.7	0	32.5	7.4	2.8	0	0	36	0	
Chenopodium nitrariaceum	3	3	SG			3							
Nitraria billardierei	3	5	SG			3							
Sclerolaena muricata var. semiglabra	25	60	SG			25							
*Hordeum leporinum**	30	2000	EX								30		
Oxalis perennans	1	500	FG					1					
*Vulpia myuros**	0.3	50	EX								0.3		
*Erodium cicutarium**	0.4	20	EX								0.4		
Austrostipa scabra subsp. scabra	5	100	GG				5						
*Medicago laciniata**	5	5000	EX								5		
Enteropogon acicularis	0.4	10	GG				0.4						
Rhagodia spinescens	1	2	SG			1							
*Sisymbrium orientale**	0.1	5	EX								0.1		
Einadia nutans	1	10	FG					1					
Rhodanthe corymbiflora	0.4	50	FG					0.4					
Calotis hispidula	0.1	10	FG					0.1					
Maireana decalvans	0.3	5	SG			0.3							
Malacocera tricornis	0.2	1	SG			0.2							
Maireana pentagona	0.1	5	FG					0.1					
*Malva parviflora**	0.1	5	EX								0.1		
Atriplex lindleyi	0.2	1	FG					0.2					
*Lamarckia aurea**	0.1	10	EX								0.1		
Austrostipa nodosa	2	20	GG				2						

Easting	232802
Northing	6121436
Orientation	80
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_MP22

Date	11/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP22		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		13	8	0	6	1	1	0	0	5	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	54	41.4	0	40.3	0.1	1	0	0	12.6	0	
Atriplex nummularia	38	50	SG			38							
*Hordeum leporinum**	8	250	EX								8		
Rhodanthe corymbiflora	1	200	FG					1					
Sclerolaena muricata	0.1	25	SG			0.1							
*Lolium rigidum**	3	150	EX								3		
*Vulpia myuros**	1	150	EX								1		
*Medicago praecox**	0.5	50	EX								0.5		
*Cotula bipinnata**	0.1	100	EX								0.1		
Atriplex lindleyi	1	20	SG			1							
Sclerolaena tricuspis	1	10	SG			1							
Rhagodia spinescens	0.1	1	SG			0.1							
Atriplex spp.	0.1	3	SG			0.1							
Rytidosperma caespitosum	0.1	5	GG				0.1						

Easting	278701
Northing	6118984
Orientation	74
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	42

VNI_MP45

Date	18/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP45		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		10	7	0	5	1	1	0	0	3	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	31.5	30.3	0	25.2	5	0.1	0	0	1.2	0	
Sclerolaena tricuspis	5	50	SG			5							
Atriplex nummularia	15	100	SG			15							
Rytidosperma caespitosum	5	250	GG				5						
Atriplex spp	5	150	SG			5							
Einadia nutans	0.1	1	FG					0.1					
*Hordeum leporinum**	1	200	EX								1		
Nitraria billardierei	0.1	2	SG			0.1							
*Medicago laciniata**	0.1	10	EX								0.1		
*Medicago praecox**	0.1	10	EX								0.1		
Rhagodia spinescens	0.1	1	SG			0.1							

Easting	278589
Northing	6118934
Orientation	98
Plot size	20x50
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
Attributes 1x1 plot (%)	
Litter (%)	16

VNI_MP46

Date	18/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP46		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		7	5	0	3	0	2	0	0	2	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	48.1	47.1	0	46	0	1.1	0	0	1	0	
Sclerolaena tricuspis	1	15	SG			1							
Atriplex nummularia	5	100	SG			5							
Rhodanthe corymbiflora	0.1	1	FG					0.1					
Atriplex spp	40	100	SG			40							
Hordeum leporinum *	0.5	50	EX								0.5		
Medicago praecox *	0.5	200	EX								0.5		
Einadia nutans	1	10	FG					1					

Easting	274665
Northing	6122002
Orientation	280
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	32

D2.3 PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate_good)

VNI_OZ08

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_08		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		16	10	1	6	0	2	1	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	76.4	15.2	10	4.8	0	0.3	0.1	0	61.2	0	
Eucalyptus largiflorens	10	3	TG		10								
Nitraria billardierei	2	4	SG			2							
*Lolium perenne**	30	9000	EX								30		
*Hordeum leporinum**	15	1000	EX								15		
Sclerolaena muricata var. semiglabra	2	10	SG			2							
Atriplex leptocarpa	0.5	20	SG			0.5							
Einadia nutans	0.1	2	FG					0.1					
Enchylaena tomentosa	0.1	10	SG			0.1							
*Sisymbrium orientale**	8	800	EX								8		
*Malva parviflora**	0.1	1	EX								0.1		
Marsilea drummondii	0.1	50	EG						0.1				
Rhodanthe corymbiflora	0.2	30	FG					0.2					
*Arctotheca calendula**	0.1	1	EX								0.1		
Duma florulenta	0.1	1	SG			0.1							
*Chenopodium murale**	8	800	EX								8		
Sclerolaena stelligera	0.1	10	SG			0.1							

Easting	370094
Northing	6121853
Orientation	35
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	1
20-29	No
10-19	No
5-9	No
<5	No
Hollows	1
Length logs (m)	25
Attributes 1x1 plot (%)	
Litter (%)	3.2

VNI_DR04

Date	31/01/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		16	14	1	6	4	2	1	0	1	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	44.3	43.2	15	15.6	11.3	0.3	1	0	0.1	1	
Eucalyptus largiflorens	15	9	TG		15								
Chenopodium nitrariaceum	5	10	SG			5							
*Lycium ferocissimum**	1	1	HT									1	
Duma florulenta	1	10	SG			1							
Enteropogon acicularis	10	50	GG				10						
Sclerolaena muricata var. semiglabra	8	50	SG			8							
Marsilea drummondii	1	500	EG						1				
Atriplex semibaccata	1	5	SG			1							
Sclerolaena stelligera	0.5	20	SG			0.5							
*Polygonum aviculare**	0.1	5	EX								0.1		
Eleocharis pusilla	0.1	10	GG				0.1						
Paspalidium jubiflorum	1	20	GG				1						
Einadia nutans	0.1	5	FG					0.1					
Carex inversa	0.2	50	GG				0.2						
Enchylaena tomentosa	0.1	5	SG			0.1							
Centipeda minima	0.2	10	FG					0.2					

Easting	371569
Northing	6122866
Orientation	170
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	4
20-29	yes
10-19	yes
5-9	yes
<5	no
Hollows	3
Length logs (m)	38
BAM Attributes 1x1 plot (%)	
Litter (%)	7

VNI_DR54

Date	27/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR54		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		19	13	1	5	2	4	1	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	43.5	35.9	25	8.2	1.1	1.5	0.1	0	7.6	0	
Eucalyptus largiflorens	25	3	TG		25								
Duma florulenta	2	10	SG			2							
Chenopodium nitrariaceum	5	20	SG			5							
Sclerolaena muricata	1	10	SG			1							
*Lolium perenne**	5	1000	EX								5		
*Cotula bipinnata**	2	500	EX								2		
Crassula sieberiana	0.1	100	FG					0.1					
Rhodanthe corymbiflora	1	1000	FG					1					
Eleocharis plana	1	1000	GG				1						
Marsilea drummondii	0.1	20	EG						0.1				
*Hypochaeris radicata**	0.1	2	EX								0.1		
Ranunculus pentandrus var. platycarpu	0.3	100	FG					0.3					
*Medicago laciniata**	0.1	100	EX								0.1		
*Sonchus oleraceus**	0.1	5	EX								0.1		
Maireana decalvans	0.1	5	SG			0.1							
Sclerolaena stelligera	0.1	5	SG			0.1							
*Spergularia rubra**	0.3	20	EX								0.3		
Sporobolus caroli	0.1	2	GG				0.1						
Sida trichopoda	0.1	5	FG					0.1					

Easting	367004
Northing	6121213
Orientation	250
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	1
20-29	Yes
10-19	No
5-9	No
<5	No
Hollows	3
Length logs (m)	25
Attributes 1x1 plot (%)	
Litter (%)	16

VNI_DR68

Date	3/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR68		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		29	22	2	10	3	6	0	1	7	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	68.7	50.5	7	34.8	1.5	7	0	0.2	18.2	2	
Eucalyptus largiflorens	3	4	TG		3								
Alectryon oleifolius subsp. canescens	4	3	TG		4								
Lysiana exocarpi subsp. exocarpi	0.2	2	OG							0.2			
Rhagodia spinescens	10	20	SG			10							
Einadia nutans	5	50	FG					5					
*Hordeum leporinum**	10	500	EX								10		
Enchylaena tomentosa	15	80	SG			15							
Crassula sieberiana	0.3	3000	FG					0.3					
*Schismus barbatus**	1	200	EX								1		
Sclerolaena muricata var. semiglabra	3	30	SG			3							
Salsola australis	0.4	10	SG			0.4							
*Sisymbrium officinale**	1	50	EX								1		
*Medicago laciniata**	2	2000	EX								2		
Sclerolaena diacantha	3	100	SG			3							
Calandrinia eremaea	0.2	100	FG					0.2					
Oxalis perennans	0.3	30	FG					0.3					
Atriplex semibaccata	1	20	SG			1							
Tetragonia eremaea	1	40	FG					1					
Sclerolaena muricata var. villosa	1	10	SG			1							
Juncus spp.	0.2	10	GG				0.2						
Malacocera tricornis	1	10	SG			1							
Austrostipa scabra subsp. scabra	0.3	20	GG				0.3						
*Medicago praecox**	2	2000	EX								2		
*Hypochaeris radicata**	0.2	20	EX								0.2		
Rytidosperma caespitosum	1	20	GG				1						
Atriplex vesicaria	0.2	1	SG			0.2							
*Lycium ferocissimum**	2	2	HT									2	
Rhodanthe moschata	0.2	20	FG					0.2					
Maireana brevifolia	0.2	1	SG			0.2							

Easting	268133
Northing	6126554
Orientation	280
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	2
20-29	No
10-19	Yes
5-9	No
<5	No
Hollows	1
Length logs (m)	17
Attributes 1x1 plot (%)	
Litter (%)	19.6

VNI_DR69

Date	3/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR69		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		31	24	1	9	3	10	1	0	7	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	57.6	52.5	5	39.4	0.7	7.3	0.1	0	5.1	1	
Eucalyptus largiflorens	5	5	TG		5								
Rhagodia spinescens	25	30	SG			25							
Einadia nutans	5	60	FG					5					
Teucrium racemosum	0.2	20	FG					0.2					
Sclerolaena diacantha	2	30	SG			2							
*Spergularia rubra**	0.3	40	EX								0.3		
Oxalis perennans	0.2	10	FG					0.2					
Rytidosperma caespitosum	0.4	20	GG				0.4						
*Medicago laciniata**	3	500	EX								3		
*Lycium ferocissimum**	1	5	HT									1	
Enchylaena tomentosa	5	100	SG			5							
Atriplex semibaccata	1	20	SG			1							
Juncus spp.	0.1	5	GG				0.1						
Sida trichopoda	0.1	5	FG					0.1					
Crassula sieberiana	0.1	100	FG					0.1					
Marsilea drummondii	0.1	10	EG						0.1				
Sclerolaena muricata var. semiglabra	2	20	SG			2							
*Hordeum leporinum**	0.4	20	EX								0.4		
Tetragonia eremaea	0.4	20	FG					0.4					
Calandrinia eremaea	0.1	20	FG					0.1					
Atriplex lindleyi	1	10	FG					1					
Atriplex vesicaria	0.3	1	SG			0.3							
Malacocera tricornis	3	40	SG			3							
Scleroblitum atriplicinum	0.1	10	FG					0.1					
*Schismus barbatus**	0.1	10	EX								0.1		
Vittadinia cuneata var. hirsuta	0.1	1	FG					0.1					
*Sisymbrium orientale**	0.2	20	EX								0.2		
Austrostipa scabra subsp. scabra	0.2	10	GG				0.2						
Chenopodium nitrariaceum	1	5	SG			1							
Sclerolaena muricata var. villosa	0.1	1	SG			0.1							
*Sonchus oleraceus**	0.1	5	EX								0.1		

Easting	268465
Northing	6126473
Orientation	80
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	5
20-29	Yes
10-19	Yes
5-9	Yes
<5	No
Hollows	2
Length logs (m)	20
Attributes 1x1 plot (%)	
Litter (%)	30.6

VNI_DR70

Date	3/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR70		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		26	19	1	11	2	5	0	0	7	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	54.9	50.1	5	23.8	0.7	20.6	0	0	4.8	1	
Eucalyptus largiflorens	5	4	TG		5								
Exocarpos aphyllus	2	2	SG			2							
Rhagodia spinescens	10	20	SG			10							
Einadia nutans	20	100	FG					20					
Atriplex pseudocampanulata	1	30	SG			1							
Sclerolaena muricata var. semiglabra	3	20	SG			3							
*Hordeum leporinum**	2	100	EX								2		
Sclerolaena muricata var. villosa	1	10	SG			1							
Enchylaena tomentosa	5	40	SG			5							
*Lycium ferocissimum**	1	3	HT									1	
Maireana brevifolia	0.2	1	SG			0.2							
Sclerolaena brachyptera	0.1	5	SG			0.1							
Sclerolaena diacantha	0.4	10	SG			0.4							
Rytidosperma caespitosum	0.5	10	GG				0.5						
*Medicago laciniata**	1	1000	EX								1		
Tetragonia eremaea	0.2	10	FG					0.2					
Atriplex semibaccata	1	20	SG			1							
Salsola australis	0.1	5	SG			0.1							
Crassula sieberiana	0.2	500	FG					0.2					
*Sisymbrium orientale**	0.1	10	EX								0.1		
Austrostipa scabra subsp. scabra	0.2	10	GG				0.2						
Vittadinia cuneata var. cuneata	0.1	5	FG					0.1					
*Spergularia rubra**	0.1	10	EX								0.1		
Erodium crinitum	0.1	5	FG					0.1					
*Medicago praecox**	0.5	100	EX								0.5		
*Vulpia myuros**	0.1	10	EX								0.1		

Easting	267757
Northing	6126492
Orientation	275
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	Yes
10-19	Yes
5-9	No
<5	No
Hollows	1
Length logs (m)	11
Attributes 1x1 plot (%)	
Litter (%)	33.4

VNI_DR71

Date	3/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR71		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		30	22	1	11	2	8	0	0	8	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	80.4	77.2	8	37.5	0.5	31.2	0	0	3.2	0	
Eucalyptus largiflorens	8	6	TG		8								
Atriplex nummularia	10	20	SG			10							
Malacocera tricornis	15	100	SG			15							
*Medicago laciniata**	2	2000	EX								2		
Atriplex lindleyi	20	500	FG					20					
Sclerolaena diacantha	5	50	SG			5							
Einadia nutans	10	100	FG					10					
*Lepidium africanum**	0.2	10	EX								0.2		
Atriplex semibaccata	1	20	SG			1							
Sclerolaena tricuspis	1	20	SG			1							
*Cirsium vulgare**	0.1	5	EX								0.1		
Chenopodium nitrariaceum	1	5	SG			1							
Oxalis perennans	0.7	100	FG					0.7					
Rytidosperma caespitosum	0.4	5	GG				0.4						
*Hordeum leporinum**	0.4	20	EX								0.4		
*Spergularia rubra**	0.1	10	EX								0.1		
Crassula sieberiana	0.1	100	FG					0.1					
*Sisymbrium orientale**	0.1	10	EX								0.1		
*Erodium cicutarium**	0.2	20	EX								0.2		
Erodium crinitum	0.1	5	FG					0.1					
Sclerolaena stelligera	3	80	SG			3							
Enchylaena tomentosa	1	50	SG			1							
Atriplex leptocarpa	0.2	20	SG			0.2							
Brachyscome papillosa	0.1	1	FG					0.1					
Austrostipa scabra subsp. scabra	0.1	5	GG				0.1						
Podolepis capillaris	0.1	5	FG					0.1					
Calandrinia eremaea	0.1	10	FG					0.1					
Osteocarpum acropterum	0.1	5	SG			0.1							
Sclerolaena brachyptera	0.2	10	SG			0.2							
*Sonchus oleraceus**	0.1	5	EX								0.1		

Easting	270323
Northing	6125683
Orientation	240
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	4
20-29	Yes
10-19	No
5-9	No
<5	Yes
Hollows	2
Length logs (m)	63
Attributes 1x1 plot (%)	
Litter (%)	64

VNI_DR72

Date	12/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR72		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	15		17	13	1	5	2	4	1	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	33.1	15.5	3	5.5	1.2	5.6	0.2	0	17.6	0	
Eucalyptus largiflorens	3	1	TG		3								
Chenopodium nitrariaceum	4	10	SG			4							
Sporobolus caroli	0.2	5	GG				0.2						
Rhodanthe corymbiflora	5	400	FG					5					
Marsilea drummondii	0.2	20	EG						0.2				
Crassula sieberiana	0.1	100	FG					0.1					
*Lolium perenne**	15	1000	EX								15		
Sclerolaena muricata var. semiglabra	1	20	SG			1							
Daucus glochidiatus	0.4	200	FG					0.4					
*Vulpia myuros**	0.8	50	EX								0.8		
*Medicago praecox**	0.8	200	EX								0.8		
*Cotula bipinnata**	1	1000	EX								1		
Eleocharis acuta	1	50	GG				1						
Enchylaena tomentosa	0.2	5	SG			0.2							
Sclerolaena stelligera	0.2	20	SG			0.2							
Bulbine bulbosa	0.1	5	FG					0.1					
Atriplex semibaccata	0.1	5	SG			0.1							

Easting	368315
Northing	6121575
Orientation	125
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	37
Attributes 1x1 plot (%)	
Litter (%)	81

D2.4 PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate_good)

VNI_DR15

Date	4/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	VNI_DR15		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	17		20	15	0	4	5	5	1	0	5	0
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	50.2	48.8	0	36.6	10.8	0.6	0.8	0	1.4	0
Duma florulenta	35	50	SG			35						
Enteropogon acicularis	10	50	GG				10					
Juncus usitatus	0.1	5	GG				0.1					
*Lepidium africanum**	1	200	EX								1	
*Sonchus oleraceus**	0.1	5	EX								0.1	
Sclerolaena stelligera	0.2	20	SG			0.2						
Alternanthera nana	0.2	100	FG					0.2				
Atriplex leptocarpa	0.4	100	SG			0.4						
Spergularia brevifolia	0.1	10	FG					0.1				
Marsilea drummondii	0.8	1000	EG						0.8			
Chloris truncata	0.1	10	GG				0.1					
Rytidosperma caespitosum	0.1	10	GG				0.1					
Panicum decompositum	0.5	20	GG				0.5					
Oxalis perennans	0.1	10	FG					0.1				
Portulaca oleracea	0.1	1	FG					0.1				
*Conyza bonariensis**	0.1	1	EX								0.1	
*Echium plantagineum**	0.1	5	EX								0.1	
*Avena sp.**	0.1	5	EX								0.1	
Euphorbia drummondii	0.1	20	FG					0.1				
Chenopodium nitrariaceum	1	2	SG			1						

55

Easting	326393
Northing	6112078
Orientation	170
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR81

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	VNI_DR81		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	17		24	14	0	3	6	4	1	0	10	0
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	82.8	37	0	28.2	7.8	0.4	0.6	0	45.8	0
Duma florulenta	25	30	SG			25						
Chenopodium nitrariaceum	3	5	SG			3						
*Vulpia myuros**	20	1000	EX								20	
*Echium plantagineum**	5	40	EX								5	
*Trifolium arvense**	3	1000	EX								3	
*Lolium perenne**	15	1000	EX								15	
Austrostipa scabra subsp. scabra	5	200	GG				5					
Rhagodia spinescens	0.2	1	SG			0.2						
Marsilea drummondii	0.6	200	EG						0.6			
Rhodanthe corymbiflora	0.1	20	FG					0.1				
Eleocharis pusilla	2	200	GG				2					
Juncus flavidus	0.2	5	GG				0.2					
*Trifolium glomeratum**	0.8	40	EX								0.8	
Rytidosperma caespitosum	0.4	10	GG				0.4					
*Sonchus oleraceus**	0.1	5	EX								0.1	
*Hordeum leporinum**	0.7	20	EX								0.7	
Crassula sieberiana	0.1	20	FG					0.1				
Oxalis perennans	0.1	10	FG					0.1				
Lachnagrostis filiformis	0.1	5	GG				0.1					
*Aira cupaniana**	0.1	1	EX								0.1	
Ranunculus pentandrus var. platycarpu	0.1	5	FG					0.1				
*Medicago laciniata**	1	1000	EX								1	
Walwhalleya proluta	0.1	5	GG				0.1					
*Bromus rubens***	0.1	1	EX								0.1	

55

Easting	365316
Northing	6120723
Orientation	115
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D2.5 PCT 20 – Buloke – Moonah – Black Box open woodland on sandy rises of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Derived_LCV)

VNI_DR67

Date	2/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR67		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	20		9	3	0	1	0	2	0	0	6	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	67.5	1.5	0	0.3	0	1.2	0	0	66	0	
*Schismus barbatus**	20	3000	EX								20		
*Echium plantagineum**	20	500	EX								20		
*Hordeum leporinum**	15	100	EX								15		
Erodium crinitum	1	50	FG					1					
*Trifolium arvense**	5	2000	EX								5		
*Medicago praecox**	5	2000	EX								5		
*Vulpia myuros**	1	100	EX								1		
Crassula sieberiana	0.2	100	FG					0.2					
Enchylaena tomentosa	0.3	2	SG			0.3							

Easting	268298
Northing	6126417
Orientation	243
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D2.6 PCT 20 – Buloke – Moonah – Black Box open woodland on sandy rises of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Thinned)

VNI_DR104

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR104		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	20		24	15	1	6	2	5	0	1	9	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	46.8	29.5	5	21.8	1.1	0.6	0	1	17.3	0	
Alectryon oleifolius subsp. canescens	5	2	TG		5								
Atriplex eardleyae	0.4	20	SG			0.4							
Enchylaena tomentosa	10	100	SG			10							
Maireana pyramidata	1	1	SG			1							
Rhagodia spinescens	5	20	SG			5							
Salsola australis	0.4	20	SG			0.4							
Sclerolaena diacantha	5	50	SG			5							
Lysiana exocarpi	1	5	OG							1			
Austrostipa scabra subsp. scabra	1	200	GG				1						
Chloris truncata	0.1	5	GG				0.1						
Crassula sieberiana	0.1	30	FG					0.1					
Einadia nutans subsp. nutans	0.2	10	FG					0.2					
Oxalis perennans	0.1	10	FG					0.1					
Rhodanthe corymbiflora	0.1	1	FG					0.1					
Tetragonia eremaea	0.1	5	FG					0.1					
*Aira cupaniana**	0.1	10	EX								0.1		
*Echium plantagineum**	0.1	5	EX								0.1		
*Hordeum leporinum**	1	30	EX								1		
*Hypochaeris radicata**	0.1	10	EX								0.1		
*Lamarckia aurea**	1	30	EX								1		
*Medicago laciniata**	3	5000	EX								3		
*Schismus barbatus**	2	2000	EX								2		
*Trifolium arvense**	5	10000	EX								5		
*Vulpia myuros**	5	1000	EX								5		

Easting	267190
Northing	6126611
Orientation	105
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	No
5-9	No
<5	Yes
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	4

D2.7 PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (Derived)

VNI_DR65

Date	31/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR65		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	23		32	22	1	11	2	8	0	0	10	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	54	22.1	0.6	12.3	3.4	5.8	0	0	31.9	0	
Acacia melvillei	0.6	1	TG		0.6								
Sclerolaena muricata var. semiglabra	4	20	SG			4							
*Hordeum leporinum**	25	2000	EX								25		
Rhagodia spinescens	2	10	SG			2							
*Medicago praecox**	2	1000	EX								2		
Austrostipa scabra subsp. scabra	3	100	GG				3						
Oxalis perennans	1	500	FG					1					
Rhodanthe corymbiflora	2	2000	FG					2					
Sclerolaena brachyptera	0.4	10	SG			0.4							
Rhodanthe pygmaea	2	2000	FG					2					
*Cotula bipinnata**	1	1000	EX								1		
*Vulpia myuros**	2	1000	EX								2		
Maireana decalvans	1	10	SG			1							
*Malva parviflora**	0.1	5	EX								0.1		
*Echium plantagineum**	0.1	10	EX								0.1		
Crassula sieberiana	0.2	1000	FG					0.2					
*Medicago laciniata**	1	1000	EX								1		
*Erodium cicutarium**	0.5	30	EX								0.5		
Enteropogon acicularis	0.4	10	GG				0.4						
Calotis hispidula	0.1	10	FG					0.1					
Salsola australis	0.1	5	SG			0.1							
*Lamarckia aurea**	0.1	1	EX								0.1		
Erodium crinitum	0.2	10	FG					0.2					
*Sonchus oleraceus**	0.1	5	EX								0.1		
Maireana pentagona	0.1	10	FG					0.1					
Sclerolaena stelligera	0.1	5	SG			0.1							
Atriplex semibaccata	0.2	10	SG			0.2							
Plantago turrifera	0.2	50	FG					0.2					
Sida intricata	0.5	10	SG			0.5							
Maireana brevifolia	0.6	5	SG			0.6							
Maireana aphylla	3	5	SG			3							
Nitraria billardierei	0.4	1	SG			0.4							

Easting	232660
Northing	6121419
Orientation	60
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 plot (%)	
Litter (%)	0

VNIOZ_16

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_16		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	23		26	20	0	4	2	14	0	0	6	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	64.3	50.8	0	8.2	40.1	2.5	0	0	13.5	0	
Rytidosperma caespitosum	40	10000	GG				40						
Podolepis muelleri	1	1000	FG					1					
*Medicago laciniata**	3	3000	EX								3		
Crassula sieberiana	0.1	200	FG					0.1					
Maireana pentagona	0.2	200	FG					0.2					
*Vulpia myuros**	10	5000	EX								10		
Rhodanthe pygmaea	0.1	200	FG					0.1					
*Medicago minima**	0.1	50	EX								0.1		
Enchylaena tomentosa	5	20	SG			5							
Maireana aphylla	3	5	SG			3							
Sida intricata	0.1	1	SG			0.1							
*Hordeum leporinum**	0.1	100	EX								0.1		
Triptilodiscus pygmaeus	0.1	500	FG					0.1					
Goodenia spp.	0.1	5	FG					0.1					
Plantago turrifera	0.1	50	FG					0.1					
Calotis hispidula	0.1	20	FG					0.1					
Myriocephalus rhizocephalus	0.1	100	FG					0.1					
Spergularia brevifolia	0.2	100	FG					0.2					
*Cotula bipinnata**	0.1	1	EX								0.1		
*Limonium lobatum**	0.2	50	EX								0.2		
Sclerolaena diacantha	0.1	1	SG			0.1							
Austrostipa scabra	0.1	10	GG				0.1						
Ptilotus spathulatus f. spathulatus	0.1	2	FG					0.1					
Solanum esuriale	0.1	10	FG					0.1					
Sida trichopoda	0.1	1	FG					0.1					
Rhodanthe corymbiflora	0.1	2	FG					0.1					

Easting	269426
Northing	6126239
Orientation	202
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNIOZ_17

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	23		33	27	0	8	4	15	0	0	6	1	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	63.3	54.6	0	11.5	40.2	2.9	0	0	8.7	1	
Austrostipa scabra	30	1000	GG				30						
Rytidosperma caespitosum	10	700	GG				10						
Maireana aphylla	3	10	SG			3							
Rhagodia spinescens	5	10	SG			5							
*Lolium perenne**	2	200	EX								2		
Juncus flavidus	0.1	3	GG				0.1						
Oxalis perennans	0.1	5	FG					0.1					
*Medicago laciniata**	0.5	500	EX								0.5		
Sida trichopoda	0.1	1	FG					0.1					
Crassula sieberiana	0.1	1000	FG					0.1					
Plantago turrifera	0.1	20	FG					0.1					
Rhodanthe pygmaea	0.1	100	FG					0.1					
Enchylaena tomentosa	2	20	SG			2							
Eriochlamys squamata	1	200	FG					1					
Enteropogon acicularis	0.1	1	GG				0.1						
Calotis hispidula	0.1	20	FG					0.1					
Goodenia spp.	0.1	50	FG					0.1					
*Vulpia myuros**	5	5000	EX								5		
*Lycium ferocissimum**	1	2	HT									1	
*Medicago minima**	0.1	50	EX								0.1		
Podolepis muelleri	0.5	500	FG					0.5					
*Hordeum leporinum**	0.1	100	EX								0.1		
Solanum esuriale	0.1	10	FG					0.1					
Nitraria billardierei	1	1	SG			1							
Atriplex eardleyae	0.2	5	SG			0.2							
Maireana pentagona	0.2	100	FG					0.2					
Salsola australis	0.1	5	SG			0.1							
Rhodanthe corymbiflora	0.1	3	FG					0.1					
Plantago cunninghamii	0.1	1	FG					0.1					
Atriplex leptocarpa	0.1	3	SG			0.1							
Vittadinia cuneata	0.1	1	FG					0.1					
Sida corrugata	0.1	1	FG					0.1					
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1							

Easting	268808
Northing	6126464
Orientation	62
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D2.8 PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (Derived_LCV)

VNI_GL05

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	266516
Plot Name	VNI_GL05		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6126781
PCT	23		15	10	0	6	3	1	0	0	5	0		Orientation	137
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	72.7	27.4	0	2	25.2	0.2	0	0	45.3	0		Attributes 20x50m plot	
Austrostipa scabra	25	10000	GG				25							Stem classes	
*Hordeum leporinum**	15	8000	EX								15			80+	0
*Vulpia myuros**	10	10000	EX								10			50-79	0
*Medicago laciniata**	20	10000	EX								20			30-49	0
Crassula sieberiana	0.2	200	FG					0.2						20-29	No
*Medicago minima**	0.1	200	EX								0.1			10-19	No
Sclerolaena muricata var. semiglabra	1	5	SG			1								5-9	No
Enchylaena tomentosa	0.5	2	SG			0.5								<5	No
Chloris truncata	0.1	1	GG				0.1							Hollows	0
*Marrubium vulgare**	0.2	20	EX								0.2			Length logs (m)	0
Rytidosperma caespitosum	0.1	5	GG				0.1								
Atriplex eardleyae	0.1	5	SG			0.1								Attributes 1x1 plot (%)	
Atriplex leptocarpa	0.1	1	SG			0.1								Litter (%)	0
Salsola australis	0.1	1	SG			0.1									
Rhagodia spinescens	0.2	1	SG			0.2									

VNI_GL06

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	265671
Plot Name	VNI_GL06		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6126947
PCT	23		22	14	0	8	3	3	0	0	8	0		Orientation	43
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	50.1	14.4	0	10.8	3.2	0.4	0	0	35.7	0		Attributes 20x50m plot	
*Medicago laciniata**	15	15000	EX								15			Stem classes	
*Vulpia myuros**	5	5000	EX								5			80+	0
*Hordeum leporinum**	15	5000	EX								15			50-79	0
Rhagodia spinescens	10	30	SG			10								30-49	0
Crassula sieberiana	0.2	500	FG					0.2						20-29	No
Atriplex eardleyae	0.1	5	SG			0.1								10-19	No
*Medicago minima**	0.2	200	EX								0.2			5-9	No
*Emex australis**	0.1	2	EX								0.1			<5	No
Austrostipa scabra	3	500	GG				3							Hollows	0
Sida intricata	0.1	1	SG			0.1								Length logs (m)	0
Sclerolaena muricata var. villosa	0.1	1	SG			0.1									
Daucus glochidiatus	0.1	3	FG					0.1						Attributes 1x1 plot (%)	
Maireana pyramidata	0.1	1	SG			0.1								Litter (%)	0
Salsola australis	0.1	5	SG			0.1									
*Schismus barbatus**	0.2	100	EX								0.2				
Juncus flavidus	0.1	5	GG				0.1								
Sida corrugata	0.1	1	FG					0.1							
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1									
Sporobolus caroli	0.1	2	GG				0.1								
*Echium plantagineum**	0.1	1	EX								0.1				
Enchylaena tomentosa	0.2	1	SG			0.2									
Cucumis myriocarpus subsp myriocarpu	0.1	1	EX								0.1				

VNI_DR105

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	266033
Plot Name	VNI_DR105		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6126889
PCT	23		14	9	0	5	2	2	0	0	5	0		Orientation	285
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
Species	Cover	Abundance	51.2	4.7	0	2	2.2	0.5	0	0	46.5	0		Attributes 20x50m plot	
*Medicago minima**	20	10000	EX								20			Stem classes	
*Hordeum leporinum**	25	5000	EX								25			80+	0
Austrostipa scabra subsp. scabra	2	200	GG				2							50-79	0
Crassula sieberiana	0.1	100	FG					0.1						30-49	0
Enteropogon acicularis	0.2	10	GG				0.2							20-29	No
Enchylaena tomentosa	1	10	SG			1								10-19	No
Atriplex eardleyae	0.3	30	SG			0.3								5-9	No
Rhagodia spinescens	0.4	1	SG			0.4								<5	No
Atriplex semibaccata	0.2	10	SG			0.2								Hollows	0
Salsola australis	0.1	5	SG			0.1								Length logs (m)	0
Cucumis myriocarpus subsp. Leptoderm	0.1	10	EX								0.1				
*Schismus barbatus**	1	100	EX								1			Attributes 1x1 plot (%)	
*Vulpia myuros**	0.4	50	EX								0.4			Litter (%)	0
Einadia nutans subsp. nutans	0.4	1	FG					0.4							

D2.9 PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (Moderate_good)

VNI_DR101

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR101		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	23		34	30	1	14	5	10	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	63.4	59.2	3	32.3	21.6	2.3	0	0	4.2	0	
Acacia melvillei	3	3	TG		3								
Rhagodia spinescens	15	30	SG			15							
Austrostipa scabra subsp. scabra	15	1000	GG				15						
Sclerolaena muricata var. semiglabra	1	30	SG			1							
Enchylaena tomentosa	10	100	SG			10							
*Medicago praecox**	3	2000	EX								3		
Einadia nutans subsp. nutans	1	40	FG					1					
Atriplex semibaccata	1	30	SG			1							
*Vulpia myuros**	1	500	EX								1		
Oxalis perennans	0.4	40	FG					0.4					
Enteropogon acicularis	0.5	20	GG				0.5						
Spergularia brevifolia	0.2	40	FG					0.2					
Crassula sieberiana	0.1	10	FG					0.1					
Sclerolaena diacantha	0.7	20	SG			0.7							
Rytidosperma setaceum	5	200	GG				5						
Teucrium racemosum	0.1	20	FG					0.1					
Sida trichopoda	0.1	10	FG					0.1					
Vittadinia gracilis	0.1	5	FG					0.1					
Juncus flavidus	0.1	20	GG				0.1						
Maireana aphylla	0.8	5	SG			0.8							
Alternanthera nana	0.1	10	FG					0.1					
Salsola australis	0.1	10	SG			0.1							
Sclerolaena muricata var. villosa	1	20	SG			1							
Atriplex eardleyae	0.4	20	SG			0.4							
Solanum esuriale	0.1	20	FG					0.1					
Nitraria billardierei	1	1	SG			1							
Euphorbia drummondii	0.1	5	FG					0.1					
*Lepidium africanum**	0.1	10	EX								0.1		
Atriplex leptocarpa	0.1	5	SG			0.1							
Sporobolus caroli	1	20	GG				1						
Sclerolaena stelligera	0.1	5	SG			0.1							
*Lolium perenne**	0.1	10	EX								0.1		
Maireana pyramidata	1	1	SG			1							
Sida intricata	0.1	5	SG			0.1							

Easting	269222
Northing	6126330
Orientation	37
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	No
<5	No
Hollows	0
Length logs (m)	8
Attributes 1x1 plot (%)	
Litter (%)	24

VNI_DR102

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR102		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	23		27	20	1	10	2	7	0	0	7	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	49.9	41.6	10	20.2	5.7	5.7	0	0	8.3	1	
Acacia melvillei	10	10	TG		10								
Enchylaena tomentosa	15	50	SG			15							
Maireana pyramidata	1	3	SG			1							
Einadia nutans subsp. nutans	5	60	FG					5					
*Lycium ferocissimum**	1	2	HT									1	
Austrostipa scabra subsp. scabra	5	400	GG				5						
*Schismus barbatus**	4	1000	EX								4		
Salsola australis	0.2	20	SG			0.2							
Sida corrugata	0.1	10	FG					0.1					
*Medicago laciniata**	0.8	400	EX								0.8		
Sclerolaena muricata var. villosa	0.6	20	SG			0.6							
*Hordeum leporinum**	0.4	30	EX								0.4		
Oxalis perennans	0.2	40	FG					0.2					
Rytidosperma setaceum	0.7	50	GG				0.7						
Sclerolaena diacantha	1	30	SG			1							
Crassula sieberiana	0.1	10	FG					0.1					
Solanum esuriale	0.1	5	FG					0.1					
Tetragonia eremaea	0.1	10	FG					0.1					
*Lamarckia aurea**	0.1	20	EX								0.1		
Maireana aphylla	1	5	SG			1							
Spergularia brevifolia	0.1	20	FG					0.1					
Atriplex eardleyae	0.2	30	SG			0.2							
*Vulpia myuros**	1	500	EX								1		
Atriplex vesicaria	0.1	1	SG			0.1							
Rhagodia spinescens	1	2	SG			1							
*Sisymbrium orientale**	1	30	EX								1		
Malacocera tricornis	0.1	5	SG			0.1							

Easting	268926
Northing	6126358
Orientation	185
Plot size	20 X 20 X 50
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)	26
Attributes 1x1 plot (%)	
Litter (%)	21

VNIOZ_18

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_18		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	23		25	21	1	13	2	5	0	0	4	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	62.1	61.6	10	50.8	0.2	0.6	0	0	0.5	0.2	
Acacia melvillei	10	4	TG		10								
Rhagodia spinescens	40	50	SG			40							
Rytidosperma caespitosum	0.1	50	GG				0.1						
Austrostipa scabra	0.1	20	GG				0.1						
Atriplex nummularia	0.5	1	SG			0.5							
Enchylaena tomentosa	5	30	SG			5							
Sclerolaena diacantha	2	40	SG			2							
Maireana pentagona	0.1	100	FG					0.1					
Einadia nutans	0.2	20	FG					0.2					
*Lycium ferocissimum**	0.2	1	HT									0.2	
Salsola australis	0.1	3	SG			0.1							
*Lamarckia aurea**	0.1	50	EX								0.1		
*Hordeum leporinum**	0.1	10	EX								0.1		
Crassula sieberiana	0.1	100	FG					0.1					
Spergularia brevifolia	0.1	5	FG					0.1					
Atriplex leptocarpa	2	20	SG			2							
Sclerolaena brachyptera	0.2	20	SG			0.2							
Atriplex semibaccata	0.2	20	SG			0.2							
Atriplex spp.	0.1	1	SG			0.1							
Osteocarpum acropterum var. acropterum	0.1	20	SG			0.1							
Oxalis perennans	0.1	1	FG					0.1					
Atriplex eardleyae	0.2	20	SG			0.2							
Maireana aphylla	0.2	1	SG			0.2							
*Schismus barbatus**	0.1	1	EX								0.1		
Sclerolaena muricata var. semiglabra	0.2	2	SG			0.2							

Easting	266851
Northing	6126696
Orientation	115
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	3
20-29	Yes
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	15
Attributes 1x1 plot (%)	
Litter (%)	18

D2.10 PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (Moderate_good)

VNI_DR36

Date	4/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR36		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	24		10	10	0	4	4	1	1	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	72.4	72.4	0	5.4	56.4	0.6	10	0	0	0	
Eragrostis australasica	55	50	GG				55						
Chenopodium nitrariaceum	3	2	SG			3							
Marsilea drummondii	10	1000	EG						10				
Enteropogon acicularis	1	20	GG				1						
Duma florulenta	1	5	SG			1							
Nitraria billardierei	1	1	SG			1							
Einadia nutans	0.6	5	FG					0.6					
Sclerolaena muricata var. semiglabra	0.4	2	SG			0.4							
Juncus flavidus	0.1	5	GG				0.1						
Lachnagrostis filiformis	0.3	10	GG				0.3						

Easting	301854
Northing	6113670
Orientation	150
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR90

Date	20/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR90		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	24		21	17	0	3	6	8	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	35.5	34.2	0	11.1	20.9	2.2	0	0	1.3	0	
Eragrostis australasica	15	60	GG				15						
Maireana aphylla	10	50	SG			10							
Rytidosperma caespitosum	5	100	GG				5						
*Lolium perenne**	1	1000	EX								1		
Calocephalus sonderi	1	1000	FG					1					
Cressa australis	0.4	500	FG					0.4					
Brachyscome lineariloba	0.1	50	FG					0.1					
Goodenia pinnatifida	0.2	100	FG					0.2					
Eleocharis obicis	0.5	20	GG				0.5						
Rhodanthe corymbiflora	0.2	200	FG					0.2					
Plantago turrifera	0.1	30	FG					0.1					
Juncus flavidus	0.1	2	GG				0.1						
Maireana pentagona	0.1	20	FG					0.1					
*Sonchus oleraceus**	0.1	5	EX								0.1		
*Spergularia rubra**	0.1	5	EX								0.1		
Einadia nutans	0.1	5	FG					0.1					
Chloris truncata	0.1	10	GG				0.1						
Sclerolaena muricata var. semiglabra	0.1	5	SG			0.1							
Nitraria billardierei	1	1	SG			1							
*Medicago praecox**	0.1	20	EX								0.1		
Enteropogon acicularis	0.2	5	GG				0.2						

Easting	289033
Northing	6115617
Orientation	300
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR98

Date	22/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR98		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	24		50	42	0	6	13	22	1	0	8	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	68.7	55.2	0	9.2	31.9	13.6	0.5	0	13.5	0	
Eragrostis australasica	20	50	GG				20						
Maireana aphylla	5	20	SG			5							
Leiocarpa leptolepis	5	100	FG					5					
Rytidosperma caespitosum	5	300	GG				5						
*Lolium perenne**	5	1000	EX								5		
Rhodanthe corymbiflora	0.5	100	FG					0.5					
Calotis scabiosifolia var. scabiosifolia	4	200	FG					4					
Calocephalus sonderi	0.4	500	FG					0.4					
*Medicago sp.**	2	2000	EX								2		
Oxalis perennans	0.5	300	FG					0.5					
*Vulpia myuros**	5	2000	EX								5		
Plantago turrifera	0.2	50	FG					0.2					
Solanum esuriale	0.1	10	FG					0.1					
Tricoryne elatior	0.1	10	FG					0.1					
*Sonchus oleraceus**	0.1	10	EX								0.1		
Brachyscome lineariloba	0.2	50	FG					0.2					
Vittadinia cuneata	0.2	20	FG					0.2					
Alternanthera nana	0.1	20	FG					0.1					
Enteropogon acicularis	1	20	GG				1						
Einadia nutans	1	20	FG					1					
Nitraria billardierei	2	1	SG			2							
Lachnagrostis filiformis	0.1	10	GG				0.1						
Chenopodium nitrariaceum	1	1	SG			1							
Myriocephalus rhizocephalus	0.2	50	FG					0.2					
Marsilea drummondii	0.5	500	EG						0.5				
Daucus glochidiatus	0.1	50	FG					0.1					
Juncus flavidus	0.4	20	GG				0.4						
Eleocharis pusilla	1	100	GG				1						
Rytidosperma setaceum	1	40	GG				1						
Pycnosorus globosus	0.1	5	FG					0.1					
Senecio runcinifolius	0.3	20	FG					0.3					
*Hypochaeris radicata**	0.1	10	EX								0.1		
Walwhalleya proluta	1	20	GG				1						
*Bromus hordeaceus**	0.2	10	EX								0.2		
*Avena sp.**	0.1	10	GG				0.1						
*Phalaris paradoxa**	0.1	10	EX								0.1		
Chloris truncata	1	20	GG				1						
*Hordeum leporinum**	1	30	EX								1		
Eragrostis dielsii	1	20	GG				1						
Eleocharis obicis	0.1	10	GG				0.1						
Austrostipa scabra subsp. scabra	0.2	10	GG				0.2						
Goodenia fascicularis	0.1	20	FG					0.1					
Duma florulenta	1	5	SG			1							
Teucrium racemosum	0.1	20	FG					0.1					
Haloragis glauca f. glauca	0.1	10	FG					0.1					
Asperula conferta	0.1	20	FG					0.1					
Crassula sieberiana	0.1	20	FG					0.1					
Sclerolaena muricata var. semiglabra	0.1	5	SG			0.1							
Sclerolaena stelligera	0.1	5	SG			0.1							
Podolepis muelleri	0.1	5	FG					0.1					

Easting	297242
Northing	6114114
Orientation	58
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNIOZ_03

Date	30/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_03		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	24		17	13	0	1	2	9	1	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	54.7	48.5	0	15	30	3.4	0.1	0	6.2	0	
Eragrostis australasica	20	50	GG				20						
Rytidosperma caespitosum	10	200	GG				10						
Maireana aphylla	15	50	SG			15							
*Lolium perenne**	5	1000	EX								5		
Rhodanthe corymbiflora	2	1000	FG					2					
*Medicago sp.**	1	1000	EX								1		
*Erodium cicutarium**	0.1	100	EX								0.1		
Marsilea drummondii	0.1	200	EG						0.1				
Plantago turrifera	0.2	200	FG					0.2					
*Sonchus oleraceus**	0.1	20	EX								0.1		
Ranunculus pentandrus	0.5	200	FG					0.5					
Crassula sieberiana	0.1	500	FG					0.1					
Goodenia spp.	0.1	10	FG					0.1					
Cotula australis	0.2	200	FG					0.2					
Oxalis perennans	0.1	500	FG					0.1					
Swainsona procumbens	0.1	1	FG					0.1					
Brachyscome lineariloba	0.1	100	FG					0.1					

Easting	288578
Northing	6115650
Orientation	150
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNIOZ_13

Date	22/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_13		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	24		17	12	0	1	6	4	1	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	84.5	59	0	3	55.4	0.4	0.2	0	25.5	0	
Eragrostis australasica	30	50	GG				30						
Chenopodium nitrariaceum	3	1	SG			3							
Eleocharis plana	25	10000	GG				25						
Marsilea drummondii	0.2	1000	EG						0.2				
*Lolium perenne**	25	10000	EX								25		
*Phalaris paradoxa**	0.2	200	EX								0.2		
Cressa australis	0.1	3	FG					0.1					
Amphibromus neesii	0.1	1	GG				0.1						
*Vulpia myuros**	0.1	100	EX								0.1		
Juncus spp.	0.1	1	GG				0.1						
Rhodanthe corymbiflora	0.1	10	FG					0.1					
Walwhalleya proluta	0.1	1	GG				0.1						
*Medicago laciniata**	0.1	10	EX								0.1		
Rytidosperma caespitosum	0.1	3	GG				0.1						
Rumex brownii	0.1	3	FG					0.1					
*Romulea minutiflora**	0.1	5	EX								0.1		
Stellaria angustifolia	0.1	1	FG					0.1					

Easting	301051
Northing	6113751
Orientation	135
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D2.11 PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW Southwestern Slopes Bioregion (Derived)

VNI_DR01

Date	28/11/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	VNI_DR01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	26		25	22	0	7	8	7	0	0	3	0
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	76.9	75.9	0	2.8	71.5	1.6	0	0	1	0
Enteropogon acicularis	30	500	GG				30					
Rytidosperma caespitosum	15	500	GG				15					
*Lolium perenne**	0.5	20	EX								0.5	
Maireana pentagona	0.5	100	FG					0.5				
*Medicago laciniata**	0.4	100	EX								0.4	
Crassula sieberiana	0.1	10	FG					0.1				
Chloris truncata	10	500	GG				10					
Maireana excavata	0.8	20	SG			0.8						
Panicum decompositum	0.2	10	GG				0.2					
Salsola australis	0.1	20	SG			0.1						
Austrostipa scabra s ubsp. scabra	15	500	GG				15					
*Avena barbata**	0.1	10	EX								0.1	
Ptilotus spathulatus	0.4	30	FG					0.4				
Atriplex semibaccata	1	20	SG			1						
Vittadinia gracilis	0.1	10	FG					0.1				
Enchylaena tomentosa	0.2	20	SG			0.2						
Sida trichopoda	0.1	10	FG					0.1				
Maireana decalvans	0.1	10	SG			0.1						
Sclerolaena muricata var. semiglabra	0.5	2	SG			0.5						
Leiocarpa websteri	0.1	10	FG					0.1				
Juncus flavidus	0.1	2	GG				0.1					
Sporobolus caroli	0.2	20	GG				0.2					
Rytidosperma setaceum	1	20	GG				1					
Leucochrysum molle	0.3	40	FG					0.3				
Maireana aphylla	0.1	1	SG			0.1						

55

Easting	300103
Northing	6113777
Orientation	150
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	8

VNI_DR05

Date	31/01/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	VNI_DR05		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	26		21	21	1	5	7	8	0	0	0	0
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	62.8	62.8	1	2.7	58	1.1	0	0	0	0
Acacia pendula	1	1	TG		1							
Enteropogon acicularis	20	200	GG				20					
Austrostipa scabra subsp. scabra	15	200	GG				15					
Rytidosperma caespitosum	5	100	GG				5					
Sporobolus caroli	15	200	GG				15					
Sida trichopoda	0.2	50	FG					0.2				
Salsola australis	0.5	50	SG			0.5						
Atriplex semibaccata	1	10	SG			1						
Sclerolaena diacantha	0.6	50	SG			0.6						
Rytidosperma setaceum	1	100	GG				1					
Goodenia fascicularis	0.2	30	FG					0.2				
Chloris truncata	1	50	GG				1					
Solanum esuriale	0.1	10	FG					0.1				
Maireana decalvans	0.4	5	SG			0.4						
Panicum decompositum	1	50	GG				1					
Sclerolaena muricata var. semiglabr	0.2	2	SG			0.2						
Vittadinia cuneata	0.1	5	FG					0.1				
Oxalis perennans	0.1	5	FG					0.1				
Sida corrugata	0.1	5	FG					0.1				
Leiocarpa websteri	0.2	1	FG					0.2				
Euphorbia drummondii	0.1	5	FG					0.1				

55

Easting	370125
Northing	6122584
Orientation	260
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	yes
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	
Litter (%)	1

VNI_DR28

Date	2/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	VNI_DR28		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	26		18	17	0	4	6	7	0	0	1	0
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	44.5	44.2	0	10.4	31.2	2.6	0	0	0.3	0
Walwhalleya proluta	15	500	GG				15					
Maireana aphylla	10	50	SG			10						
Chloris truncata	0.2	20	GG				0.2					
Rytidosperma caespitosum	10	500	GG				10					
Enteropogon acicularis	5	80	GG				5					
*Medicago laciniata**	0.3	2000	EX								0.3	
Sida corrugata	0.1	10	FG					0.1				
Maireana pentagona	0.1	10	FG					0.1				
Sida trichopoda	0.1	10	FG					0.1				
Solanum esuriale	0.1	10	FG					0.1				
Sclerolaena diacantha	0.1	1	SG			0.1						
Calotis scabiosifolia var. scabiosifolia	0.1	5	FG					0.1				
Leiocarpa panaetioides	2	30	FG					2				
Atriplex semibaccata	0.2	1	SG			0.2						
Austrostipa scabra subsp. scabra	0.4	20	GG				0.4					
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1						
Oxalis perennans	0.1	50	FG					0.1				
Sporobolus caroli	0.6	20	GG				0.6					

55

Easting	360894
Northing	6119109
Orientation	80
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	no
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR57

Date	28/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR57		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		33	25	0	4	4	17	0	0	8	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	62.7	55.1	0	2.1	48	5	0	0	7.6	0	
Sporobolus caroli	30	800	GG				30						
Enteropogon acicularis	5	200	GG				5						
Austrostipa aristiglumis	10	200	GG				10						
Austrostipa scabra subsp. scabra	3	100	GG				3						
*Medicago laciniata**	1	1000	EX								1		
Rhodanthe corymbiflora	2	500	FG					2					
*Cotula bipinnata**	1	100	EX								1		
Maireana excavata	0.5	50	SG			0.5							
Maireana humillima	0.5	50	SG			0.5							
Erodium crinitum	0.1	100	FG					0.1					
Crassula sieberiana	0.1	200	FG					0.1					
Goodenia pusilliflora	0.1	10	FG					0.1					
*Lolium perenne**	2	200	EX								2		
Chrysocephalum apiculatum	1	50	FG					1					
Oxalis perennans	0.1	200	FG					0.1					
Calotis scabiosifolia var. scabiosifolia	0.2	100	FG					0.2					
Wurmbea dioica subsp. dioica	0.1	50	FG					0.1					
Sida corrugata	0.1	20	FG					0.1					
Ptilotus seminudus	0.1	5	FG					0.1					
*Erodium cicutarium**	0.1	10	EX								0.1		
*Arctotheca calendula**	3	200	EX								3		
Tricoryne elatior	0.1	20	FG					0.1					
Teucrium racemosum	0.1	20	FG					0.1					
Vittadinia cuneata var. cuneata	0.5	10	FG					0.5					
*Erodium botrys**	0.1	20	EX								0.1		
Isoetopsis graminifolia	0.1	10	FG					0.1					
*Sonchus oleraceus**	0.3	50	EX								0.3		
Vittadinia cuneata var. hirsuta	0.1	10	FG					0.1					
Salsola tragus	0.1	20	SG			0.1							
Ptilotus spathulatus f. spathulatus	0.1	5	FG					0.1					
*Echium plantagineum**	0.1	10	EX								0.1		
Sclerolaena muricata var. semiglabra	1	3	SG			1							
Asperula scoparia	0.1	5	FG					0.1					

Easting	382000
Northing	6124183
Orientation	60
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	No
Hollows	0
Length logs (m)	6
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_MP02

Date	28/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP02		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		19	12	0	1	2	9	0	0	7	1	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	20.95	13.65	0	0.15	5.1	8.4	0	0	7.3	1	
*Arctotheca calendula**	0.1	1	EX								0.1		
*Medicago praecox**	2	100	EX								2		
Enterpogon acicularis	5	100	GG				5						
Tricoryne elatior	1	20	FG					1					
Pseudognaphalium luteoalbum	2	200	FG					2					
*Lolium rigidum**	3	100	EX								3		
Erodium crinitum	3	100	FG					3					
*Erodium sp.**	0.1	5	EX								0.1		
Asperula conferta	1	5	FG					1					
Romulea rosea	1	1	HT									1	
Oxalis perennans	0.1	0.1	FG					0.1					
Leucochrysum molle	1	25	FG					1					
Maireana brevifolia	0.15	1	SG			0.15							
Crassula colorata	0.1	5	FG					0.1					
*Hordeum leporinum**	1	1	EX								1		
Goodenia pinnatifida	0.1	2	FG					0.1					
*Vulpia myuros**	0.1	1	EX								0.1		
Walwhalleya proluta	0.1	1	GG				0.1						
Swainsona phacoides	0.1	1	FG					0.1					

Easting	376517
Northing	6123085
Orientation	202
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	1

VNI_MP20

Date	10/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP20		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		12	5	0	2	2	1	0	0	7	1	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	76	7.7	0	5.5	2.1	0.1	0	0	68.3	0.1	
Atriplex nummularia (planted)	5	3	SG			5							
Sclerolaena muricata	0.5	10	SG			0.5							
*Lolium rigidum**	60	250	EX								60		
Rytidosperma caespitosum	2	100	GG				2						
*Avena fatua**	0.1	20	EX								0.1		
*Medicago praecox**	6	200	EX								6		
*Hordeum leporinum**	1	100	EX								1		
Rhodanthe corymbiflora	0.1	20	FG					0.1					
Chloris truncata	0.1	1	GG				0.1						
*Echium plantagineum**	0.1	1	EX								0.1		
*Vulpia myuros**	1	100	EX								1		
*Romulea rosea**	0.1	5	HT									0.1	

Easting	358656
Northing	6118456
Orientation	195
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D2.12 PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW Southwestern Slopes Bioregion (Derived_LCV)

VNI_MP21

Date	10/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP21		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		16	11	0	4	4	3	0	0	5	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	66.2	27.1	0	3.2	23.6	0.3	0	0	39.1	0	
Austrostipa scabra	15	100	GG				15						
Maireana aphylla	1	5	SG			1							
Enteropogon acicularis	0.5	10	GG				0.5						
*Lolium rigidum**	5	100	EX								5		
Rytidosperma caespitosum	8	100	GG				8						
*Arctotheca calendula**	1	10	EX								1		
Maireana ciliata	0.1	10	FG					0.1					
Sclerolaena muricata	2	15	SG			2							
*Trifolium angustifolium**	0.1	10	EX								0.1		
Rhodanthe corymbiflora	0.1	1	FG					0.1					
*Hordeum leporinum**	3	50	EX								3		
Atriplex semibaccata	0.1	5	SG			0.1							
Vittadinia cuneata	0.1	5	FG					0.1					
Mariana brevifolia	0.1	1	SG			0.1							
*Medicago praecox**	30	100	EX								30		
Chloris truncata	0.1	1	GG				0.1						

Easting	358775
Northing	6118594
Orientation	150
Plot size	20x50
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
Attributes 1x1 plot (%)	
Litter (%)	0

D2.13 PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW Southwestern Slopes Bioregion (Moderate_good)

VNI_DR02

Date	28/11/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR02		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		24	21	1	7	7	6	0	0	3	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	49.2	48.1	5	6.5	35.7	0.9	0	0	1.1	0	
Acacia pendula	5	2	TG		5								
Rhagodia spinescens	1	10	SG			1							
Atriplex semibaccata	3	20	SG			3							
Rytidosperma setaceum	0.4	30	GG				0.4						
Salsola australis	0.3	20	SG			0.3							
Maireana excavata	0.8	30	SG			0.8							
*Lolium perenne**	0.4	30	EX								0.4		
Sida trichopoda	0.1	10	FG					0.1					
Maireana pentagona	0.2	30	FG					0.2					
Austrostipa scabra subsp. *scabra*	15	500	GG				15						
*Medicago laciniata**	0.6	100	EX								0.6		
Enteropogon acicularis	15	500	GG				15						
Chloris truncata	1	50	GG				1						
Chrysocephalum apiculatum	0.3	20	FG					0.3					
Enchylaena tomentosa	0.1	10	SG			0.1							
Maireana decalvans	0.3	20	SG			0.3							
Maireana enchylaenoides	0.1	30	FG					0.1					
Panicum decompositum	1	20	GG				1						
Vittadinia gracilis	0.1	10	FG					0.1					
Sporobolus caroli	0.3	30	GG				0.3						
Sclerolaena muricata var. *semiglabra*	1	2	SG			1							
*Avena sp.**	0.1	2	EX								0.1		
Rytidosperma caespitosum	3	100	GG				3						
Ptilotus spathulatus	0.1	10	FG					0.1					

Easting	376139
Northing	6123574
Orientation	190
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	No
<5	Yes
Hollows	0
Length logs (m)	10
Attributes 1x1 plot (%)	
Litter (%)	19

VNI_DR07

Date	31/01/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThrea	55
Plot Name	VNI_DR07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		20	20	1	9	4	6	0	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	71	71	20	33.6	15.9	1.5	0	0	0	0	
Acacia pendula	20	13	TG		20								
Rhagodia spinescens	25	100	SG			25							
Enteropogon acicularis	10	300	GG				10						
Salsola australis	0.5	50	SG			0.5							
Austrostipa scabra subsp. *scabra*	5	50	GG				5						
Enchylaena tomentosa	1	50	SG			1							
Rytidosperma setaceum	0.8	40	GG				0.8						
Maireana decalvans	1	50	SG			1							
Atriplex semibaccata	3	20	SG			3							
Sclerolaena muricata var. *muricata*	1	10	SG			1							
Maireana aphylla	2	5	SG			2							
Leiocarpa websteri	0.1	10	FG					0.1					
Sida corrugata	0.1	10	FG					0.1					
Oxalis perennans	0.1	10	FG					0.1					
Vittadinia cuneata	0.1	5	FG					0.1					
Teucrium racemosum	0.1	5	FG					0.1					
Carex inversa	0.1	5	GG				0.1						
Einadia nutans	1	20	FG					1					
Senna artemisioides subsp. *filifolia*	0.1	1	SG			0.1							
Sclerolaena diacantha			SG			0							

Easting	363968
Northing	6120787
Orientation	85
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)	13
BAM Attributes 1x1 plot (%)	
Litter (%)	18

VNI_DR08

Date	31/01/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR08		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		29	23	2	10	6	4	0	1	5	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	51.1	46.6	10	21.9	14	0.6	0	0.1	4.3	0.2	
Acacia pendula	7	5	TG		7								
Acacia oswaldii	3	1	TG		3								
Rhagodia spinescens	8	20	SG			8							
Sclerolaena muricata var. *semiglabra*	2	20	SG			2							
Maireana aphylla	5	10	SG			5							
Teucrium racemosum	0.2	20	FG					0.2					
Enteropogon acicularis	5	50	GG				5						
Atriplex semibaccata	3	20	SG			3							
Austrostipa scabra subsp. *scabra*	2	30	GG				2						
Enchylaena tomentosa	0.3	20	SG			0.3							
Sclerolaena diacantha	1	50	SG			1							
Maireana decalvans	1	20	SG			1							
Salsola australis	0.3	20	SG			0.3							
*Spergularia rubra**	0.1	5	EX								0.1		
Chloris truncata	1	30	GG				1						
Maireana pentatropis	1	100	SG			1							
Rytidosperma caespitosum	1	30	GG				1						
Convolvulus erubescens	0.1	1	OG							0.1			
Sida corrugata	0.2	20	FG					0.2					
*Medicago sp.**	0.1	5	EX								0.1		
*Heliotropium europaeum**	2	20	EX								2		
*Marrubium vulgare**	2	10	EX								2		
Alternanthera nana	0.1	5	FG					0.1					
Rumex spp.	0.1	1	FG					0.1					
Carex inversa	2	30	GG				2						
Eriochloa crebra	3	30	GG				3						
*Lepidium africanum**	0.1	5	EX								0.1		
Atriplex leptocarpa	0.3	20	SG			0.3							
*Lycium ferocissimum**	0.2	3	HT									0.2	

Easting	363993
Northing	6120712
Orientation	250
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	no
<5	yes
Hollows	0
Length logs (m)	55
BAM Attributes 1x1 plot (%)	
Litter (%)	22.6

VNI_DR62

Date	29/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR62		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		27	27	1	7	1	16	1	1	2	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	55.3	55.1	20	28	0.1	4.9	0.1	2	0.2	0	
Acacia pendula	20	8	TG		20								
Amyema quandang var. *quandang*	2	4	OG							2			
Rhagodia spinescens	20	50	SG			20							
Maireana aphylla	5	15	SG			5							
Swainsona procumbens	0.1	10	FG					0.1					
Maireana pentagona	0.2	50	FG					0.2					
Oxalis perennans	0.1	50	FG					0.1					
Calotis scabiosifolia var. *scabiosifolia*	0.2	100	FG					0.2					
Rhodanthe corymbiflora	3	500	FG					3					
Atriplex semibaccata	2	5	SG			2							
Hyalosperma glutinosum subsp. *glutinc*	0.1	20	FG					0.1					
Alternanthera nana	0.1	20	FG					0.1					
Rytidosperma caespitosum	0.1	20	GG				0.1						
Sclerolaena stelligera	0.2	50	SG			0.2							
Sida corrugata	0.1	50	FG					0.1					
Bulbine semibarbata	0.1	10	FG					0.1					
Teucrium racemosum	0.1	10	FG					0.1					
Euphorbia drummondii	0.1	10	FG					0.1					
Sclerolaena muricata var. *semiglabra*	0.2	20	SG			0.2							
*Lolium perenne**	0.1	50	EX								0.1		
Salsola australis	0.1	20	SG			0.1							
Crassula sieberiana	0.2	200	FG					0.2					
Sida trichopoda	0.2	100	FG					0.2					
Daucus glochidiatus	0.1	10	FG					0.1					
Cotula australis	0.1	10	FG					0.1					
Plantago turrifera	0.1	50	FG					0.1					
*Alopecurus geniculatus**	0.1	20	EX								0.1		
Marsilea drummondii	0.1	50	EG						0.1				
Maireana decalvans	0.5	50	SG			0.5							

Easting	3466742
Northing	6114558
Orientation	75
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	No
<5	Yes
Hollows	0
Length logs (m)	15
Attributes 1x1 plot (%)	
Litter (%)	32

VNI_DR73

Date	12/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR73		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		20	15	1	6	3	5	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	34.7	31	3	10.5	16	1.5	0	0	3.7	0	
Acacia pendula	3	4	TG		3								
Maireana aphylla	4	10	SG			4							
Rhagodia spinescens	1	3	SG			1							
Sclerolaena muricata var. *semiglabra*	1	20	SG			1							
Salsola australis	0.5	20	SG			0.5							
*Lolium perenne**	2	100	EX								2		
Rhodanthe corymbiflora	1	200	FG					1					
Sida corrugata	0.1	5	FG					0.1					
Sclerolaena diacantha	2	50	SG			2							
Rytidosperma caespitosum	1	40	GG				1						
*Medicago sp.**	1	200	EX								1		
Crassula sieberiana	0.2	2000	FG					0.2					
Atriplex semibaccata	2	30	SG			2							
Vittadinia cuneata var. *cuneata*	0.1	5	FG					0.1					
*Arctotheca calendula**	0.4	5	EX								0.4		
Austrostipa scabra subsp. scabra	10	70	GG				10						
*Cotula bipinnata**	0.1	10	EX								0.1		
Enteropogon acicularis	5	20	GG				5						
*Echium plantagineum**	0.2	20	EX								0.2		
Erodium crinitum	0.1	5	FG					0.1					

Easting	368087
Northing	6121369
Orientation	240
Plot size	20 X 20 X 50
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)	0
Attributes 1x1 plot (%)	
Litter (%)	21

VNI_DR82

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR82		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		38	34	1	6	6	18	2	1	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	50.8	40.6	3	13	16.3	7.9	0.2	0.2	10.2	0	
Acacia pendula	3	4	TG		3								
Maireana aphylla	10	20	SG			10							
Rhagodia spinescens	1	5	SG			1							
Rhodanthe corymbiflora	2	500	FG					2					
Sclerolaena muricata var. semiglabra	0.5	5	SG			0.5							
*Medicago laciniata**	5	200	EX								5		
Salsola australis	1	50	SG			1							
Sida trichopoda	0.1	10	FG					0.1					
Crassula sieberiana	0.1	50	FG					0.1					
Bulbine bulbosa	0.1	10	FG					0.1					
Atriplex leptocarpa	0.4	20	SG			0.4							
*Lolium perenne**	5	100	EX								5		
Rytidosperma caespitosum	10	60	GG				10						
Oxalis perennans	0.2	30	FG					0.2					
Einadia nutans	1	5	FG					1					
Goodenia pusilliflora	0.1	10	FG					0.1					
Enteropogon acicularis	1	20	GG				1						
Calocephalus sonderi	1	200	FG					1					
*Cotula bipinnata**	0.1	20	EX								0.1		
Austrostipa scabra	5	100	GG				5						
Maireana pentagona	1	30	FG					1					
Amyema quandang	0.2	1	OG							0.2			
Sporobolus caroli	0.1	5	GG				0.1						
Vittadinia cuneata	0.1	5	FG					0.1					
*Spergularia rubra**	0.1	10	EX								0.1		
Ptilotus semilanatus	0.1	2	FG					0.1					
Wurmbea dioica subsp. dioica	0.1	5	FG					0.1					
Swainsona procumbens	0.1	10	FG					0.1					
Chloris truncata	0.1	5	GG				0.1						
Calotis scabiosifolia var. scabiosifolia	0.6	20	FG					0.6					
Myriocephalus rhizocephalus	1	200	FG					1					
Pilularia novae-hollandiae	0.1	50	EG						0.1				
Euphorbia drummondii	0.1	10	FG					0.1					
Alternanthera nana	0.1	10	FG					0.1					
Marsilea drummondii	0.1	10	EG						0.1				
Triptilodiscus pygmaeus	0.1	5	FG					0.1					
Juncus usitatus	0.1	5	GG				0.1						
Enchylaena tomentosa	0.1	1	SG			0.1							

Easting	365990
Northing	6120976
Orientation	266
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	Yes
<5	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	1

VNI_DR85

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR84		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		28	25	1	8	4	11	0	1	3	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	41.2	38.1	5	9.7	20	2.4	0	1	3.1	0	
Acacia pendula	5	11	TG		5								
Rhagodia spinescens	4	20	SG			4							
Amyema quandang var. quandang	1	1	OG							1			
Rhodanthe corymbiflora	0.1	30	FG					0.1					
Rytidosperma caespitosum	10	200	GG				10						
Rytidosperma setaceum	5	200	GG				5						
*Lolium perenne**	2	300	EX								2		
Salsola australis	0.2	10	SG			0.2							
*Medicago sp.**	1	1000	EX								1		
Enchylaena tomentosa	1	30	SG			1							
Sclerolaena muricata var. semiglabra	1	10	SG			1							
Sida corrugata	0.5	10	FG					0.5					
Atriplex semibaccata	1	20	SG			1							
Einadia nutans	1	20	FG					1					
Austrostipa scabra subsp. scabra	1	40	GG				1						
Sclerolaena stelligera	0.1	10	SG			0.1							
*Lepidium africanum**	0.1	5	EX								0.1		
Maireana aphylla	2	20	SG			2							
Enteropogon acicularis	4	40	GG				4						
Maireana enchylaenoides	0.1	10	FG					0.1					
Sclerolaena diacantha	0.4	30	SG			0.4							
Arthropodium minus	0.1	10	FG					0.1					
Vittadinia cuneata var. cuneata	0.1	10	FG					0.1					
Sida trichopoda	0.1	10	FG					0.1					
Bulbine bulbosa	0.1	10	FG					0.1					
Zygophyllum glaucum	0.1	5	FG					0.1					
Euphorbia drummondii	0.1	5	FG					0.1					
Chrysocephalum apiculatum	0.1	5	FG					0.1					

Easting	374315
Northing	6123358
Orientation	80
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	No
<5	Yes
Hollows	0
Length logs (m)	2
Attributes 1x1 plot (%)	
Litter (%)	5

D2.14 PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW Southwestern Slopes Bioregion (Thinned)

VNI_DR29

Date	2/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR29		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		15	13	1	4	4	4	0	0	2	1	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	58.7	56.6	2	26	28.1	0.5	0	0	2.1	2	
Acacia pendula	2	2	TG		2								
Maireana aphylla	25	100	SG			25							
Enteropogon acicularis	20	500	GG				20						
Austrostipa scabra subsp. scabra	5	100	GG				5						
Rytidosperma caespitosum	3	50	GG				3						
*Medicago laciniata**	0.1	1000	EX								0.1		
Sclerolaena diacantha	0.2	10	SG			0.2							
Einadia nutans	0.1	1	FG					0.1					
Sida corrugata	0.2	20	FG					0.2					
Maireana pentagona	0.1	20	FG					0.1					
Sporobolus caroli	0.1	20	GG				0.1						
Salsola australis	0.2	20	SG			0.2							
Solanum esuriale	0.1	5	FG					0.1					
*Lycium ferocissimum**	2	1	HT									2	
Rhagodia spinescens	0.6	1	SG			0.6							

Easting	361679
Northing	6119448
Orientation	170
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	6
Attributes 1x1 plot (%)	
Litter (%)	12

VNI_DR30

Date	2/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR30		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		27	25	1	7	6	10	1	0	2	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	32.5	31.9	2	21.5	6.3	2	0.1	0	0.6	0	
Acacia pendula	2	15	TG		2								
Maireana aphylla	20	100	SG			20							
Enteropogon acicularis	5	100	GG				5						
Sclerolaena muricata var. semiglabra	0.8	10	SG			0.8							
*Spergularia rubra**	0.1	5	EX								0.1		
Atriplex semibaccata	0.2	10	SG			0.2							
Sida corrugata	0.1	10	FG					0.1					
Rytidosperma setaceum	0.3	10	GG				0.3						
Teucrium racemosum	0.1	5	FG					0.1					
Juncus usitatus	0.2	20	GG				0.2						
Boerhavia coccinea	0.1	5	FG					0.1					
Einadia nutans	0.2	20	FG					0.2					
Marsilea drummondii	0.1	30	EG						0.1				
Salsola australis	0.1	10	SG			0.1							
Rhagodia spinescens	0.2	10	SG			0.2							
Eleocharis pusilla	0.1	20	GG				0.1						
Alternanthera nana	0.4	50	FG					0.4					
Oxalis perennans	0.2	20	FG					0.2					
Maireana decalvans	0.1	1	SG			0.1							
Sclerolaena stelligera	0.1	5	SG			0.1							
Erodium crinitum	0.6	50	FG					0.6					
*Echium plantagineum**	0.5	50	EX								0.5		
Rytidosperma caespitosum	0.5	20	GG				0.5						
Solanum esuriale	0.1	10	FG					0.1					
Goodenia pinnatifida	0.1	5	FG					0.1					
Vittadinia cuneata	0.1	5	FG					0.1					
Austrostipa scabra subsp. scabra	0.2	10	GG				0.2						

Easting	359970
Northing	6118763
Orientation	70
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	no
10-19	yes
5-9	yes
<5	yes
Hollows	0
Length logs (m)	4
Attributes 1x1 plot (%)	
Litter (%)	4

VNI_DR61

Date	29/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR61		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		19	7	1	4	0	2	0	0	12	1	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	67.3	24.3	5	18.1	0	1.2	0	0	43	1	
Eucalyptus camaldulensis	5	1	TG		5								
Rhagodia spinescens	15	30	SG			15							
*Lycium ferocissimum**	1	1	HT									1	
*Hordeum leporinum**	20	1000	EX								20		
*Echium plantagineum**	5	100	EX								5		
*Marrubium vulgare**	5	50	EX								5		
*Medicago laciniata**	5	2000	EX								5		
Erodium crinitum	1	50	FG					1					
Salsola australis	0.1	10	SG			0.1							
*Malva parviflora**	1	20	EX								1		
Atriplex semibaccata	2	20	SG			2							
*Urtica dioica**	2	100	EX								2		
*Sonchus oleraceus**	0.3	30	EX								0.3		
Enchylaena tomentosa	1	10	SG			1							
*Sisymbrium officinale**	2	70	EX								2		
Einadia nutans	0.2	10	FG					0.2					
*Amsinckia intermedia**	0.2	10	EX								0.2		
*Lepidium africanum**	0.5	50	EX								0.5		
*Schismus barbatus**	1	200	EX								1		

Easting	347370
Northing	6114813
Orientation	175
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	0
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	1
Length logs (m)	10
Attributes 1x1 plot (%)	
Litter (%)	16

VNI_DR83

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR83		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		27	19	1	5	3	9	0	1	8	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	63.5	34.1	2	2.2	27	2.8	0	0.1	29.4	0	
Acacia pendula	2	9	TG		2								
*Medicago laciniata**	20	4000	EX								20		
*Lolium perenne**	5	1000	EX								5		
*Vulpia myuros**	2	500	EX								2		
Enteropogon acicularis	20	100	GG				20						
Austrostipa scabra subsp. scabra	2	60	GG				2						
Sida corrugata	2	100	FG					2					
Crassula sieberiana	0.1	5	FG					0.1					
Rhodanthe corymbiflora	0.1	20	FG					0.1					
Erodium crinitum	0.1	5	FG					0.1					
Rytidosperma caespitosum	5	100	GG				5						
*Echium plantagineum**	1	40	EX								1		
Enchylaena tomentosa	1	10	SG			1							
*Avena sp.**	0.4	20	EX								0.4		
*Sonchus oleraceus**	0.1	5	EX								0.1		
Leucochrysum molle	0.1	20	FG					0.1					
Boerhavia coccinea	0.1	5	FG					0.1					
Atriplex leptocarpa	0.1	5	SG			0.1							
Vittadinia cuneata var. hirsuta	0.1	2	FG					0.1					
Sclerolaena muricata var. semiglabra	0.7	10	SG			0.7							
*Hordeum leporinum**	0.8	30	EX								0.8		
Atriplex semibaccata	0.3	5	SG			0.3							
Sclerolaena diacantha	0.1	5	SG			0.1							
Convolvulus erubescens	0.1	5	OG							0.1			
Solanum esuriale	0.1	10	FG					0.1					
*Arctotheca calendula**	0.1	5	EX								0.1		
Ptilotus semilanatus	0.1	5	FG					0.1					

Easting	369488
Northing	6121499
Orientation	355
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	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	1

VNI_DR84

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR84		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		20	17	1	6	3	7	0	0	3	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	31.1	19.7	2	5.4	11	1.3	0	0	11.4	0	
Acacia pendula	2	13	TG		2								
*Lolium perenne**	10	400	EX								10		
Walwhalleya proluta	3	50	GG				3						
Atriplex semibaccata	2	30	SG			2							
Sclerolaena muricata var. semiglabra	1	20	SG			1							
*Medicago laciniata**	1	500	EX								1		
Einadia nutans	0.2	10	FG					0.2					
Sclerolaena diacantha	1	50	SG			1							
Enchylaena tomentosa	1	20	SG			1							
Teucrium racemosum	0.3	20	FG					0.3					
*Avena sp.**	0.4	30	EX								0.4		
Sclerolaena stelligera	0.2	20	SG			0.2							
Vittadinia cuneata var. cuneata	0.2	30	FG					0.2					
Enteropogon acicularis	5	30	GG				5						
Sida trichopoda	0.2	20	FG					0.2					
Maireana enchylaenoides	0.1	10	FG					0.1					
Rytidosperma caespitosum	3	50	GG				3						
Leiocarpa panaetioides	0.2	1	FG					0.2					
Sclerolaena muricata var. muricata	0.2	5	SG			0.2							
Calotis scabiosifolia var. scabiosifolia	0.1	5	FG					0.1					

Easting	371524
Northing	6122481
Orientation	200
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	Yes
5-9	Yes
<5	Yes
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	3

VNI_MP19

Date	10/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP19		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	26		19	16	1	3	5	7	0	0	3	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	96.7	78.6	10	35.5	31.2	1.9	0	0	18.1	0	
Acacia pendula	10	3	TG		10								
Maireana aphylla	30	50	SG			30							
Rytidosperma caespitosum	8	200	GG				8						
Enchylaena tomentosa	0.1	10	GG				0.1						
Rytidosperma spp	8	100	GG				8						
Austrostipa scabra	15	100	GG				15						
Crassula sieberiana	0.1	1	FG					0.1					
Rhodanthe corymbiflora	0.5	20	FG					0.5					
Vittadinia cuneata	0.5	5	FG					0.5					
*Medicago praecox**	10	100	EX								10		
Sporobolus caroli	0.1	10	GG				0.1						
Leiocarpa panaetioides	0.1	1	FG					0.1					
Side corrugata	0.1	5	FG					0.1					
Einadia nutans	0.1	2	FG					0.1					
Rhagodia spinescens	5	30	SG			5							
*Lolium rigidum**	8	20	EX								8		
Maireana ciliata	0.5	10	FG					0.5					
Atriplex semibaccata	0.5	10	SG			0.5							
*Romulea rosea**	0.1	1	EX								0.1		

Easting	356007
Northing	6118174
Orientation	122
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	Yes
10-19	Yes
5-9	No
<5	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	4.6

D2.15 PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (Derived)

VNI_DR42

Date	5/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR42		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		13	13	0	4	5	3	0	1	0	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	30.6	30.6	0	3	27.2	0.3	0	0.1	0	0	
Austrostipa scabra subsp. scabra	10	200	GG				10						
Enteropogon acicularis	15	200	GG				15						
Sida intricata	0.4	5	SG			0.4							
Salsola australis	0.1	5	SG			0.1							
Sporobolus caroli	1	40	GG				1						
Chloris truncata	1	60	GG				1						
Sclerolaena muricata var. semiglabra	2	20	SG			2							
Solanum esuriale	0.1	5	FG					0.1					
Eragrostis parviflora	0.2	10	GG				0.2						
Sida corrugata	0.1	5	FG					0.1					
Dysphania pumilio	0.1	5	FG					0.1					
Rhagodia spinescens	0.5	1	SG			0.5							
Convolvulus erubescens	0.1	5	OG							0.1			

Easting	293858
Northing	6114652
Orientation	230
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	no
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR44

Date	5/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR44		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		19	18	0	6	6	5	0	1	1	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	33.2	33.1	0	3.1	29.3	0.6	0	0.1	0.1	0	
Austrostipa scabra subsp. scabra	25	500	GG				25						
Sclerolaena muricata var. villosa	1	2	SG			1							
Salsola australis	0.4	20	SG			0.4							
Enteropogon acicularis	1	30	GG				1						
Eragrostis parviflora	2	30	GG				2						
Maireana aphylla	0.4	2	SG			0.4							
Sida intricata	1	20	SG			1							
Rytidosperma caespitosum	0.6	20	GG				0.6						
Oxalis perennans	0.1	5	FG					0.1					
Eriochlamys behrii	0.2	100	FG					0.2					
Euphorbia drummondii	0.1	5	FG					0.1					
Sida corrugata	0.1	5	FG					0.1					
*Medicago laciniata**	0.1	5	EX								0.1		
Maireana pentagona	0.1	5	FG					0.1					
Sclerolaena tricuspis	0.2	1	SG			0.2							
Fimbristylis dichotoma	0.1	5	GG				0.1						
Chloris truncata	0.6	10	GG				0.6						
Convolvulus erubescens	0.1	5	OG							0.1			
Sclerolaena brachyptera	0.1	5	SG			0.1							

Easting	291109
Northing	6115580
Orientation	35
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	no
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR91

Date	20/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR91		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		26	19	0	5	4	9	1	0	7	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	56.8	36.3	0	7.2	27	2	0.1	0	20.5	0	
Austrostipa scabra subsp. scabra	20	1000	GG				20						
Maireana aphylla	2	20	SG			2							
Enteropogon acicularis	5	40	GG				5						
*Vulpia myuros**	15	3000	EX								15		
Cheilanthes sieberi	0.1	20	EG						0.1				
*Medicago laciniata**	5	3000	EX								5		
Crassula sieberiana	0.1	50	FG					0.1					
Rytidosperma setaceum	1	40	GG				1						
Sida corrugata	0.2	10	FG					0.2					
Calotis hispidula	0.1	10	FG					0.1					
Hyalosperma glutinosum subsp. glutinc	0.1	5	FG					0.1					
Salsola australis	0.1	10	SG			0.1							
Sclerolaena muricata var. villosa	2	20	SG			2							
*Spergularia rubra**	0.1	5	EX								0.1		
Maireana pentagona	1	200	FG					1					
Rytidosperma caespitosum	1	30	GG				1						
Einadia nutans	0.2	10	FG					0.2					
Sida intricata	3	30	SG			3							
*Echium plantagineum**	0.1	10	EX								0.1		
Rhodanthe corymbiflora	0.1	10	FG					0.1					
Oxalis perennans	0.1	5	FG					0.1					
*Hordeum leporinum**	0.1	10	EX								0.1		
Vittadinia cuneata	0.1	5	FG					0.1					
Atriplex spp.	0.1	5	SG			0.1							
*Cotula bipinnata**	0.1	5	EX								0.1		
*Medicago minima**	0.1	20	EX								0.1		

Easting	291249
Northing	6115116
Orientation	22
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_NM08

Date	7/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThrea	54
Plot Name	VNI_NM08		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		31	22	1	9	3	9	0	0	9	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	74	65	3	41	7	14	0	0	9	0	
Rhagodia spinescens	15	100	SG			15							
Eremophila longifolia	5	50	SG			5							
Crassula colorata	5	50	FG					5					
Maireana brevifolia	1	50	SG			1							
Maireana spp.	1	20	SG			1							
Calandrinia eremaea	1	50	FG					1					
*Hordeum leporinum**	1	100	EX								1		
*Lolium rigidum**	1	300	EX								1		
Rhodanthe corymbiflora	1	50	FG					1					
*Vulpia bromoides**	1	200	EX								1		
Calotis hispidula	1	50	FG					1					
Austrostipa scabra	1	50	GG				1						
Vittadinia cuneata	2	100	FG					2					
Calocephalus sonderi	1	300	FG					1					
*Medicago praecox**	1	500	EX								1		
Brachyscome linearioloba	1	500	FG					1					
Dodonaea viscosa	10	20	SG			10							
*Schismus barbatus**	1	20	EX								1		
*Arctotheca calendula**	1	20	EX								1		
Enchylaena tomentosa	5	50	SG			5							
Oxalis perennans	1	50	FG					1					
*Echium plantagineum**	1	50	EX								1		
Dissocarpus paradoxus	1	10	SG			1							
Austrostipa nitida	5	50	GG				5						
*Limonium sinuatum**	1	20	EX								1		
*Sisymbrium irio**	1	10	EX								1		
Acacia oswaldii	3	1	TG		3								
Sclerolaena tricuspis	1	20	SG			1							
Nitraria billardierei	2	5	SG			2							
Austrostipa elegantissima	1	10	GG				1						
Einadia nutans	1	10	FG					1					

Easting	218008
Northing	6117028
Orientation	288
Plot size	20 X 20 X 50
ttributes 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
ttributes 1x1 plot (%)	
Litter (%)	0

VNIOZ_12

Date	20/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_12		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		16	11	0	5	2	4	0	0	5	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	67.1	43.9	0	33.2	10.2	0.5	0	0	23.2	0	
Maireana aphylla	5	5	SG			5							
Sclerolaena muricata var. semiglabra	25	100	SG			25							
Enteropogon acicularis	10	500	GG				10						
*Vulpia myuros**	20	9000	EX								20		
*Hordeum leporinum**	2	200	EX								2		
*Medicago laciniata**	1	1000	EX								1		
Sida intricata	3	50	SG			3							
Crassula sieberiana	0.2	500	FG					0.2					
Calotis hispidula	0.1	50	FG					0.1					
Austrostipa scabra	0.2	200	GG				0.2						
*Echium plantagineum**	0.1	20	EX								0.1		
Chenopodium desertorum subsp. virosum	0.1	1	SG			0.1							
Enchylaena tomentosa	0.1	1	SG			0.1							
*Trifolium arvense**	0.1	50	EX								0.1		
Rhodanthe corymbiflora	0.1	5	FG					0.1					
Oxalis perennans	0.1	2	FG					0.1					

Easting	292396
Northing	6114844
Orientation	163
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D2.16 PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (Derived_TS)

VNI_DR41

Date	5/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR41		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		21	14	0	9	3	2	0	0	7	1	
Condition	Derived Tall Shrubland		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	18.8	16.2	0	14.3	1.6	0.3	0	0	2.6	1	
Hakea tephrosperma	5	8	SG			5							
Rhagodia spinescens	5	15	SG			5							
Atriplex leptocarpa	0.4	20	SG			0.4							
Enchylaena tomentosa	3	10	SG			3							
Sporobolus caroli	0.4	30	GG				0.4						
*Schismus barbatus**	0.5	50	EX								0.5		
Atriplex eardleyae	0.2	10	SG			0.2							
*Marrubium vulgare**	0.3	5	EX								0.3		
*Lycium ferocissimum**	1	1	HT									1	
*Cucumis myriocarpus**	0.1	5	EX								0.1		
*Heliotropium europaeum**	0.2	10	EX								0.2		
*Chenopodium album**	0.4	20	EX								0.4		
Salsola australis	0.1	5	SG			0.1							
Atriplex vesicaria	0.2	1	SG			0.2							
Sida intricata	0.1	5	SG			0.1							
Austrostipa scabra subsp. scabra	0.2	20	GG				0.2						
Einadia nutans	0.2	5	FG					0.2					
Enteropogon acicularis	1	20	GG				1						
*Chondrilla juncea**	0.1	5	EX								0.1		
Dysphania pumilio	0.1	5	FG					0.1					
Atriplex semibaccata	0.3	5	SG			0.3							

Easting	293944
Northing	6114695
Orientation	115
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	yes
10-19	yes
5-9	no
<5	yes
Hollows	0
Length logs (m)	34
Attributes 1x1 plot (%)	
Litter (%)	6

VNI_DR92

Date	20/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR92		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		23	16	1	10	3	2	0	0	7	0	
Condition	Derived Tall shrubland		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	52.8	35.4	1	20.1	12.2	2.1	0	0	17.4	0	
Hakea tephrosperma	5	30	SG			5							
Acacia oswaldii	1	2	TG		1								
Rhagodia spinescens	3	5	SG			3							
Enteropogon acicularis	10	50	GG				10						
Salsola australis	0.1	5	SG			0.1							
*Echium plantagineum**	1	30	EX								1		
*Hordeum leporinum**	10	100	EX								10		
*Medicago laciniata**	2	3000	EX								2		
*Lolium perenne**	2	1000	EX								2		
Austrostipa scabra subsp. scabra	2	100	GG				2						
Atriplex semibaccata	3	50	SG			3							
Atriplex leptocarpa	1	60	SG			1							
Sida intricata	2	30	SG			2							
Sclerolaena muricata var. villosa	1	10	SG			1							
Crassula sieberiana	0.1	100	FG					0.1					
Sclerolaena muricata var. semiglabra	1	5	SG			1							
Sporobolus caroli	0.2	20	GG				0.2						
*Sisymbrium orientale**	0.3	20	EX								0.3		
Einadia nutans	2	20	FG					2					
Nitraria billardierei	2	1	SG			2							
Atriplex eardleyae	2	40	SG			2							
*Lamarckia aurea**	0.1	10	EX								0.1		
*Vulpia myuros**	2	500	EX								2		

Easting	292505
Northing	6114742
Orientation	168
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	No
Hollows	0
Length logs (m)	3
Attributes 1x1 plot (%)	
Litter (%)	1

VNI_MP01

Date	27/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		13	6	1	3	0	2	0	0	7	1	
Condition	Derived Tall Shrubland		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	64.3	31.1	20	8.1	0	3	0	0	33.2	2	
Alectryon oleifolius	20	7	TG		20								
Rhagodia spinescens	5	6	SG			5							
*Hordeum leporinum**	25	5	EX								25		
*Lycium ferocissimum**	2	3	HT									2	
*Urtica urens**	1	50	EX								1		
*Amsinckia intermedia**	3	50	EX								3		
*Malva parviflora**	2	5	EX								2		
Erodium crinitum	2	5	FG					2					
*Echium plantagineum**	0.1	10	EX								0.1		
*Arctotheca calendula**	0.1	1	EX								0.1		
Maireana brevifolia	3	15	SG			3							
Crassula colorata	1	25	FG					1					
Enchylaena tomentosa	0.1	2	SG			0.1							

Easting	364690
Northing	6120588
Orientation	180
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	3.6

D2.17 PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (Derived_LCV)

VNI_DR27

Date	1/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR27		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		16	16	0	6	5	4	0	1	0	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	48.1	48.1	0	3.7	43	1.3	0	0.1	0	0	
Enteropogon ramosus	15	200	GG				15						
Sporobolus caroli	15	200	GG				15						
Austrostipa scabra subsp. scabra	10	200	GG				10						
Solanum esuriale	0.7	50	FG					0.7					
Vittadinia cuneata	0.4	50	FG					0.4					
Scleroloena diacantha	0.8	20	SG			0.8							
Sida intricata	0.2	10	SG			0.2							
Chloris truncata	2	50	GG				2						
Convolvulus erubescens	0.1	5	OG							0.1			
Maireana decalvans	0.1	5	SG			0.1							
Rytidosperma caespitosum	1	100	GG				1						
Sida trichopoda	0.1	20	FG					0.1					
Einadia nutans	0.1	10	FG					0.1					
Enchylaena tomentosa	2	20	SG			2							
Rhagodia spinescens	0.3	1	SG			0.3							
Maireana georgei	0.3	10	SG			0.3							

Easting	769417
Northing	6119756
Orientation	125
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	no
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR55

Date	27/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR55		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		9	4	0	0	2	2	0	0	5	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	75.1	11.1	0	0	6	5.1	0	0	64	0	
*Hordeum leporinum**	45	2000	EX								45		
Erodium crinitum	5	200	FG					5					
*Echium plantagineum**	15	200	EX								15		
Austrostipa scabra subsp. scabra	1	20	GG				1						
Sporobolus caroli	5	30	GG				5						
Crassula sieberiana	0.1	100	FG					0.1					
*Medicago laciniata**	1	2000	EX								1		
*Vulpia myuros**	2	1000	EX								2		
*Arctotheca calendula**	1	20	EX								1		

Easting	364852
Northing	6120581
Orientation	245
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR58

Date	29/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR58		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		9	4	0	0	1	3	0	0	5	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	73.7	32.7	0	0	30	2.7	0	0	41	0	
Enteropogon acicularis	30	200	GG				30						
*Hordeum leporinum**	15	1000	EX								15		
*Medicago laciniata**	10	2000	EX								10		
*Echium plantagineum**	10	500	EX								10		
*Vulpia myuros**	5	1000	EX								5		
Erodium crinitum	2	100	FG					2					
*Hypochaeris radicata**	1	50	EX								1		
Sida corrugata	0.5	100	FG					0.5					
Oxalis perennans	0.2	100	FG					0.2					

Easting	348152
Northing	6115195
Orientation	180
Plot size	20 X 20 X 50
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)	2
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR60

Date	29/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR60		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		10	5	0	0	0	5	0	0	5	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	64.4	17.4	0	0	0	17.4	0	0	47	0	
*Echium plantagineum**	15	500	EX								15		
Erodium crinitum	15	1000	FG					15					
*Medicago laciniata**	20	5000	EX								20		
Crassula sieberiana	2	1000	FG					2					
*Hordeum leporinum**	5	500	EX								5		
*Vulpia myuros**	2	100	EX								2		
*Urtica urens**	5	1000	EX								5		
Calotis hispidula	0.2	100	FG					0.2					
Sida corrugata	0.1	50	FG					0.1					
Oxalis perennans	0.1	100	FG					0.1					

Easting	347604
Northing	6114923
Orientation	250
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	No
Hollows	0
Length logs (m)	2
Attributes 1x1 plot (%)	
Litter (%)	0

VNIOZ_01

Date	30/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_01		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		12	8	0	2	2	4	0	0	4	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	72.5	52.3	0	15	35	2.3	0	0	20.2	0	
Enteropogon acicularis	20	200	GG				20						
Maireana aphylla	5	10	SG			5							
*Medicago sp.**	10	1000	EX								10		
Crassula sieberiana	1	500	FG					1					
Oxalis perennans	0.1	200	FG					0.1					
Calotis scabiosifolia	0.2	200	FG					0.2					
Erodium crinitum	1	100	FG					1					
*Hordeum leporinum**	10	1000	EX								10		
Sida intricata	10	50	SG			10							
*Sonchus oleraceus**	0.1	30	EX								0.1		
*Lolium perenne**	0.1	200	EX								0.1		
Austrostipa scabra	15	500	GG				15						

Easting	293008
Northing	6114667
Orientation	330
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D2.18 PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (Thinned)

VNI_DR43

Date	5/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR43		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		14	12	1	6	2	3	0	0	2	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	19.9	19.6	3	4	12	0.6	0	0	0.3	0	
Callitris glaucophylla	3	1	TG		3								
Enteropogon acicularis	10	50	GG				10						
Scleroloena muricata var. semiglabra	2	5	SG			2							
Austrostipa scabra subsp. scabra	2	50	GG				2						
Enchylaena tomentosa	1	5	SG			1							
Sida intricata	0.3	10	SG			0.3							
Rhagodia spinescens	0.4	1	SG			0.4							
Einadia nutans	0.4	5	FG					0.4					
*Chenopodium album**	0.2	10	EX								0.2		
Atriplex semibaccata	0.2	10	SG			0.2							
Dysphania pumilio	0.1	5	FG					0.1					
*Schismus barbatus**	0.1	10	EX								0.1		
Salsola australis	0.1	5	SG			0.1							
Sida corrugata	0.1	5	FG					0.1					

Easting	292685
Northing	6115084
Orientation	70
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	no
10-19	no
5-9	no
<5	no
Hollows	0
Length logs (m)	5
Attributes 1x1 plot (%)	
Litter (%)	3

VNI_DR59

Date	29/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR59		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		15	7	1	1	0	5	0	0	8	1	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	66.5	15.3	5	5	0	5.3	0	0	51.2	2	
Callitris glaucophylla	5	1	TG		5								
Rhagodia spinescens	5	15	SG			5							
*Lycium ferocissimum**	2	4	HT									2	
Erodium crinitum	2	100	FG					2					
*Urtica urens**	2	20	EX								2		
*Hordeum leporinum**	20	1000	EX								20		
*Sisymbrium orientale**	2	50	EX								2		
*Malva parviflora**	5	50	EX								5		
*Echium plantagineum**	10	100	EX								10		
Sida corrugata	1	50	FG					1					
Crassula sieberiana	0.2	100	FG					0.2					
*Medicago laciniata**	10	5000	EX								10		
Stuartina muelleri	2	500	FG					2					
*Mesembryanthemum nodiflorum**	0.2	10	EX								0.2		
Calotis hispidula	0.1	10	FG					0.1					

Easting	347759
Northing	6114941
Orientation	320
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	0
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	1
Attributes 1x1 plot (%)	
Litter (%)	1

VNIOZ_07

Date	17/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	28		16	7	1	1	2	3	0	0	9	1	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	53.8	11.3	5	2	4	0.3	0	0	42.5	0.1	
Callitris glaucophylla	5	1	TG		5								
Rhagodia spinescens	2	3	SG			2							
*Hordeum leporinum**	40	10000	EX								40		
Sida corrugata	0.1	10	FG					0.1					
*Medicago praecox**	0.5	1000	EX								0.5		
*Echium plantagineum**	0.2	100	EX								0.2		
*Trifolium arvense**	0.2	100	EX								0.2		
*Vulpia myuros**	0.2	200	EX								0.2		
*Schismus barbatus**	1	100	EX								1		
Austrostipa scabra	1	20	GG				1						
Enteropogon acicularis	3	100	GG				3						
*Lolium perenne**	0.2	200	EX								0.2		
*Lycium ferocissimum**	0.1	2	HT									0.1	
*Arctotheca calendula**	0.1	5	EX								0.1		
Erodium crinitum	0.1	2	FG					0.1					
Boerhavia coccinea	0.1	10	FG					0.1					

Easting	364974
Northing	6120597
Orientation	179
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	8
Attributes 1x1 plot (%)	
Litter (%)	0

D2.19 PCT 44 – Forb–rich Spear grass – Windmill Grass – White Top grassland of the Riverina Bioregion (Moderate_good)

VNI_DR14

Date	4/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR14		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	44		19	18	0	4	5	9	0	0	1	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	68.9	68.8	0	6.4	61.3	1.1	0	0	0.1	0	
Austrostipa scabra subsp. scabra	35	1000	GG				35						
Enteropogon acicularis	25	500	GG				25						
Maireana aphylla	5	10	SG			5							
Sida trichopoda	0.1	10	FG					0.1					
Alternanthera nana	0.1	5	FG					0.1					
Vittadinia cuneata	0.1	5	FG					0.1					
Solanum esuriale	0.2	20	FG					0.2					
Sclerolaena stelligera	0.3	30	SG			0.3							
Teucrium racemosum	0.2	20	FG					0.2					
Euphorbia drummondii	0.1	5	FG					0.1					
Chrysocephalum apiculatum	0.1	5	FG					0.1					
Maireana excavata	0.1	5	SG			0.1							
Oxalis perennans	0.1	5	FG					0.1					
Sclerolaena diacantha	1	40	SG			1							
Rytidosperma setaceum	1	60	GG				1						
Portulaca oleracea	0.1	1	FG					0.1					
Chloris truncata	0.2	10	GG				0.2						
*Sonchus oleraceus**	0.1	1	EX								0.1		
Juncus spp.	0.1	1	GG				0.1						

Easting	325943
Northing	6112105
Orientation	215
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR32

Date	3/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR32		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	44		11	10	0	3	4	3	0	0	1	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	32.9	32.8	0	3.7	27	2.1	0	0	0.1	0	
Rytidosperma caespitosum	20	500	GG				20						
Sporobolus caroli	5	100	GG				5						
Enteropogon acicularis	1	20	GG				1						
Maireana aphylla	2	5	SG			2							
Maireana pentagona	1	1000	FG					1					
Atriplex leptocarpa	0.7	30	SG			0.7							
Chloris truncata	1	30	GG				1						
Goodenia pinnatifida	0.1	1	FG					0.1					
Leiocarpa panaetioides	1	5	FG					1					
Atriplex semibaccata	1	20	SG			1							
*Medicago laciniata**	0.1	20	EX								0.1		

Easting	314004
Northing	6114080
Orientation	140
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR34

Date	3/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR34		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	44		17	16	0	4	4	8	0	0	1	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	48.9	48.8	0	2.7	45	1.1	0	0	0.1	0	
Austrostipa scabra subsp. scabra	20	300	GG				20						
Rytidosperma caespitosum	15	200	GG				15						
Sporobolus caroli	5	50	GG				5						
Eriochlamys behrii	0.3	100	FG					0.3					
Chloris truncata	5	200	GG				5						
Salsola australis	0.1	10	SG			0.1							
*Medicago laciniata**	0.1	10	EX								0.1		
Sida trichopoda	0.1	5	FG					0.1					
Maireana pentagona	0.2	100	FG					0.2					
Leiocarpa panaetioides	0.1	5	FG					0.1					
Maireana aphylla	2	10	SG			2							
Maireana excavata	0.2	20	SG			0.2							
Chrysocephalum apiculatum	0.1	5	FG					0.1					
Teucrium racemosum	0.1	5	FG					0.1					
Atriplex semibaccata	0.4	10	SG			0.4							
Pycnosorus thompsonianus	0.1	10	FG					0.1					
Plantago turrifera	0.1	10	FG					0.1					

Easting	316718
Northing	6114191
Orientation	205
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR63

Date	29/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR63		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	44		28	22	0	2	3	17	0	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	51.9	48.5	0	1.5	40	7	0	0	3.4	0	
Austrostipa scabra subsp. scabra	25	200	GG				25						
Enteropogon acicularis	5	50	GG				5						
Rhodanthe corymbiflora	0.3	50	FG					0.3					
Maireana excavata	1	50	SG			1							
Leucochrysum molle	1	50	FG					1					
*Medicago laciniata**	2	1000	EX								2		
Crassula sieberiana	0.1	100	FG					0.1					
Rytidosperma caespitosum	10	100	GG				10						
Goodenia pusilliflora	1	100	FG					1					
Swainsona phacoides	0.4	30	FG					0.4					
Wurmbea dioica subsp. dioica	0.1	100	FG					0.1					
*Lolium perenne**	1	60	EX								1		
Tricoryne elatior	0.1	20	FG					0.1					
Goodenia fascicularis	1	100	FG					1					
Rhodanthe pygmaea	0.4	100	FG					0.4					
Calotis scabiosifolia var. scabiosifolia	1	50	FG					1					
Maireana aphylla	0.5	1	SG			0.5							
*Romulea minutiflora**	0.1	5	EX								0.1		
Hyalosperma glutinosum subsp. glutinc	1	200	FG					1					
Erodium crinitum	0.1	5	FG					0.1					
Ptilotus spathulatus f. spathulatus	0.1	5	FG					0.1					
*Vulpia myuros**			EX								0		
Leiocarpa panaetioides	0.1	2	FG					0.1					
Daucus glochidiatus	0.1	5	FG					0.1					
Vittadinia cuneata	0.1	1	FG					0.1					
*Hypochaeris radicata**	0.2	10	EX								0.2		
Calotis hispidula	0.1	5	FG					0.1					
*Sonchus oleraceus**	0.1	5	EX								0.1		

Easting	343236
Northing	6113453
Orientation	95
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR89

Date	19/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR89		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	44		30	25	0	4	5	16	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	64.1	63.3	0	5.1	52.2	6	0	0	0.8	0	
Austrostipa scabra subsp. scabra	40	1000	GG				40						
Austrostipa elegantissima	0.2	5	GG				0.2						
Rytidosperma caespitosum	10	400	GG				10						
Enteropogon acicularis	1	50	GG				1						
Maireana aphylla	1	5	SG			1							
Chrysocephalum apiculatum	3	50	FG					3					
*Medicago laciniata**	0.4	200	EX								0.4		
Crassula sieberiana	0.1	100	FG					0.1					
*Romulea minutiflora**	0.1	30	EX								0.1		
Maireana pentagona	1	50	FG					1					
Maireana humillima	2	100	SG			2							
Goodenia pinnatifida	0.4	20	FG					0.4					
Hyalosperma glutinosum subsp. glutinc	0.4	100	FG					0.4					
Sclerolaena diacantha	2	100	SG			2							
Swainsona murrayana	0.1	5	FG					0.1					
*Vulpia myuros**	0.1	20	EX								0.1		
Rhodanthe corymbiflora	0.1	10	FG					0.1					
Wurmbea dioica subsp. dioica	0.1	5	FG					0.1					
Sida trichopoda	0.1	5	FG					0.1					
Brachyscome lineariloba	0.1	5	FG					0.1					
*Lolium perenne**	0.1	10	EX								0.1		
Teucrium racemosum	0.1	5	FG					0.1					
Bulbine bulbosa	0.1	5	FG					0.1					
Daucus glochidiatus	0.1	5	FG					0.1					
Plantago turrifera	0.1	5	FG					0.1					
Calandrinia eremaea	0.1	5	FG					0.1					
*Avena barbata**	0.1	10	EX								0.1		
Rytidosperma setaceum	1	30	GG				1						
Abutilon halophilum	0.1	5	SG			0.1							
Vittadinia cuneata var. cuneata	0.1	5	FG					0.1					

Easting	324274
Northing	6112395
Orientation	119
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR99

Date	22/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR99		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	44		18	14	0	1	3	10	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	49.5	47.6	0	1	40	6.6	0	0	1.9	0	
Rytidosperma setaceum	35	2000	GG				35						
Podolepis muelleri	1	2000	FG					1					
Maireana pentagona	2	3000	FG					2					
*Hordeum leporinum**	0.5	20	EX								0.5		
Sporobolus caroli	2	1000	GG				2						
Daucus glochidiatus	0.2	2000	FG					0.2					
Brachyscome lineariloba	0.2	1000	FG					0.2					
Cressa australis	0.8	500	FG					0.8					
Rhodanthe corymbiflora	0.1	20	FG					0.1					
*Vulpia myuros**	1	500	EX								1		
*Medicago sp.**	0.1	50	EX								0.1		
Minuria cunninghamii	2	40	FG					2					
*Lolium perenne**	0.3	50	EX								0.3		
Plantago turrifera	0.1	20	FG					0.1					
Calocephalus sonderi	0.1	10	FG					0.1					
Rytidosperma caespitosum	3	200	GG				3						
Maireana aphylla	1	1	SG			1							
Goodenia fascicularis	0.1	20	FG					0.1					

Easting	298635
Northing	6113906
Orientation	210
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR100

Date	23/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR100		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	44		27	23	0	7	2	14	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	44.3	42.1	0	3.4	20.1	18.6	0	0	2.2	0	
Austrostipa scabra subsp. scabra	0.1	30	GG				0.1						
Rytidosperma setaceum	20	3000	GG				20						
Hyalosperma glutinosum subsp. glutinc	10	9000	FG					10					
Eriochlamys behrii	5	6000	FG					5					
Salsola australis	1	40	SG			1							
Sida corrugata	0.5	30	FG					0.5					
Goodenia fascicularis	0.2	20	FG					0.2					
Crassula sieberiana	0.1	30	FG					0.1					
Maireana pentagona	2	500	FG					2					
Atriplex semibaccata	0.5	10	SG			0.5							
*Vulpia myuros**	1	200	EX								1		
Maireana humillima	0.7	30	SG			0.7							
*Medicago spp.**	0.1	30	EX								0.1		
*Spergularia rubra**	0.1	5	EX								0.1		
Teucrium racemosum	0.1	5	FG					0.1					
Maireana aphylla	0.4	5	SG			0.4							
Sclerolaena diacantha	0.1	5	SG			0.1							
Chrysocephalum apiculatum	0.1	5	FG					0.1					
Rhagodia spinescens	0.2	2	SG			0.2							
Atriplex leptocarpa	0.5	30	SG			0.5							
Brachyscome lineariloba	0.1	10	FG					0.1					
*Hordeum leporinum**	1	200	EX								1		
Vittadinia cuneata	0.1	5	FG					0.1					
Calocephalus sonderi	0.1	10	FG					0.1					
Plantago turrifera	0.1	5	FG					0.1					
Wurmbea dioica subsp. dioica	0.1	5	FG					0.1					
Rhodanthe corymbiflora	0.1	5	FG					0.1					

Easting	307850
Northing	6113883
Orientation	54
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

Q195E

Date	16/08/2021		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	Q195E		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	PCT 44		31	25	0	3	7	15	0	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	79	71	0	7.1	35.3	28.6	0	0	8	0	
*Arctotheca calendula**	0.1	2	EX								0.1		
Austrostipa aristiglumis	3	20	GG					3					
Austrostipa nodosa	20	200	GG					20					
Austrostipa scabra subsp. falcata	0.5	10	GG					0.5					
Brachyscome lineariloba	0.1	10	FG						0.1				
Calocephalus sonderi	0.8	40	FG						0.8				
Calotis scabiosifolia var. scabiosifolia	0.2	15	FG						0.2				
Chrysocephalum apiculatum	0.5	20	FG						0.5				
Crassula decumbens var. decumbens	0.2	30	FG						0.2				
Crassula sieberiana	0.1	50	FG						0.1				
Enteropogon acicularis	4	80	GG					4					
*Erodium botrys**	1	60	EX								1		
Goodenia pusilliflora	10	300	FG						10				
*Hypochaeris glabra**	0.5	20	EX								0.5		
Hypoxis glabella var. glabella	0.2	40	Fg						0.2				
Isoetopsis graminifolia	0.1	10	FG						0.1				
*Lolium ridgidum**	0.4	10	EX								0.4		
Maireana excavata	3	80	SG				3						
*Medicago laciniata**	1	40	EX								1		
*Medicago minima**	5	100	EX								5		
Microseris lanceolata	0.1	2	FG						0.1				
Panicum decompositum	1	30	GG					1					
Rhagodia ulicina	4	100	SG				4						
Rhodanthe corymbiflora	15	500	FG						15				
Rytidosperma caespitosum	6	100	GG					6					
Rytidosperma setaceum	0.8	20	GG					0.8					
Sclerolaena muricata var. semiglabra	0.1	1	SG				0.1						
Swainsona plagiotropis	0.1	5	FG						0.1				
Triptilodiscus pygmaeus	0.5	30	FG						0.5				
Vittadinia cuneata var. cuneata	0.6	30	FG						0.6				
Wurmbea diocia subsp. diocia	0.1	20	FG						0.1				

Easting	383800
Northing	6123224
Orientation	28°
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D2.20 PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW Southwestern Slopes Bioregion (Moderate_good)

Q193E

Date	16/08/2021		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	Q193E		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	PCT 45		27	19	0	1	3	15	0	0	8	2	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	**Cover**	**Abundance**	99.5	79.1	0	1	46	32.1	0	0	20.4	0.5	
Austrostipa aristiglumis	40	100	GG				40						
*Avena fatua**	0.8	20	EX								0.8		
Brachyscome lineariloba	0.1	10	FG					0.1					
Calotis anthemoides	0.2	20	FG					0.2					
*Carthamus lanatus**	0.1	2	HT									0.1	
Chrysocephalum apiculatum	5	100	FG					5					
Crassula decumbens var. decumbens	0.1	5	FG					0.1					
Crassula sieberiana	0.1	10	FG					0.1					
Enteropogon acicularis	1	30	GG				1						
*Erodium botrys**	3	100	EX								3		
Erodium crinitum	3	100	FG					3					
Goodenia pusilliflora	5	300	FG					5					
*Hordeum leporinum**	10	300	EX								10		
Hypoxis glabella var. glabella	0.1	10	FG					0.1					
*Lolium ridgidum**	2	60	EX								2		
Maireana enchylaenoides	0.1	3	FG					0.1					
Maireana excavata	1	70	SG			1							
Maireana humillima	0.1	3	FG					0.1					
Maireana pentagona	0.1	5	FG					0.1					
*Medicago minima**	4	100	EX								4		
Panicum decompositum	5	80	GG				5						
Rhodanthe corymbiflora	3	90	FG					3					
Rhodanthe pygmaea	15	200	FG					15					
Romulea rosea	0.4	60	HT									0.4	
*Sonchus oleraceus**	0.1	5	EX								0.1		
Teucrium racemosum	0.1	3	FG					0.1					
Vittadinia cuneata var. cuneata	0.1	5	FG					0.1					

Easting	383092
Northing	6124002
Orientation	270°
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 (%)	
Litter (%)	0

Q196E

Date	16/08/2021		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	Q196E		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	PCT 45		26	18	0	2	4	12	0	0	8	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	**Cover**	**Abundance**	94.8	71.7	0	1.1	61	9.6	0	0	23.1	0	
*Arctotheca calendula**	0.5	10	EX								0.5		
Austrostipa aristiglumis	55	300	GG				55						
Austrostipa scabra subsp. falcata	1	40	GG				1						
*Avena fatua**	0.5	10	EX								0.5		
Crassula decumbens var. decumbens	0.1	5	FG					0.1					
Crassula sieberiana	0.4	60	FG					0.4					
Enteropogon acicularis	3	60	GG				3						
*Erodium botrys**	1	50	EX								1		
Erodium crinitum	2	80	FG					2					
Goodenia pusilliflora	4	100	FG					4					
*Hordeum leporinum**	5	100	EX								5		
*Hypochaeris glabra**	0.7	40	EX								0.7		
Hypoxis glabella var. glabella	0.1	20	FG					0.1					
*Lolium ridgidum**	5	60	EX								5		
Maireana excavata	1	70	SG			1							
Maireana humillima	0.1	10	FG					0.1					
Maireana pentagona	0.4	40	FG					0.4					
*Medicago minima**	10	100	EX								10		
Rhodanthe corymbiflora	0.8	50	FG					0.8					
Rhodanthe pygmaea	0.6	50	FG					0.6					
Rytidosperma setaceum	2	80	GG				2						
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1							
*Sonchus oleraceus**	0.4	10	EX								0.4		
Teucrium racemosum	0.1	5	FG					0.1					
Triptilodiscus pygmaeus	0.2	20	FG					0.2					
Vittadinia cuneata var. cuneata	0.8	15	FG					0.8					

Easting	384603
Northing	6122142
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	No
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	0
BAM Attributes 1x1 plot (%)	No
Litter (%)	0

D2.21 PCT 46 – Curly Windmill Grass – spear grass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (Moderate_good)

VNI_DR10

Date	4/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR10		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	46		0	20	0	4	6	9	0	1	2	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	0	72.5	0	1.6	68.6	2.2	0	0.1	0.2	0	
Enteropogon acicularis	60	1000	GG				60						
Austrostipa scabra subsp. *scabra*	5	100	GG				5						
Rytidosperma caespitosum	1	100	GG				1						
*Avena sp.**	0.1	5	EX								0.1		
Panicum decompositum	1	20	GG				1						
Sida trichopoda	0.3	30	FG					0.3					
Sclerolaena muricata var. *semiglabr*	0.1	2	SG			0.1							
Leiocarpa websteri	0.2	5	FG					0.2					
Asperula conferta	0.1	20	FG					0.1					
Euphorbia drummondii	0.1	20	FG					0.1					
Einadia nutans	1	20	FG					1					
Maireana aphylla	0.2	1	SG			0.2							
Oxalis perennans	0.1	5	FG					0.1					
Sporobolus caroli	1	20	GG				1						
Solanum esuriale	0.2	20	FG					0.2					
Convolvulus erubescens	0.1	10	OG							0.1			
Maireana decalvans	0.3	5	SG			0.3							
Atriplex semibaccata	1	10	SG			1							
Rytidosperma setaceum	0.6	20	GG				0.6						
Vittadinia cuneata	0.1	10	FG					0.1					
*Sonchus oleraceus**	0.1	5	EX								0.1		
Calotis scabiosifolia var. *scabiosifoli*	0.1	5	FG					0.1					

Easting	335973
Northing	6111071
Orientation	285
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR64

Date	29/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR64		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	46		25	20	0	5	4	11	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	79.3	61.1	0	2.5	55.2	3.4	0	0	18.2	0	
Sporobolus caroli	25	200	GG				25						
Enteropogon acicularis	15	100	GG				15						
*Medicago laciniata**	2	2000	EX								2		
Calotis scabiosifolia var. scabiosifolia	1	100	FG					1					
Erodium crinitum	1	200	FG					1					
Rhodanthe corymbiflora	0.4	80	FG					0.4					
Maireana excavata	0.2	20	SG			0.2							
Oxalis perennans	0.2	100	FG					0.2					
*Lolium perenne**	15	200	EX								15		
Plantago turrifera	0.1	10	FG					0.1					
Sida trichopoda	0.1	5	FG					0.1					
Leiocarpa panaetioides	0.2	5	FG					0.2					
Austrostipa scabra subsp. scabra	0.2	10	GG				0.2						
Rytidosperma caespitosum	15	100	GG				15						
Tricoryne elatior	0.1	5	FG					0.1					
Atriplex semibaccata	1	5	SG			1							
Sclerolaena muricata var. muricata	1	5	SG			1							
Maireana pentagona	0.1	5	FG					0.1					
Goodenia pusilliflora	0.1	20	FG					0.1					
Sclerolaena stelligera	0.1	1	SG			0.1							
*Sonchus oleraceus**	0.1	5	EX								0.1		
Vittadinia cuneata	0.1	5	FG					0.1					
*Erodium cicutarium**	0.1	5	EX								0.1		
Maireana aphylla	0.2	1	SG			0.2							
*Avena sp.**	1	50	EX								1		

Easting	341338
Northing	6112700
Orientation	215
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR88

Date	19/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR88		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	46		15	12	0	3	5	4	0	0	3	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	73.4	56.4	0	2.7	51.8	1.9	0	0	17	0	
Enteropogon acicularis	10	200	GG				10						
Walwhalleya proluta	35	500	GG				35						
Rytidosperma caespitosum	5	100	GG				5						
*Avena barbata**	1	60	EX								1		
Rhodanthe corymbiflora	0.8	100	FG					0.8					
*Lolium perenne**	15	2000	EX								15		
*Medicago praecox**	1	1000	EX								1		
Leiocarpa panaetioides	0.3	5	FG					0.3					
Rytidosperma setaceum	0.8	30	GG				0.8						
Atriplex semibaccata	0.4	5	SG			0.4							
Austrostipa scabra subsp. scabra	1	40	GG				1						
Maireana pentagona	0.6	100	FG					0.6					
Maireana aphylla	2	5	SG			2							
Calotis scabiosifolia var. scabiosifolia	0.2	20	FG					0.2					
Sclerolaena muricata var. muricata	0.3	2	SG			0.3							

Easting	337730
Northing	6111463
Orientation	90
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNIOZ_11

Date	19/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_11		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	46		21	16	0	4	3	9	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	79.4	67.7	0	0.4	65	2.3	0	0	11.7	0	
Enteropogon acicularis	30	1000	GG				30						
Walwhalleya proluta	30	1000	GG				30						
*Lolium perenne**	10	5000	EX								10		
Rytidosperma caespitosum	5	1000	GG				5						
*Avena barbata**	1	200	EX								1		
*Medicago laciniata**	0.5	500	EX								0.5		
Rhodanthe corymbiflora	1	200	FG					1					
Vittadinia cuneata	0.2	50	FG					0.2					
Leiocarpa panaetioides	0.1	5	FG					0.1					
Sclerolaena muricata var. muricata	0.1	5	SG			0.1							
*Sonchus oleraceus**	0.1	20	EX								0.1		
Calotis scabiosifolia var. scabiosifolia	0.5	50	FG					0.5					
Crassula sieberiana	0.1	100	FG					0.1					
Enchylaena tomentosa	0.1	1	SG			0.1							
*Spergularia rubra**	0.1	10	EX								0.1		
Plantago turrifera	0.1	20	FG					0.1					
Oxalis perennans	0.1	100	FG					0.1					
Maireana pentagona	0.1	5	FG					0.1					
Atriplex leptocarpa	0.1	5	SG			0.1							
Atriplex semibaccata	0.1	1	SG			0.1							
Goodenia pinnatifida	0.1	10	FG					0.1					

Easting	340269
Northing	6112367
Orientation	169
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D2.22 PCT 47 – Swamp grassland wetland of the Riverine Plain (Moderate_good)

Q194E

Date	16/08/2021		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	Q194E		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	PCT 47		21	15	0	3	7	5	0	0	6	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	**Cover**	**Abundance**	97.3	77.2	0	4.4	69	3.8	0	0	20.1	1	
*Arctotheca calendula**	2	40	EX								2		
Calocephalus sonderi	0.2	10	FG					0.2					
Duma florulenta	1	10	SG			1							
Enteropogon acicularis	0.8	30	GG				0.8						
*Erodium botrys**	0.8	40	EX								0.8		
Erodium crinitum	0.4	20	FG					0.4					
Juncus flavidus	0.1	5	GG				0.1						
Juncus radula	0.1	5	GG				0.1						
Lachnagrostis filiformis	3	60	GG				3						
*Lolium ridgidum**	10	200	EX								10		
*Medicago minima**	6	100	EX								6		
Rhodanthe corymbiflora	3	100	FG					3					
Romulea rosea	1	70	HT									1	
Rumex dumosus	0.1	5	FG					0.1					
Rytidosperma duttonianum	45	300	GG				45						
Sclerolaena muricata var. muricata	0.4	3	SG			0.4							
Sclerolaena muricata var. semiglabra	3	20	SG			3							
*Sonchus oleraceus**	0.3	20	EX								0.3		
Sporobolus caroli	10	100	GG				10						
Swainsona procumbens	0.1	5	FG					0.1					
Walwhalleya proluta	10	100	GG				10						

Easting	383602
Northing	6123437
Orientation	48°
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 (%)	
Litter (%)	0

D2.23 PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Moderate_good)

VNI_DR24

Date	1/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR24		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	58		22	22	2	13	2	5	0	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	41.3	41.3	7	29.9	1.1	3.3	0	0	0	0	
Casuarina pauper	4	7	TG		4								
Alectryon oleifolius subsp. canescens	3	1	TG		3								
Rhagodia spinescens	20	100	SG			20							
Maireana brevifolia	3	20	SG			3							
Atriplex lindleyi	2	100	FG					2					
Sclerolaena diacantha	0.2	20	SG			0.2							
Enteropogon ramosus	1	20	GG				1						
Salsola australis	1	50	SG			1							
Senna artemisioides subsp. coriacea	0.1	1	SG			0.1							
Einadia nutans	1	30	FG					1					
Atriplex leptocarpa	1	40	SG			1							
Spergularia brevifolia	0.1	10	FG					0.1					
Sclerolaena tricuspis	0.1	5	SG			0.1							
Sclerolaena brachyptera	0.8	20	SG			0.8							
Maireana decalvans	0.1	5	SG			0.1							
Enchylaena tomentosa	2	20	SG			2							
Atriplex semibaccata	1	20	SG			1							
Sclerolaena muricata var. muricata	0.4	10	SG			0.4							
Austrostipa scabra subsp. scabra	0.1	5	GG				0.1						
Maireana georgei	0.2	5	SG			0.2							
Vittadinia cuneata	0.1	5	FG					0.1					
Sida corrugata	0.1	1	FG					0.1					

Easting	768816
Northing	6119450
Orientation	210
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	3
20-29	yes
10-19	yes
5-9	no
<5	no
Hollows	0
Length logs (m)	1
Attributes 1x1 plot (%)	
Litter (%)	21

D2.24 PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Thinned)

VNI_NM21

Date	13/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	222343
Plot Name	VNI_NM021		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6119149
PCT	58		20	16	1	6	3	6	0	0	4	0		Orientation	76
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 50
Species	Cover	Abundance	76.3	55.1	10	21.2	21.1	2.8	0	0	21.2	0		AM Attributes 20x50m plot	
Casuarina pauper	10	4	TG		10									Stem classes	
Rhodanthe corymbiflora	0.5	100	FG					0.5						80+	0
Maireana brevifolia	5	50	SG			5								50-79	1
Einadia nutans	1	50	FG					1						30-49	0
Enteropogon acicularis	20	300	GG				20							20-29	No
Rytidosperma setaceum	1	50	GG				1							10-19	Yes
Nitraria billardierei	5	20	SG			5								5-9	No
Enchylaena tomentosa	10	50	SG			10								<5	No
Austrostipa scabra	0.1	20	GG				0.1							Hollows	2
Malacocera tricornis	1	20	SG			1								Length logs (m)	5
Sclerolaena muricata	0.1	10	SG			0.1								Litter (%)	35
Atriplex lindleyi	1	50	FG					1							
Sclerolaena tricuspis	0.1	1	SG			0.1									

D2.25 PCT 157 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Moderate_good)

VNI_DR09

Date	3/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR09		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	157		20	19	0	5	7	7	0	0	1	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	54.8	54.7	0	23.7	29	2	0	0	0.1	0	
Atriplex vesicaria	15	50	SG			15							
Sporobolus caroli	10	100	GG				10						
Rytidosperma caespitosum	5	50	GG				5						
Rytidosperma setaceum	2	100	GG				2						
Austrostipa scabra	2	50	GG				2						
Chloris truncata	5	100	GG				5						
Enteropogon acicularis	2	30	GG				2						
Sida trichopoda	0.1	20	FG					0.1					
Minuria cunninghamii	0.5	1	FG					0.5					
Panicum decompositum	3	30	GG				3						
Leiocarpa websteri	1	10	FG					1					
Maireana aphylla	5	20	SG			5							
Goodenia heteromera	0.1	10	FG					0.1					
*Sonchus oleraceus**	0.1	5	EX								0.1		
Nitraria billardierei	1	2	SG			1							
Abutilon halophilum	0.7	3	SG			0.7							
Rhagodia spinescens	2	1	SG			2							
Einadia nutans	0.1	1	FG					0.1					
Euphorbia drummondii	0.1	5	FG					0.1					
Teucrium racemosum	0.1	10	FG					0.1					

Easting	295989
Northing	6114185
Orientation	250
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 (%)	
Litter (%)	0

VNI_DR26

Date	1/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR26		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	157		13	13	0	6	4	3	0	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	41.8	41.8	0	33.2	8	0.6	0	0	0	0	
Atriplex vesicaria	25	100	SG			25							
Nitraria billardierei	5	10	SG			5							
Sporobolus caroli	2	20	GG				2						
Rytidosperma caespitosum	2	50	GG				2						
Chloris truncata	3	100	GG				3						
Austrostipa scabra subsp. scabra	1	20	GG				1						
Einadia nutans	0.3	10	FG					0.3					
Enchylaena tomentosa	1	20	SG			1							
Sclerolaena tricuspis	0.1	10	SG			0.1							
Malacocera tricornis	2	20	SG			2							
Sida trichopoda	0.2	20	FG					0.2					
Salsola australis	0.1	10	SG			0.1							
Vittadinia cuneata	0.1	5	FG					0.1					

Easting	230078
Northing	6120647
Orientation	250
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR40

Date	5/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR40		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	157		10	10	0	4	4	1	1	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	63.5	63.5	0	38.4	24	0.1	1	0	0	0	
Atriplex vesicaria	35	100	SG			35							
Maireana aphylla	3	10	SG			3							
Chloris truncata	15	300	GG				15						
Marsilea drummondii	1	100	EG						1				
Sporobolus caroli	5	200	GG				5						
Enteropogon acicularis	1	20	GG				1						
Rytidosperma caespitosum	3	200	GG				3						
Cressa australis	0.1	20	FG					0.1					
Rhagodia spinescens	0.3	1	SG			0.3							
Sclerolaena tricuspis	0.1	2	SG			0.1							

Easting	294740
Northing	6114330
Orientation	215
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR49

Date	6/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR49		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	157		11	10	0	2	5	3	0	0	1	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	66.7	66.5	0	40.1	25.2	1.2	0	0	0.2	0	
Atriplex vesicaria	40	100	SG			40							
Sporobolus caroli	15	800	GG				15						
Chloris truncata	5	200	GG				5						
Rytidosperma caespitosum	5	200	GG				5						
Leiocarpa panaetioides	1	40	FG					1					
Sclerolaena tricuspis	0.1	5	SG			0.1							
*Sonchus oleraceus**	0.2	20	EX								0.2		
Euphorbia drummondii	0.1	1	FG					0.1					
Enteropogon acicularis	0.1	5	GG				0.1						
Walwhalleya proluta	0.1	10	GG				0.1						
Einadia nutans	0.1	2	FG					0.1					

Easting	300103
Northing	6113777
Orientation	100
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR52

Date	7/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR52		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	157		13	11	0	6	2	3	0	0	2	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	48.4	48.2	0	47.6	0.2	0.4	0	0	0.2	0	
Atriplex vesicaria	45	100	SG			45							
Nitraria billardierei	1	5	SG			1							
Sporobolus caroli	0.1	5	GG				0.1						
Atriplex leptocarpa	0.1	10	SG			0.1							
Rytidosperma caespitosum	0.1	5	GG				0.1						
*Lolium perenne**	0.1	10	EX								0.1		
Sclerolaena tricuspis	0.1	5	SG			0.1							
Maireana aphylla	1	5	SG			1							
Cressa australis	0.2	50	FG					0.2					
*Hordeum leporinum**	0.1	10	EX								0.1		
Malacocera tricornis	0.4	10	SG			0.4							
Maireana pentagona	0.1	50	FG					0.1					
Vittadinia cuneata	0.1	1	FG					0.1					

Easting	234061
Northing	6121375
Orientation	70
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_MP23

Date	11/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP23		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	157		21	14	0	4	2	8	0	0	7	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	67.1	59.3	0	50.3	6	3	0	0	7.8	0	
Atriplex vesicaria	50	500	SG			50							
Rytidosperma caespitosum	5	150	GG				5						
*Hordeum leporinum**	5	250	EX								5		
Rhodanthe corymbiflora	1	200	FG					1					
*Lolium rigidum**	1	150	EX								1		
*Vulpia myuros**	0.1	100	EX								0.1		
*Medicago praecox**	1	150	EX								1		
Pseudognaphalium luteoalbum	0.1	50	FG					0.1					
Rytidosperma carphoides	1	50	GG				1						
Arthropodium minus	0.1	1	FG					0.1					
Plantago turrifera	1	100	FG					1					
*Sonchus oleraceus**	0.1	10	EX								0.1		
Cotula bipinnata	0.5	50	EX								0.5		
Disphyma crassifolium	0.1	1	FG					0.1					
*Medicago sp.**	0.1	1	EX								0.1		
Malacocera tricornis	0.1	1	SG			0.1							
Vittadinia cuneata	0.1	1	FG					0.1					
Sclerolaena tricuspis	0.1	1	SG			0.1							
Calotis scabiosifolia	0.5	25	FG					0.5					
Sclerolaena brachyptera	0.1	10	SG			0.1							
Goodenia spp.	0.1	1	FG					0.1					

Easting	276976
Northing	6120140
Orientation	119
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_NM06

Date	7/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_NM06		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	157		26	22	0	3	3	16	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	42.8	34.7	0	12.1	1.2	21.4	0	0	8.1	0	
Atriplex vesicaria	10	50	SG			10							
Minuria cunninghamii	10	100	FG					10					
*Cotula bipinnata**	5	500	EX								5		
Chrysocephalum apiculatum	5	300	FG					5					
Rytidosperma spp.	1	100	GG				1						
*Medicago minima**	1	500	EX								1		
Brachyscome spp.	0.2	100	FG					0.2					
Leiocarpa leptolepis	0.1	20	FG					0.1					
Brachyscome lineariloba	5	300	FG					5					
*Lolium rigidum**	2	500	EX								2		
Rhodanthe pygmaea	0.1	100	FG					0.1					
Nitraria billardierei	2	20	SG			2							
Pogonolepis muelleriana	0.1	100	FG					0.1					
Maireana pentagona	0.1	100	FG					0.1					
Crassula colorata	0.1	100	FG					0.1					
Calandrinia eremaea	0.1	50	FG					0.1					
Sclerochlamys brachyptera	0.1	100	FG					0.1					
Senecio glossanthus	0.1	20	FG					0.1					
Daucus glochidiatus	0.1	20	FG					0.1					
Maireana aphylla	0.1	10	SG			0.1							
Rhodanthe corymbiflora	0.1	20	FG					0.1					
*Vulpia bromoides**	0.1	100	EX								0.1		
Sporobolus caroli	0.1	20	GG				0.1						
Atriplex lindleyi	0.1	10	FG					0.1					
Austrostipa nitida	0.1	10	GG				0.1						
Plantago turrifera	0.1	20	FG					0.1					

Easting	218269
Northing	6117141
Orientation	300
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D2.26 PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains (Moderate_good)

VNI_DR12

Date	4/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR12		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	160		14	13	0	4	3	5	1	0	1	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	38	37.9	0	26.4	10.9	0.5	0.1	0	0.1	0.1	
Chenopodium nitrariaceum	25	15	SG			25							
Eragrostis australasica	10	10	GG				10						
Eleocharis plana	0.8	1000	GG				0.8						
Sclerolaena stelligera	0.2	50	SG			0.2							
Sclerolaena muricata var.	0.2	10	SG			0.2							
Marsilea drummondii	0.1	50	EG						0.1				
Oxalis perennans	0.1	10	FG					0.1					
Atriplex semibaccata	1	5	SG			1							
Euchiton spp.	0.1	5	FG					0.1					
Juncus spp.	0.1	1	GG				0.1						
Vittadinia cuneata	0.1	5	FG					0.1					
Centipeda minima	0.1	20	FG					0.1					
*Xanthium spinosum**	0.1	1	HT									0.1	
Alternanthera sp. A	0.1	10	FG					0.1					

Easting	333611
Northing	6111386
Orientation	200
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR35

Date	4/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR35		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	160		20	16	0	5	8	2	1	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	26.6	26.2	0	19.2	1.8	0.2	5	0	0.4	0	
Chenopodium nitrariaceum	7	10	SG			7							
Duma florulenta	2	5	SG			2							
Sclerolaena muricata var. semiglabra	10	50	SG			10							
Marsilea drummondii	5	3000	EG						5				
Enteropogon acicularis	1	20	GG				1						
*Heliotropium europaeum**	0.1	10	EX								0.1		
*Medicago laciniata**	0.1	2000	EX								0.1		
*Lolium perenne**	0.1	500	EX								0.1		
Rytidosperma caespitosum	0.1	200	GG				0.1						
Salsola tragus	0.1	5	SG			0.1							
Juncus flavidus	0.1	1	GG				0.1						
Sporobolus caroli	0.1	10	GG				0.1						
Pycnosorus thompsonianus	0.1	1	FG					0.1					
Chloris truncata	0.2	50	GG				0.2						
Lachnagrostis filiformis	0.1	3	GG				0.1						
Sida corrugata	0.1	5	FG					0.1					
Atriplex semibaccata	0.1	1	SG			0.1							
Austrostipa scabra	0.1	5	GG				0.1						
Walwhalleya proluta	0.1	2	GG				0.1						
*Cirsium vulgare**	0.1	1	EX								0.1		

Easting	304631
Northing	6113814
Orientation	220
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR38

Date	4/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR38		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	160		27	23	0	10	6	6	1	0	4	2	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	41.4	39.3	0	34.1	3.8	0.8	0.6	0	2.1	1.8	
Chenopodium nitrariaceum	10	20	SG			10							
Sclerolaena muricata var. semiglabra	10	30	SG			10							
Salsola australis	1	20	SG			1							
*Lycium ferocissimum**	1	1	HT									1	
Nitraria billardierei	5	5	SG			5							
Rytidosperma caespitosum	0.4	20	GG				0.4						
Chloris truncata	0.1	10	GG				0.1						
Maireana aphylla	2	10	SG			2							
Atriplex semibaccata	3	30	SG			3							
*Xanthium spinosum**	0.8	20	HT									0.8	
Sida corrugata	0.1	5	FG					0.1					
Maireana decalvans	0.6	20	SG			0.6							
*Medicago laciniata**	0.1	10	EX								0.1		
Enteropogon acicularis	2	20	GG				2						
Vittadinia cuneata	0.2	20	FG					0.2					
Rhagodia spinescens	1	1	SG			1							
Leiocarpa panaetioides	0.1	5	FG					0.1					
Einadia nutans	0.2	5	FG					0.2					
Sporobolus caroli	0.4	10	GG				0.4						
Sclerolaena tricuspis	0.5	5	SG			0.5							
Solanum esuriale	0.1	5	FG					0.1					
Austrostipa scabra subsp. scabra	0.2	20	GG				0.2						
Marsilea drummondii	0.6	50	EG						0.6				
Duma florulenta	1	1	SG			1							
*Heliotropium europaeum**	0.2	20	EX								0.2		
Euphorbia drummondii	0.1	5	FG					0.1					
Walwhalleya proluta	0.7	10	GG				0.7						

Easting	299607
Northing	6113870
Orientation	195
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_MP17

Date	10/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP17		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	160		6	16	0	5	4	7	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	51.7	42.4	0	37.3	2.7	2.4	0	0	9.3	0	
Nitraria billardierei	30	50	SG			30							
Duma florulenta	7	20	SG			7							
*Lolium rigidum**	2	500	EX								2		
*Medicago praecox**	7	500	EX								7		
*Avena fatua**	0.1	1	EX								0.1		
*Hordeum leporinum**	0.1	1	EX								0.1		
Rhodanthe corymbiflora	0.5	50	FG					0.5					
Bothriochloa macra	0.1	2	GG				0.1						
Rytidosperma caespitosum	0.5	25	GG				0.5						
Oxalis perennans	0.1	20	FG					0.1					
Sporobolus caroli	2	100	GG				2						
Senecio quadridentatus	0.5	25	FG					0.5					
Marsilea drummondii	1	200	FG					1					
Eleocharis pallens	0.1	10	GG				0.1						
Erodium crinitum	0.1	5	FG					0.1					
Sclerolaena stelligera	0.1	1	SG			0.1							
*Sonchus oleraceus**	0.1	5	EX								0.1		
Atriplex leptocarpa	0.1	2	SG			0.1							
Calotis scabiosifolia	0.1	10	FG					0.1					
Alternanthera spp.	0.1	5	FG					0.1					
Sclerolaena muricata	0.1	1	SG			0.1							

Easting	352716
Northing	6116971
Orientation	60
Plot size	20 X 20
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
Attributes 1x1 plot (%)	
Litter (%)	0

VNIOZ_15

Date	22/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_15		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	160		21	15	0	6	1	7	1	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	97.4	50.2	0	27.4	22	0.7	0.1	0	47.2	0	
Chenopodium nitrariaceum	25	30	SG			25							
Rytidosperma caespitosum	22	2000	GG				22						
*Lolium perenne**	22	5000	EX								22		
*Vulpia myuros**	22	6000	EX								22		
*Medicago praecox**	1	1000	EX								1		
Rhodanthe corymbiflora	0.1	10	FG					0.1					
Sclerolaena stelligera	0.2	15	SG			0.2							
Sclerolaena tricuspis	1	5	SG			1							
Sclerolaena muricata var. semiglabra	1	10	SG			1							
Oxalis perennans	0.1	10	FG					0.1					
Einadia nutans	0.1	10	FG					0.1					
Enchylaena tomentosa	0.1	1	SG			0.1							
Atriplex leptocarpa	0.1	1	SG			0.1							
*Sisymbrium erysimoides**	0.1	30	EX								0.1		
*Sonchus oleraceus**	0.1	2	EX								0.1		
Cressa australis	0.1	2	FG					0.1					
Marsilea drummondii	0.1	10	EG						0.1				
Plantago cunninghamii	0.1	10	FG					0.1					
Calocephalus sonderi	0.1	2	FG					0.1					
Brachyscome lineariloba	0.1	5	FG					0.1					
*Hordeum leporinum**	2	500	EX								2		

Easting	299015
Northing	6113968
Orientation	153
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D2.27 PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (Moderate_good)

VNI_NM07

Date	7/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	at	54
Plot Name	VNI_NM07		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		27	22	0	4	4	14	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	51.6	38.3	0	16	5	17.3	0	0	13.3	0	
*Medicago minima**	2	100	EX								2		
Rhodanthe corymbiflora	5	500	FG					5					
Nitraria billardierei	5	50	SG			5							
*Erodium cicutarium**	1	20	EX								1		
Senecio glossanthus	1	100	FG					1					
Malacocera tricornis	5	50	SG			5							
Plantago turrifera	2	200	FG					2					
*Lolium rigidum**	10	1000	EX								10		
Leiocarpa leptolepis	2	30	FG					2					
Einadia nutans	0.1	20	FG					0.1					
*Hordeum leporinum**	0.2	50	EX								0.2		
Crassula colorata	0.1	100	FG					0.1					
Daucus glochidiatus	0.1	20	FG					0.1					
Rytidosperma spp.	2	50	GG				2						
Brachyscome lineariloba	1	50	FG					1					
*Sonchus oleraceus**	0.1	20	EX								0.1		
Sclerolaena tricuspis	5	50	SG			5							
Leontodon rhagalioloides	1	10	FG					1					
Sporobolus caroli	1	50	GG				1						
Geranium retrorsum	1	50	FG					1					
Sclerochlamys brachyptera	1	50	FG					1					
Calotis scabiosifolia	1	50	FG					1					
Atriplex lindleyi	1	10	FG					1					
Maireana aphylla	1	10	SG			1							
Enteropogon ramosus	1	10	GG				1						
Ranunculus pentandrus	1	10	FG					1					
Walwhalleya proluta	1	10	GG				1						

Easting	218360
Northing	6117181
Orientation	284
Plot size	20 X 20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
BAM Attributes 1x1 plot (%)	
Litter (%)	N/A

VNIOZ_14

Date	22/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_14		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		22	16	0	3	1	12	0	0	6	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	54.4	47.8	0	25.4	15	7.4	0	0	6.6	0	
Nitraria billardierei	25	14	SG			25							
Rytidosperma caespitosum	15	6000	GG				15						
*Cotula bipinnata**	0.2	200	EX								0.2		
*Hordeum leporinum**	5	3000	EX								5		
Daucus glochidiatus	0.1	100	FG					0.1					
Minuria cunninghamii	5	100	FG					5					
Podolepis muelleri	0.5	500	FG					0.5					
Triptilodiscus pygmaeus	0.1	500	FG					0.1					
Maireana pentagona	1	500	FG					1					
*Medicago minima**	0.1	20	EX								0.1		
Rhodanthe corymbiflora	0.1	5	FG					0.1					
Plantago turrifera	0.1	30	FG					0.1					
Crassula sieberiana	0.1	100	FG					0.1					
*Lolium perenne**	0.2	200	EX								0.2		
Brachyscome lineariloba	0.1	200	FG					0.1					
Einadia nutans	0.1	2	FG					0.1					
Sclerolaena muricata var. semiglabra	0.2	2	SG			0.2							
Erodium crinitum	0.1	1	FG					0.1					
*Vulpia myuros**	1	500	EX								1		
Goodenia spp.	0.1	10	FG					0.1					
*Medicago laciniata**	0.1	50	EX								0.1		
Maireana aphylla	0.2	1	SG			0.2							

Easting	297692
Northing	6113986
Orientation	137
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR13

Date	4/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR13		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		22	17	0	5	5	6	0	1	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	49.2	47.6	0	42.1	4	1.4	0	0.1	1.6	0	
Nitraria billardierei	25	20	SG			25							
Sclerolaena muricata var. *muricata*	15	20	SG			15							
Austrostipa scabra subsp. *scabra*	2	200	GG				2						
Enteropogon acicularis	0.6	20	GG				0.6						
Sida trichopoda	0.4	40	FG					0.4					
Panicum decompositum	0.8	20	GG				0.8						
*Heliotropium europaeum**	1	50	EX								1		
Atriplex semibaccata	1	20	SG			1							
*Marrubium vulgare**	0.3	5	EX								0.3		
Rytidosperma setaceum	0.2	20	GG				0.2						
*Sonchus oleraceus**	0.1	5	EX								0.1		
*Medicago sp.**	0.1	5	EX								0.1		
Euphorbia drummondii	0.1	10	FG					0.1					
Leiocarpa websteri	0.1	1	FG					0.1					
Convolvulus graminetinus	0.1	5	OG							0.1			
Vittadinia cuneata	0.1	5	FG					0.1					
Sporobolus caroli	0.4	20	GG				0.4						
Einadia nutans	0.6	10	FG					0.6					
Atriplex leptocarpa	0.1	5	SG			0.1							
Solanum esuriale	0.1	10	FG					0.1					
Maireana aphylla	1	5	SG			1							
*Avena sp.**	0.1	5	EX								0.1		

Easting	332184
Northing	6111447
Orientation	220
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR25

Date	1/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_DR25		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		12	12	0	5	5	2	0	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	15.4	15.4	0	11.3	2.8	1.3	0	0	0	0	
Nitraria billardierei	10	20	SG			10							
Sclerolaena diacantha	0.2	50	SG			0.2							
Maireana pentagona	0.3	100	FG					0.3					
Rytidosperma setaceum	0.2	20	GG				0.2						
Malacocera tricornis	0.2	20	SG			0.2							
Sporobolus caroli	1	30	GG				1						
Enteropogon ramosus	1	20	GG				1						
Sclerolaena tricuspis	0.7	10	SG			0.7							
Chloris truncata	0.4	10	GG				0.4						
Atriplex lindleyi	1	20	FG					1					
Atriplex pseudocampanulata	0.2	20	SG			0.2							
Rytidosperma caespitosum	0.2	10	GG				0.2						

Easting	770585
Northing	6119900
Orientation	45
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR39

Date	4/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR39		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		10	10	0	5	3	2	0	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	69.8	69.8	0	7.4	62	0.4	0	0	0	0	
Nitraria billardierei	6	5	SG			6							
Maireana aphylla	1	5	SG			1							
Rytidosperma caespitosum	35	200	GG				35						
Sporobolus caroli	25	300	GG				25						
Chloris truncata	2	100	GG				2						
Maireana pentagona	0.3	100	FG					0.3					
Sclerolaena tricuspis	0.1	5	SG			0.1							
Sclerolaena muricata var. semiglabra	0.2	5	SG			0.2							
Einadia nutans	0.1	5	FG					0.1					
Sclerolaena brachyptera	0.1	5	SG			0.1							

Easting	296576
Northing	6114123
Orientation	150
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR50

Date	7/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR50		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		13	13	0	9	2	2	0	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	33.5	33.5	0	33.1	0.2	0.2	0	0	0	0	
Maireana aphylla	10	30	SG			10							
Nitraria billardierei	20	20	SG			20							
Malacocera tricornis	2	100	SG			2							
Atriplex leptocarpa	0.3	100	SG			0.3							
Sclerolaena brachyptera	0.1	50	SG			0.1							
Sclerolaena tricuspis	0.2	100	SG			0.2							
Rytidosperma caespitosum	0.1	10	GG				0.1						
Rhagodia spinescens	0.1	1	SG			0.1							
Einadia nutans	0.1	5	FG					0.1					
Maireana decalvans	0.1	10	SG			0.1							
Maireana pentagona	0.1	50	FG					0.1					
Sporobolus caroli	0.1	5	GG				0.1						
Atriplex pseudocampanulata	0.3	40	SG			0.3							

Easting	236282
Northing	6121816
Orientation	350
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR51

Date	7/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR51		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		22	18	0	10	3	4	1	0	4	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	34.1	33.7	0	32.8	0.4	0.4	0.1	0	0.4	0.1	
Nitraria billardierei	20	30	SG			20							
Maireana aphylla	10	30	SG			10							
Sclerolaena tricuspis	1	50	SG			1							
Atriplex pseudocampanulata	0.2	10	SG			0.2							
Malacocera tricornis	1	50	SG			1							
Rytidosperma caespitosum	0.2	80	GG				0.2						
Einadia nutans	0.1	20	FG					0.1					
Sclerolaena stelligera	0.1	3	SG			0.1							
Atriplex leptocarpa	0.1	3	SG			0.1							
Atriplex vesicaria	0.1	5	SG			0.1							
*Xanthium spinosum**	0.1	1	HT									0.1	
Sporobolus caroli	0.1	10	GG				0.1						
Vittadinia cuneata	0.1	2	FG					0.1					
*Spergularia rubra**	0.1	1	EX								0.1		
Rhagodia spinescens	0.2	2	SG			0.2							
*Hordeum leporinum**	0.1	5	EX								0.1		
Marsilea drummondii	0.1	500	EG						0.1				
Maireana pentagona	0.1	20	FG					0.1					
*Lolium perenne**	0.1	3	EX								0.1		
Chloris truncata	0.1	5	GG				0.1						
Sida trichopoda	0.1	3	FG					0.1					
Sclerolaena brachyptera	0.1	1	SG			0.1							

Easting	235188
Northing	6121642
Orientation	30
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR106

Date	24/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR106		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	163		35	25	0	11	4	9	1	0	10	1	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	63.9	60.5	0	23.4	31.2	5.8	0.1	0	3.4	0.2	
Nitraria billardierei	15	30	SG			15							
Rytidosperma caespitosum	20	3000	GG				20						
Rytidosperma setaceum	10	2000	GG				10						
Rhodanthe corymbiflora	1	400	FG					1					
Rhagodia spinescens	2	10	SG			2							
Maireana pentagona	1	200	FG					1					
Podolepis muelleri	0.4	50	FG					0.4					
*Medicago praecox**	0.4	300	EX								0.4		
Rhodanthe pygmaea	0.1	50	FG					0.1					
Plantago turrifera	0.1	20	FG					0.1					
Enchylaena tomentosa	1	20	SG			1							
*Sonchus oleraceus**	0.1	10	EX								0.1		
*Lolium perenne**	1	50	EX								1		
*Medicago laciniata**	0.6	70	EX								0.6		
Minuria cunninghamii	2	30	FG					2					
Austrostipa scabra subsp. scabra	1	50	GG				1						
Malacocera tricornis	2	30	SG			2							
Sclerolaena brachyptera	0.8	20	SG			0.8							
Crassula sieberiana	0.1	50	FG					0.1					
Atriplex leptocarpa	0.1	20	SG			0.1							
*Vulpia myuros**	0.4	40	EX								0.4		
Einadia nutans subsp. nutans	1	20	FG					1					
Sporobolus caroli	0.2	20	GG				0.2						
Maireana aphylla	1	20	SG			1							
Atriplex vesicaria	1	5	SG			1							
Marsilea drummondii	0.1	20	EG						0.1				
*Lycium ferocissimum**	0.2	1	HT									0.2	
*Cotula bipinnata**	0.1	30	EX								0.1		
Atriplex semibaccata	0.3	10	SG			0.3							
Sclerolaena stelligera	0.1	5	SG			0.1							
*Erodium cicutarium**	0.2	30	EX								0.2		
Sida trichopoda	0.1	10	FG					0.1					
Sclerolaena tricuspis	0.1	1	SG			0.1							
*Hordeum leporinum**	0.2	20	EX								0.2		

Easting	264589
Northing	6126864
Orientation	350
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D2.28 PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (Moderate_good)

VNI_DR11

Date	4/02/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR11		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		12	12	0	3	5	4	0	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	63	63	0	45.3	15.4	2.3	0	0	0	0	
Maireana aphylla	45	60	SG			45							
Enteropogon acicularis	10	300	GG				10						
Sporobolus caroli	2	50	GG				2						
Rytidosperma caespitosum	1	50	GG				1						
Rytidosperma setaceum	2	100	GG				2						
Maireana pentagona	2	500	FG					2					
Atriplex semibaccata	0.2	1	SG			0.2							
Solanum esuriale	0.1	10	FG					0.1					
Sida trichopoda	0.1	5	FG					0.1					
Einadia nutans	0.1	5	FG					0.1					
Chloris truncata	0.4	20	GG				0.4						
Atriplex leptocarpa	0.1	5	SG			0.1							

Easting	334390
Northing	6111299
Orientation	185
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR31

Date	3/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR31		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		12	12	0	2	6	4	0	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	58.5	58.5	0	55.2	2.9	0.4	0	0	0	0	
Maireana aphylla	55	100	SG			55							
Rytidosperma caespitosum	1	50	GG				1						
Sclerolaena muricata var. semiglabra	0.2	2	SG			0.2							
Enteropogon acicularis	1	20	GG				1						
Walwhalleya proluta	0.4	10	GG				0.4						
Einadia nutans	0.1	5	FG					0.1					
Solanum esuriale	0.1	5	FG					0.1					
Rytidosperma setaceum	0.2	10	GG				0.2						
Maireana pentagona	0.1	10	FG					0.1					
Austrostipa scabra subsp. scabra	0.1	5	GG				0.1						
Sporobolus caroli	0.2	10	GG				0.2						
Pycnosorus thompsonianus	0.1	5	FG					0.1					

Easting	313445
Northing	6114111
Orientation	85
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR33

Date	3/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR33		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		15	14	0	1	6	7	0	0	1	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	58	57.9	0	40	16.9	1	0	0	0.1	0	
Maireana aphylla	40	100	SG			40							
Rytidosperma caespitosum	15	200	GG				15						
Sporobolus caroli	0.5	50	GG				0.5						
Enteropogon acicularis	0.2	5	GG				0.2						
Teucrium racemosum	0.1	5	FG					0.1					
*Medicago laciniata**	0.1	10	EX								0.1		
Calocephalus sonderi	0.1	5	FG					0.1					
Einadia nutans	0.1	5	FG					0.1					
Leiocarpa panaetioides	0.4	10	FG					0.4					
Chloris truncata	0.6	20	GG				0.6						
Sida trichopoda	0.1	5	FG					0.1					
Goodenia pinnatifida	0.1	10	FG					0.1					
Juncus usitatus	0.4	10	GG				0.4						
Solanum esuriale	0.1	10	FG					0.1					
Austrostipa scabra subsp. scabra	0.2	10	GG				0.2						

Easting	319405
Northing	6113443
Orientation	60
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_DR37

Date	4/05/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR37		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		19	19	0	6	7	5	1	0	0	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	49.8	49.8	0	36.5	12.3	0.9	0.1	0	0	0	
Maireana aphylla	35	40	SG			35							
Enteropogon acicularis	5	30	GG				5						
Rytidosperma caespitosum	5	50	GG				5						
Eragrostis parviflora	0.3	10	GG				0.3						
Chloris truncata	0.7	20	GG				0.7						
Chenopodium nitrariaceum	0.4	1	SG			0.4							
Nitraria billardierei	0.6	2	SG			0.6							
Austrostipa scabra subsp. scabra	1	40	GG				1						
Eriochlamys behrii	0.2	50	FG					0.2					
Leiocarpa panaetioides	0.3	10	FG					0.3					
Chrysocephalum apiculatum	0.1	1	FG					0.1					
Sclerolaena muricata var. semiglabra	0.3	5	SG			0.3							
Marsilea drummondii	0.1	50	EG						0.1				
Juncus usitatus	0.1	5	GG				0.1						
Maireana pentagona	0.2	100	FG					0.2					
Alternanthera nana	0.1	10	FG					0.1					
Maireana cheelii	0.1	20	SG			0.1							
Sclerolaena tricuspis	0.1	1	SG			0.1							
Sporobolus caroli	0.2	40	GG				0.2						

Easting	301346
Northing	6113782
Orientation	205
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNI_MP03

Date	29/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP03		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		20	16	0	2	5	9	0	0	4	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	68	64.8	0	30.1	31.2	3.5	0	0	3.2	0	
Swainsona procumbens	0.1	7	FG					0.1					
Maireana aphylla	30	35	SG			30							
Rytidosperma caespitosum	25	40	GG				25						
*Lolium perenne**	2	500	EX								2		
*Medicago praecox**	1	50	EX								1		
Daucus glochidiatus	0.1	50	FG					0.1					
Calotis scabiosofolia	1	100	FG					1					
Goodenia spp.	0.5	100	FG					0.5					
*Moraea setifolia**	0.1	1	EX								0.1		
Leucochrysum molle	1	150	FG					1					
Sporobous caroli	0.1	1	GG				0.1						
Crassula sieberiana	0.5	100	FG					0.5					
Einadia nutans	0.1	3	FG					0.1					
Tricoryne elatior	0.1	1	FG					0.1					
Austrostipa scabra	0.1	5	GG				0.1						
Chloris truncata	1	2	GG				1						
Enteropogon acicularis	5	50	GG				5						
*Sonchus oleraceus**	0.1	3	EX								0.1		
Vittadinia cuneata	0.1	10	FG					0.1					
Rhagodia spinescens	0.1	2	SG			0.1							

Easting	309818
Northing	6113910
Orientation	112
Plot size	20x20
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_MP04

Date	1/09/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_MP04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		25	20	0	1	6	13	0	0	5	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	54.1	50.2	0	25	16.7	8.5	0	0	3.9	0	
Maireana aphylla	25	100	SG			25							
Enteropogon acicularis	5	50	GG				5						
*Lolium perenne**	3	100	EX								3		
Rytidosperma caespitosum	10	100	GG				10						
Sporobous caroli	0.1	1	GG				0.1						
maireana ciliata	1	500	FG					1					
Podolepis muelleri	5	500	FG					5					
Goodenia pusilliflora	0.5	100	FG					0.5					
Rhodanthe corymbiflora	0.5	50	FG					0.5					
Crassula sieberiana	0.2	500	FG					0.2					
Plantago turrifera	0.5	100	FG					0.5					
*Vulpia myuros**	0.2	50	EX								0.2		
Austrostipa scabra	0.5	5	GG				0.5						
Swainsona murrayana	0.2	20	FG					0.2					
Daucus glochidiatus	0.1	50	FG					0.1					
*Medicago praecox**	0.5	200	EX								0.5		
*Sonchus oleraceus**	0.1	5	EX								0.1		
Rytidosperma spp.	1	5	GG				1						
*Cotula australis**	0.1	100	EX								0.1		
Brachyscome lineariloba	0.1	200	FG					0.1					
Calotis hispidula	0.1	50	FG					0.1					
Chloris truncata	0.1	5	GG				0.1						
Goodenia spp.	0.1	10	FG					0.1					
Tricoryne elatior	0.1	5	FG					0.1					
Calotis scabiosifolia var. scabiosifolia	0.1	1	FG					0.1					

Easting	286367
Northing	6116259
Orientation	115
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNIOZ_02

Date	30/08/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNIOZ_02		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	164		22	14	0	3	3	8	0	0	8	0	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	78.3	65.6	0	40.2	17.2	8.2	0	0	12.7	0	
Maireana aphylla	40	100	SG			40							
Austrostipa scabra	15	500	GG				15						
*Vulpia myuros**	5	2000	EX								5		
Enteropogon acicularis	2	50	GG				2						
*Heliotropium europaeum**	2	100	EX								2		
*Medicago sp.**	5	2000	EX								5		
Cotula australis	2	1000	FG					2					
Oxalis perennans	2	500	FG					2					
Crassula sieberiana	0.5	1000	FG					0.5					
Goodenia spp.	0.2	100	FG					0.2					
Maireana pentagona	0.2	100	FG					0.2					
Austrostipa nodosa	0.2	50	GG				0.2						
Rhodanthe pygmaea	3	1000	FG					3					
*Arctotheca calendula**	0.1	20	EX								0.1		
*Lolium perenne**	0.2	200	EX								0.2		
*Hypochaeris radicata**	0.1	100	EX								0.1		
*Erodium cicutarium**	0.1	50	EX								0.1		
Calotis hispidula	0.1	200	FG					0.1					
Sclerolaena tricuspis	0.1	2	SG			0.1							
*Hordeum leporinum**	0.2	200	EX								0.2		
Sida intricata	0.1	2	SG			0.1							
Goodenia spp.	0.2	100	FG					0.2					

Easting	291636
Northing	6115030
Orientation	70
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

VNIOZ_04

Plot Name	VNIOZ_04		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	164		29	22	0	9	3	10	0	0	7	0
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	66.9	62.9	0	50.5	5.2	7.2	0	0	4	0
Maireana aphylla	40	200	SG			40						
Atriplex vesicaria	2	50	SG			2						
Malacocera tricornis	2	50	SG			2						
Rhodanthe corymbiflora	0.8	1000	FG					0.8				
*Medicago praecox**	0.6	1000	EX								0.6	
*Erodium cicutarium**	0.1	10	EX								0.1	
*Sonchus oleraceus**	0.1	10	EX								0.1	
Plantago turrifera	0.2	100	FG					0.2				
Brachyscome lineariloba	0.6	1000	FG					0.6				
*Hordeum leporinum**	0.5	1000	EX								0.5	
Crassula sieberiana	0.1	1000	FG					0.1				
Rytidosperma caespitosum	5	800	GG				5					
Enteropogon acicularis	0.1	1	GG				0.1					
Atriplex lindleyi	5	50	FG					5				
*Lolium perenne**	2	500	EX								2	
Nitraria billardierei	1	2	SG			1						
Sporobolus caroli	0.1	5	GG				0.1					
Sclerolaena tricuspis	5	100	SG			5						
Einadia nutans	0.1	10	FG					0.1				
Vittadinia cuneata var. cuneata	0.1	1	FG					0.1				
Sclerolaena stelligera	0.1	1	SG			0.1						
Salsola australis	0.1	1	SG			0.1						
Daucus glochidiatus	0.1	20	FG					0.1				
Maireana pentagona	0.1	5	FG					0.1				
Calotis hispidula	0.1	10	FG					0.1				
*Medicago laciniata**	0.6	1000	EX								0.6	
Sclerolaena brachyptera	0.1	2	SG			0.1						
Rhagodia spinescens	0.2	1	SG			0.2						
*Spergularia rubra**	0.1	10	EX								0.1	

Northing	6121769
Orientation	295
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	N/A
50-79	N/A
30-49	N/A
20-29	N/A
10-19	N/A
5-9	N/A
<5	N/A
Hollows	N/A
Length logs (m)	N/A
Attributes 1x1 plot (%)	
Litter (%)	N/A

D2.29 PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Derived)

VNI_MP28

Date	13/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP28		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	170		9	6	0	3	1	2	0	0	3	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	58.7	40.7	0	30.1	10	0.6	0	0	18	0	
*Hordeum leporinum**	15	250	EX								15		
Austrostipa scabra	10	280	GG				10						
*Medicago praecox**	2	250	EX								2		
*Marrubium vulgare**	1	50	EX								1		
Maireana brevifolia	25	50	SG			25							
Enchylaena tomentosa	5	25	SG			5							
Vittadinia cuneata	0.5	100	FG					0.5					
Calotis scabiosifolia	0.1	10	FG					0.1					
Dissocarpus paradoxus	0.1	5	SG			0.1							

Easting	769234
Northing	6119126
Orientation	226
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_MP29

Date	13/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP29		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	170		12	6	0	4	1	1	0	0	6	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	87.9	42.1	0	41	1	0.1	0	0	45.8	0	
*Hordeum leporinum**	35	250	EX								35		
*Marrubium vulgare**	0.1	10	EX								0.1		
*Medicago praecox**	10	250	EX								10		
Rhagodia spinescens	0.5	5	SG			0.5							
Maireana brevifolia	25	100	SG			25							
*Sisymbrium irio**	0.1	15	EX								0.1		
*Lolium rigidum**	0.1	50	EX								0.1		
Enchylaena tomentosa	15	50	SG			15							
Erodium crinitum	0.1	25	FG					0.1					
Dissocarpus paradoxus	0.5	10	SG			0.5							
*Sonchus oleraceus**	0.5	30	EX								0.5		
Austrostipa scabra	1	100	GG				1						

Easting	769307
Northing	6119317
Orientation	73
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_MP30

Date	13/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54
Plot Name	VNI_MP30		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	170		18	11	0	5	2	4	0	0	7	0	
Condition	Derived		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	65.4	41.5	0	12.2	26	3.3	0	0	23.9	0	
Abutilon spp.	0.1	5	FG					0.1					
Solanum esuriale	0.1	25	FG					0.1					
*Medicago praecox**	5	150	EX								5		
Vittadinia cuneata	3	150	FG					3					
Enteropogon acicularis	1	25	GG				1						
Maireana brevifolia	10	25	SG			10							
Maireana spp.	1	10	SG			1							
Dissocarpus paradoxus	0.1	5	SG			0.1							
*Limonium lobatum**	0.1	5	EX								0.1		
*Avena fatua**	0.5	50	EX								0.5		
*Marrubium vulgare**	0.1	5	EX								0.1		
Senna artemisioides	0.1	1	SG			0.1							
Rhagodia spinescens	1	10	SG			1							
*Hordeum leporinum**	18	200	EX								18		
Austrostipa scabra	25	150	GG				25						
*Lactuca serriola**	0.1	5	EX								0.1		
*Sonchus oleraceus**	0.1	10	EX								0.1		
Rhodanthe corymbiflora	0.1	5	FG					0.1					

Easting	222114
Northing	6119016
Orientation	80
Plot size	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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	1.4

D2.30 PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Thinned)

VNI_NM19

Date	13/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	VNI_NM019		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	170		12	9	2	4	0	3	0	0	3	0
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	71.8	60.8	10.1	45.5	0	5.2	0	0	11	0
Rhagodia spinescens	20	50	SG			20						
*Schismus barbatus**	5	100	EX								5	
Maireana brevifolia	5	100	SG			5						
Einadia nutans	5	100	FG					5				
*Marrubium vulgare**	1	50	EX								1	
Enchylaena tomentosa	20	100	SG			20						
Salsola tragus	0.5	50	SG			0.5						
Vittadinia cuneata	0.1	10	FG					0.1				
Eucalyptus socialis	10	2	TG		10							
Rhodanthe corymbiflora	0.1	1	FG					0.1				
Alectryon oleifolius	0.1	5	TG		0.1							
*Hordeum leporinum**	5	100	EX								5	

54

Easting	221927
Northing	6118906
Orientation	354
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	2
10-19	0
5-9	0
<5	0
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	25

VNI_NM20

Date	13/10/2024		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	VNI_NM020		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	170		15	10	1	6	0	3	0	0	5	0
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	82.8	56.6	10	45.4	0	1.2	0	0	26.2	0
Eucalyptus socialis	10	1	TG		10							
Enchylaena tomentosa	30	50	SG			30						
Rhagodia spinescens	10	20	SG			10						
Einadia nutans	1	50	FG					1				
*Hordeum leporinum**	20	500	EX								20	
*Medicago praecox**	0.1	50	EX								0.1	
*Marrubium vulgare**	1	50	EX								1	
*Schismus barbatus**	5	100	EX								5	
Salsola tragus	0.1	50	SG			0.1						
*Sisymbrium irio**	0.1	10	EX								0.1	
Sclerolaena stelligera	0.1	20	SG			0.1						
Vittadinia spp.	0.1	10	FG					0.1				
Nitraria billardierei	0.2	1	SG			0.2						
Atriplex lindleyi	0.1	20	FG					0.1				
Maireana brevifolia	5	100	SG			5						

55

Easting	222126
Northing	6118965
Orientation	306
Plot size	20 X 50
Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	1
10-19	0
5-9	0
<5	0
Hollows	3
Length logs (m)	41
Attributes 1x1 plot (%)	
Litter (%)	25

D3 Inland Slopes IBRA

D3.1 PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (Thinned)

VNI_DR112

Date	25/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR112		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	76		34	12	1	0	9	2	0	0	22	4	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	68	21.2	5	0	15.9	0.3	0	0	46.8	12.3	
Eucalyptus microcarpa	5	4	TG		5								
*Avena spp.**	1	30	EX								1		
*Bromus catharticus**	2	60	EX								2		
*Echium plantagineum**	5	100	EX								5		
*Lolium perenne**	2	100	EX								2		
*Lolium spp.**	5	1000	EX								5		
*Solanum nigrum**	5	40	EX								5		
*Malva parviflora**	4	60	EX								4		
*Lactuca serriola**	2	40	EX								2		
Cucumis myriocarpus subsp. leptoderma	1	5	EX								1		
*Eragrostis cilianensis**	2	60	EX								2		
*Xanthium spinosum**	0.2	1	HT									0.2	
*Eragrostis curvula**	2	5	HT									2	
*Phalaris canariensis**	1	20	EX								1		
Panicum effusum	5	100	GG				5						
*Hypochaeris radicata**	1	50	EX								1		
Paspalidium constrictum	2	60	GG				2						
*Paspalum dilatatum**	10	80	HT									10	
Sporobolus creber	2	60	GG				2						
Anthosachne scabra	1	40	GG				1						
*Rumex crispus**	0.1	5	EX								0.1		
*Setaria parviflora**	1	100	EX								1		
Euphorbia drummondii	0.1	10	FG					0.1					
Carex inversa	2	700	GG				2						
Eriochloa pseudoacrotricha	2	60	GG				2						
*Romulea rosea var. australis**	0.1	20	HT									0.1	
Austrostipa scabra	0.5	20	GG				0.5						
Oxalis perennans	0.2	20	FG					0.2					
Eragrostis parviflora	1	30	GG				1						
*Conyza spp.**	0.1	10	EX								0.1		
Juncus spp.	0.4	10	GG				0.4						
*Sonchus oleraceus**	0.1	5	EX								0.1		
*Lepidium africanum**	2	100	EX								2		
*Polygonum aviculare**	0.2	30	EX								0.2		

Easting	544038
Northing	6097414
Orientation	340
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	2
50-79	2
30-49	0
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	3
Length logs (m)	8
Attributes 1x1 plot (%)	
Litter (%)	4

D3.2 PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion (Moderate-good)

VNI_DR108

Date	24/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR108		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	266		31	14	2	0	8	4	0	0	17	2	
Condition	Moderate-good		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	46.6	35.1	10.2	0	20.4	4.5	0	0	11.5	1.2	
Eucalyptus albens	10	10	TG		10								
Dysphania pumilio	2	50	FG					2					
*Malva parviflora**	1	20	EX								1		
Panicum effusum	3	10	GG				3						
*Avena spp.**	0.1	5	EX								0.1		
*Polygonum aviculare**	0.4	50	EX								0.4		
*Tribulus terrestris**	0.8	20	EX								0.8		
Xanthium spinosum	0.2	5	HT									0.2	
*Solanum nigrum**	3	20	EX								3		
Einadia nutans	2	40	FG					2					
Paspalidium constrictum	3	30	GG				3						
*Sonchus oleraceus**	0.1	10	EX								0.1		
Bothriochloa macra	3	60	GG				3						
Austrostipa scabra	5	100	GG				5						
Rytidosperma setaceum	5	200	GG				5						
*Lepidium africanum**	0.5	50	EX								0.5		
Portulaca oleracea	0.4	5	FG					0.4					
*Solanum elaeagnifolium**	1	30	HT									1	
*Digitaria sanguinalis**	0.4	10	EX								0.4		
Cucumis myriocarpus subsp. Leptoderm	0.2	10	EX								0.2		
*Cirsium vulgare**	0.2	10	EX								0.2		
*Amaranthus retroflexus**	1	20	EX								1		
*Hordeum leporinum**	0.2	50	EX								0.2		
Chloris truncata	1	50	GG				1						
Rumex brownii	0.1	5	FG					0.1					
Lomandra filiformis subsp. coriacea	0.2	10	GG				0.2						
*Modiola caroliniana**	1	20	EX								1		
Enteropogon acicularis	0.2	5	GG				0.2						
*Eleusine indica**	0.4	10	EX								0.4		
*Setaria parviflora**	1	30	EX								1		
Eucalyptus blakelyi	0.2	1	TG		0.2								

Easting	536616
Northing	6102765
Orientation	164
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	3
50-79	5
30-49	2
20-29	Yes
10-19	No
5-9	Yes
<5	Yes
Hollows	5
Length logs (m)	42
Attributes 1x1 plot (%)	
Litter (%)	39

D3.3 PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion (Thinned)

VNI_DR110

Date	24/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR110		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	266		36	14	2	0	8	4	0	0	22	4	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	71.3	33.4	6	0	25.2	2.2	0	0	37.9	16.2	
Eucalyptus albens	3	1	TG		3								
Callitris glaucophylla	3	1	TG		3								
Dysphania pumilio	1	50	FG					1					
*Lepidium africanum**	1	100	EX								1		
*Echium plantagineum**	5	100	EX								5		
Portulaca oleracea	1	50	FG					1					
*Malva parviflora**	3	500	EX								3		
Cynodon dactylon	10	500	GG				10						
*Plantago lanceolata**	1	20	EX								1		
*Solanum elaeagnifolium**	5	70	HT									5	
Panicum effusum	5	100	GG				5						
*Cirsium vulgare**	2	20	EX								2		
Eriochloa pseudoacrotricha	3	100	GG				3						
Dactyloctenium radulans	3	100	GG				3						
*Alternanthera pungens**	1	50	HT									1	
*Heliotropium europaeum**	2	50	EX								2		
Euphorbia drummondii	0.1	10	FG					0.1					
Bothriochloa macra	1	40	GG				1						
*Marrubium vulgare**	1	20	EX								1		
*Xanthium spinosum**	10	10	HT									10	
*Echinochloa crus-galli**	3	100	EX								3		
*Rumex crispus**	0.4	20	EX								0.4		
*Sonchus oleraceus**	0.1	10	EX								0.1		
*Hypochaeris radicata**	0.8	30	EX								0.8		
*Modiola caroliniana**	0.2	30	EX								0.2		
*Polygonum aviculare**	0.1	20	EX								0.1		
*Tribulus terrestris**	0.8	20	EX								0.8		
*Setaria parviflora**	1	50	EX								1		
*Hordeum leporinum**	0.1	10	EX								0.1		
Chloris truncata	0.2	10	GG				0.2						
Paspalidium spp.	1	30	GG				1						
*Cyperus eragrostis**	0.2	10	HT									0.2	
Oxalis perennans	0.1	10	FG					0.1					
*Conyza sp.**	0.1	5	EX								0.1		
Enteropogon acicularis	2	30	GG				2						
*Centaurea solstitialis**	0.1	10	EX								0.1		

Easting	536930
Northing	6102731
Orientation	110
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	2
30-49	0
20-29	no
10-19	no
5-9	no
<5	no
Hollows	1
Length logs (m)	2
Attributes 1x1 plot (%)	
Litter (%)	2

D3.4 PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (Derived_LCV)

VNI_DR107

Date	24/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR107		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	277		24	10	0	0	6	4	0	0	14	1	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	66	38.2	0	0	26.6	11.6	0	0	27.8	0.5	
Chloris truncata	10	200	GG				10						
*Hypochaeris radicata**	5	100	EX								5		
*Centaurea solstitialis**	1	50	EX								1		
*Eragrostis cilianensis**	5	50	EX								5		
*Bromus molliformis**	1	20	EX								1		
Cynodon dactylon	5	100	GG				5						
Dysphania pumilio	10	500	FG					10					
*Medicago spp.**	1	500	EX								1		
*Echinochloa crus-galli**	10	300	EX								10		
Panicum effusum	10	500	GG				10						
*Setaria parviflora**	1	30	EX								1		
*Polygonum aviculare**	1	50	EX								1		
*Echium plantagineum**	1	20	EX								1		
Portulaca oleracea	1	50	FG					1					
Oxalis perennans	0.5	40	FG					0.5					
*Conyza spp.**	0.1	5	EX								0.1		
Eragrostis parviflora	1	20	GG				1						
*Phalaris canariensis**	1	20	EX								1		
*Xanthium spinosum**	0.5	5	HT									0.5	
*Avena spp.**	0.1	5	EX								0.1		
Juncus spp.	0.2	1	GG				0.2						
Sporobolus creber	0.4	10	GG				0.4						
*Cirsium vulgare**	0.1	5	EX								0.1		
Rumex brownii	0.1	5	FG					0.1					

Easting	537355
Northing	6104131
Orientation	243
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR109

Date	24/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR109		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	277		18	11	0	0	7	4	0	0	7	1	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	64.8	43.4	0	0	41.8	1.6	0	0	21.4	1	
Panicum effusum	15	400	GG				15						
Cynodon dactylon	15	500	GG				15						
*Medicago spp.**	0.1	5	EX								0.1		
*Hypochaeris radicata**	15	1000	EX								15		
Chloris truncata	5	300	GG				5						
Paspalidium constrictum	1	40	GG				1						
Eragrostis elongata	3	50	GG				3						
Erodium crinitum	0.4	30	FG					0.4					
*Echium plantagineum**	5	50	EX								5		
Eragrostis parviflora	0.8	15	GG				0.8						
Bothriochloa macra	2	100	GG				2						
Dysphania pumilio	1	100	FG					1					
Euphorbia drummondii	0.1	10	FG					0.1					
*Acetosa sagittata**	1	40	HT									1	
*Conyza spp.**	0.1	5	EX								0.1		
Portulaca oleracea	0.1	5	FG					0.1					
*Modiola caroliniana**	0.1	5	EX								0.1		
*Cirsium vulgare**	0.1	5	EX								0.1		

Easting	536805
Northing	6102788
Orientation	112
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR111

Date	25/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR111		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	277		24	10	0	0	7	3	0	0	14	2	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	58.7	30.7	0	0	28.2	2.5	0	0	28	5.1	
*Digitaria sanguinalis**	5	200	EX								5		
Panicum effusum	10	500	GG				10						
*Hypochaeris radicata**	3	500	EX								3		
Portulaca oleracea	0.4	20	FG					0.4					
*Eragrostis cilianensis**	3	200	EX								3		
Dysphania pumilio	2	20	FG					2					
*Echium plantagineum**	5	100	EX								5		
*Acetosa sagittata**	5	200	HT									5	
*Polygonum aviculare**	0.2	20	EX								0.2		
*Amaranthus retroflexus**	0.3	10	EX								0.3		
*Modiola caroliniana**	5	20	EX								5		
*Avena spp.**	0.1	5	EX								0.1		
*Conyza spp.**	0.1	1	EX								0.1		
Eragrostis parviflora	1	40	GG				1						
Enteropogon acicularis	1	30	GG				1						
Chloris truncata	1	40	GG				1						
*Setaria parviflora**	1	1	EX								1		
Paspalidium distans	10	500	GG				10						
Cynodon dactylon	5	200	GG				5						
*Bromus molliformis**	0.1	5	EX								0.1		
Rumex brownii	0.1	5	FG					0.1					
Juncus spp.	0.2	2	GG				0.2						
*Xanthium spinosum**	0.1	1	HT									0.1	
*Tribulus terrestris**	0.1	1	EX								0.1		

Easting	543141
Northing	6097627
Orientation	293
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_OZ23

Date	27/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_OZ23		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	277		17	9	0	0	5	4	0	0	8	1	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	89.5	82.9	0	0	81.2	1.7	0	0	6.6	0.1	
Cynodon dactylon	75	10000	GG				75						
*Eragrostis cilianensis**	5	500	EX								5		
*Acetosella vulgaris**	0.1	10	HT									0.1	
*Medicago sp.**	0.1	10	EX								0.1		
Austrostipa spp.	0.1	10	GG				0.1						
*Hypochaeris radicata**	0.5	20	EX								0.5		
Eragrostis spp.	0.1	10	GG				0.1						
Juncus spp.	1	3	GG				1						
Dysphania pumilio	1	200	FG					1					
Paspalidium distans	5	200	GG				5						
Portulaca oleracea	0.5	20	FG					0.5					
*Avena barbata**	0.1	5	EX								0.1		
*Echium plantagineum**	0.5	20	EX								0.5		
Oxalis spp.	0.1	10	FG					0.1					
Rumex brownii	0.1	2	FG					0.1					
*Cirsium vulgare**	0.1	1	EX								0.1		
Cucumis myriocarpus subsp myriocarpus*	0.2	1	EX								0.2		

Easting	539333
Northing	6100286
Orientation	272
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D3.5 PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (Thinned)

VNI_DR113

Date	25/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR113		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	277		19	9	1	0	6	2	0	0	10	0	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	74.8	68.2	15	0	51.8	1.4	0	0	6.6	0	
Eucalyptus blakelyi	15	15	TG		15								
Paspalidium constrictum	1	20	GG				1						
*Bromus catharticus**	2	60	EX								2		
*Echium plantagineum**	1	50	EX								1		
*Digitaria sanguinalis**	1	20	EX								1		
*Solanum nigrum**	1	10	EX								1		
Anthosachne scabra	0.4	10	GG				0.4						
Portulaca oleracea	0.6	20	FG					0.6					
*Eleusine indica**	1	30	EX								1		
Pennisetum spp. (native)	10	200	GG				10						
Dysphania pumilio	0.8	20	FG					0.8					
Panicum effusum	5	50	GG				5						
*Marrubium vulgare**	0.1	5	EX								0.1		
*Cirsium vulgare**	0.1	5	EX								0.1		
Cynodon dactylon	35	2000	GG				35						
*Hypochaeris radicata**	0.1	10	EX								0.1		
*Malva parviflora**	0.2	10	EX								0.2		
*Amaranthus retroflexus**	0.1	5	EX								0.1		
Enteropogon acicularis	0.4	10	GG				0.4						

Easting	539777
Northing	6099976
Orientation	95
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	9
50-79	8
30-49	6
20-29	No
10-19	No
5-9	No
<5	No
Hollows	25
Length logs (m)	2
Attributes 1x1 plot (%)	
Litter (%)	49

VNI_OZ19

Date	24/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_OZ19		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	277		30	16	2	0	8	6	0	0	14	3	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	58.9	37.4	8	0	27.1	2.3	0	0	21.5	8	
Eucalyptus melliodora	5	1	TG		5								
Eucalyptus blakelyi	3	2	TG		3								
Panicum effusum	3	300	GG				3						
*Hypochaeris radicata**	5	500	EX								5		
*Acetosella vulgaris**	2	500	HT									2	
Chloris truncata	3	300	GG				3						
*Echium plantagineum**	1	100	EX								1		
Oxalis spp.	0.1	10	FG					0.1					
Eragrostis spp.	2	150	GG				2						
Vittadinia gracilis	0.5	15	FG					0.5					
Austrostipa spp.	3	200	GG				3						
*Vulpia myuros**	0.5	100	EX								0.5		
Portulaca oleracea	0.5	30	FG					0.5					
Rumex brownii	0.1	1	FG					0.1					
Cynodon dactylon	1	200	GG				1						
Dysphania pumilio	1	50	FG					1					
Cucumis myriocarpus subsp myriocarpus*	0.2	1	EX								0.2		
Eragrostis elongata	5	300	GG				5						
*Solanum nigrum**	1	20	EX								1		
*Euphorbia drummondii**	0.1	5	FG					0.1					
*Enteropogon acicularis**	10	500	GG				10						
*Xanthium spinosum**	3	100	HT									3	
*Solanum elaeagnifolium**	3	20	HT									3	
*Tribulus terrestris**	0.5	30	EX								0.5		
*Heliotropium europaeum**	0.2	2	EX								0.2		
*Centaurea solstitialis**	1	20	EX								1		
*Marrubium vulgare**	3	20	EX								3		
*Malva parviflora**	1	50	EX								1		
*Lepidium africanum**	0.1	1	EX								0.1		
Bothriochloa macra	0.1	3	GG				0.1						

Easting	536696
Northing	6102909
Orientation	28
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	1
30-49	1
20-29	No
10-19	No
5-9	No
<5	Yes
Hollows	1
Length logs (m)	1
Attributes 1x1 plot (%)	
Litter (%)	4.8

D3.6 PCT 319 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (Derived_LCV)

VNI_DR114

Date	25/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR114		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	319		23	17	0	0	11	5	1	0	6	2	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	56.5	51.2	0	0	49.1	1.1	1	0	5.3	3.1	
Bothriochloa macra	25	600	GG				25						
Aristida ramosa	10	500	GG				10						
Paspalidium constrictum	0.4	20	GG				0.4						
*Romulea rosea var. australis**	0.1	10	HT									0.1	
Digitaria brownii	1	30	GG				1						
Digitaria divaricatissima	1	20	GG				1						
Cheilanthes sieberi	1	70	EG						1				
*Acetosa sagittata**	3	400	HT									3	
*Hypochaeris radicata**	1	40	EX								1		
Eragrostis elongata	5	300	GG				5						
Portulaca oleracea	0.4	20	FG					0.4					
Rytidosperma spp.	0.3	20	GG				0.3						
Wahlenbergia communis	0.1	5	FG					0.1					
Aristida vagans	5	40	GG				5						
Oxalis perennans	0.1	10	FG					0.1					
Euphorbia drummondii	0.1	10	FG					0.1					
*Digitaria sanguinalis**	1	20	EX								1		
Enteropogon acicularis	0.4	20	GG				0.4						
Dysphania pumilio	0.4	20	FG					0.4					
Chloris truncata	0.6	20	GG				0.6						
Eragrostis brownii	0.4	20	GG				0.4						
*Conyza spp.**	0.1	5	EX								0.1		
*Avena spp.**	0.1	10	EX								0.1		

Easting	540250
Northing	6099596
Orientation	16
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_DR116PL

Date	26/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR116_PL		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	319		25	15	0	0	10	4	1	0	10	3	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	64.8	60.6	0	0	59.6	0.9	0.1	0	4.2	1.4	
Digitaria divaricatissima	10	500	GG				10						
Bothriochloa macra	15	500	GG				15						
Euphorbia drummondii	0.1	20	FG					0.1					
*Hypochaeris radicata**	1	100	EX								1		
Rytidosperma fulvum	1	30	GG				1						
Panicum effusum	10	300	GG				10						
Paspalidium gracile	2	50	GG				2						
Romulea rosea var. australis	0.1	10	HT									0.1	
*Medicago spp.**	0.1	10	EX								0.1		
*Avena spp.**	0.1	10	EX								0.1		
Aristida ramosa	15	1000	GG				15						
*Bromus molliformis**	0.4	20	EX								0.4		
Oxalis perennans	0.1	20	FG					0.1					
Dysphania pumilio	0.6	20	FG					0.6					
*Acetosa sagittata**	0.3	40	HT									0.3	
Eragrostis elongata	0.7	20	GG				0.7						
Digitaria brownii	5	100	GG				5						
Eragrostis leptostachya	0.4	10	GG				0.4						
*Paspalum dilatatum**	1	20	HT									1	
Cheilanthes sieberi	0.1	20	EG						0.1				
Erodium crinitum	0.1	10	FG					0.1					
*Panicum capillare**	0.3	20	EX								0.3		
Eragrostis parviflora	0.5	20	GG				0.5						
*Solanum nigrum**	0.8	1	EX								0.8		
*Chondrilla juncea**	0.1	5	EX								0.1		

Easting	538554
Northing	6100765
Orientation	132
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_OZ20

Date	26/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_OZ20		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	319		14	8	0	0	5	2	1	0	6	2	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	67.8	46.2	0	0	45.8	0.3	0.1	0	21.6	0.3	
Bothriochloa macra	40	2000	GG				40						
*Hypochaeris radicata**	20	2000	EX								20		
Cynodon dactylon	5	200	GG				5						
*Romulea rosea**	0.1	50	HT									0.1	
*Erodium brachycarpum**	1	2000	EX								1		
*Eragrostis spp.**	0.2	50	GG				0.2						
Enteropogon acicularis	0.1	10	GG				0.1						
*Acetosella vulgaris**	0.2	50	HT									0.2	
Eragrostis cilianensis	0.2	20	EX								0.2		
Cheilanthes austrotenuifolia	0.1	5	EG						0.1				
Dysphania pumilio	0.2	20	FG					0.2					
Digitaria spp.	0.5	100	GG				0.5						
*Medicago sp.**	0.1	5	EX								0.1		
Portulaca oleracea	0.1	1	FG					0.1					

Easting	538247
Northing	6101322
Orientation	324
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

D3.7 PCT 319 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (Thinned)

VNI_DR116

Date	26/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR116		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	319		21	13	1	0	10	2	0	0	8	1	
Condition	Thinned		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	37.5	35.2	10	0	23.1	2.1	0	0	2.3	1	
Eucalyptus dealbata	10	7	TG		10								
Digitaria divaricatissima	3	50	GG				3						
Paspalidium gracile	2	30	GG				2						
Rytidosperma racemosum var. racemo	5	100	GG				5						
*Hordeum leporinum**	0.2	80	EX								0.2		
*Hypochaeris radicata**	0.2	20	EX								0.2		
Erodium crinitum	0.1	10	FG					0.1					
Dysphania pumilio	2	30	FG					2					
*Medicago spp.**	0.1	40	EX								0.1		
Panicum effusum	2	20	GG				2						
*Acetosa sagittata**	1	50	HT									1	
Austrostipa scabra	3	200	GG				3						
Juncus spp.	1	3	GG				1						
Chloris truncata	0.4	20	GG				0.4						
*Polygonum aviculare**	0.1	5	EX								0.1		
Eragrostis parviflora	0.7	20	GG				0.7						
*Solanum nigrum**	0.3	1	EX								0.3		
*Chondrilla juncea**	0.1	5	EX								0.1		
Microlaena stipoides var. stipoides	5	1000	GG				5						
*Panicum capillare**	0.3	10	EX								0.3		
Aristida ramosa	1	30	GG				1						

Easting	538514
Northing	6100757
Orientation	216
Plot size	20 X 20 X 50
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)	10
Attributes 1x1 plot (%)	
Litter (%)	70

D3.8 PCT 343 – Mugga Ironbark – Red Box – Red Stringybark – Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta – Gundagai region, NSW South Western Slopes Bioregion (Derived_LCV)

VNI_DR117

Date	26/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR117		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	343		14	11	0	1	8	2	0	0	3	0	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	76.5	74.4	0	20	53	1.4	0	0	2.1	0	
Acacia genistifolia	20	50	SG			20							
Panicum simile	40	500	GG				40						
Dysphania pumilio	1	30	FG					1					
*Bromus molliformis**	1	30	EX								1		
Eragrostis brownii	1	40	GG				1						
Bothriochloa macra	5	100	GG				5						
Oxalis perennans	0.4	40	FG					0.4					
Panicum effusum	1	20	GG				1						
Eragrostis elongata	1	30	GG				1						
*Hypochaeris radicata**	1	30	EX								1		
Digitaria divaricatissima	2	30	GG				2						
Aristida ramosa	2	30	GG				2						
Digitaria brownii	1	30	GG				1						
*Conyza spp.**	0.1	10	EX								0.1		

Easting	540686
Northing	6099205
Orientation	115
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	5

VNI_DR118

Date	27/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_DR118		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	343		18	8	0	0	7	1	0	0	10	2	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	57.7	34.8	0	0	33.8	1	0	0	22.9	3.1	
Paspalidium constrictum	5	500	GG				5						
Cynodon dactylon	25	2000	GG				25						
Chloris truncata	1	100	GG				1						
Dysphania pumilio	1	100	FG					1					
*Hypochaeris radicata**	2	200	EX								2		
*Echium plantagineum**	2	100	EX								2		
*Xanthium spinosum**	3	20	HT									3	
*Medicago spp.**	3	2000	EX								3		
*Lolium spp.**	2	3000	EX								2		
*Digitaria sanguinalis**	3	400	EX								3		
*Echinochloa crus-galli**	5	300	EX								5		
*Sonchus oleraceus**	0.8	40	EX								0.8		
Eragrostis parviflora	0.4	20	GG				0.4						
*Eragrostis cilianensis**	2	100	EX								2		
Juncus spp.	1	10	GG				1						
Enteropogon acicularis	0.4	20	GG				0.4						
Panicum effusum	1	40	GG				1						
*Acetosa sagittata**	0.1	10	HT									0.1	

Easting	541237
Northing	6098997
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

VNI_OZ22

Date	27/02/2025		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
Plot Name	VNI_OZ22		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
PCT	343		15	8	0	0	6	2	0	0	7	1	
Condition	Derived_LCV		Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
Species	Cover	Abundance	84.1	38.2	0	0	37.1	1.1	0	0	45.9	0.2	
*Eragrostis cilianensis**	30	5000	EX								30		
Panicum effusum	20	2000	GG				20						
Echinochloa colona	5	500	GG				5						
Paspalidium distans	10	1000	GG				10						
*Polygonum aviculare**	5	500	EX								5		
*Hypochaeris radicata**	10	1000	EX								10		
*Medicago sp.**	0.1	10	EX								0.1		
Paspalidium spp.	1	100	GG				1						
*Acetosella vulgaris**	0.2	20	HT									0.2	
*Lolium perenne**	0.1	5	EX								0.1		
Dysphania pumilio	1	50	FG					1					
Eragrostis elongata	1	200	GG				1						
Dactyloctenium radulans	0.1	5	GG				0.1						
*Conyza bonariensis**	0.5	20	EX								0.5		
Euphorbia drummondii	0.1	1	FG					0.1					

Easting	540959
Northing	6099147
Orientation	256
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	No
Hollows	0
Length logs (m)	0
Attributes 1x1 plot (%)	
Litter (%)	0

Appendix E

Credit reports

In accordance with BAM requirements the BAM Biodiversity Credit Reports were finalised on the 23/07/2025 (within the 14 day period of EIS being lodged for exhibition) and are provided here in Appendix E.

The BAM Biodiversity Credit Reports case numbers are:

Murray Fans IBRA sub-region

- Ecosystem and Species Credits – 00053398/BAAS23009/24/00053401 Revision 6
- Scattered Trees – 00053398/BAAS18097/25/00056440 Revision 1.

Inland Slopes IBRA sub-region

- Ecosystem and Species Credits – 00047237/BAAS23009/24/00047238 Revision 7
- Scattered trees – 00047237/BAAS18097/25/00056459 Revision 1.

Murrumbidgee IBRA sub-region

For this region two credit reports are provided with dates of 10/06/2025 and 23/07/2027. The BAM Biodiversity Credit Reports from the 10/06/2025 form part of the assessment for this BDAR. Changes have occurred within the BAM-C late in June as a result of a regulator calculator error. Due to the timing of this error being advised the changes have not been able to be considered for this version of the BDAR. These changes will be considered during the Response to Submission Phase for the project.

The BAM-C report dated 23/07/2025 with changed numbers has been included in this Appendix to meet the requirement of the BAM and the associated calculator finalisation within 14 days of the EIS being lodged for exhibition only.

Finalisation BAM Biodiversity Credit Reports 10/06/2025 (relied upon in this BDAR)

- Ecosystem and Species Credits – 00041510/BAAS19078/25/00054312 – Revision 7
- Scattered trees – 00041510/BAAS18097/25/00056448 Revision 0.

Finalisation BAM Biodiversity Credit Reports 23/07/2025

- Ecosystem and Species Credits – 00041510/BAAS19078/25/00054312 Revision 8
- Scattered Trees – 00041510/BAAS18097/25/00056448 Revision 1.

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00053398/BAAS23009/24/00053401

Proposal Name
VNI Murray Fans

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Assessor Number
BAAS23009

BAM Data version *
Current classification (live - default) (80)

Proponent Names

Report Created
23/07/2025

BAM Case Status
Finalised

Assessment Revision
6

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
23/07/2025

* 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
Prasophyllum sp. Moama / Prasophyllum sp. Moama
Pterostylis despectans / Pterostylis despectans

BAM Biodiversity Credit Report (Like for like)

Additional Information for Approval

PCT Outside Ibra Added

PCT
164-Cotton Bush open shrubland of the semi-arid (warm) zone

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)

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
7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	Not a TEC	4.7	65	0	65
10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	36.2	174	21	195

11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	0.5	4	0	4
13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	160.6	859	640	1499
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	28.3	199	60	259
17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	0.1	0	3	3
28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	0.9	0	4	4
160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Not a TEC	0.2	0	3	3
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Not a TEC	15.8	0	330	330
164-Cotton Bush open shrubland of the semi-arid (warm) zone	Not a TEC	9.0	0	158	158

216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Not a TEC	0.7	0	12	12
237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	0.8	11	0	11
2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW	Not a TEC	0.1	0	2	2
19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	1.6	0	45	45
44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Natural Grasslands of the Murray Valley Plains	10.2	0	509	509
86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion	Not a TEC	0.1	0	3	3

2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362, 4088, 4089	Inland Riverine Forests <50%	2_SVTM	No	2	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

2-River Red Gum-sedge dominated very tall open forest in frequently flooded	
7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	**Like-for-like credit retirement options**

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362, 4088, 4089	Inland Riverine Forests <50%	7_Moderate-good	Yes	65	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362, 4088, 4089	Inland Riverine Forests <50%	10_Derived	No	0	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362, 4088, 4089	Inland Riverine Forests <50%	10_Moderate-good	Yes	95	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362, 4088, 4089	Inland Riverine Forests <50%	10_Thinned	Yes	79	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362, 4088, 4089	Inland Riverine Forests <50%	10_SVTM	No	21	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362, 4088, 4089	Inland Riverine Forests <50%	10_Derived_LCV01	No	0	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362, 4088, 4089	Inland Riverine Forests <50%	11_Moderate-good	Yes	4	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Derived_LCV	No	0	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Moderate-good	Yes	859	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Thinned	No	300	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_SVTM	No	337	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Derived	No	0	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Planted_NatVeg01	No	3	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Derived_LCV	No	0	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Moderate-good	Yes	199	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Thinned	No	27	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_SVTM	No	33	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Derived	No	0	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_Moderate-good	No	3	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	19_SVTM	No	45	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived	No	0	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived_TS	No	4	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	44_SVTM	No	509	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Riverine Sandhill Woodlands This includes PCT's: 19, 20, 21, 22, 23, 28, 48, 75, 86	Riverine Sandhill Woodlands >=70% and <90%	86_Moderate-good	No	3	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_Moderate-good	No	2	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_SVTM	No	1	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

160-Nitre Goosefoot shrubland wetland on clays of

163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_Derived_LCV	No	11	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_Moderate-good	No	293	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_SVTM	No	26	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

164-Cotton Bush open shrubland of the semi-arid (warm) zone

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_Derived_LCV	No	80	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_Moderate-good	No	76	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_SVTM	No	2	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	216_Moderate-good	No	12	Murray Fans, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248, 267, 3405	-	237_Moderate-good	Yes	11	Murray Fans, 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
Amphibromus fluitans / Floating Swamp Wallaby-grass	**11_Moderate-good, 17_Moderate-good, 160_Moderate-good, 2_SVTM**	0.4	11.00
Ardeotis australis / Australian Bustard	**163_Moderate-good, 15_SVTM, 44_SVTM, 163_SVTM**	12.0	570.00
Austrostipa metatoris / A spear-grass	**7_Moderate-good, 28_Derived_TS, 19_SVTM, 28_Derived**	1.2	26.00

Austrostipa wakoolica / A spear-grass	**28_Derived, 28_Derived_TS**	0.4	2.00
Burhinus grallarius / Bush Stone-curlew	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 15_Moderate-good, 15_Thinned, 216_Moderate-good, 2_SVTM, 10_SVTM, 13_SVTM, 15_SVTM**	58.1	1399.00
Eleocharis obicis / Spike-Rush	**10_Derived, 10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 164_Moderate-good, 10_SVTM, 13_SVTM, 163_SVTM, 13_Derived**	29.3	559.00
Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	**13_SVTM, 15_SVTM, 19_SVTM, 86_Moderate-good**	4.0	8.00
Haliaeetus leucogaster / White-bellied Sea-Eagle	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 2_SVTM, 10_SVTM, 13_SVTM, 15_SVTM**	29.8	944.00

Hamirostra melanosternon / Black-breasted Buzzard	**10_Moderate-good, 13_Moderate-good, 10_SVTM, 13_SVTM, 15_SVTM**	2.4	49.00
Hemiaspis damelii / Grey Snake	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 11_Moderate-good, 13_Moderate-good, 13_Thinned, 15_Moderate-good, 15_Thinned, 17_Moderate-good, 2_SVTM, 10_SVTM, 13_SVTM, 15_SVTM, 19_SVTM**	62.0	1478.00
Hieraaetus morphnoides / Little Eagle	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 2_SVTM, 10_SVTM, 13_SVTM, 15_SVTM, 19_SVTM**	41.9	1043.00
Lepidium monoplocoides / Winged Peppercress	**13_Moderate-good, 13_Thinned, 13_SVTM, 15_SVTM, 163_SVTM, 13_Derived**	28.4	609.00

Litoria raniformis / Southern Bell Frog	**7_Moderate-good, 10_Derived, 10_Moderate-good, 10_Thinned, 11_Moderate-good, 13_Derived_LCV, 13_Moderate-good, 13_Thinned, 15_Derived_LCV, 15_Moderate-good, 15_Thinned, 160_Moderate-good, 163_Moderate-good, 237_Moderate-good, 13_SVTM, 44_SVTM, 13_Derived, 15_Derived, 163_Derived_LCV, 13_Planted_NatVeg01**	9.8	213.00
Lophochroa leadbeateri / Pink Cockatoo	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 2_SVTM, 10_SVTM, 13_SVTM, 15_SVTM, 19_SVTM**	43.7	1470.00
Lophoictinia isura / Square-tailed Kite	**10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 2_SVTM, 10_SVTM, 13_SVTM, 15_SVTM**	38.9	986.00

Maireana cheelii / Chariot Wheels	**164_Moderate-good, 44_SVTM**	10.0	500.00
Myotis macropus / Southern Myotis	**7_Moderate-good, 10_Derived, 10_Moderate-good, 10_Thinned, 11_Moderate-good, 237_Moderate-good, 2_SVTM, 10_SVTM**	20.7	333.00
Ninox connivens / Barking Owl	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 15_Moderate-good, 15_Thinned, 2_SVTM, 10_SVTM, 13_SVTM, 15_SVTM**	51.8	1659.00
Phascolarctos cinereus / Koala	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 11_Moderate-good, 13_Moderate-good, 13_Thinned, 15_Moderate-good, 15_Thinned, 237_Moderate-good, 2_SVTM, 10_SVTM, 13_SVTM, 15_SVTM**	145.3	3330.00

Pilularia novae-hollandiae / Austral Pillwort	**13_Moderate-good, 13_Thinned, 15_Moderate-good, 2_SVTM, 13_SVTM, 15_SVTM, 44_SVTM, 13_Derived, 13_Planted_NatVeg01**	41.6	1165.00
Polytelis swainsonii / Superb Parrot	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 13_Planted_NatVeg01**	25.2	539.00
Prasophyllum sp. Moama / Prasophyllum sp. Moama	**44_SVTM**	9.9	741.00
Pterostylis despectans / Pterostylis despectans	**44_SVTM**	9.9	741.00
Tyto novaehollandiae / Masked Owl	**7_Moderate-good, 10_Moderate-good, 10_Thinned, 13_Moderate-good, 13_Thinned, 10_SVTM, 13_SVTM**	45.6	1430.00

Credit Retirement Options

Like-for-like credit retirement options

Amphibromus fluitans / Floating Swamp Wallaby-grass	Spp	IBRA subregion
	Amphibromus fluitans / Floating Swamp Wallaby-grass	Any in NSW

Ardeotis australis / Australian Bustard	Spp	IBRA subregion
	Ardeotis australis / Australian Bustard	Any in NSW
Austrostipa metatoris / A spear-grass	Spp	IBRA subregion
	Austrostipa metatoris / A spear-grass	Any in NSW
Austrostipa wakoolica / A spear-grass	Spp	IBRA subregion
	Austrostipa wakoolica / A spear-grass	Any in NSW
Burhinus grallarius / Bush Stone-curlew	Spp	IBRA subregion
	Burhinus grallarius / Bush Stone-curlew	Any in NSW
Eleocharis obicis / Spike-Rush	Spp	IBRA subregion
	Eleocharis obicis / Spike-Rush	Any in NSW
Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	Spp	IBRA subregion
	Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	Any in NSW
Haliaeetus leucogaster / White-bellied Sea-Eagle	Spp	IBRA subregion

	Haliaeetus leucogaster / White-bellied Sea-Eagle	Any in NSW
Hamirostra melanosternon / Black-breasted Buzzard	Spp	IBRA subregion
	Hamirostra melanosternon / Black-breasted Buzzard	Any in NSW
Hemiaspis damelii / Grey Snake	Spp	IBRA subregion
	Hemiaspis damelii / Grey Snake	Any in NSW
Hieraaetus morphnoides / Little Eagle	Spp	IBRA subregion
	Hieraaetus morphnoides / Little Eagle	Any in NSW
Lepidium monoplocoides / Winged Peppercress	Spp	IBRA subregion
	Lepidium monoplocoides / Winged Peppercress	Any in NSW
Litoria raniformis / Southern Bell Frog	Spp	IBRA subregion
	Litoria raniformis / Southern Bell Frog	Any in NSW
Lophochroa leadbeateri / Pink Cockatoo	Spp	IBRA subregion
	Lophochroa leadbeateri / Pink Cockatoo	Any in NSW

Lophoictinia isura / Square-tailed Kite	Spp	IBRA subregion
	Lophoictinia isura / Square-tailed Kite	Any in NSW
Maireana cheelii / Chariot Wheels	Spp	IBRA subregion
	Maireana cheelii / Chariot Wheels	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
Phascolarctos cinereus / Koala	Spp	IBRA subregion
	Phascolarctos cinereus / Koala	Any in NSW
Pilularia novae-hollandiae / Austral Pillwort	Spp	IBRA subregion
	Pilularia novae-hollandiae / Austral Pillwort	Any in NSW
Polytelis swainsonii / Superb Parrot	Spp	IBRA subregion

	Polytelis swainsonii / Superb Parrot	Any in NSW
Prasophyllum sp. Moama / Prasophyllum sp. Moama	Spp	IBRA subregion
	Prasophyllum sp. Moama / Prasophyllum sp. Moama	Any in NSW
Pterostylis despectans / Pterostylis despectans	Spp	IBRA subregion
	Pterostylis despectans / Pterostylis despectans	Any in NSW
Tyto novaehollandiae / Masked Owl	Spp	IBRA subregion
	Tyto novaehollandiae / Masked Owl	Any in NSW

BAM Candidate Species Report

Proposal Details

Assessment Id 00053398/BAAS23009/24/00053401	Proposal Name VNI Murray Fans	BAM data last updated * 28/10/2024
Assessor Name Devon T Raiff	Report Created 23/07/2025	BAM Data version * Current classification (live - default) (80)
Assessor Number BAAS23009	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 6	BOS entry trigger	Date Finalised 23/07/2025

* 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
Amphibromus fluitans Floating Swamp Wallaby-grass	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ardeotis australis Australian Bustard	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Austrostipa metatoris A spear-grass	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Austrostipa wakoolica A spear-grass	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	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eleocharis obicis Spike-Rush	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?
Eucalyptus leucoxylon subsp. pruinosa Yellow Gum	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hamirostra melanosternon Black-breasted Buzzard	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Hemiaspis damelii Grey Snake	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lepidium monoplocoides Winged Peppercress	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Litoria raniformis Southern Bell 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?
Lophochroa leadbeateri Pink Cockatoo	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Maireana cheelii Chariot Wheels	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Myotis macropus Southern Myotis	Yes (assumed present)	☐ 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?
Petaurus norfolcensis Squirrel Glider	No (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascogale tapoatafa Brush-tailed Phascogale	No (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pilularia novae-hollandiae Austral Pillwort	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis swainsonii Superb Parrot	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Prasophyllum sp. Moama Prasophyllum sp. Moama	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pterostylis despectans Pterostylis despectans	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 (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

Common Name	Scientific Name
Spike-Rush	Eleocharis obicis
Grey Snake	Hemiaspis damelii

Threatened species assessed as not on site

Refer to BAR for detailed justification

BAM Candidate Species Report

Common name	Scientific name	Justification in the BAM-C
Claypan Daisy	Brachyscome muelleroides	Refer to BAR
Plains-wanderer	Pedionomus torquatus	Habitat constraints
Red Darling Pea	Swainsona plagiotropis	Refer to BAR
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	Refer to BAR
Silky Swainson-pea	Swainsona sericea	Refer to BAR
Slender Darling Pea	Swainsona murrayana	Refer to BAR
Sloane's Froglet	Crinia sloanei	Habitat degraded
Small Scurf-pea	Cullen parvum	Refer to BAR
Swift Parrot	Lathamus discolor	Habitat constraints
Turnip Copperburr	Sclerolaena napiformis	Refer to BAR

BAM Credit Summary Report

Proposal Details

Assessment Id
00053398/BAAS23009/24/00053401

Proposal Name
VNI Murray Fans

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Report Created
23/07/2025

BAM Data version *
Current classification (live - default) (80)

Assessor Number
BAAS23009

BAM Case Status
Finalised

Date Finalised
23/07/2025

Assessment Revision
6

BOS entry trigger

Assessment Type
Major Projects

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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
Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
6	13_Derived_LCV	Not a TEC	12.6	12.6	49.3	PCT Cleared - 57%	Low Sensitivity to Gain			1.25		0

7	13_Moderate-good	Not a TEC	56.2	46.1	59.7	PCT Cleared - 57%	Low Sensitivity to Gain			1.25		859
8	13_Thinned	Not a TEC	52.5	43.7	22	PCT Cleared - 57%	Low Sensitivity to Gain			1.25		300
24	13_SVTM	Not a TEC	100	75.3	14.4	PCT Cleared - 57%	Low Sensitivity to Gain			1.25		337
31	13_Derived	Not a TEC	8.7	8.7	15.1	PCT Cleared - 57%	Low Sensitivity to Gain			1.25		0
34	13_Planted_NatVeg01	Not a TEC	70.2	48.1	0.2	PCT Cleared - 57%	Low Sensitivity to Gain			1.25		3
											Subtotal	**1499**
Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
9	15_Derived_LCV	Not a TEC	6.7	6.7	6.4	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		0
10	15_Moderate-good	Not a TEC	72.3	51.1	12.4	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		199
11	15_Thinned	Not a TEC	37.5	32.7	2.6	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		27

25	15_SVTM	Not a TEC	100	67.7	1.6	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		33
32	15_Derived	Not a TEC	12	12.0	5.2	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		0
											Subtotal	**259**
Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion												
20	216_Moderate-good	Not a TEC	75.3	75.3	0.66	PCT Cleared - 0%	Low Sensitivity to Gain			1.00		12
											Subtotal	**12**
Cotton Bush open shrubland of the semi-arid (warm) zone												
18	164_Derived_LCV	Not a TEC	58.7	58.7	5.5	PCT Cleared - 8%	Low Sensitivity to Gain			1.00		80
19	164_Moderate-good	Not a TEC	87.6	87.6	3.5	PCT Cleared - 8%	Low Sensitivity to Gain			1.00		76
30	164_SVTM	Not a TEC	100	100.0	0.09	PCT Cleared - 8%	Low Sensitivity to Gain			1.00		2
											Subtotal	**158**

Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains												
26	19_SVTM	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	100	56.1	1.6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		45
											Subtotal	**45**
Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones												
16	163_Derived_LCV	Not a TEC	62.7	62.7	0.68	PCT Cleared - 26%	Low Sensitivity to Gain			1.00		11
17	163_Moderate-good	Not a TEC	83.2	83.2	14.1	PCT Cleared - 26%	Low Sensitivity to Gain			1.00		293
29	163_SVTM	Not a TEC	100	100.0	1	PCT Cleared - 26%	Low Sensitivity to Gain			1.00		26
											Subtotal	**330**

Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion												
27	44_SVTM	Natural Grasslands of the Murray Valley Plains	100	100.0	10.2	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Critically Endangered	2.00		509
											Subtotal	**509**
Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
12	17_Moderate-good	Not a TEC	64.8	64.8	0.14	PCT Cleared - 63%	Low Sensitivity to Gain			1.25		3
											Subtotal	**3**
Nitre Goosefoot shrubland wetland on clays of the inland floodplains												
15	160_Moderate-good	Not a TEC	46.2	46.2	0.14	PCT Cleared - 28%	Low Sensitivity to Gain			1.00		2
28	160_SVTM	Not a TEC	100	100.0	0.04	PCT Cleared - 28%	Low Sensitivity to Gain			1.00		1
											Subtotal	**3**

River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
2	10_Derived	Not a TEC	8.7	8.7	3.5	PCT Cleared - 43%	Low Sensitivity to Gain			1.00		0
3	10_Moderate-good	Not a TEC	31.3	28.2	13.5	PCT Cleared - 43%	Low Sensitivity to Gain			1.00		95
4	10_Thinned	Not a TEC	28	24.9	12.7	PCT Cleared - 43%	Low Sensitivity to Gain			1.00		79
23	10_SVTM	Not a TEC	100	60.5	1.4	PCT Cleared - 43%	Low Sensitivity to Gain			1.00		21
33	10_Derived_LCV01	Not a TEC	9	9.0	5.2	PCT Cleared - 43%	Low Sensitivity to Gain			1.00		0
											Subtotal	**195**
River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
5	11_Moderate-good	Not a TEC	42.3	30.1	0.49	PCT Cleared - 42%	Low Sensitivity to Gain			1.00		4
											Subtotal	**4**

River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion												
1	7_Moderate-good	Not a TEC	74.7	55.4	4.7	PCT Cleared - 15%	Low Sensitivity to Gain			1.00		65
											Subtotal	**65**
River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW												
22	2_SVTM	Not a TEC	100	55.1	0.12	PCT Cleared - 14%	Low Sensitivity to Gain			1.00		2
											Subtotal	**2**
Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone												
21	237_Moderate-good	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	64	36.4	0.84	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		11
											Subtotal	**11**

White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone												
13	28_Derived	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	6.1	6.1	0.2	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		0
14	28_Derived_TS	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	37.5	14.1	0.67	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		4
											Subtotal	**4**
Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion												
35	86_Moderate-good	Not a TEC	100	100.0	0.05	PCT Cleared - 75%	High Sensitivity to Gain			2.00		3
											Subtotal	**3**
											Total	**3102**

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
Amphibromus fluitans / Floating Swamp Wallaby-grass (Flora)									
11_Moderate-good	30.1	30.1	0.13	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	2
17_Moderate-good	64.8	64.8	0.14	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	5
160_Moderate-good	46.2	46.2	0.14	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	3
2_SVTM	55.1	55.1	0.02	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1
								Subtotal	**11**

Ardeotis australis / Australian Bustard (Fauna)									
163_Moderate-good	83.2	83.2	0.37	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	15
15_SVTM	67.7	67.7	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	53
44_SVTM	100.0	100.0	9.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	477
163_SVTM	100.0	100.0	0.49	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	25
								Subtotal	**570**
Austrostipa metatoris / A spear-grass (Flora)									
7_Moderate-good	55.4	55.4	0.31	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	9

28_Derived_TS	14.1	14.1	0.19	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	1
19_SVTM	56.1	56.1	0.54	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	15
28_Derived	6.1	6.1	0.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	1
								Subtotal	**26**
Austrostipa wakoolica / A spear-grass (Flora)									
28_Derived	6.1	6.1	0.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1
28_Derived_TS	14.1	14.1	0.19	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1
								Subtotal	**2**

Burhinus grallarius / Bush Stone-curlew (Fauna)									
7_Moderate-good	55.4	55.4	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	31
10_Moderate-good	28.2	28.2	4.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	69
10_Thinned	24.9	24.9	11.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	139
13_Moderate-good	46.1	46.1	15.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	348
13_Thinned	43.7	43.7	5.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	111

15_Moderate-good	51.1	51.1	3.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	84
15_Thinned	32.7	32.7	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	19
216_Moderate-good	75.3	75.3	0.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	23
2_SVTM	55.1	55.1	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	3
10_SVTM	60.5	60.5	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	34
13_SVTM	75.3	75.3	12.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	485

15_SVTM	67.7	67.7	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	53
								Subtotal	**1399**
Eleocharis obicis / Spike-Rush (Flora)									
10_Derived	8.7	8.7	2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	9
10_Moderate-good	28.2	28.2	0.41	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	6
10_Thinned	24.9	24.9	4.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	52
13_Moderate-good	46.1	46.1	1.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	26

13_Thinned	43.7	43.7	2.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	52
164_Moderate-good	87.6	87.6	0.93	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	41
10_SVTM	60.5	60.5	0.37	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	11
13_SVTM	75.3	75.3	7.8	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	295
163_SVTM	100.0	100.0	0.49	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	25
13_Derived	8.7	8.7	9.6	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	42

								Subtotal	**559**
Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum (Flora)									
13_SVTM	N/A	N/A	1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2
15_SVTM	N/A	N/A	1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2
19_SVTM	N/A	N/A	1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2
86_Moderate-good	N/A	N/A	1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2
								Subtotal	**8**
Haliaeetus leucogaster / White-bellied Sea-Eagle (Fauna)									
7_Moderate-good	74.7	74.7	1.1	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	42
10_Moderate-good	31.3	31.3	2.2	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	35

10_Thinned	28.0	28.0	5.9	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	83
13_Moderate-good	56.2	56.2	1.8	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	51
13_Thinned	52.5	52.5	8.5	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	223
2_SVTM	100.0	100.0	0.12	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	6
10_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	57
13_SVTM	100.0	100.0	8.4	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	422
15_SVTM	100.0	100.0	0.5	Biodiversity Conservation Act listing status	Fecundity – age at which females first produce	Vulnerable	Not Listed	False	25
								Subtotal	**944**

Hamirostra melanosternon / Black-breasted Buzzard (Fauna)									
10_Moderate-good	31.3	31.3	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	19
13_Moderate-good	56.2	56.2	0.02	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	1
10_SVTM	100.0	100.0	0.55	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	21
13_SVTM	100.0	100.0	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	5
15_SVTM	100.0	100.0	0.09	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	3
								Subtotal	**49**

Hemiaspis damelii / Grey Snake (Fauna)									
7_Moderate-good	55.4	55.4	1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	28
10_Moderate-good	28.2	28.2	2.9	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	41
10_Thinned	24.9	24.9	3.7	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	46
11_Moderate-good	30.1	30.1	0.13	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	2
13_Moderate-good	46.1	46.1	26.8	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	618

13_Thinned	43.7	43.7	12	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	261
15_Moderate-good	51.1	51.1	5.7	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	145
15_Thinned	32.7	32.7	0.97	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	16
17_Moderate-good	64.8	64.8	0.13	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	4
2_SVTM	55.1	55.1	0.02	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	1
10_SVTM	60.5	60.5	0.29	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	9

13_SVTM	75.3	75.3	7.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	280
15_SVTM	67.7	67.7	0.35	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	12
19_SVTM	56.1	56.1	0.54	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	15
								Subtotal	**1478**
Hieraaetus morphnoides / Little Eagle (Fauna)									
7_Moderate-good	74.7	74.7	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	31
10_Moderate-good	31.3	31.3	1.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	23

10_Thinned	28.0	28.0	9.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	101
13_Moderate-good	56.2	56.2	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	59
13_Thinned	52.5	52.5	9.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	178
2_SVTM	100.0	100.0	0.09	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	3
10_SVTM	100.0	100.0	0.36	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	14
13_SVTM	100.0	100.0	14	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	527

15_SVTM	100.0	100.0	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	47
19_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	60
								Subtotal	**1043**
Lepidium monoplocoides / Winged Peppercress (Flora)									
13_Moderate-good	46.1	46.1	7.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	167
13_Thinned	43.7	43.7	2.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	57
13_SVTM	75.3	75.3	7.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	295

15_SVTM	67.7	67.7	0.67	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	23
163_SVTM	100.0	100.0	0.49	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	25
13_Derived	8.7	8.7	9.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	42
								Subtotal	**609**
Litoria raniformis / Southern Bell Frog (Fauna)									
7_Moderate-good	55.4	55.4	0.82	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	23
10_Derived	8.7	8.7	0.15	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	1

10_Moderate-good	28.2	28.2	0.75	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	11
10_Thinned	24.9	24.9	0.01	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	1
11_Moderate-good	30.1	30.1	0.11	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	2
13_Derived_LCV	12.6	12.6	0.18	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	1
13_Moderate-good	46.1	46.1	0.71	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	16
13_Thinned	43.7	43.7	0.41	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	9

15_Derived_LCV	6.7	6.7	0.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	3
15_Moderate-good	51.1	51.1	1.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	35
15_Thinned	32.7	32.7	0.08	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	1
160_Moderate-good	46.2	46.2	0.14	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	3
163_Moderate-good	83.2	83.2	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	89
237_Moderate-good	36.4	36.4	0.07	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	1

13_SVTM	75.3	75.3	0.02	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	1
44_SVTM	100.0	100.0	0.04	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	2
13_Derived	8.7	8.7	0.19	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	1
15_Derived	12.0	12.0	1.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	9
163_Derived_LCV	62.7	62.7	0.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	3
13_Planted_NatVeg01	48.1	48.1	0.06	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	1

								Subtotal	213
Lophochroa leadbeateri / Pink Cockatoo (Fauna)									
7_Moderate-good	74.7	74.7	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	41
10_Moderate-good	31.3	31.3	2.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	35
10_Thinned	28.0	28.0	9.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	135
13_Moderate-good	56.2	56.2	2.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	80
13_Thinned	52.5	52.5	9.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	239
2_SVTM	100.0	100.0	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	6

10_SVTM	100.0	100.0	1.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	70
13_SVTM	100.0	100.0	14.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	705
15_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	79
19_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	80
								Subtotal	**1470**
Lophoictinia isura / Square-tailed Kite (Fauna)									
10_Moderate-good	31.3	31.3	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	26
10_Thinned	28.0	28.0	7.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	80

13_Moderate-good	56.2	56.2	2.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	61
13_Thinned	52.5	52.5	9.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	178
2_SVTM	100.0	100.0	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	5
10_SVTM	100.0	100.0	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	48
13_SVTM	100.0	100.0	14.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	529
15_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	59

								Subtotal	**986**
Maireana cheelii / Chariot Wheels (Flora)									
164_Moderate-good	87.6	87.6	0.14	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	6
44_SVTM	100.0	100.0	9.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	494
								Subtotal	**500**
Myotis macropus / Southern Myotis (Fauna)									
7_Moderate-good	55.4	55.4	3.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	90
10_Derived	8.7	8.7	2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	9
10_Moderate-good	28.2	28.2	10.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	145
10_Thinned	24.9	24.9	3.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	41

11_Moderate-good	30.1	30.1	0.02	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1
237_Moderate-good	36.4	36.4	0.55	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	10
2_SVTM	55.1	55.1	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	3
10_SVTM	60.5	60.5	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	34
								Subtotal	**333**
Ninox connivens / Barking Owl (Fauna)									
7_Moderate-good	74.7	74.7	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	41
10_Moderate-good	31.3	31.3	1.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22

10_Thinned	28.0	28.0	10	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	140
13_Moderate-good	56.2	56.2	14.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	402
13_Thinned	52.5	52.5	4.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	129
15_Moderate-good	72.3	72.3	3.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	118
15_Thinned	37.5	37.5	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	21
2_SVTM	100.0	100.0	0.12	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	6
10_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	57

13_SVTM	100.0	100.0	12.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	644
15_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	79
								Subtotal	**1659**
Phascolarctos cinereus / Koala (Fauna)									
7_Moderate-good	55.4	55.4	4.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	129
10_Moderate-good	28.2	28.2	13.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	190
10_Thinned	24.9	24.9	12.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	158

11_Moderate-good	30.1	30.1	0.48	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	7
13_Moderate-good	46.1	46.1	58.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1352
13_Thinned	43.7	43.7	22	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	480
15_Moderate-good	51.1	51.1	12.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	318
15_Thinned	32.7	32.7	2.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	43
237_Moderate-good	36.4	36.4	0.84	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	15

2_SVTM	55.1	55.1	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3
10_SVTM	60.5	60.5	1.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	42
13_SVTM	75.3	75.3	14.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	540
15_SVTM	67.7	67.7	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	53
								Subtotal	**3330**
Pilularia novae-hollandiae / Austral Pillwort (Flora)									
13_Moderate-good	46.1	46.1	7.7	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	177

13_Thinned	43.7	43.7	5.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	113
15_Moderate-good	51.1	51.1	0.72	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	18
2_SVTM	55.1	55.1	0.02	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	1
13_SVTM	75.3	75.3	7.9	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	296
15_SVTM	67.7	67.7	0.67	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	23
44_SVTM	100.0	100.0	9.9	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	494

13_Derived	8.7	8.7	9.6	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	42
13_Planted_Nat Veg01	48.1	48.1	0.06	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	1
								Subtotal	**1165**
Polytelis swainsonii / Superb Parrot (Fauna)									
7_Moderate-good	74.7	74.7	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	41
10_Moderate-good	31.3	31.3	2.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	35
10_Thinned	28.0	28.0	9.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	135
13_Moderate-good	56.2	56.2	2.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	82

13_Thinned	52.5	52.5	9.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	239
13_Planted_Nat Veg01	70.2	70.2	0.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	7
								Subtotal	**539**
Prasophyllum sp. Moama / Prasophyllum sp. Moama (Flora)									
44_SVTM	100.0	100.0	9.9	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Critically Endangered	Not Listed	True	741
								Subtotal	**741**
Pterostylis despectans / Pterostylis despectans (Flora)									
44_SVTM	100.0	100.0	9.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Endangered	True	741
								Subtotal	**741**
Tyto novaehollandiae / Masked Owl (Fauna)									
7_Moderate-good	74.7	74.7	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	41

10_Moderate-good	31.3	31.3	1.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	22
10_Thinned	28.0	28.0	10	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	140
13_Moderate-good	56.2	56.2	14.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	402
13_Thinned	52.5	52.5	4.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	129
10_SVTM	100.0	100.0	1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	52
13_SVTM	100.0	100.0	12.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	644
								Subtotal	**1430**

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00053398/BAAS23009/24/00053401	VNI Murray Fans	28/10/2024
Assessor Name	**Report Created**	**BAM Data version ***
Devon T Raiff	23/07/2025	Current classification (live - default) (80)
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS23009	Major Projects	Finalised
Assessment Revision	**BOS entry trigger**	**Date Finalised**
6		23/07/2025

* 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	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Australian Painted Snipe	Rostratula australis	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Australian Painted Snipe	Rostratula australis	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
Black Falcon	Falco subniger	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Black Falcon	Falco subniger	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
Black-breasted Buzzard	Hamirostra melanosternon	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Blue-billed Duck	Oxyura australis	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Blue-winged Parrot	Neophema chrysostoma	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Blue-winged Parrot	Neophema chrysostoma	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
Brolga	Grus rubicunda	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
Corben's Long-eared Bat	Nyctophilus corbeni	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Corben's Long-eared Bat	Nyctophilus corbeni	2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Diamond Firetail	Stagonopleura guttata	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Dusky Woodswallow	Artamus cyanopterus cyanopterus	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Dusky Woodswallow	Artamus cyanopterus cyanopterus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Flame Robin	Petroica phoenicea	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
Freckled Duck	Stictonetta naevosa	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Freckled Duck	Stictonetta naevosa	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
Gilbert's Whistler	Pachycephala inornata	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
Grey Falcon	Falco hypoleucos	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Grey Falcon	Falco hypoleucos	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Little Eagle	Hieraaetus morphnoides	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW

Little Eagle	Hieraaetus morphnoides	19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Little Lorikeet	Glossopsitta pusilla	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
Little Pied Bat	Chalinolobus picatus	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Little Pied Bat	Chalinolobus picatus	2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
Magpie Goose	Anseranas semipalmata	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Painted Honeyeater	Grantiella picta	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Pied Honeyeater	Certhionyx variegatus	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Pied Honeyeater	Certhionyx variegatus	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Pink Cockatoo	Lophochroa leadbeateri	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone

Pink Cockatoo	Lophochroa leadbeateri	2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
Plains-wanderer	Pedionomus torquatus	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
Purple-crowned Lorikeet	Glossopsitta porphyrocephala	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Regent Honeyeater	Anthochaera phrygia	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
Scarlet Robin	Petroica boodang	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
South-eastern Hooded Robin	Melanodryas cucullata cucullata	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

South-eastern Hooded Robin	Melanodryas cucullata cucullata	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Southern Whiteface	Aphelocephala leucopsis	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Southern Whiteface	Aphelocephala leucopsis	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
Speckled Warbler	Chthonicola sagittata	237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
Spotted Harrier	Circus assimilis	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Spotted Harrier	Circus assimilis	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
Spotted-tailed Quoll	Dasyurus maculatus	2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
Square-tailed Kite	Lophoictinia isura	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW

Superb Parrot	Polytelis swainsonii	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
Swift Parrot	Lathamus discolor	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion

Turquoise Parrot	Neophema pulchella	237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
Varied Sittella	Daphoenositta chrysoptera	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion
White-bellied Sea-Eagle	Haliaeetus leucogaster	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

White-bellied Sea-Eagle	Haliaeetus leucogaster	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
White-fronted Chat	Epthianura albifrons	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion

White-throated Needletail	Hirundapus caudacutus	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW
		19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW

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
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	Refer to BAR

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00053398/BAAS23009/24/00053401

Assessment name
VNI Murray Fans

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Report Created
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Assessor Number
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BAM Case Status
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Assessment Revision
6

BOS entry trigger

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* 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	7_Moderate-good	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	Moderate-good	4.67	2	Area A (1.46 ha) Area B4 (2.17 ha) Area HZ (1.04 ha)

2	10_Derived	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	3.52	2	Area A (3.52 ha)
3	10_Moderate-good	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate-good	13.47	3	Area A (5.23 ha) Area B4 (5.47 ha) Area HZ (2.77 ha)
4	10_Thinned	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Thinned	12.66	3	Area A (5.31 ha) Area B4 (4.88 ha) Area HZ (2.47 ha)
5	11_Moderate-good	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate-good	0.49	1	Area A (0.13 ha) Area B4 (0.26 ha) Area HZ (0.1 ha)
6	13_Derived_LCV	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived_LCV	49.33	4	Area A (49.33 ha)

7	13_Moderate-good	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate-good	59.66	5	Area A (28.83 ha) Area B4 (30.83 ha)
8	13_Thinned	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Thinned	21.96	4	Area A (13.31 ha) Area B4 (8.65 ha)
9	15_Derived_LCV	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived_LCV	6.38	3	Area A (6.38 ha)
10	15_Moderate-good	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate-good	12.44	3	Area A (6.49 ha) Area B4 (5.95 ha)
11	15_Thinned	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Thinned	2.64	2	Area A (1.4 ha) Area B4 (1.24 ha)

12	17_Moderate-good	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate-good	0.14	1	Area A (0.14 ha)
13	28_Derived	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Derived	0.2	1	Area A (0.2 ha)
14	28_Derived_TS	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Derived_TS	0.67	1	Area A (0.19 ha) Area B4 (0.48 ha)
15	160_Moderate-good	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Moderate-good	0.14	1	Area A (0.14 ha)
16	163_Derived_LCV	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Derived_LCV	0.68	1	Area A (0.68 ha)
17	163_Moderate-good	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Moderate-good	14.08	3	Area A (14.08 ha)
18	164_Derived_LCV	164-Cotton Bush open shrubland of the semi-arid (warm) zone	Derived_LCV	5.48	3	Area A (5.48 ha)
19	164_Moderate-good	164-Cotton Bush open shrubland of the semi-arid (warm) zone	Moderate-good	3.46	2	Area A (3.46 ha)
20	216_Moderate-good	216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Moderate-good	0.66	1	Area A (0.66 ha)

21	237_Moderate-good	237-Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone	Moderate-good	0.84	1	Area A (0.21 ha) Area B4 (0.48 ha) Area HZ (0.15 ha)
22	2_SVTM	2-River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south-western NSW	SVTM	0.12	1	Area A (0.02 ha) Area B4 (0.1 ha)
23	10_SVTM	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	1.39	1	Area A (0.37 ha) Area B4 (0.62 ha) Area HZ (0.4 ha)
24	13_SVTM	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	14.35	3	Area A (8.09 ha) Area B4 (6.26 ha)
25	15_SVTM	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	1.58	1	Area A (0.68 ha) Area B4 (0.9 ha)
26	19_SVTM	19-Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains	SVTM	1.59	1	Area A (0.54 ha) Area B4 (1.05 ha)

27	44_SVTM	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	SVTM	10.17	3	Area A (10.17 ha)
28	160_SVTM	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	SVTM	0.04	1	Area A (0.04 ha)
29	163_SVTM	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	SVTM	1.02	1	Area A (1.02 ha)
30	164_SVTM	164-Cotton Bush open shrubland of the semi-arid (warm) zone	SVTM	0.09	1	Area A (0.09 ha)
31	13_Derived	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	15.11	3	Area A (15.11 ha)
32	15_Derived	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	5.23	3	Area A (5.23 ha)
33	10_Derived_LCV01	10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived_LCV01	5.2	3	Area A (5.2 ha)

34	13_Planted_NatVeg01	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Planted_NatVeg01	0.2	1	Area A (0.06 ha) Area B4 (0.14 ha)
35	86_Moderate-good	86-Yellow Gum tall woodland of the Murray River floodplain, Riverina Bioregion	Moderate-good	0.05	1	Area A (0.05 ha)

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00041510/BAAS19078/25/00054312

Proposal Name
VNI Murrumbidgee

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Assessor Number
BAAS23009

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Proponent Names

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23/07/2025

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8

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* 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
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	Endangered Ecological Community	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Species
Brachyscome muelleroides / Claypan Daisy
Calotis moorei / A burr-daisy
Convolvulus tedmoorei / Bindweed
Pedionomus torquatus / Plains-wanderer

Additional Information for Approval

PCT Outside Ibra Added

PCT
164-Cotton Bush open shrubland of the semi-arid (warm) zone

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)

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
13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	3.8	56	1	57
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	71.5	879	102	981
17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	14.9	0	372	372
20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	1.9	0	9	9
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	9.9	0	109	109
24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Not a TEC	7.0	0	126	126
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Weeping Myall Woodlands	316.9	1311	1807	3118

28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	39.9	0	535	535
44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Natural Grasslands of the Murray Valley Plains	23.6	0	1151	1151
45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Natural Grasslands of the Murray Valley Plains	9.5	0	451	451
46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Natural Grasslands of the Murray Valley Plains	58.4	0	2778	2778
47-Swamp grassland wetland of the Riverine Plain	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	0.2	0	9	9
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Not a TEC	1.0	7	5	12
157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Not a TEC	99.5	0	2686	2686
160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Not a TEC	16.7	0	374	374
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Not a TEC	63.2	0	1552	1552
164-Cotton Bush open shrubland of the semi-arid (warm) zone	Not a TEC	348.7	0	7890	7890

170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Not a TEC	5.6	30	0	30
70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt	Not a TEC	0.2	0	5	5
159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)	Not a TEC	0.1	0	3	3
216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Not a TEC	9.8	0	245	245

13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Moderate_good	Yes	56	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_SVTM	No	1	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Derived	No	73	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Moderate_good	Yes	879	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_SVTM	No	10	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Thinned	No	19	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_Moderate_good	No	298	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_SVTM	No	74	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Derived	No	8	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Thinned	No	1	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Derived_LCV	No	0	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Derived	No	21	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Derived_LCV	No	22	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Moderate_good	No	60	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Thinned	No	6	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	24_Moderate_good	No	126	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Derived	No	0	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Derived_LCV	No	0	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Moderate_good	No	1757	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Thinned	Yes	1311	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_SVTM	No	50	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived	No	154	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived_TS	No	8	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived_LCV	No	39	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Thinned	No	36	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_SVTM	No	227	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Moderate-good	No	71	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	44_Moderate_good	No	711	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	44_SVTM	No	440	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

44-Forb-rich Speargrass - Windmill Grass - White Top g

45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	45_Moderate_good	No	153	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	45_SVTM	No	298	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	46_Moderate_good	No	1824	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	46_SVTM	No	954	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

47-Swamp grassland wetland of the Riverine Plain	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains This includes PCT's: 47, 360	-	47_Moderate_good	No	9	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Moderate_good	No	5	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Thinned	Yes	7	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Floodplain Transition Woodlands This includes PCT's: 56, 70, 74, 76, 80, 81, 82, 101, 237, 244, 248, 251, 628	Floodplain Transition Woodlands >=50% and <70%	70_SVTM	No	5	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

70-White Cypress Pine woodland on sandy loams in c						
157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 195, 196, 211, 377	Riverine Chenopod Shrublands >=50% and <70%	157_Moderate_good	No	2450	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 195, 196, 211, 377	Riverine Chenopod Shrublands >=50% and <70%	157_SVTM	No	236	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Chenopod Shrublands This includes PCT's: 159, 195	Riverine Chenopod Shrublands >=90%	159_SVTM	No	3	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone

160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_Moderate_good	No	340	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_SVTM	No	34	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_Moderate_good	No	1270	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_SVTM	No	282	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

164-Cotton Bush open shrubland of the semi-arid (warm) zone	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_Moderate_good	No	5499	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_SVTM	No	2391	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Derived	No	0	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Thinned	Yes	30	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	216_Moderate-good	No	245	Murrumbidgee, 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
Ardeotis australis / Australian Bustard	**157_Moderate_good, 163_Moderate_good, 28_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM, 160_SVTM**	105.0	5225.00

Austrostipa wakoolica / A spear-grass	**17_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 17_SVTM, 26_SVTM, 28_SVTM**	28.4	587.00
Brachyscome muelleroides / Claypan Daisy	**44_SVTM, 45_SVTM**	1.0	78.00
Brachyscome papillosa / Mossgiel Daisy	**15_Derived, 15_Moderate_good, 46_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 15_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM, 160_SVTM**	141.3	6941.00

Burhinus grallarius / Bush Stone-curlew	**15_Moderate_good, 20_Thinned, 23_Moderate_good, 26_Moderate_good, 26_Thinned, 28_Thinned, 58_Moderate_good, 58_Thinned, 15_SVTM, 26_SVTM, 28_SVTM, 70_SVTM, 15_Thinned, 28_Moderate-good, 23_Thinned**	190.7	4549.00
Calotis moorei / A burr-daisy	**23_Derived, 23_Moderate_good, 157_Moderate_good, 157_SVTM**	12.1	827.00
Convolvulus tedmoorei / Bindweed	**17_Moderate_good, 44_Moderate_good, 157_Moderate_good, 160_Moderate_good, 163_Moderate_good, 164_Moderate_good, 17_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 160_SVTM**	28.9	2013.00
Cullen parvum / Small Scurf-pea	**44_Moderate_good, 44_SVTM**	23.5	1148.00

Eleocharis obicis / Spike-Rush	**17_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 17_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 160_SVTM**	125.2	6146.00
Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	**15_SVTM**	1.0	2.00
Hemiaspis damelii / Grey Snake	**13_Moderate_good, 15_Moderate_good, 17_Moderate_good, 24_Moderate_good, 46_Moderate_good, 47_Moderate_good, 160_Moderate_good, 15_SVTM, 17_SVTM, 46_SVTM, 160_SVTM, 15_Thinned**	128.3	5099.00
Hieraaetus morphnoides / Little Eagle	**28_SVTM**	0.9	35.00
Lepidium monoplocoides / Winged Peppercress	**15_Derived, 26_Derived, 26_Moderate_good, 26_Thinned, 163_Moderate_good, 15_SVTM, 26_SVTM, 45_SVTM, 163_SVTM, 46_SVTM, 160_SVTM**	52.1	1764.00

Leptorhynchos orientalis / Lanky Buttons	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	43.7	1352.00
Litoria raniformis / Southern Bell Frog	**15_Moderate_good, 163_Moderate_good, 163_SVTM**	1.7	73.00
Lophochroa leadbeateri / Pink Cockatoo	**15_Moderate_good, 28_SVTM, 45_SVTM**	6.6	330.00
Lophoictinia isura / Square-tailed Kite	**28_SVTM**	0.9	35.00
Maireana cheelii / Chariot Wheels	**24_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 44_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 26_SVTM, 44_SVTM, 157_SVTM, 164_SVTM, 46_SVTM**	146.8	6460.00
Ninox connivens / Barking Owl	**15_Moderate_good, 15_SVTM, 70_SVTM, 15_Thinned**	28.3	1018.00

Pedionomus torquatus / Plains-wanderer	**26_Derived, 46_Moderate_good, 164_Moderate_good, 44_SVTM, 163_SVTM, 216_Moderate-good, 164_SVTM**	1.2	70.00
Pilularia novae-hollandiae / Austral Pillwort	**15_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 45_SVTM**	72.2	994.00
Polytelis swainsonii / Superb Parrot	**28_SVTM**	0.9	46.00
Sclerolaena napiformis / Turnip Copperburr	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 46_SVTM**	43.4	1336.00
Solanum karsense / Menindee Nightshade	**15_Derived**	0.2	3.00

Swainsona murrayana / Slender Darling Pea	**15_Derived, 17_Moderate_good, 23_Derived, 23_Moderate_good, 24_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 28_Derived, 44_Moderate_good, 46_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 15_SVTM, 26_SVTM, 28_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM**	341.2	13995.00
Swainsona plagiotropis / Red Darling Pea	**26_Derived, 26_Moderate_good, 26_Thinned, 44_Moderate_good, 163_Moderate_good, 26_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	45.7	1448.00

Swainsona sericea / Silky Swainson-pea	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 28_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	45.3	1433.00
Tyto novaehollandiae / Masked Owl	**26_Moderate_good, 26_Thinned, 70_SVTM**	7.4	271.00

Credit Retirement Options

Like-for-like credit retirement options

Ardeotis australis / Australian Bustard	Spp	IBRA subregion
	Ardeotis australis / Australian Bustard	Any in NSW
Austrostipa wakoolica / A spear-grass	Spp	IBRA subregion
	Austrostipa wakoolica / A spear-grass	Any in NSW
Brachyscome muelleroides / Claypan Daisy	Spp	IBRA subregion
	Brachyscome muelleroides / Claypan Daisy	Any in NSW
Brachyscome papillosa / Mossgiel Daisy	Spp	IBRA subregion
	Brachyscome papillosa / Mossgiel Daisy	Any in NSW

Burhinus grallarius / Bush Stone-curlew	Spp	IBRA subregion
	Burhinus grallarius / Bush Stone-curlew	Any in NSW
Calotis moorei / A burr-daisy	Spp	IBRA subregion
	Calotis moorei / A burr-daisy	Any in NSW
Convolvulus tedmoorei / Bindweed	Spp	IBRA subregion
	Convolvulus tedmoorei / Bindweed	Any in NSW
Cullen parvum / Small Scurf-pea	Spp	IBRA subregion
	Cullen parvum / Small Scurf-pea	Any in NSW
Eleocharis obicis / Spike-Rush	Spp	IBRA subregion
	Eleocharis obicis / Spike-Rush	Any in NSW
Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	Spp	IBRA subregion
	Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	Any in NSW
Hemiaspis damelii / Grey Snake	Spp	IBRA subregion

	Hemiaspis damelii / Grey Snake	Any in NSW
Hieraaetus morphnoides / Little Eagle	Spp	IBRA subregion
	Hieraaetus morphnoides / Little Eagle	Any in NSW
Lepidium monoplocoides / Winged Peppercress	Spp	IBRA subregion
	Lepidium monoplocoides / Winged Peppercress	Any in NSW
Leptorhynchos orientalis / Lanky Buttons	Spp	IBRA subregion
	Leptorhynchos orientalis / Lanky Buttons	Any in NSW
Litoria raniformis / Southern Bell Frog	Spp	IBRA subregion
	Litoria raniformis / Southern Bell Frog	Any in NSW
Lophochroa leadbeateri / Pink Cockatoo	Spp	IBRA subregion
	Lophochroa leadbeateri / Pink Cockatoo	Any in NSW
Lophoictinia isura / Square-tailed Kite	Spp	IBRA subregion
	Lophoictinia isura / Square-tailed Kite	Any in NSW

Maireana cheelii / Chariot Wheels	Spp	IBRA subregion
	Maireana cheelii / Chariot Wheels	Any in NSW
Ninox connivens / Barking Owl	Spp	IBRA subregion
	Ninox connivens / Barking Owl	Any in NSW
Pedionomus torquatus / Plains-wanderer	Spp	IBRA subregion
	Pedionomus torquatus / Plains-wanderer	Any in NSW
Pilularia novae-hollandiae / Austral Pillwort	Spp	IBRA subregion
	Pilularia novae-hollandiae / Austral Pillwort	Any in NSW
Polytelis swainsonii / Superb Parrot	Spp	IBRA subregion
	Polytelis swainsonii / Superb Parrot	Any in NSW
Sclerolaena napiformis / Turnip Copperburr	Spp	IBRA subregion
	Sclerolaena napiformis / Turnip Copperburr	Any in NSW
Solanum karsense / Menindee Nightshade	Spp	IBRA subregion

	Solanum karsense / Menindee Nightshade	Any in NSW
Swainsona murrayana / Slender Darling Pea	Spp	IBRA subregion
	Swainsona murrayana / Slender Darling Pea	Any in NSW
Swainsona plagiotropis / Red Darling Pea	Spp	IBRA subregion
	Swainsona plagiotropis / Red Darling Pea	Any in NSW
Swainsona sericea / Silky Swainson-pea	Spp	IBRA subregion
	Swainsona sericea / Silky Swainson-pea	Any in NSW
Tyto novaehollandiae / Masked Owl	Spp	IBRA subregion
	Tyto novaehollandiae / Masked Owl	Any in NSW

BAM Candidate Species Report

Proposal Details

Assessment Id 00041510/BAAS19078/25/00054312	Proposal Name VNI Murrumbidgee	BAM data last updated * 28/10/2024
Assessor Name Devon T Raiff	Report Created 23/07/2025	BAM Data version * Current classification (live - default) (80)
Assessor Number BAAS23009	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 8	BOS entry trigger	Date Finalised 23/07/2025

* 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
Ardeotis australis Australian Bustard	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Austrostipa wakoolica A spear-grass	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Brachyscome muelleroides Claypan Daisy	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Brachyscome papillosa Mossgiel Daisy	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	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Calotis moorei A burr-daisy	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Convolvulus tedmoorei Bindweed	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cullen parvum Small Scurf-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eleocharis obicis Spike-Rush	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?

Eucalyptus leucoxylon subsp. pruinosa Yellow Gum	Yes (assumed present)	☐ 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)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hemiaspis damelii Grey Snake	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lepidium monoplocoides Winged Peppercress	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Leptorhynchos orientalis Lanky Buttons	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Litoria raniformis Southern Bell Frog	Yes (surveyed)	☑ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophochroa leadbeateri Pink Cockatoo	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Maireana cheelii Chariot Wheels	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?
Pedionomus torquatus Plains-wanderer	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pilularia novae-hollandiae Austral Pillwort	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?
Polytelis swainsonii Superb Parrot	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Sclerolaena napiformis Turnip Copperburr	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Solanum karsense Menindee Nightshade	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona murrayana Slender Darling Pea	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?
Swainsona plagiotropis Red Darling Pea	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?

Swainsona sericea Silky Swainson-pea	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 (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

Common Name	Scientific Name
Spike-Rush	Eleocharis obicis

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Curlew Sandpiper	Calidris ferruginea	Habitat constraints
Koala	Phascolarctos cinereus	Species is vagrant Habitat constraints
Pine Donkey Orchid	Diuris tricolor	Habitat degraded
Pink-tailed Legless Lizard	Aprasia parapulchella	Refer to BAR
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	Refer to BAR
Sand-hill Spider Orchid	Caladenia arenaria	Refer to BAR
Southern Myotis	Myotis macropus	Habitat constraints
Swift Parrot	Lathamus discolor	Habitat constraints
White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	Climacteris affinis - endangered population	Refer to BAR

BAM Credit Summary Report

Proposal Details

Assessment Id
00041510/BAAS19078/25/00054312

Proposal Name
VNI Murrumbidgee

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Report Created
23/07/2025

BAM Data version *
Current classification (live - default) (80)

Assessor Number
BAAS23009

BAM Case Status
Finalised

Date Finalised
23/07/2025

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
Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
1	13_Moderate_good	Not a TEC	57	47.4	3.8	PCT Cleared - 57%	High Sensitivity to Gain			1.75		78

31	13_SVTM	Not a TEC	100	43.3	0.01	PCT Cleared - 57%	High Sensitivity to Gain			1.75		1
											Subtotal	**79**
Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
2	15_Derived	Not a TEC	29.2	29.2	8	PCT Cleared - 50%	High Sensitivity to Gain			1.75		102
3	15_Moderate_good	Not a TEC	70.6	45.0	62.4	PCT Cleared - 50%	High Sensitivity to Gain			1.75		1231
32	15_SVTM	Not a TEC	100	100.0	0.33	PCT Cleared - 50%	High Sensitivity to Gain			1.75		14
46	15_Thinned	Not a TEC	100	85.8	0.72	PCT Cleared - 50%	High Sensitivity to Gain			1.75		27
											Subtotal	**1374**
Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion												
23	58_Moderate_good	Not a TEC	66.3	58.4	0.26	PCT Cleared - 50%	High Sensitivity to Gain			1.75		7

24	58_Thinned	Not a TEC	46.3	30.5	0.7	PCT Cleared - 50%	High Sensitivity to Gain			1.75		9
											Subtotal	**16**
Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion												
42	216_Moderate-good	Not a TEC	100	100.0	9.8	PCT Cleared - 0%	High Sensitivity to Gain			1.50		368
											Subtotal	**368**
Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion												
25	157_Moderate_good	Not a TEC	85.3	85.3	91.9	PCT Cleared - 60%	High Sensitivity to Gain			1.75		3429
39	157_SVTM	Not a TEC	100	100.0	7.6	PCT Cleared - 60%	High Sensitivity to Gain			1.75		330
											Subtotal	**3759**

Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
5	20_Derived	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	21.5	21.5	0.99	Population size	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	11
6	20_Thinned	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	34.9	24.4	0.16	Population size	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	2
47	20_Derived_LCV	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	5.2	5.2	0.77	Population size	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	0
											Subtotal	**13**

Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains												
10	24_Moderate_good	Not a TEC	72	72.0	7	PCT Cleared - 20%	High Sensitivity to Gain			1.50		190
											Subtotal	**190**
Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones												
29	170_Derived	Not a TEC	12.3	12.3	1.4	PCT Cleared - 41%	High Sensitivity to Gain			1.50		0
30	170_Thinned	Not a TEC	46.6	28.8	4.2	PCT Cleared - 41%	High Sensitivity to Gain			1.50		45
											Subtotal	**45**
Cotton Bush open shrubland of the semi-arid (warm) zone												
28	164_Moderate_good	Not a TEC	86.9	86.9	253	PCT Cleared - 8%	High Sensitivity to Gain			1.50		8249
43	164_SVTM	Not a TEC	100	100.0	95.6	PCT Cleared - 8%	High Sensitivity to Gain			1.50		3587
											Subtotal	**11836**

Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion												
21	46_Moderate_good	Natural Grasslands of the Murray Valley Plains	92.7	92.7	39.4	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		2280
44	46_SVTM	Natural Grasslands of the Murray Valley Plains	100	100.0	19.1	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		1192
											Subtotal	**3472**
Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones												
27	163_Moderate_good	Not a TEC	97.7	97.7	52	PCT Cleared - 26%	High Sensitivity to Gain			1.50		1905
41	163_SVTM	Not a TEC	100	100.0	11.3	PCT Cleared - 26%	High Sensitivity to Gain			1.50		422
											Subtotal	**2327**

Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion												
19	44_Moderate_good	Natural Grasslands of the Murray Valley Plains	96.3	96.3	14.8	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		889
36	44_SVTM	Natural Grasslands of the Murray Valley Plains	100	100.0	8.8	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		549
											Subtotal	**1438**
Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
4	17_Moderate_good	Not a TEC	76.3	76.3	12.5	PCT Cleared - 63%	High Sensitivity to Gain			1.75		417
33	17_SVTM	Not a TEC	100	100.0	2.4	PCT Cleared - 63%	High Sensitivity to Gain			1.75		104
											Subtotal	**521**
Nitre Goosefoot shrubland wetland on clays of the inland floodplains												
26	160_Moderate_good	Not a TEC	88.7	88.7	15.3	PCT Cleared - 28%	High Sensitivity to Gain			1.50		509

45	160_SVTM	Not a TEC	100	100.0	1.4	PCT Cleared - 28%	High Sensitivity to Gain			1.50		51
											Subtotal	**560**
Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)												
40	159_SVTM	Not a TEC	100	100.0	0.05	PCT Cleared - 92%	High Sensitivity to Gain			2.50		3
											Subtotal	**3**
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion												
20	45_Moderate_good	Natural Grasslands of the Murray Valley Plains	85.5	85.5	3.6	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		191
37	45_SVTM	Natural Grasslands of the Murray Valley Plains	100	100.0	6	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		373
											Subtotal	**564**

Swamp grassland wetland of the Riverine Plain												
22	47_Moderate_good	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	87.5	87.5	0.17	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		9
											Subtotal	**9**
Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
11	26_Derived	Weeping Myall Woodlands	15	15.0	138.9	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		0
12	26_Derived_LCV	Weeping Myall Woodlands	11.4	11.4	1.3	Environment Protection and Conservation Act listing status	Moderate Sensitivity to Gain	Not Listed	Endangered	1.75		0

13	26_Moderate_good	Weeping Myall Woodlands	76.7	51.3	91.3	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		2343
14	26_Thinned	Weeping Myall Woodlands	51.6	41.6	84.1	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		1748
34	26_SVTM	Weeping Myall Woodlands	100	100.0	1.3	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		67
											Subtotal	**4158**
White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone												
15	28_Derived	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	21	21.0	19.6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		206

16	28_Derived_TS	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	45	35.4	0.64	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		11
17	28_Derived_LCV	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	17.9	17.9	5	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.75		39
18	28_Thinned	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	23.9	17.1	5.6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		48

35	28_SVTM	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	100	100.0	6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		302
48	28_Moderate-good	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	100	64.2	2.9	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		94
											Subtotal	**700**
White Cypress Pine woodland on sandy loams in central NSW wheatbelt												
38	70_SVTM	Not a TEC	100	100.0	0.16	PCT Cleared - 65%	High Sensitivity to Gain			1.75		7
											Subtotal	**7**

Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones												
7	23_Derived	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	20.5	20.5	2.7	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		28
8	23_Derived_LCV	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	16.6	16.6	3.5	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		22
9	23_Moderate_good	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	72.4	47.1	3.4	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		80
49	23_Thinned	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	100	76.7	0.2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		8
											Subtotal	**138**
											Total	**31577**

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
Ardeotis australis / Australian Bustard (Fauna)									
157_Moderate_good	85.3	85.3	3.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	146
163_Moderate_good	97.7	97.7	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	115
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	46
157_SVTM	100.0	100.0	4.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	204

163_SVTM	100.0	100.0	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	101
164_SVTM	100.0	100.0	73.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	3663
46_SVTM	100.0	100.0	17.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	890
160_SVTM	100.0	100.0	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	60
								Subtotal	**5225**
Austrostipa wakoolica / A spear-grass (Flora)									
17_Moderate_good	76.3	76.3	0.08	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3

26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	72
26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	177
17_SVTM	100.0	100.0	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	110
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	53
28_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	81

								Subtotal	**587**
Brachyscome muelleroides / Claypan Daisy (Flora)									
44_SVTM	100.0	100.0	0.73	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	55
45_SVTM	100.0	100.0	0.31	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	23
								Subtotal	**78**
Brachyscome papillosa / Mossgiel Daisy (Flora)									
15_Derived	29.2	29.2	0.24	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4
15_Moderate_good	45.0	45.0	0.12	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	3
46_Moderate_good	92.7	92.7	5.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	255
157_Moderate_good	85.3	85.3	4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	169

163_Moderate_good	97.7	97.7	3.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	190
164_Moderate_good	86.9	86.9	9.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	398
15_SVTM	100.0	100.0	0.07	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	16
157_SVTM	100.0	100.0	7.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	373
163_SVTM	100.0	100.0	6.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	303

164_SVTM	100.0	100.0	84.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4223
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	906
160_SVTM	100.0	100.0	1.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	60
								Subtotal	**6941**
Burhinus grallarius / Bush Stone-curlew (Fauna)									
15_Moderate_good	45.0	45.0	27.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	611
20_Thinned	24.4	24.4	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	2
23_Moderate_good	47.1	47.1	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	37

26_Moderate_good	51.3	51.3	69	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	1769
26_Thinned	41.6	41.6	76.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	1585
28_Thinned	17.1	17.1	4.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	41
58_Moderate_good	58.4	58.4	0.26	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	8
58_Thinned	30.5	30.5	0.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	11
15_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	16

26_SVTM	100.0	100.0	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	61
28_SVTM	100.0	100.0	5.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	268
70_SVTM	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	8
15_Thinned	85.8	85.8	0.72	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	31
28_Moderate-good	64.2	64.2	2.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	94
23_Thinned	76.7	76.7	0.19	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	7

								Subtotal	**4549**
Calotis moorei / A burr-daisy (Flora)									
23_Derived	20.5	20.5	0.61	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Endangered	True	9
23_Moderate_good	47.1	47.1	0.1	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Endangered	True	4
157_Moderate_good	85.3	85.3	4	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Endangered	True	254
157_SVTM	100.0	100.0	7.5	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Endangered	True	560
								Subtotal	**827**
Convolvulus tedmoorei / Bindweed (Flora)									
17_Moderate_good	76.3	76.3	0.08	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	5

44_Moderate_good	96.3	96.3	0.52	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	38
157_Moderate_good	85.3	85.3	4	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	254
160_Moderate_good	88.7	88.7	0.21	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	14
163_Moderate_good	97.7	97.7	1.4	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	106
164_Moderate_good	86.9	86.9	10.8	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	702
17_SVTM	100.0	100.0	2	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	146

44_SVTM	100.0	100.0	0.76	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	57
45_SVTM	100.0	100.0	0.31	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	23
157_SVTM	100.0	100.0	7.6	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	566
160_SVTM	100.0	100.0	1.4	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	102
								Subtotal	**2013**
Cullen parvum / Small Scurf-pea (Flora)									
44_Moderate_good	96.3	96.3	14.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	711

44_SVTM	100.0	100.0	8.7	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	437
								Subtotal	**1148**
Eleocharis obicis / Spike-Rush (Flora)									
17_Moderate_good	76.3	76.3	0.08	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	3
157_Moderate_good	85.3	85.3	4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	169
163_Moderate_good	97.7	97.7	3.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	150
164_Moderate_good	86.9	86.9	12.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	537

17_SVTM	100.0	100.0	2.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	119
157_SVTM	100.0	100.0	7.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	373
163_SVTM	100.0	100.0	6.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	303
164_SVTM	100.0	100.0	88.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	4423
160_SVTM	100.0	100.0	1.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	69
								Subtotal	**6146**

Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum (Flora)									
15_SVTM	N/A	N/A	1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2
								Subtotal	**2**
Hemiaspis damelii / Grey Snake (Fauna)									
13_Moderate_good	47.4	47.4	1.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	36
15_Moderate_good	45.0	45.0	29.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	658
17_Moderate_good	76.3	76.3	12.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	476
24_Moderate_good	72.0	72.0	6.6	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	237

46_Moderate_good	92.7	92.7	39.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	1824
47_Moderate_good	87.5	87.5	0.17	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	7
160_Moderate_good	88.7	88.7	15.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	679
15_SVTM	100.0	100.0	0.33	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	17
17_SVTM	100.0	100.0	2.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	119
46_SVTM	100.0	100.0	19.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	954

160_SVTM	100.0	100.0	1.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	69
15_Thinned	85.8	85.8	0.54	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	23
								Subtotal	**5099**
Hieraaetus morphnoides / Little Eagle (Fauna)									
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	35
								Subtotal	**35**
Lepidium monoplocoides / Winged Peppercress (Flora)									
15_Derived	29.2	29.2	0.24	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	4
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	91

26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	72
26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	177
163_Moderate_good	97.7	97.7	1.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	69
15_SVTM	100.0	100.0	0.07	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	4
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	53
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	16

163_SVTM	100.0	100.0	6.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	303
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	906
160_SVTM	100.0	100.0	1.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	69
								Subtotal	**1764**
Leptorhynchos orientalis / Lanky Buttons (Flora)									
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	72

26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	177
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	53
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	16
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	906
								Subtotal	**1352**

Litoria raniformis / Southern Bell Frog (Fauna)									
15_Moderate_good	45.0	45.0	0.33	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	7
163_Moderate_good	97.7	97.7	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	64
163_SVTM	100.0	100.0	0.03	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	2
								Subtotal	**73**
Lophochroa leadbeateri / Pink Cockatoo (Fauna)									
15_Moderate_good	70.6	70.6	0.05	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	2
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	46

45_SVTM	100.0	100.0	5.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	282
								Subtotal	**330**
Lophoictinia isura / Square-tailed Kite (Fauna)									
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	35
								Subtotal	**35**
Maireana cheelii / Chariot Wheels (Flora)									
24_Moderate_good	72.0	72.0	0.06	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	2
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	72

26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	177
44_Moderate_good	96.3	96.3	0.12	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	6
157_Moderate_good	85.3	85.3	3.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	149
163_Moderate_good	97.7	97.7	0.82	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	40
164_Moderate_good	86.9	86.9	3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	131
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	53
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	37

157_SVTM	100.0	100.0	7.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	373
164_SVTM	100.0	100.0	88.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4423
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	906
								Subtotal	**6460**
Ninox connivens / Barking Owl (Fauna)									
15_Moderate_good	70.6	70.6	27.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	958
15_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	16
70_SVTM	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	8

15_Thinned	100.0	100.0	0.72	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	36
								Subtotal	**1018**
Pedionomus torquatus / Plains-wanderer (Fauna)									
26_Derived	15.0	15.0	0.25	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	3
46_Moderate_good	92.7	92.7	0.69	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	48
164_Moderate_good	86.9	86.9	0.1	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	7

44_SVTM	100.0	100.0	0.01	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1
163_SVTM	100.0	100.0	0.02	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	2
216_Moderate-good	100.0	100.0	0.11	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	8
164_SVTM	100.0	100.0	0.01	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1
								Subtotal	**70**

Pilularia novae-hollandiae / Austral Pillwort (Flora)									
15_Moderate_good	45.0	45.0	0.05	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	1
26_Derived	15.0	15.0	47.6	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	356
26_Moderate_good	51.3	51.3	13.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	336
26_Thinned	41.6	41.6	9.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	195
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	53

44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	16
								Subtotal	**994**
Polytelis swainsonii / Superb Parrot (Fauna)									
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	46
								Subtotal	**46**
Sclerolaena napiformis / Turnip Copperburr (Flora)									
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	72

26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	177
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	53
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	37
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	906
								Subtotal	**1336**
Solanum karsense / Menindee Nightshade (Flora)									
15_Derived	29.2	29.2	0.24	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	3
								Subtotal	**3**

Swainsona murrayana / Slender Darling Pea (Flora)									
15_Derived	29.2	29.2	1.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	23
17_Moderate_good	76.3	76.3	0.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	19
23_Derived	20.5	20.5	0.61	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	6
23_Moderate_good	47.1	47.1	0.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	2
24_Moderate_good	72.0	72.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	40
26_Derived	15.0	15.0	26.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	201
26_Moderate_good	51.3	51.3	8.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	220

26_Thinned	41.6	41.6	18	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	375
28_Derived	21.0	21.0	1.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	20
44_Moderate_good	96.3	96.3	5.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	262
46_Moderate_good	92.7	92.7	1.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	88
157_Moderate_good	85.3	85.3	26.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	1118
163_Moderate_good	97.7	97.7	2.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	140
164_Moderate_good	86.9	86.9	121.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	5285

15_SVTM	100.0	100.0	0.07	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	53
28_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	81
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	16
157_SVTM	100.0	100.0	7.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	373
163_SVTM	100.0	100.0	6.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	303

164_SVTM	100.0	100.0	88.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4423
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	906
								Subtotal	**13995**
Swainsona plagiotropis / Red Darling Pea (Flora)									
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	72
26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	177
44_Moderate_good	96.3	96.3	0.52	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	25

163_Moderate_good	97.7	97.7	1.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	71
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	53
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	16
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	906
								Subtotal	**1448**
Swainsona sericea / Silky Swainson-pea (Flora)									
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	91

26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	72
26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	177
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	53
28_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	81
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	16
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	906
								Subtotal	**1433**

Tyto novaehollandiae / Masked Owl (Fauna)									
26_Moderate_good	76.7	76.7	6.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	234
26_Thinned	51.6	51.6	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	29
70_SVTM	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	8
								Subtotal	**271**

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00041510/BAAS19078/25/00054312	VNI Murrumbidgee	28/10/2024
Assessor Name	**Report Created**	**BAM Data version ***
Devon T Raiff	23/07/2025	Current classification (live - default) (80)
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS23009	Major Projects	Finalised
Assessment Revision	**BOS entry trigger**	**Date Finalised**
8		23/07/2025

* 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	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Australian Painted Snipe	Rostratula australis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		47-Swamp grassland wetland of the Riverine Plain

Australian Painted Snipe	Rostratula australis	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Black Falcon	Falco subniger	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains

Black Falcon	Falco subniger	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Blue-billed Duck	Oxyura australis	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Blue-winged Parrot	Neophema chrysostoma	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Blue-winged Parrot	Neophema chrysostoma	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Brolga	Grus rubicunda	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion

Brolga	Grus rubicunda	47-Swamp grassland wetland of the Riverine Plain
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Curlew Sandpiper	Calidris ferruginea	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		47-Swamp grassland wetland of the Riverine Plain
Diamond Firetail	Stagonopleura guttata	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Dusky Woodswallow	Artamus cyanopterus cyanopterus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Dusky Woodswallow	Artamus cyanopterus cyanopterus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Dusky Woodswallow	Artamus cyanopterus cyanopterus	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Freckled Duck	Stictonetta naevosa	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Gilbert's Whistler	Pachycephala inornata	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Grey Falcon	Falco hypoleucos	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Grey Falcon	Falco hypoleucos	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Inland Forest Bat	Vespadelus baverstocki	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Little Eagle	Hieraaetus morphnoides	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Little Eagle	Hieraaetus morphnoides	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Little Pied Bat	Chalinolobus picatus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains

Little Pied Bat	Chalinolobus picatus	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Magpie Goose	Anseranas semipalmata	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Painted Honeyeater	Grantiella picta	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

Painted Honeyeater	Grantiella picta	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Pied Honeyeater	Certhionyx variegatus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Pink Cockatoo	Lophochroa leadbeateri	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Pink Cockatoo	Lophochroa leadbeateri	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
Plains-wanderer	Pedionomus torquatus	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
Redthroat	Pyrrholaemus brunneus	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Redthroat	Pyrrholaemus brunneus	159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
Scarlet Robin	Petroica boodang	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
South-eastern Hooded Robin	Melanodryas cucullata cucullata	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Southern Whiteface	Aphelocephala leucopsis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Southern Whiteface	Aphelocephala leucopsis	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Speckled Warbler	Chthonicola sagittata	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt

Spotted Harrier	Circus assimilis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Spotted Harrier	Circus assimilis	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Square-tailed Kite	Lophoictinia isura	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Superb Parrot	Polytelis swainsonii	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Superb Parrot	Polytelis swainsonii	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Swift Parrot	Lathamus discolor	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Turquoise Parrot	Neophema pulchella	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Varied Sittella	Daphoenositta chrysoptera	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

Varied Sittella	Daphoenositta chrysoptera	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Western Blue-tongued Lizard	Tiliqua occipitalis	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
White-bellied Sea-Eagle	Haliaeetus leucogaster	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion

White-bellied Sea-Eagle	Haliaeetus leucogaster	47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
White-fronted Chat	Epthianura albifrons	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

White-fronted Chat	Epthianura albifrons	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
White-throated Needletail	Hirundapus caudacutus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

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
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	Refer to BAR

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00041510/BAAS19078/25/00054312

Assessment name
VNI Murrumbidgee

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Report Created
23/07/2025

BAM Data version *
Current classification (live - default) (80)

Assessor Number
BAAS23009

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
8

BOS entry trigger

Date Finalised
23/07/2025

* 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	13_Moderate_good	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate_good	3.75	2	AreaA (1.52 ha) Area B4 (2.23 ha)
2	15_Derived	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	7.95	3	Area A (7.95 ha)
3	15_Moderate_good	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate_good	62.45	5	Area A (29.84 ha) Area B4 (32.61 ha)
4	17_Moderate_good	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate_good	12.49	3	Area A (12.49 ha)
5	20_Derived	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	0.99	1	Area A (0.99 ha)

6	20_Thinned	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Thinned	0.16	1	Area A (0.03 ha) Area B4 (0.13 ha)
7	23_Derived	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Derived	2.71	2	Area A (2.71 ha)
8	23_Derived_LCV	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Derived_LCV	3.54	2	Area A (3.54 ha)
9	23_Moderate_good	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Moderate_good	3.41	2	Area A (1.83 ha) Area B4 (1.58 ha)
10	24_Moderate_good	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Moderate_good	7.02	3	Area A (7.02 ha)
11	26_Derived	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Derived	138.9	6	Area A (138.9 ha)
12	26_Derived_LCV	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Derived_LCV	1.29	1	Area A (1.29 ha)

13	26_Moderate_good	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Moderate_good	91.32	5	Area A (49.73 ha) Area B4 (41.59 ha)
14	26_Thinned	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Thinned	84.09	5	Area A (48.62 ha) Area B4 (35.47 ha)
15	28_Derived	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Derived	19.63	3	Area A (19.63 ha)
16	28_Derived_TS	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Derived_TS	0.64	1	Area A (0.45 ha) Area B4 (0.19 ha)
17	28_Derived_LCV	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Derived_LCV	5.03	3	Area A (5.03 ha)
18	28_Thinned	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Thinned	5.65	3	Area A (3.53 ha) Area B4 (2.12 ha)
19	44_Moderate_good	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Moderate_good	14.77	3	Area A (14.77 ha)

20	45_Moderate_good	45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Moderate_good	3.58	2	Area A (3.58 ha)
21	46_Moderate_good	46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Moderate_good	39.35	4	Area A (39.35 ha)
22	47_Moderate_good	47-Swamp grassland wetland of the Riverine Plain	Moderate_good	0.17	1	Area A (0.17 ha)
23	58_Moderate_good	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Moderate_good	0.26	1	Area A (0.19 ha) Area B4 (0.07 ha)
24	58_Thinned	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Thinned	0.7	1	Area A (0.38 ha) Area B4 (0.32 ha)
25	157_Moderate_good	157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Moderate_good	91.91	5	Area A (91.91 ha)
26	160_Moderate_good	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Moderate_good	15.32	3	Area A (15.32 ha)
27	163_Moderate_good	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Moderate_good	51.98	5	Area A (51.98 ha)
28	164_Moderate_good	164-Cotton Bush open shrubland of the semi-arid (warm) zone	Moderate_good	253.05	7	Area A (253.05 ha)

29	170_Derived	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Derived	1.42	1	Area A (1.42 ha)
30	170_Thinned	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Thinned	4.17	2	Area A (2.09 ha) Area B4 (2.08 ha)
31	13_SVTM	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	0.01	1	Area B4 (0.01 ha)
32	15_SVTM	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	0.33	1	Area A (0.33 ha)
33	17_SVTM	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	2.38	2	Area A (2.38 ha)
34	26_SVTM	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	SVTM	1.33	1	Area A (1.33 ha)

35	28_SVTM	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	SVTM	6.04	3	Area A (6.04 ha)
36	44_SVTM	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	SVTM	8.79	3	Area A (8.79 ha)
37	45_SVTM	45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	SVTM	5.96	3	Area A (5.96 ha)
38	70_SVTM	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt	SVTM	0.16	1	Area A (0.16 ha)
39	157_SVTM	157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	SVTM	7.55	3	Area A (7.55 ha)
40	159_SVTM	159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)	SVTM	0.05	1	Area A (0.05 ha)
41	163_SVTM	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	SVTM	11.26	3	Area A (11.26 ha)
42	216_Moderate-good	216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Moderate-good	9.8	3	Area A (9.8 ha)
43	164_SVTM	164-Cotton Bush open shrubland of the semi-arid (warm) zone	SVTM	95.65	5	Area A (95.65 ha)

44	46_SVTM	46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	SVTM	19.07	3	Area A (19.07 ha)
45	160_SVTM	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	SVTM	1.37	1	Area A (1.37 ha)
46	15_Thinned	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Thinned	0.72	1	Area A (0.54 ha) Area B4 (0.18 ha)
47	20_Derived_LCV	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived_LCV	0.77	1	Area A (0.77 ha)
48	28_Moderate-good	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Moderate-good	2.94	2	Area A (1.36 ha) Area B4 (1.58 ha)
49	23_Thinned	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Thinned	0.2	1	Area A (0.13 ha) Area B4 (0.07 ha)

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00041510/BAAS19078/25/00054312

Proposal Name
VNI Murrumbidgee

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Assessor Number
BAAS23009

BAM Data version *
Current classification (live - default) (80)

Proponent Names

Report Created
11/06/2025

BAM Case Status
Finalised

Assessment Revision
7

Assessment Type
Major Projects

Date Finalised
11/06/2025

* 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
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	Endangered Ecological Community	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Species
Brachyscome muelleroides / Claypan Daisy

Calotis moorei / A burr-daisy
Convolvulus tedmoorei / Bindweed
Pedionomus torquatus / Plains-wanderer

Additional Information for Approval

PCT Outside Ibra Added

PCT
164-Cotton Bush open shrubland of the semi-arid (warm) zone

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)

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
13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	3.8	56	1	57
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	71.5	879	102	981
17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	14.9	0	372	372
20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	1.9	0	9	9
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	9.9	0	109	109
24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Not a TEC	7.0	0	126	126
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Weeping Myall Woodlands	316.9	1311	1807	3118

28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	39.9	0	535	535
44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Natural Grasslands of the Murray Valley Plains	23.6	0	1151	1151
45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Natural Grasslands of the Murray Valley Plains	9.5	0	451	451
46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Natural Grasslands of the Murray Valley Plains	58.4	0	2778	2778
47-Swamp grassland wetland of the Riverine Plain	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	0.2	0	9	9
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Not a TEC	1.0	7	5	12
157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Not a TEC	99.5	0	2686	2686
160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Not a TEC	16.7	0	374	374
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Not a TEC	63.2	0	1552	1552
164-Cotton Bush open shrubland of the semi-arid (warm) zone	Not a TEC	348.7	0	7890	7890

170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Not a TEC	5.6	30	0	30
70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt	Not a TEC	0.2	0	5	5
159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)	Not a TEC	0.1	0	3	3
216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Not a TEC	9.8	0	245	245

13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Moderate_good	Yes	56	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_SVTM	No	1	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Derived	No	73	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Moderate_good	Yes	879	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_SVTM	No	10	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Thinned	No	19	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_Moderate_good	No	298	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_SVTM	No	74	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Derived	No	8	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Thinned	No	1	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Derived_LCV	No	0	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Derived	No	21	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Derived_LCV	No	22	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Moderate_good	No	60	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Thinned	No	6	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	24_Moderate_good	No	126	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Derived	No	0	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Derived_LCV	No	0	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Moderate_good	No	1757	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Thinned	Yes	1311	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_SVTM	No	50	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived	No	154	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived_TS	No	8	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived_LCV	No	39	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Thinned	No	36	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_SVTM	No	227	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Moderate-good	No	71	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	44_Moderate_good	No	711	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	44_SVTM	No	440	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	45_Moderate_good	No	153	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	45_SVTM	No	298	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	46_Moderate_good	No	1824	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	46_SVTM	No	954	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
47-Swamp grassland wetland of the Riverine Plain	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains This includes PCT's: 47, 360	-	47_Moderate_good	No	9	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Moderate_good	No	5	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Thinned	Yes	7	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Floodplain Transition Woodlands This includes PCT's: 56, 70, 74, 76, 80, 81, 82, 101, 237, 244, 248, 251, 628	Floodplain Transition Woodlands >=50% and <70%	70_SVTM	No	5	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 195, 196, 211, 377	Riverine Chenopod Shrublands >=50% and <70%	157_Moderate_good	No	2450	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 195, 196, 211, 377	Riverine Chenopod Shrublands >=50% and <70%	157_SVTM	No	236	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Riverine Chenopod Shrublands This includes PCT's: 159, 195	Riverine Chenopod Shrublands >=90%	159_SVTM	No	3	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_Moderate_good	No	340	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_SVTM	No	34	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_Moderate_good	No	1270	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_SVTM	No	282	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

164-Cotton Bush open shrubland of the semi-arid (warm) zone	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_Moderate_good	No	5499	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_SVTM	No	2391	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Derived	No	0	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Thinned	Yes	30	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	216_Moderate-good	No	245	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. 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
Ardeotis australis / Australian Bustard	**157_Moderate_good, 163_Moderate_good, 28_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM, 160_SVTM**	105.0	5225.00
Austrostipa wakoolica / A spear-grass	**17_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 17_SVTM, 26_SVTM, 28_SVTM**	28.4	587.00
Brachyscome muelleroides / Claypan Daisy	**44_SVTM, 45_SVTM**	1.0	78.00
Brachyscome papillosa / Mossgiel Daisy	**15_Derived, 15_Moderate_good, 46_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 15_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM, 160_SVTM**	141.3	6941.00

Burhinus grallarius / Bush Stone-curlew	**15_Moderate_good, 20_Thinned, 23_Moderate_good, 26_Moderate_good, 26_Thinned, 28_Thinned, 58_Moderate_good, 58_Thinned, 15_SVTM, 26_SVTM, 28_SVTM, 70_SVTM, 15_Thinned, 28_Moderate-good, 23_Thinned**	190.7	4549.00
Calotis moorei / A burr-daisy	**23_Derived, 23_Moderate_good, 157_Moderate_good, 157_SVTM**	12.1	827.00
Convolvulus tedmoorei / Bindweed	**17_Moderate_good, 44_Moderate_good, 157_Moderate_good, 160_Moderate_good, 163_Moderate_good, 164_Moderate_good, 17_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 160_SVTM**	28.9	2013.00
Cullen parvum / Small Scurf-pea	**44_Moderate_good, 44_SVTM**	23.5	1148.00

Eleocharis obicis / Spike-Rush	**17_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 17_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 160_SVTM**	125.2	6146.00
Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	**15_SVTM**	1.0	2.00
Hemiaspis damelii / Grey Snake	**13_Moderate_good, 15_Moderate_good, 17_Moderate_good, 24_Moderate_good, 46_Moderate_good, 47_Moderate_good, 160_Moderate_good, 15_SVTM, 17_SVTM, 46_SVTM, 160_SVTM, 15_Thinned**	128.3	5099.00
Hieraaetus morphnoides / Little Eagle	**28_SVTM**	0.9	35.00
Lepidium monoplocoides / Winged Peppercress	**15_Derived, 26_Derived, 26_Moderate_good, 26_Thinned, 163_Moderate_good, 15_SVTM, 26_SVTM, 45_SVTM, 163_SVTM, 46_SVTM, 160_SVTM**	52.1	1764.00

Leptorhynchos orientalis / Lanky Buttons	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	43.7	1352.00
Litoria raniformis / Southern Bell Frog	**15_Moderate_good, 163_Moderate_good, 163_SVTM**	1.7	73.00
Lophochroa leadbeateri / Pink Cockatoo	**15_Moderate_good, 28_SVTM, 45_SVTM**	6.6	330.00
Lophoictinia isura / Square-tailed Kite	**28_SVTM**	0.9	35.00
Maireana cheelii / Chariot Wheels	**24_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 44_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 26_SVTM, 44_SVTM, 157_SVTM, 164_SVTM, 46_SVTM**	146.8	6460.00
Ninox connivens / Barking Owl	**15_Moderate_good, 15_SVTM, 70_SVTM, 15_Thinned**	28.3	1018.00

Pedionomus torquatus / Plains-wanderer	**26_Derived, 46_Moderate_good, 164_Moderate_good, 44_SVTM, 163_SVTM, 216_Moderate-good, 164_SVTM**	1.2	70.00
Pilularia novae-hollandiae / Austral Pillwort	**15_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 45_SVTM**	72.2	994.00
Polytelis swainsonii / Superb Parrot	**28_SVTM**	0.9	46.00
Sclerolaena napiformis / Turnip Copperburr	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 46_SVTM**	43.4	1336.00
Solanum karsense / Menindee Nightshade	**15_Derived**	0.2	3.00

Swainsona murrayana / Slender Darling Pea	**15_Derived, 17_Moderate_good, 23_Derived, 23_Moderate_good, 24_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 28_Derived, 44_Moderate_good, 46_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 15_SVTM, 26_SVTM, 28_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM**	341.2	13995.00
Swainsona plagiotropis / Red Darling Pea	**26_Derived, 26_Moderate_good, 26_Thinned, 44_Moderate_good, 163_Moderate_good, 26_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	45.7	1448.00

Swainsona sericea / Silky Swainson-pea	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 28_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	45.3	1433.00
Tyto novaehollandiae / Masked Owl	**26_Moderate_good, 26_Thinned, 70_SVTM**	7.4	271.00

Credit Retirement Options

Like-for-like credit retirement options

Ardeotis australis / Australian Bustard	Spp	IBRA subregion
	Ardeotis australis / Australian Bustard	Any in NSW
Austrostipa wakoolica / A spear-grass	Spp	IBRA subregion
	Austrostipa wakoolica / A spear-grass	Any in NSW
Brachyscome muelleroides / Claypan Daisy	Spp	IBRA subregion
	Brachyscome muelleroides / Claypan Daisy	Any in NSW
Brachyscome papillosa / Mossgiel Daisy	Spp	IBRA subregion
	Brachyscome papillosa / Mossgiel Daisy	Any in NSW

Burhinus grallarius / Bush Stone-curlew	Spp	IBRA subregion
	Burhinus grallarius / Bush Stone-curlew	Any in NSW
Calotis moorei / A burr-daisy	Spp	IBRA subregion
	Calotis moorei / A burr-daisy	Any in NSW
Convolvulus tedmoorei / Bindweed	Spp	IBRA subregion
	Convolvulus tedmoorei / Bindweed	Any in NSW
Cullen parvum / Small Scurf-pea	Spp	IBRA subregion
	Cullen parvum / Small Scurf-pea	Any in NSW
Eleocharis obicis / Spike-Rush	Spp	IBRA subregion
	Eleocharis obicis / Spike-Rush	Any in NSW
Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	Spp	IBRA subregion
	Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	Any in NSW
Hemiaspis damelii / Grey Snake	Spp	IBRA subregion

	Hemiaspis damelii / Grey Snake	Any in NSW
Hieraaetus morphnoides / Little Eagle	Spp	IBRA subregion
	Hieraaetus morphnoides / Little Eagle	Any in NSW
Lepidium monoplocoides / Winged Peppercress	Spp	IBRA subregion
	Lepidium monoplocoides / Winged Peppercress	Any in NSW
Leptorhynchos orientalis / Lanky Buttons	Spp	IBRA subregion
	Leptorhynchos orientalis / Lanky Buttons	Any in NSW
Litoria raniformis / Southern Bell Frog	Spp	IBRA subregion
	Litoria raniformis / Southern Bell Frog	Any in NSW
Lophochroa leadbeateri / Pink Cockatoo	Spp	IBRA subregion
	Lophochroa leadbeateri / Pink Cockatoo	Any in NSW
Lophoictinia isura / Square-tailed Kite	Spp	IBRA subregion
	Lophoictinia isura / Square-tailed Kite	Any in NSW

Maireana cheelii / Chariot Wheels	Spp	IBRA subregion
	Maireana cheelii / Chariot Wheels	Any in NSW
Ninox connivens / Barking Owl	Spp	IBRA subregion
	Ninox connivens / Barking Owl	Any in NSW
Pedionomus torquatus / Plains-wanderer	Spp	IBRA subregion
	Pedionomus torquatus / Plains-wanderer	Any in NSW
Pilularia novae-hollandiae / Austral Pillwort	Spp	IBRA subregion
	Pilularia novae-hollandiae / Austral Pillwort	Any in NSW
Polytelis swainsonii / Superb Parrot	Spp	IBRA subregion
	Polytelis swainsonii / Superb Parrot	Any in NSW
Sclerolaena napiformis / Turnip Copperburr	Spp	IBRA subregion
	Sclerolaena napiformis / Turnip Copperburr	Any in NSW
Solanum karsense / Menindee Nightshade	Spp	IBRA subregion

	Solanum karsense / Menindee Nightshade	Any in NSW
Swainsona murrayana / Slender Darling Pea	Spp	IBRA subregion
	Swainsona murrayana / Slender Darling Pea	Any in NSW
Swainsona plagiotropis / Red Darling Pea	Spp	IBRA subregion
	Swainsona plagiotropis / Red Darling Pea	Any in NSW
Swainsona sericea / Silky Swainson-pea	Spp	IBRA subregion
	Swainsona sericea / Silky Swainson-pea	Any in NSW
Tyto novaehollandiae / Masked Owl	Spp	IBRA subregion
	Tyto novaehollandiae / Masked Owl	Any in NSW

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id

00041510/BAAS19078/25/00054312

Proposal Name

VNI Murrumbidgee

BAM data last updated *

28/10/2024

Assessor Name

Devon T Raiff

Assessor Number

BAAS23009

BAM Data version *

Current classification (live - default) (80)

Proponent Name(s)

Report Created

11/06/2025

BAM Case Status

Finalised

Assessment Revision

7

Assessment Type

Major Projects

Date Finalised

11/06/2025

* 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
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	Endangered Ecological Community	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Species
Brachyscome muelleroides / Claypan Daisy
Calotis moorei / A burr-daisy
Convolvulus tedmoorei / Bindweed
Pedionomus torquatus / Plains-wanderer

Additional Information for Approval

PCT Outside Ibra Added

PCT
164-Cotton Bush open shrubland of the semi-arid (warm) zone

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)

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
13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	3.8	56	1	57.00
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	71.5	879	102	981.00
17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	14.9	0	372	372.00

20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	1.9	0	9	9.00
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	9.9	0	109	109.00
24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Not a TEC	7.0	0	126	126.00
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Weeping Myall Woodlands	316.9	1311	1807	3118.00
28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	39.9	0	535	535.00
44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Natural Grasslands of the Murray Valley Plains	23.6	0	1151	1151.00
45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Natural Grasslands of the Murray Valley Plains	9.5	0	451	451.00
46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Natural Grasslands of the Murray Valley Plains	58.4	0	2778	2778.00
47-Swamp grassland wetland of the Riverine Plain	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	0.2	0	9	9.00
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Not a TEC	1.0	7	5	12.00
157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Not a TEC	99.5	0	2686	2686.00

160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Not a TEC	16.7	0	374	374.00
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Not a TEC	63.2	0	1552	1552.00
164-Cotton Bush open shrubland of the semi-arid (warm) zone	Not a TEC	348.7	0	7890	7890.00
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Not a TEC	5.6	30	0	30.00
70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt	Not a TEC	0.2	0	5	5.00
159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)	Not a TEC	0.1	0	3	3.00
216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Not a TEC	9.8	0	245	245.00

13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Moderate_good	Yes	56	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_SVTM	No	1	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Semi-arid Woodlands (Grassy sub-formation)	Tier 3 or higher threat status	13_Moderate_good	Yes (including artificial)	56	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Grassy sub-formation)	Tier 3 or higher threat status	13_SVTM	No	1	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Derived	No	73	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Moderate_good	Yes	879	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_SVTM	No	10	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Thinned	No	19	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Semi-arid Woodlands (Grassy sub-formation)	Tier 3 or higher threat status	15_Derived	No	73	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Semi-arid Woodlands (Grassy sub-formation)	Tier 3 or higher threat status	15_Moderate_good	Yes (including artificial)	879	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Semi-arid Woodlands (Grassy sub-formation)	Tier 3 or higher threat status	15_SVTM	No	10	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Semi-arid Woodlands (Grassy sub-formation)	Tier 3 or higher threat status	15_Thinned	No	19	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_Moderate_good	No	298	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_SVTM	No	74	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region

	Freshwater Wetlands	Tier 3 or higher threat status	17_Moderate_good	No	298	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Freshwater Wetlands	Tier 3 or higher threat status	17_SVTM	No	74	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Derived	No	8	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Thinned	No	1	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions This includes PCT's: 20, 22	-	20_Derived_LCV	No	0	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	20_Derived	No	8	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	20_Thinned	No	1	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	20_Derived_LCV	No	0	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Derived	No	21	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Derived_LCV	No	22	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Moderate_good	No	60	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Thinned	No	6	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	23_Derived	No	21	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	23_Derived_LCV	No	22	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	23_Moderate_good	No	60	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	23_Thinned	No	6	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	24_Moderate_good	No	126	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Freshwater Wetlands	Tier 4 or higher threat status	24_Moderate_good	No	126	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Derived	No	0	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Derived_LCV	No	0	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Moderate_good	No	1757	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Thinned	Yes	1311	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_SVTM	No	50	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Semi-arid Woodlands (Grassy sub-formation)	Tier 1	26_Derived	No	0	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Semi-arid Woodlands (Grassy sub-formation)	Tier 1	26_Derived_LCV	No	0	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Semi-arid Woodlands (Grassy sub-formation)	Tier 1	26_Moderate_good	No	1757	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Grassy sub-formation)	Tier 1	26_Thinned	Yes (including artificial)	1311	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Grassy sub-formation)	Tier 1	26_SVTM	No	50	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived	No	154	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived_TS	No	8	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Derived_LCV	No	39	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Thinned	No	36	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_SVTM	No	227	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Moderate-good	No	71	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	28_Derived	No	154	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	28_Derived_TS	No	8	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	28_Derived_LCV	No	39	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	28_Thinned	No	36	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	28_SVTM	No	227	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	28_Moderate-good	No	71	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	44_Moderate_good	No	711	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	44_SVTM	No	440	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Grasslands	Tier 2 or higher threat status	44_Moderate_good	No	711	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Grasslands	Tier 2 or higher threat status	44_SVTM	No	440	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	45_Moderate_good	No	153	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	45_SVTM	No	298	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Grasslands	Tier 3 or higher threat status	45_Moderate_good	No	153	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Grasslands	Tier 3 or higher threat status	45_SVTM	No	298	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	46_Moderate_good	No	1824	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	46_SVTM	No	954	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region

	Grasslands	Tier 4 or higher threat status	46_Moderate_good	No	1824	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Grasslands	Tier 4 or higher threat status	46_SVTM	No	954	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
47-Swamp grassland wetland of the Riverine Plain	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains This includes PCT's: 47, 360	-	47_Moderate_good	No	9	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Freshwater Wetlands	Tier 3 or higher threat status	47_Moderate_good	No	9	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Moderate_good	No	5	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Thinned	Yes	7	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	58_Moderate_good	No	5	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Semi-arid Woodlands (Shrubby sub-formation)	Tier 3 or higher threat status	58_Thinned	Yes (including artificial)	7	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Floodplain Transition Woodlands This includes PCT's: 56, 70, 74, 76, 80, 81, 82, 101, 237, 244, 248, 251, 628	Floodplain Transition Woodlands >=50% and <70%	70_SVTM	No	5	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Grassy Woodlands	Tier 3 or higher threat status	70_SVTM	No	5	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 195, 196, 211, 377	Riverine Chenopod Shrublands >=50% and <70%	157_Moderate_good	No	2450	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 195, 196, 211, 377	Riverine Chenopod Shrublands >=50% and <70%	157_SVTM	No	236	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Arid Shrublands (Chenopod sub-formation)	Tier 3 or higher threat status	157_Moderate_good	No	2450	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Arid Shrublands (Chenopod sub-formation)	Tier 3 or higher threat status	157_SVTM	No	236	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Chenopod Shrublands This includes PCT's: 159, 195	Riverine Chenopod Shrublands >=90%	159_SVTM	No	3	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Arid Shrublands (Chenopod sub-formation)	Tier 1	159_SVTM	No	3	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_Moderate_good	No	340	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_SVTM	No	34	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Freshwater Wetlands	Tier 4 or higher threat status	160_Moderate_good	No	340	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Freshwater Wetlands	Tier 4 or higher threat status	160_SVTM	No	34	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_Moderate_good	No	1270	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_SVTM	No	282	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Arid Shrublands (Chenopod sub-formation)	Tier 4 or higher threat status	163_Moderate_good	No	1270	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Arid Shrublands (Chenopod sub-formation)	Tier 4 or higher threat status	163_SVTM	No	282	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

164-Cotton Bush open shrubland of the semi-arid (warm) zone

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_Moderate_good	No	5499	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_SVTM	No	2391	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Variation options

Formation	Trading group	Zone	HBT	Credits	IBRA region
Arid Shrublands (Chenopod sub-formation)	Tier 4 or higher threat status	164_Moderate_good	No	5499	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Arid Shrublands (Chenopod sub-formation)	Tier 4 or higher threat status	164_SVTM	No	2391	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Derived	No	0	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Thinned	Yes	30	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region

	Semi-arid Woodlands (Shrubby sub-formation)	Tier 4 or higher threat status	170_Derived	No	0	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Woodlands (Shrubby sub-formation)	Tier 4 or higher threat status	170_Thinned	Yes (including artificial)	30	IBRA Region: Riverina, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	216_Moderate-good	No	245	Murrumbidgee,Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Arid Shrublands (Chenopod sub-formation)	Tier 4 or higher threat status	216_Moderate-good	No	245	IBRA Region: Riverina, 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
Ardeotis australis / Australian Bustard	**157_Moderate_good, 163_Moderate_good, 28_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM, 160_SVTM**	105.0	5225.00
Austrostipa wakoolica / A spear-grass	**17_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 17_SVTM, 26_SVTM, 28_SVTM**	28.4	587.00
Brachyscome muelleroides / Claypan Daisy	**44_SVTM, 45_SVTM**	1.0	78.00
Brachyscome papillosa / Mossgiel Daisy	**15_Derived, 15_Moderate_good, 46_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 15_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM, 160_SVTM**	141.3	6941.00
Burhinus grallarius / Bush Stone-curlew	**15_Moderate_good, 20_Thinned, 23_Moderate_good, 26_Moderate_good, 26_Thinned, 28_Thinned, 58_Moderate_good, 58_Thinned, 15_SVTM, 26_SVTM, 28_SVTM, 70_SVTM, 15_Thinned, 28_Moderate-good, 23_Thinned**	190.7	4549.00
Calotis moorei / A burr-daisy	**23_Derived, 23_Moderate_good, 157_Moderate_good, 157_SVTM**	12.1	827.00

Convolvulus tedmoorei / Bindweed	**17_Moderate_good, 44_Moderate_good, 157_Moderate_good, 160_Moderate_good, 163_Moderate_good, 164_Moderate_good, 17_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 160_SVTM**	28.9	2013.00
Cullen parvum / Small Scurf-pea	**44_Moderate_good, 44_SVTM**	23.5	1148.00
Eleocharis obicis / Spike-Rush	**17_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 17_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 160_SVTM**	125.2	6146.00
Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum	**15_SVTM**	1.0	2.00
Hemiaspis damelii / Grey Snake	**13_Moderate_good, 15_Moderate_good, 17_Moderate_good, 24_Moderate_good, 46_Moderate_good, 47_Moderate_good, 160_Moderate_good, 15_SVTM, 17_SVTM, 46_SVTM, 160_SVTM, 15_Thinned**	128.3	5099.00
Hieraaetus morphnoides / Little Eagle	**28_SVTM**	0.9	35.00

Lepidium monoplocoides / Winged Peppercress	**15_Derived, 26_Derived, 26_Moderate_good, 26_Thinned, 163_Moderate_good, 15_SVTM, 26_SVTM, 45_SVTM, 163_SVTM, 46_SVTM, 160_SVTM**	52.1	1764.00
Leptorhynchos orientalis / Lanky Buttons	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	43.7	1352.00
Litoria raniformis / Southern Bell Frog	**15_Moderate_good, 163_Moderate_good, 163_SVTM**	1.7	73.00
Lophochroa leadbeateri / Pink Cockatoo	**15_Moderate_good, 28_SVTM, 45_SVTM**	6.6	330.00
Lophoictinia isura / Square-tailed Kite	**28_SVTM**	0.9	35.00
Maireana cheelii / Chariot Wheels	**24_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 44_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 26_SVTM, 44_SVTM, 157_SVTM, 164_SVTM, 46_SVTM**	146.8	6460.00
Ninox connivens / Barking Owl	**15_Moderate_good, 15_SVTM, 70_SVTM, 15_Thinned**	28.3	1018.00
Pedionomus torquatus / Plains-wanderer	**26_Derived, 46_Moderate_good, 164_Moderate_good, 44_SVTM, 163_SVTM, 216_Moderate-good, 164_SVTM**	1.2	70.00

Pilularia novae-hollandiae / Austral Pillwort	**15_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 45_SVTM**	72.2	994.00
Polytelis swainsonii / Superb Parrot	**28_SVTM**	0.9	46.00
Sclerolaena napiformis / Turnip Copperburr	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 44_SVTM, 46_SVTM**	43.4	1336.00
Solanum karsense / Menindee Nightshade	**15_Derived**	0.2	3.00
Swainsona murrayana / Slender Darling Pea	**15_Derived, 17_Moderate_good, 23_Derived, 23_Moderate_good, 24_Moderate_good, 26_Derived, 26_Moderate_good, 26_Thinned, 28_Derived, 44_Moderate_good, 46_Moderate_good, 157_Moderate_good, 163_Moderate_good, 164_Moderate_good, 15_SVTM, 26_SVTM, 28_SVTM, 44_SVTM, 45_SVTM, 157_SVTM, 163_SVTM, 164_SVTM, 46_SVTM**	341.2	13995.00
Swainsona plagiotropis / Red Darling Pea	**26_Derived, 26_Moderate_good, 26_Thinned, 44_Moderate_good, 163_Moderate_good, 26_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	45.7	1448.00
Swainsona sericea / Silky Swainson-pea	**26_Derived, 26_Moderate_good, 26_Thinned, 26_SVTM, 28_SVTM, 44_SVTM, 45_SVTM, 46_SVTM**	45.3	1433.00

Tyto novaehollandiae / Masked Owl	**26_Moderate_good, 26_Thinned, 70_SVTM**	7.4	271.00

Credit Retirement Options

Like-for-like options

Ardeotis australis/ Australian Bustard	Spp	IBRA region	
	Ardeotis australis/Australian Bustard	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Austrostipa wakoolica/ A spear-grass	Spp	IBRA region	
	Austrostipa wakoolica/A spear-grass	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act	IBRA region

		shown below	
	Flora	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Brachyscome muelleroides/ Claypan Daisy	Spp	IBRA region	
	Brachyscome muelleroides/Claypan Daisy	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Brachyscome papillosa/ Mossgiel Daisy	Spp	IBRA region	
	Brachyscome papillosa/Mossgiel Daisy	Any in NSW	

Brachyscome papillosa/ Mossgiel Daisy	**Variation options**		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Burhinus grallarius/ Bush Stone-curlew	Spp	IBRA region	
	Burhinus grallarius/Bush Stone-curlew	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region

	Fauna	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Calotis moorei/ A burr-daisy	Spp	IBRA region	
	Calotis moorei/A burr-daisy	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Convolvulus tedmoorei/ Bindweed	Spp	IBRA region	
	Convolvulus tedmoorei/Bindweed	Any in NSW	
	Variation options		

	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Cullen parvum/ Small Scurf-pea	Spp	IBRA region	
	Cullen parvum/Small Scurf-pea	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Eleocharis obicis/ Spike-Rush	Spp		IBRA region
	Eleocharis obicis/Spike-Rush		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora		Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Eucalyptus leucoxylon subsp. pruinosa/ Yellow Gum	Spp		IBRA region
	Eucalyptus leucoxylon subsp. pruinosa/Yellow Gum		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region

	Flora	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Hemiaspis damelii/ Grey Snake	Spp	IBRA region	
	Hemiaspis damelii/Grey Snake	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Hieraaetus morphnoides/ Little Eagle	Spp	IBRA region	
	Hieraaetus morphnoides/Little Eagle	Any in NSW	
	Variation options		

	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Lepidium monoplocoides/ Winged Peppercress	Spp	IBRA region	
	Lepidium monoplocoides/Winged Peppercress	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Leptorhynchos orientalis/ Lanky Buttons	Spp		IBRA region
	Leptorhynchos orientalis/Lanky Buttons		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Litoria raniformis/ Southern Bell Frog	Spp		IBRA region
	Litoria raniformis/Southern Bell Frog		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region

	Fauna	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Lophochroa leadbeateri/ Pink Cockatoo	Spp	IBRA region	
	Lophochroa leadbeateri/Pink Cockatoo	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Lophoictinia isura/ Square-tailed Kite	Spp	IBRA region	
	Lophoictinia isura/Square-tailed Kite	Any in NSW	
	Variation options		

	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Maireana cheelii/ Chariot Wheels	Spp	IBRA region	
	Maireana cheelii/Chariot Wheels	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Ninox connivens/ Barking Owl	Spp		IBRA region
	Ninox connivens/Barking Owl		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Pedionomus torquatus/ Plains-wanderer	Spp		IBRA region
	Pedionomus torquatus/Plains-wanderer		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region

	Fauna	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Pilularia novae-hollandiae/ Austral Pillwort	Spp	IBRA region	
	Pilularia novae-hollandiae/Austral Pillwort	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Polytelis swainsonii/ Superb Parrot	Spp	IBRA region	
	Polytelis swainsonii/Superb Parrot	Any in NSW	
	Variation options		

	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Sclerolaena napiformis/ Turnip Copperburr	Spp	IBRA region	
	Sclerolaena napiformis/Turnip Copperburr	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Endangered	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Solanum karsense/ Menindee Nightshade	Spp		IBRA region
	Solanum karsense/Menindee Nightshade		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Swainsona murrayana/ Slender Darling Pea	Spp		IBRA region
	Swainsona murrayana/Slender Darling Pea		Any in NSW
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region

	Flora	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Swainsona plagiotropis/ Red Darling Pea	Spp	IBRA region	
	Swainsona plagiotropis/Red Darling Pea	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Swainsona sericea/ Silky Swainson-pea	Spp	IBRA region	
	Swainsona sericea/Silky Swainson-pea	Any in NSW	
	Variation options		

	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Flora	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Tyto novaehollandiae/ Masked Owl	Spp	IBRA region	
	Tyto novaehollandiae/Masked Owl	Any in NSW	
	Variation options		
	Kingdom	Any species with same or higher category of listing under Part 4 of the BC Act shown below	IBRA region
	Fauna	Vulnerable	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Candidate Species Report

Proposal Details

Assessment Id 00041510/BAAS19078/25/00054312	Proposal Name VNI Murrumbidgee	BAM data last updated * 28/10/2024
Assessor Name Devon T Raiff	Report Created 11/06/2025	BAM Data version * Current classification (live - default) (80)
Assessor Number BAAS23009	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 7		Date Finalised 11/06/2025

* 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
Ardeotis australis Australian Bustard	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Austrostipa wakoolica A spear-grass	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Brachyscome muelleroides Claypan Daisy	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Brachyscome papillosa Mossgiel Daisy	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	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Calotis moorei A burr-daisy	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Convolvulus tedmoorei Bindweed	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cullen parvum Small Scurf-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eleocharis obicis Spike-Rush	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?

Eucalyptus leucoxylon subsp. pruinosa Yellow Gum	Yes (assumed present)	☐ 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)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hemiaspis damelii Grey Snake	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lepidium monoplocoides Winged Peppercress	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Leptorhynchos orientalis Lanky Buttons	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Litoria raniformis Southern Bell Frog	Yes (surveyed)	☑ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophochroa leadbeateri Pink Cockatoo	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Maireana cheelii Chariot Wheels	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?
Pedionomus torquatus Plains-wanderer	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pilularia novae-hollandiae Austral Pillwort	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?
Polytelis swainsonii Superb Parrot	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Sclerolaena napiformis Turnip Copperburr	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Solanum karsense Menindee Nightshade	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona murrayana Slender Darling Pea	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?
Swainsona plagiotropis Red Darling Pea	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?

Swainsona sericea Silky Swainson-pea	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 (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

Common Name	Scientific Name
Spike-Rush	Eleocharis obicis

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Curlew Sandpiper	Calidris ferruginea	Habitat constraints
Koala	Phascolarctos cinereus	Species is vagrant Habitat constraints
Pine Donkey Orchid	Diuris tricolor	Habitat degraded
Pink-tailed Legless Lizard	Aprasia parapulchella	Refer to BAR
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	Refer to BAR
Sand-hill Spider Orchid	Caladenia arenaria	Refer to BAR
Southern Myotis	Myotis macropus	Habitat constraints
Swift Parrot	Lathamus discolor	Habitat constraints
White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	Climacteris affinis - endangered population	Refer to BAR

BAM Credit Summary Report

Proposal Details

Assessment Id
00041510/BAAS19078/25/00054312

Proposal Name
VNI Murrumbidgee

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Report Created
11/06/2025

BAM Data version *
Current classification (live - default) (80)

Assessor Number
BAAS23009

BAM Case Status
Finalised

Date Finalised
11/06/2025

Assessment Revision
7

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
Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
1	13_Moderate_good	Not a TEC	57	47.4	3.8	PCT Cleared - 57%	Low Sensitivity to Gain			1.25		56

31	13_SVTM	Not a TEC	100	43.3	0.01	PCT Cleared - 57%	Low Sensitivity to Gain			1.25		1
											Subtotal	**57**
Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
2	15_Derived	Not a TEC	29.2	29.2	8	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		73
3	15_Moderate_good	Not a TEC	70.6	45.0	62.4	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		879
32	15_SVTM	Not a TEC	100	100.0	0.33	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		10
46	15_Thinned	Not a TEC	100	85.8	0.72	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		19
											Subtotal	**981**
Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion												
23	58_Moderate_good	Not a TEC	66.3	58.4	0.26	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		5

24	58_Thinned	Not a TEC	46.3	30.5	0.7	PCT Cleared - 50%	Low Sensitivity to Gain			1.25		7
											Subtotal	**12**
Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion												
42	216_Moderate-good	Not a TEC	100	100.0	9.8	PCT Cleared - 0%	Low Sensitivity to Gain			1.00		245
											Subtotal	**245**
Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion												
25	157_Moderate_good	Not a TEC	85.3	85.3	91.9	PCT Cleared - 60%	Low Sensitivity to Gain			1.25		2450
39	157_SVTM	Not a TEC	100	100.0	7.6	PCT Cleared - 60%	Low Sensitivity to Gain			1.25		236
											Subtotal	**2686**

Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
5	20_Derived	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	21.5	21.5	0.99	Population size	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50	True	8
6	20_Thinned	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	34.9	24.4	0.16	Population size	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50	True	1
47	20_Derived_LCV	Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	5.2	5.2	0.77	Population size	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	True	0
											Subtotal	**9**

Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains												
10	24_Moderate_good	Not a TEC	72	72.0	7	PCT Cleared - 20%	Low Sensitivity to Gain			1.00		126
											Subtotal	**126**
Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones												
29	170_Derived	Not a TEC	12.3	12.3	1.4	PCT Cleared - 41%	Low Sensitivity to Gain			1.00		0
30	170_Thinned	Not a TEC	46.6	28.8	4.2	PCT Cleared - 41%	Low Sensitivity to Gain			1.00		30
											Subtotal	**30**
Cotton Bush open shrubland of the semi-arid (warm) zone												
28	164_Moderate_good	Not a TEC	86.9	86.9	253	PCT Cleared - 8%	Low Sensitivity to Gain			1.00		5499
43	164_SVTM	Not a TEC	100	100.0	95.6	PCT Cleared - 8%	Low Sensitivity to Gain			1.00		2391
											Subtotal	**7890**

Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion												
21	46_Moderate_good	Natural Grasslands of the Murray Valley Plains	92.7	92.7	39.4	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Critically Endangered	2.00		1824
44	46_SVTM	Natural Grasslands of the Murray Valley Plains	100	100.0	19.1	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Critically Endangered	2.00		954
											Subtotal	**2778**
Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones												
27	163_Moderate_good	Not a TEC	97.7	97.7	52	PCT Cleared - 26%	Low Sensitivity to Gain			1.00		1270
41	163_SVTM	Not a TEC	100	100.0	11.3	PCT Cleared - 26%	Low Sensitivity to Gain			1.00		282
											Subtotal	**1552**

Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion												
19	44_Moderate_good	Natural Grasslands of the Murray Valley Plains	96.3	96.3	14.8	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Critically Endangered	2.00		711
36	44_SVTM	Natural Grasslands of the Murray Valley Plains	100	100.0	8.8	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Critically Endangered	2.00		440
											Subtotal	**1151**
Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
4	17_Moderate_good	Not a TEC	76.3	76.3	12.5	PCT Cleared - 63%	Low Sensitivity to Gain			1.25		298
33	17_SVTM	Not a TEC	100	100.0	2.4	PCT Cleared - 63%	Low Sensitivity to Gain			1.25		74
											Subtotal	**372**
Nitre Goosefoot shrubland wetland on clays of the inland floodplains												
26	160_Moderate_good	Not a TEC	88.7	88.7	15.3	PCT Cleared - 28%	Low Sensitivity to Gain			1.00		340

45	160_SVTM	Not a TEC	100	100.0	1.4	PCT Cleared - 28%	Low Sensitivity to Gain			1.00		34
											Subtotal	**374**
Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)												
40	159_SVTM	Not a TEC	100	100.0	0.05	PCT Cleared - 92%	Low Sensitivity to Gain			2.00		3
											Subtotal	**3**
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion												
20	45_Moderate_good	Natural Grasslands of the Murray Valley Plains	85.5	85.5	3.6	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Critically Endangered	2.00		153
37	45_SVTM	Natural Grasslands of the Murray Valley Plains	100	100.0	6	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Critically Endangered	2.00		298
											Subtotal	**451**

Swamp grassland wetland of the Riverine Plain												
22	47_Moderate_good	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	87.5	87.5	0.17	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		9
											Subtotal	**9**
Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
11	26_Derived	Weeping Myall Woodlands	15	15.0	138.9	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Endangered	1.50		0
12	26_Derived_LCV	Weeping Myall Woodlands	11.4	11.4	1.3	Environment Protection and Conservation Act listing status	Moderate Sensitivity to Gain	Not Listed	Endangered	1.75		0

13	26_Moderate_good	Weeping Myall Woodlands	76.7	51.3	91.3	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Endangered	1.50		1757
14	26_Thinned	Weeping Myall Woodlands	51.6	41.6	84.1	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Endangered	1.50		1311
34	26_SVTM	Weeping Myall Woodlands	100	100.0	1.3	Environment Protection and Conservation Act listing status	Low Sensitivity to Gain	Not Listed	Endangered	1.50		50
											Subtotal	**3118**
White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone												
15	28_Derived	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	21	21.0	19.6	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		154

16	28_Derived_TS	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	45	35.4	0.64	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		8
17	28_Derived_LCV	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	17.9	17.9	5	Biodiversity Conservation Act listing status	Moderate Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.75		39
18	28_Thinned	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	23.9	17.1	5.6	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		36

35	28_SVTM	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	100	100.0	6	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		227
48	28_Moderate-good	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	100	64.2	2.9	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		71
											Subtotal	**535**
White Cypress Pine woodland on sandy loams in central NSW wheatbelt												
38	70_SVTM	Not a TEC	100	100.0	0.16	PCT Cleared - 65%	Low Sensitivity to Gain			1.25		5
											Subtotal	**5**

Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones												
7	23_Derived	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	20.5	20.5	2.7	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		21
8	23_Derived_LCV	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	16.6	16.6	3.5	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		22
9	23_Moderate_good	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	72.4	47.1	3.4	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		60
49	23_Thinned	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	100	76.7	0.2	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		6
											Subtotal	**109**
											Total	**22493**

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
Ardeotis australis / Australian Bustard (Fauna)									
157_Moderate_good	85.3	85.3	3.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	146
163_Moderate_good	97.7	97.7	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	115
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	46
157_SVTM	100.0	100.0	4.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	204

163_SVTM	100.0	100.0	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	101
164_SVTM	100.0	100.0	73.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	3663
46_SVTM	100.0	100.0	17.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	890
160_SVTM	100.0	100.0	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	60
								Subtotal	**5225**
Austrostipa wakoolica / A spear-grass (Flora)									
17_Moderate_good	76.3	76.3	0.08	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3

26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	72
26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	177
17_SVTM	100.0	100.0	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	110
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	53
28_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	81

								Subtotal	**587**
Brachyscome muelleroides / Claypan Daisy (Flora)									
44_SVTM	100.0	100.0	0.73	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	55
45_SVTM	100.0	100.0	0.31	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	23
								Subtotal	**78**
Brachyscome papillosa / Mossgiel Daisy (Flora)									
15_Derived	29.2	29.2	0.24	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4
15_Moderate_good	45.0	45.0	0.12	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	3
46_Moderate_good	92.7	92.7	5.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	255
157_Moderate_good	85.3	85.3	4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	169

163_Moderate_good	97.7	97.7	3.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	190
164_Moderate_good	86.9	86.9	9.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	398
15_SVTM	100.0	100.0	0.07	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	16
157_SVTM	100.0	100.0	7.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	373
163_SVTM	100.0	100.0	6.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	303

164_SVTM	100.0	100.0	84.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4223
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	906
160_SVTM	100.0	100.0	1.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	60
								Subtotal	**6941**
Burhinus grallarius / Bush Stone-curlew (Fauna)									
15_Moderate_good	45.0	45.0	27.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	611
20_Thinned	24.4	24.4	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	2
23_Moderate_good	47.1	47.1	1.6	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	37

26_Moderate_good	51.3	51.3	69	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	1769
26_Thinned	41.6	41.6	76.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	1585
28_Thinned	17.1	17.1	4.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	41
58_Moderate_good	58.4	58.4	0.26	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	8
58_Thinned	30.5	30.5	0.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	11
15_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	16

26_SVTM	100.0	100.0	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	61
28_SVTM	100.0	100.0	5.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	268
70_SVTM	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	8
15_Thinned	85.8	85.8	0.72	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	31
28_Moderate-good	64.2	64.2	2.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	94
23_Thinned	76.7	76.7	0.19	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	7

								Subtotal	**4549**
Calotis moorei / A burr-daisy (Flora)									
23_Derived	20.5	20.5	0.61	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Endangered	True	9
23_Moderate_good	47.1	47.1	0.1	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Endangered	True	4
157_Moderate_good	85.3	85.3	4	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Endangered	True	254
157_SVTM	100.0	100.0	7.5	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Endangered	True	560
								Subtotal	**827**
Convolvulus tedmoorei / Bindweed (Flora)									
17_Moderate_good	76.3	76.3	0.08	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	5

44_Moderate_good	96.3	96.3	0.52	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	38
157_Moderate_good	85.3	85.3	4	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	254
160_Moderate_good	88.7	88.7	0.21	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	14
163_Moderate_good	97.7	97.7	1.4	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	106
164_Moderate_good	86.9	86.9	10.8	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	702
17_SVTM	100.0	100.0	2	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	146

44_SVTM	100.0	100.0	0.76	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	57
45_SVTM	100.0	100.0	0.31	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	23
157_SVTM	100.0	100.0	7.6	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	566
160_SVTM	100.0	100.0	1.4	Population size	Ecology or response to management is poorly known	Endangered	Not Listed	True	102
								Subtotal	**2013**
Cullen parvum / Small Scurf-pea (Flora)									
44_Moderate_good	96.3	96.3	14.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	711

44_SVTM	100.0	100.0	8.7	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	437
								Subtotal	**1148**
Eleocharis obicis / Spike-Rush (Flora)									
17_Moderate_good	76.3	76.3	0.08	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	3
157_Moderate_good	85.3	85.3	4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	169
163_Moderate_good	97.7	97.7	3.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	150
164_Moderate_good	86.9	86.9	12.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	537

17_SVTM	100.0	100.0	2.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	119
157_SVTM	100.0	100.0	7.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	373
163_SVTM	100.0	100.0	6.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	303
164_SVTM	100.0	100.0	88.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	4423
160_SVTM	100.0	100.0	1.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Vulnerable	Vulnerable	False	69
								Subtotal	**6146**

Eucalyptus leucoxylon subsp. pruinosa / Yellow Gum (Flora)									
15_SVTM	N/A	N/A	1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2
								Subtotal	**2**
Hemiaspis damelii / Grey Snake (Fauna)									
13_Moderate_good	47.4	47.4	1.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	36
15_Moderate_good	45.0	45.0	29.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	658
17_Moderate_good	76.3	76.3	12.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	476
24_Moderate_good	72.0	72.0	6.6	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	237

46_Moderate_good	92.7	92.7	39.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	1824
47_Moderate_good	87.5	87.5	0.17	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	7
160_Moderate_good	88.7	88.7	15.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	679
15_SVTM	100.0	100.0	0.33	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	17
17_SVTM	100.0	100.0	2.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	119
46_SVTM	100.0	100.0	19.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	954

160_SVTM	100.0	100.0	1.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	69
15_Thinned	85.8	85.8	0.54	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	23
								Subtotal	**5099**
Hieraaetus morphnoides / Little Eagle (Fauna)									
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	35
								Subtotal	**35**
Lepidium monoplocoides / Winged Peppercress (Flora)									
15_Derived	29.2	29.2	0.24	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	4
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	91

26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	72
26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	177
163_Moderate_good	97.7	97.7	1.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	69
15_SVTM	100.0	100.0	0.07	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	4
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	53
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	16

163_SVTM	100.0	100.0	6.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	303
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	906
160_SVTM	100.0	100.0	1.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	69
								Subtotal	**1764**
Leptorhynchos orientalis / Lanky Buttons (Flora)									
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	72

26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	177
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	53
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	16
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	906
								Subtotal	**1352**

Litoria raniformis / Southern Bell Frog (Fauna)									
15_Moderate_good	45.0	45.0	0.33	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	7
163_Moderate_good	97.7	97.7	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	64
163_SVTM	100.0	100.0	0.03	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	2
								Subtotal	**73**
Lophochroa leadbeateri / Pink Cockatoo (Fauna)									
15_Moderate_good	70.6	70.6	0.05	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	2
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	46

45_SVTM	100.0	100.0	5.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Endangered	False	282
								Subtotal	**330**
Lophoictinia isura / Square-tailed Kite (Fauna)									
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	35
								Subtotal	**35**
Maireana cheelii / Chariot Wheels (Flora)									
24_Moderate_good	72.0	72.0	0.06	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	2
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	72

26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	177
44_Moderate_good	96.3	96.3	0.12	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	6
157_Moderate_good	85.3	85.3	3.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	149
163_Moderate_good	97.7	97.7	0.82	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	40
164_Moderate_good	86.9	86.9	3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	131
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	53
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	37

157_SVTM	100.0	100.0	7.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	373
164_SVTM	100.0	100.0	88.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4423
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	906
								Subtotal	**6460**
Ninox connivens / Barking Owl (Fauna)									
15_Moderate_good	70.6	70.6	27.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	958
15_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	16
70_SVTM	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	8

15_Thinned	100.0	100.0	0.72	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	36
								Subtotal	**1018**
Pedionomus torquatus / Plains-wanderer (Fauna)									
26_Derived	15.0	15.0	0.25	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	3
46_Moderate_good	92.7	92.7	0.69	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	48
164_Moderate_good	86.9	86.9	0.1	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	7

44_SVTM	100.0	100.0	0.01	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1
163_SVTM	100.0	100.0	0.02	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	2
216_Moderate-good	100.0	100.0	0.11	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	8
164_SVTM	100.0	100.0	0.01	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1
								Subtotal	**70**

Pilularia novae-hollandiae / Austral Pillwort (Flora)									
15_Moderate_good	45.0	45.0	0.05	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	1
26_Derived	15.0	15.0	47.6	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	356
26_Moderate_good	51.3	51.3	13.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	336
26_Thinned	41.6	41.6	9.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	195
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	53

44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	16
								Subtotal	**994**
Polytelis swainsonii / Superb Parrot (Fauna)									
28_SVTM	100.0	100.0	0.92	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	46
								Subtotal	**46**
Sclerolaena napiformis / Turnip Copperburr (Flora)									
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	72

26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	177
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	53
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	37
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	906
								Subtotal	**1336**
Solanum karsense / Menindee Nightshade (Flora)									
15_Derived	29.2	29.2	0.24	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	3
								Subtotal	**3**

Swainsona murrayana / Slender Darling Pea (Flora)									
15_Derived	29.2	29.2	1.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	23
17_Moderate_good	76.3	76.3	0.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	19
23_Derived	20.5	20.5	0.61	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	6
23_Moderate_good	47.1	47.1	0.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	2
24_Moderate_good	72.0	72.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	40
26_Derived	15.0	15.0	26.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	201
26_Moderate_good	51.3	51.3	8.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	220

26_Thinned	41.6	41.6	18	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	375
28_Derived	21.0	21.0	1.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	20
44_Moderate_good	96.3	96.3	5.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	262
46_Moderate_good	92.7	92.7	1.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	88
157_Moderate_good	85.3	85.3	26.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	1118
163_Moderate_good	97.7	97.7	2.9	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	140
164_Moderate_good	86.9	86.9	121.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	5285

15_SVTM	100.0	100.0	0.07	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	53
28_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	81
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	16
157_SVTM	100.0	100.0	7.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	373
163_SVTM	100.0	100.0	6.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	303

164_SVTM	100.0	100.0	88.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4423
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	906
								Subtotal	**13995**
Swainsona plagiotropis / Red Darling Pea (Flora)									
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	91
26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	72
26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	177
44_Moderate_good	96.3	96.3	0.52	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	25

163_Moderate_good	97.7	97.7	1.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	71
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	53
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	16
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	906
								Subtotal	**1448**
Swainsona sericea / Silky Swainson-pea (Flora)									
26_Derived	15.0	15.0	12.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	91

26_Moderate_good	51.3	51.3	2.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	72
26_Thinned	41.6	41.6	8.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	177
26_SVTM	100.0	100.0	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	53
28_SVTM	100.0	100.0	1.6	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	81
44_SVTM	100.0	100.0	0.73	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	37
45_SVTM	100.0	100.0	0.31	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	16
46_SVTM	100.0	100.0	18.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	906
								Subtotal	**1433**

Tyto novaehollandiae / Masked Owl (Fauna)									
26_Moderate_good	76.7	76.7	6.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	234
26_Thinned	51.6	51.6	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	29
70_SVTM	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	8
								Subtotal	**271**

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00041510/BAAS19078/25/00054312	VNI Murrumbidgee	28/10/2024
Assessor Name	Report Created	BAM Data version *
Devon T Raiff	11/06/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS23009	Major Projects	Finalised
Assessment Revision		Date Finalised
7		11/06/2025

* 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	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Australian Painted Snipe	Rostratula australis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		47-Swamp grassland wetland of the Riverine Plain

Australian Painted Snipe	Rostratula australis	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Black Falcon	Falco subniger	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains

Black Falcon	Falco subniger	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Blue-billed Duck	Oxyura australis	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Blue-winged Parrot	Neophema chrysostoma	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Blue-winged Parrot	Neophema chrysostoma	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Brolga	Grus rubicunda	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion

Brolga	Grus rubicunda	47-Swamp grassland wetland of the Riverine Plain
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Curlew Sandpiper	Calidris ferruginea	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		47-Swamp grassland wetland of the Riverine Plain
Diamond Firetail	Stagonopleura guttata	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Dusky Woodswallow	Artamus cyanopterus cyanopterus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Dusky Woodswallow	Artamus cyanopterus cyanopterus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Dusky Woodswallow	Artamus cyanopterus cyanopterus	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Freckled Duck	Stictonetta naevosa	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
Gilbert's Whistler	Pachycephala inornata	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Grey Falcon	Falco hypoleucos	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Grey Falcon	Falco hypoleucos	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Inland Forest Bat	Vespadelus baverstocki	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Little Eagle	Hieraaetus morphnoides	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Little Eagle	Hieraaetus morphnoides	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Little Pied Bat	Chalinolobus picatus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains

Little Pied Bat	Chalinolobus picatus	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Magpie Goose	Anseranas semipalmata	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Painted Honeyeater	Grantiella picta	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

Painted Honeyeater	Grantiella picta	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Pied Honeyeater	Certhionyx variegatus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Pink Cockatoo	Lophochroa leadbeateri	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Pink Cockatoo	Lophochroa leadbeateri	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
Plains-wanderer	Pedionomus torquatus	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
Redthroat	Pyrrholaemus brunneus	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Redthroat	Pyrrholaemus brunneus	159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
Scarlet Robin	Petroica boodang	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
South-eastern Hooded Robin	Melanodryas cucullata cucullata	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Southern Whiteface	Aphelocephala leucopsis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Southern Whiteface	Aphelocephala leucopsis	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Speckled Warbler	Chthonicola sagittata	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt

Spotted Harrier	Circus assimilis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Spotted Harrier	Circus assimilis	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
Square-tailed Kite	Lophoictinia isura	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Superb Parrot	Polytelis swainsonii	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Superb Parrot	Polytelis swainsonii	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Swift Parrot	Lathamus discolor	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Turquoise Parrot	Neophema pulchella	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Varied Sittella	Daphoenositta chrysoptera	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

Varied Sittella	Daphoenositta chrysoptera	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
Western Blue-tongued Lizard	Tiliqua occipitalis	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
White-bellied Sea-Eagle	Haliaeetus leucogaster	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion

White-bellied Sea-Eagle	Haliaeetus leucogaster	47-Swamp grassland wetland of the Riverine Plain
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
White-fronted Chat	Epthianura albifrons	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

White-fronted Chat	Epthianura albifrons	164-Cotton Bush open shrubland of the semi-arid (warm) zone
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
White-throated Needletail	Hirundapus caudacutus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

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
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	Refer to BAR

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00041510/BAAS19078/25/00054312

Assessment name
VNI Murrumbidgee

BAM data last updated *
28/10/2024

Assessor Name
Devon T Raiff

Report Created
11/06/2025

BAM Data version *
Current classification (live - default) (80)

Assessor Number
BAAS23009

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
7

Date Finalised
11/06/2025

* 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	13_Moderate_good	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate_good	3.75	2	AreaA (1.52 ha) Area B4 (2.23 ha)
2	15_Derived	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	7.95	3	Area A (7.95 ha)
3	15_Moderate_good	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate_good	62.45	5	Area A (29.84 ha) Area B4 (32.61 ha)
4	17_Moderate_good	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Moderate_good	12.49	3	Area A (12.49 ha)
5	20_Derived	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	0.99	1	Area A (0.99 ha)

6	20_Thinned	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Thinned	0.16	1	Area A (0.03 ha) Area B4 (0.13 ha)
7	23_Derived	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Derived	2.71	2	Area A (2.71 ha)
8	23_Derived_LCV	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Derived_LCV	3.54	2	Area A (3.54 ha)
9	23_Moderate_good	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Moderate_good	3.41	2	Area A (1.83 ha) Area B4 (1.58 ha)
10	24_Moderate_good	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Moderate_good	7.02	3	Area A (7.02 ha)
11	26_Derived	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Derived	138.9	6	Area A (138.9 ha)
12	26_Derived_LCV	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Derived_LCV	1.29	1	Area A (1.29 ha)

13	26_Moderate_good	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Moderate_good	91.32	5	Area A (49.73 ha) Area B4 (41.59 ha)
14	26_Thinned	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Thinned	84.09	5	Area A (48.62 ha) Area B4 (35.47 ha)
15	28_Derived	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Derived	19.63	3	Area A (19.63 ha)
16	28_Derived_TS	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Derived_TS	0.64	1	Area A (0.45 ha) Area B4 (0.19 ha)
17	28_Derived_LCV	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Derived_LCV	5.03	3	Area A (5.03 ha)
18	28_Thinned	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Thinned	5.65	3	Area A (3.53 ha) Area B4 (2.12 ha)
19	44_Moderate_good	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Moderate_good	14.77	3	Area A (14.77 ha)

20	45_Moderate_good	45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Moderate_good	3.58	2	Area A (3.58 ha)
21	46_Moderate_good	46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Moderate_good	39.35	4	Area A (39.35 ha)
22	47_Moderate_good	47-Swamp grassland wetland of the Riverine Plain	Moderate_good	0.17	1	Area A (0.17 ha)
23	58_Moderate_good	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Moderate_good	0.26	1	Area A (0.19 ha) Area B4 (0.07 ha)
24	58_Thinned	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Thinned	0.7	1	Area A (0.38 ha) Area B4 (0.32 ha)
25	157_Moderate_good	157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Moderate_good	91.91	5	Area A (91.91 ha)
26	160_Moderate_good	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Moderate_good	15.32	3	Area A (15.32 ha)
27	163_Moderate_good	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Moderate_good	51.98	5	Area A (51.98 ha)
28	164_Moderate_good	164-Cotton Bush open shrubland of the semi-arid (warm) zone	Moderate_good	253.05	7	Area A (253.05 ha)

29	170_Derived	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Derived	1.42	1	Area A (1.42 ha)
30	170_Thinned	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Thinned	4.17	2	Area A (2.09 ha) Area B4 (2.08 ha)
31	13_SVTM	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	0.01	1	Area B4 (0.01 ha)
32	15_SVTM	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	0.33	1	Area A (0.33 ha)
33	17_SVTM	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVTM	2.38	2	Area A (2.38 ha)
34	26_SVTM	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	SVTM	1.33	1	Area A (1.33 ha)

35	28_SVTM	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	SVTM	6.04	3	Area A (6.04 ha)
36	44_SVTM	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	SVTM	8.79	3	Area A (8.79 ha)
37	45_SVTM	45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	SVTM	5.96	3	Area A (5.96 ha)
38	70_SVTM	70-White Cypress Pine woodland on sandy loams in central NSW wheatbelt	SVTM	0.16	1	Area A (0.16 ha)
39	157_SVTM	157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	SVTM	7.55	3	Area A (7.55 ha)
40	159_SVTM	159-Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)	SVTM	0.05	1	Area A (0.05 ha)
41	163_SVTM	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	SVTM	11.26	3	Area A (11.26 ha)
42	216_Moderate-good	216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Moderate-good	9.8	3	Area A (9.8 ha)
43	164_SVTM	164-Cotton Bush open shrubland of the semi-arid (warm) zone	SVTM	95.65	5	Area A (95.65 ha)

44	46_SVTM	46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	SVTM	19.07	3	Area A (19.07 ha)
45	160_SVTM	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	SVTM	1.37	1	Area A (1.37 ha)
46	15_Thinned	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Thinned	0.72	1	Area A (0.54 ha) Area B4 (0.18 ha)
47	20_Derived_LCV	20-Buloke - Moonah - Black Box open woodland on sandy rises of semi arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived_LCV	0.77	1	Area A (0.77 ha)
48	28_Moderate-good	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Moderate-good	2.94	2	Area A (1.36 ha) Area B4 (1.58 ha)
49	23_Thinned	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Thinned	0.2	1	Area A (0.13 ha) Area B4 (0.07 ha)

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00047237/BAAS23009/24/00047238

Proposal Name
VNI - Inland Slopes

BAM data last updated *
28/10/2024

Assessor Name
Michelle Patrick

Assessor Number
BAAS19078

BAM Data version *
Current classification (live - default) (80)

Proponent Names

Report Created
23/07/2025

BAM Case Status
Finalised

Assessment Revision
7

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
23/07/2025

* 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
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 Highla	Critically Endangered Ecological Community	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

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 Highla	Critically Endangered Ecological Community	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion

Species
Grevillea wilkinsonii / Tumut Grevillea
Caladenia arenaria / Sand-hill Spider Orchid

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Lophochroa leadbeateri / Pink Cockatoo
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo
Leipoa ocellata / Malleefowl

BAM Biodiversity Credit Report (Like for like)

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
76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	0.3	4	0	4
266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	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 Highla	0.2	5	0	5
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	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 Highla	44.1	82	10	92
319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	Not a TEC	12.5	0	11	11
343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion	Not a TEC	3.8	0	1	1

76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248, 267, 3405	-	76_Thinned	Yes	4	Inland Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New	-	266_Moderate-good	Yes	4	Inland Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 516, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395,					

	3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
	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 Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 516, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633,	-	266_Thinned	Yes	1	Inland Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	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 Highla This includes PCT's:	-	277_Derived_LCV	No	0	Inland Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 516, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
	White Box - Yellow Box - Blakely's Red Gum	-	277_Thinned	Yes	82	Inland Slopes, or

	Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 516, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383,					Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
	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 Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492,	-	277_Moderate-good	No	10	Inland Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	496, 508, 509, 510, 511, 516, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Rocky Hill Woodlands This includes PCT's: 177, 178, 318, 319	Inland Rocky Hill Woodlands >=50% and <70%	319_Derived_LCV	No	0	Inland Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Rocky Hill Woodlands This includes PCT's: 177, 178, 318, 319	Inland Rocky Hill Woodlands >=50% and <70%	319_Thinned	No	11	Inland Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Western Slopes Dry Sclerophyll Forests This includes PCT's: 54, 110, 333, 341, 343, 358, 472, 1279, 1668	Western Slopes Dry Sclerophyll Forests >=70% and <90%	343_Derived_LCV	No	0	Inland Slopes, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Western Slopes Dry Sclerophyll Forests This includes PCT's: 54, 110, 333, 341, 343, 358, 472, 1279, 1668	Western Slopes Dry Sclerophyll Forests >=70% and <90%	343_Moderate-good	No	1	Inland Slopes, 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
Ammobium craspedioides / Yass Daisy	**266_Moderate-good, 266_Thinned, 277_Thinned, 277_Moderate-good**	4.0	8.00
Aprasia parapulchella / Pink-tailed Legless Lizard	**319_Thinned**	0.6	9.00
Austrostipa wakoolica / A spear-grass	**76_Thinned**	0.3	6.00
Burhinus grallarius / Bush Stone-curlew	**76_Thinned, 266_Moderate-good, 266_Thinned, 277_Thinned, 277_Moderate-good, 343_Moderate-good**	3.6	99.00
Caladenia arenaria / Sand-hill Spider Orchid	**76_Thinned**	0.3	8.00
Callocephalon fimbriatum / Gang-gang Cockatoo	**277_Moderate-good**	0.1	5.00
Cullen parvum / Small Scurf-pea	**277_Thinned, 277_Moderate-good**	2.0	57.00
Diuris tricolor / Pine Donkey Orchid	**76_Thinned**	0.3	4.00
Grevillea wilkinsonii / Tumut Grevillea	**266_Moderate-good, 266_Thinned**	0.1	4.00

Petaurus norfolcensis - endangered population / Squirrel Glider in the Wagga Wagga Local Government Area	**76_Thinned, 266_Moderate-good, 266_Thinned, 277_Derived_LCV, 277_Thinned, 319_Derived_LCV, 319_Thinned, 277_Moderate-good**	0.9	23.00
Phascolarctos cinereus / Koala	**76_Thinned, 266_Moderate-good, 266_Thinned, 277_Thinned, 319_Thinned, 277_Moderate-good, 343_Moderate-good**	4.5	132.00
Polytelis swainsonii / Superb Parrot	**76_Thinned, 266_Moderate-good, 266_Thinned, 277_Thinned, 277_Moderate-good, 343_Moderate-good**	3.7	119.00
Prasophyllum petilum / Tarengo Leek Orchid	**277_Thinned, 277_Moderate-good**	2.0	57.00
Swainsona recta / Small Purple-pea	**266_Moderate-good, 266_Thinned, 277_Thinned, 277_Moderate-good**	2.1	60.00
Swainsona sericea / Silky Swainson-pea	**266_Moderate-good, 266_Thinned, 277_Thinned, 277_Moderate-good**	2.1	60.00

Credit Retirement Options

Like-for-like credit retirement options

Ammobium craspedioides / Yass Daisy	Spp	IBRA subregion
	Ammobium craspedioides / Yass Daisy	Any in NSW
Aprasia parapulchella / Pink-tailed Legless Lizard	Spp	IBRA subregion
	Aprasia parapulchella / Pink-tailed Legless Lizard	Any in NSW
Austrostipa wakoolica / A spear-grass	Spp	IBRA subregion
	Austrostipa wakoolica / A spear-grass	Any in NSW
Burhinus grallarius / Bush Stone-curlew	Spp	IBRA subregion
	Burhinus grallarius / Bush Stone-curlew	Any in NSW
Caladenia arenaria / Sand-hill Spider Orchid	Spp	IBRA subregion
	Caladenia arenaria / Sand-hill Spider Orchid	Any in NSW
Callocephalon fimbriatum / Gang-gang Cockatoo	Spp	IBRA subregion
	Callocephalon fimbriatum / Gang-gang Cockatoo	Any in NSW
Cullen parvum / Small Scurf-pea	Spp	IBRA subregion

	Cullen parvum / Small Scurf-pea	Any in NSW
Diuris tricolor / Pine Donkey Orchid	Spp	IBRA subregion
	Diuris tricolor / Pine Donkey Orchid	Any in NSW
Grevillea wilkinsonii / Tumut Grevillea	Spp	IBRA subregion
	Grevillea wilkinsonii / Tumut Grevillea	Any in NSW
Petaurus norfolcensis - endangered population / Squirrel Glider in the Wagga Wagga Local Government Area	Spp	IBRA subregion
	Petaurus norfolcensis - endangered population / Squirrel Glider in the Wagga Wagga Local Government Area	Any in NSW
Phascolarctos cinereus / Koala	Spp	IBRA subregion
	Phascolarctos cinereus / Koala	Any in NSW
Polytelis swainsonii / Superb Parrot	Spp	IBRA subregion
	Polytelis swainsonii / Superb Parrot	Any in NSW
Prasophyllum petilum / Tarengo Leek Orchid	Spp	IBRA subregion
	Prasophyllum petilum / Tarengo Leek Orchid	Any in NSW

Swainsona recta / Small Purple-pea	Spp	IBRA subregion
	Swainsona recta / Small Purple-pea	Any in NSW
Swainsona sericea / Silky Swainson-pea	Spp	IBRA subregion
	Swainsona sericea / Silky Swainson-pea	Any in NSW

BAM Candidate Species Report

Proposal Details

Assessment Id 00047237/BAAS23009/24/00047238	Proposal Name VNI - Inland Slopes	BAM data last updated * 28/10/2024
Assessor Name Michelle Patrick	Report Created 23/07/2025	BAM Data version * Current classification (live - default) (80)
Assessor Number BAAS19078	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 7	BOS entry trigger	Date Finalised 23/07/2025

* 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
Ammobium craspedioides Yass Daisy	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Aprasia parapulchella Pink-tailed Legless Lizard	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Austrostipa wakoolica A spear-grass	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	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Caladenia arenaria Sand-hill Spider Orchid	Yes (assumed present)	☐ 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?
Cullen parvum Small Scurf-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Delma impar Striped Legless Lizard	No (expert report)	☐ 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?

Grevillea wilkinsonii Tumut Grevillea	Yes (assumed present)	☐ 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 (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	No (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Keyacris scurra Key's Matchstick Grasshopper	No (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	No (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox connivens Barking Owl	No (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

***Petaurus norfolcensis* - endangered population** Squirrel Glider in the Wagga Wagga Local Government Area	Yes (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascogale tapoatafa Brush-tailed Phascogale	No (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis swainsonii Superb Parrot	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?
Swainsona recta Small Purple-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Swainsona sericea Silky Swainson-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Synemon plana Golden Sun Moth	No (expert report)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto novaehollandiae Masked Owl	No (expert report)	☐ 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
Ausfeld's Wattle	Acacia ausfeldii	Habitat constraints
Booroolong Frog	Litoria booroolongensis	Habitat degraded Species is vagrant
Brush-tailed Rock-wallaby	Petrogale penicillata	Habitat constraints
Dwarf Bush-pea	Pultenaea humilis	Refer to BAR
Eastern Pygmy-possum	Cercartetus nanus	Species is vagrant
Euphrasia arguta	Euphrasia arguta	Species is vagrant
Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints

Large-eared Pied Bat	Chalinolobus dwyeri	Habitat constraints
Leafless Indigo	Indigofera efoliata	Species is vagrant
Pink Cockatoo	Lophochroa leadbeateri	Species is vagrant
Prasophyllum sp. Wybong	Prasophyllum sp. Wybong	Species is vagrant
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Sloane's Froglet	Crinia sloanei	Habitat constraints
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	Habitat constraints
Southern Myotis	Myotis macropus	Habitat constraints
Squirrel Glider	Petaurus norfolcensis	Refer to BAR
Swift Parrot	Lathamus discolor	Habitat constraints
Woolly Ragwort	Senecio garlandii	Refer to BAR

BAM Credit Summary Report

Proposal Details

Assessment Id
00047237/BAAS23009/24/00047238

Proposal Name
VNI - Inland Slopes

BAM data last updated *
28/10/2024

Assessor Name
Michelle Patrick

Report Created
23/07/2025

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Current classification (live - default) (80)

Assessor Number
BAAS19078

BAM Case Status
Finalised

Date Finalised
23/07/2025

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

Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion												
4	277_Derived_LCV	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 Highla	14	14.0	40.9	Population size	Low Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.00	True	0

5	277_Thinned	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 Highla	63.4	54.2	3	Population size	Low Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.00	True	82

9	277_Moderate-good	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 Highla	100	100.0	0.19	Population size	Low Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.00	True	10
											Subtotal	**92**
Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion												
8	343_Derived_LCV	Not a TEC	8.5	8.5	3.8	PCT Cleared - 88%	Low Sensitivity to Gain			1.50		0
10	343_Moderate-good	Not a TEC	100	60.0	0.01	PCT Cleared - 88%	High Sensitivity to Gain			2.00		1
											Subtotal	**1**

Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion												
6	319_Derived_LCV	Not a TEC	8.8	8.8	11.7	PCT Cleared - 60%	Low Sensitivity to Gain			1.25		0
7	319_Thinned	Not a TEC	31	29.1	0.83	PCT Cleared - 60%	High Sensitivity to Gain			1.75		11
											Subtotal	**11**
Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions												
1	76_Thinned	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	36.8	36.8	0.3	Biodiversity Conservation Act listing status	Low Sensitivity to Gain	Endangered Ecological Community	Not Listed	1.50		4
											Subtotal	**4**

White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion												
2	266_Moderate-good	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 Highla	73.6	53.4	0.16	Population size	Low Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.00	True	4

3	266_Thinned	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 Highla	26.4	26.4	0.02	Population size	Low Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.00	True	1
											Subtotal	**5**
											Total	**113**

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

Ammobium craspedioides / Yass Daisy (Flora)									
266_Moderate-good	N/A	N/A	1	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	2
266_Thinned	N/A	N/A	1	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	2
277_Thinned	N/A	N/A	1	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	2
277_Moderate-good	N/A	N/A	1	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Vulnerable	False	2
								Subtotal	**8**
Aprasia parapulchella / Pink-tailed Legless Lizard (Fauna)									
319_Thinned	29.1	29.1	0.62	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	9
								Subtotal	**9**

Austrostipa wakoolica / A spear-grass (Flora)									
76_Thinned	36.8	36.8	0.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	6
								Subtotal	**6**
Burhinus grallarius / Bush Stone-curlew (Fauna)									
76_Thinned	36.8	36.8	0.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	6
266_Moderate-good	53.4	53.4	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	4
266_Thinned	26.4	26.4	0.02	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	1
277_Thinned	54.2	54.2	3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	82

277_Moderate-good	100.0	100.0	0.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	5
343_Moderate-good	60.0	60.0	0.01	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	1
								Subtotal	**99**
Caladenia arenaria / Sand-hill Spider Orchid (Flora)									
76_Thinned	36.8	36.8	0.3	Geographic Distribution	Effectiveness of management in controlling threats	Endangered	Endangered	True	8
								Subtotal	**8**
Callocephalon fimbriatum / Gang-gang Cockatoo (Fauna)									
277_Moderate-good	100.0	100.0	0.09	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	False	5
								Subtotal	**5**

Cullen parvum / Small Scurf-pea (Flora)									
277_Thinned	54.2	54.2	1.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	49
277_Moderate-good	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Endangered	Not Listed	False	8
								Subtotal	**57**
Diuris tricolor / Pine Donkey Orchid (Flora)									
76_Thinned	36.8	36.8	0.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	4
								Subtotal	**4**
Grevillea wilkinsonii / Tumut Grevillea (Flora)									
266_Moderate-good	53.4	53.4	0.08	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	3
266_Thinned	26.4	26.4	0.02	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Critically Endangered	Critically Endangered	True	1

								Subtotal	4
Petaurus norfolcensis - endangered population / Squirrel Glider in the Wagga Wagga Local Government Area (Fauna)									
76_Thinned	36.8	36.8	0.28	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered Population	Not Listed	False	5
266_Moderate-good	73.6	73.6	0.07	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered Population	Not Listed	False	3
266_Thinned	26.4	26.4	0.01	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered Population	Not Listed	False	1
277_Derived_LCV	14.0	14.0	0.06	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered Population	Not Listed	False	1
277_Thinned	63.4	63.4	0.11	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered Population	Not Listed	False	3
319_Derived_LCV	8.8	8.8	0.04	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered Population	Not Listed	False	1

319_Thinned	31.0	31.0	0.25	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered Population	Not Listed	False	4
277_Moderate-good	100.0	100.0	0.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered Population	Not Listed	False	5
								Subtotal	**23**
Phascolarctos cinereus / Koala (Fauna)									
76_Thinned	36.8	36.8	0.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	6
266_Moderate-good	73.6	73.6	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	6
266_Thinned	26.4	26.4	0.02	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1

277_Thinned	63.4	63.4	3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	95
319_Thinned	31.0	31.0	0.83	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	13
277_Moderate-good	100.0	100.0	0.19	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	10
343_Moderate-good	100.0	100.0	0.01	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1
								Subtotal	**132**
Polytelis swainsonii / Superb Parrot (Fauna)									
76_Thinned	36.8	36.8	0.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	6

266_Moderate-good	73.6	73.6	0.16	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	6
266_Thinned	26.4	26.4	0.02	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	1
277_Thinned	63.4	63.4	3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	95
277_Moderate-good	100.0	100.0	0.19	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	10
343_Moderate-good	100.0	100.0	0.01	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	1
								Subtotal	**119**
Prasophyllum petilum / Tarengo Leek Orchid (Flora)									
277_Thinned	54.2	54.2	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	49

277_Moderate-good	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	8
								Subtotal	**57**
Swainsona recta / Small Purple-pea (Flora)									
266_Moderate-good	53.4	53.4	0.08	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	2
266_Thinned	26.4	26.4	0.02	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1
277_Thinned	54.2	54.2	1.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	49
277_Moderate-good	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	8
								Subtotal	**60**

Swainsona sericea / Silky Swainson-pea (Flora)									
266_Moderate-good	53.4	53.4	0.08	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2
266_Thinned	26.4	26.4	0.02	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	1
277_Thinned	54.2	54.2	1.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	49
277_Moderate-good	100.0	100.0	0.16	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	8
								Subtotal	**60**

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00047237/BAAS23009/24/00047238	VNI - Inland Slopes	28/10/2024
Assessor Name	Report Created	BAM Data version *
Michelle Patrick	23/07/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS19078	Major Projects	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
7		23/07/2025

* 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)
Black Falcon	Falco subniger	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion

Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Corben's Long-eared Bat	Nyctophilus corbeni	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
Diamond Firetail	Stagonopleura guttata	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Dusky Woodswallow	Artamus cyanopterus cyanopterus	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion

Dusky Woodswallow	Artamus cyanopterus cyanopterus	343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Eastern False Pipistrelle	Falsistrellus tasmaniensis	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Flame Robin	Petroica phoenicea	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Gang-gang Cockatoo	Callocephalon fimbriatum	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion

Grey-headed Flying-fox	Pteropus poliocephalus	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Large Bent-winged Bat	Miniopterus orianae oceanensis	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Little Eagle	Hieraaetus morphnoides	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Little Lorikeet	Glossopsitta pusilla	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Little Pied Bat	Chalinolobus picatus	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

Painted Honeyeater	Grantiella picta	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Purple-crowned Lorikeet	Glossopsitta porphyrocephala	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
Regent Honeyeater	Anthochaera phrygia	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Scarlet Robin	Petroica boodang	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion

South-eastern Hooded Robin	Melanodryas cucullata cucullata	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Southern Whiteface	Aphelocephala leucopsis	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Speckled Warbler	Chthonicola sagittata	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Spotted Harrier	Circus assimilis	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Spotted-tailed Quoll	Dasyurus maculatus	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion

Spotted-tailed Quoll	Dasyurus maculatus	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Square-tailed Kite	Lophoictinia isura	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Superb Parrot	Polytelis swainsonii	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Swift Parrot	Lathamus discolor	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Turquoise Parrot	Neophema pulchella	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

Turquoise Parrot	Neophema pulchella	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Varied Sittella	Daphoenositta chrysoptera	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
White-bellied Sea-Eagle	Haliaeetus leucogaster	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion

White-throated Needletail	Hirundapus caudacutus	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion
Yellow-bellied Glider	Petaurus australis	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Malleefowl	Leipoa ocellata	343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion

Pink Cockatoo	Lophochroa leadbeateri	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion

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
Malleefowl	Leipoa ocellata	Species is vagrant
Pink Cockatoo	Lophochroa leadbeateri	Species is vagrant
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	Habitat constraints

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00047237/BAAS23009/24/00047238

Assessment name
VNI - Inland Slopes

BAM data last updated *
28/10/2024

Assessor Name
Michelle Patrick

Report Created
23/07/2025

BAM Data version *
Current classification (live - default) (80)

Assessor Number
BAAS19078

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
7

BOS entry trigger

Date Finalised
23/07/2025

* 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	76_Thinned	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Thinned	0.3	1	Area A (0.3 ha)

2	266_Moderate-good	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	Moderate-good	0.16	1	Area A (0.08 ha) Area B4 (0.04 ha) Area HZ (0.04 ha)
3	266_Thinned	266-White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	Thinned	0.02	1	Area A (0.02 ha)
4	277_Derived_LCV	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Derived_LCV	40.86	4	Area A (40.86 ha)
5	277_Thinned	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Thinned	3.01	2	Area A (1.82 ha) Area B4 (0.79 ha) Area HZ (0.4 ha)
6	319_Derived_LCV	319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	Derived_LCV	11.66	3	Area A (11.66 ha)
7	319_Thinned	319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	Thinned	0.83	1	Area A (0.75 ha) Area B4 (0.04 ha) Area HZ (0.04 ha)
8	343_Derived_LCV	343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion	Derived_LCV	3.79	2	Area A (3.79 ha)

9	277_Moderate-good	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Moderate-good	0.19	1	Area A (0.19 ha)
10	343_Moderate-good	343-Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion	Moderate-good	0.01	1	Area HZ (0.01 ha)

Appendix F

Herbarium correspondence

BOTANIC GARDENS OF SYDNEY

National Herbarium of New South Wales

Devon RAIFF
WSP Ecology
Level 3, 51-55 Bolton Street
Newcastle, NSW 2300
AUSTRALIA

BIS Enquiry No: 22597
Botanical.Is@botanicgardens.nsw.gov.au
Ph. No: (02) 4631 5135
Date: 18 March 2024

Dear Devon,

Re: 2 specimens for ID from W of Moulamein on Balranald Rd & W of Cobb Hwy nr Wangenella

Thank you for your enquiry of 11-Mar-24. We are happy to provide the following information:

Eleocharis obicis Det P Jobson 18 March 2024 (retained)

Calotis cf moorei Det. A Orme and S McCune 18 March 2024 (retained) – good match for 'Zara' collection referenced in Short's paper (1991), published in Muelleria. Your collection, along with other material sent into BIS in 2023, represents a new species, and we will shortly begin the process of recognising this taxon as a separate entity.

If you have any questions please feel free to contact me.

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

Devon RAIFF
WSP Ecology
Level 3, 51-55 Bolton Street
Newcastle, NSW 2300

BIS Enquiry No: 22644
Botanical.Is@botanicgardens.nsw.gov.au
Ph. No: (02) 4631 5135
Date: 21st May 2024

Dear Devon,

Re: plant identification – West of Moulamein on Yarrein Ck – 0763488mE 6112788mN

Your specimen has been confirmed as:

Eucalyptus leucoxylon* subsp. *pruinosa - conf. A.E. Orme 13th May 2024 - specimen retained for the herbarium collection - northerly extension of range.

Thank you for your sending us these quality specimens.

Yours sincerely,

Andrew Orme
Senior Identification Technical Officer
Botanical Identification Service

Appendix G

Anabat analysis

Microbat Call Identification Report

Prepared for ("Client"):	WSP
Survey location/project name:	VNI West
Survey dates:	January – February 2024
Client project reference:	PS138962
Job no.:	WSP-2402
Report date:	23 July 2024

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Methods

Data received

Balance! Environmental received the following ultrasonic acoustic data, recorded during two summer sampling periods for the VNI West EIS project. Five sites were sampled over two separate periods (see **Table 1**).

Post-processing

Anabat Insight (Version 2.1.2; Titley Scientific, Brisbane) was used to extract individual acoustic trigger events from each Anabat Express ZCA file and store them as zero-crossing format "call sequence 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 were also converted to ZC sequence file format to 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 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 were labelled "noise" and excluded from further analysis.

Table 1 Bat detector deployment schedule: VNI West EIS; January-February 2024.

Site coordinates derived by averaging detector GPS metadata recorded each night.

Detector name	Detector serial	Latitude	Longitude	First night	Last night
Express-1	575458	-35.2785	143.8468	29/01/2024	5/02/2024
Express-2	575424	-35.2781	143.8457	30/01/2024	5/02/2024
Express-3	409353	-35.2786	143.8474	30/01/2024	5/02/2024
Swift-AB3	669203	-35.2784	143.8469	19/02/2024	22/02/2024
Swift-AB4	657470	-35.0708	143.9315	19/02/2024	22/02/2024

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).

Where a call receives a unique species label in the above iterative process, it is implied that the identification is highly reliable (i.e. better than 90% probability that the call belongs to the relevant species). Where there is any doubt over call identities during the Search-and-vet process the files receive only an "either-or" species label (presented as "unresolved calls" in the results tables). No attempt has been made to assign differing levels of probability to call identities, so if a species is listed in its own right, the reliability rating should be treated as "Definite". Where calls only receive "either/or" labels, all members of the group should be treated as "Possibly present".

Some frequency groups inevitably include an enormous volume of calls, often with multiple individuals and species occurring in each file. For the present analysis, this was particularly the case for *Chalinolobus gouldii* and *Ozimops* spp. in the 27-33 kHz range, and *Vespadelus regulus*, *V. vulturnus* and *Chalinolobus morio* in the 48-53 kHz range. Once the iterative Search process had extracted the most reliably identifiable calls of each member species of those groups, the remaining calls in each group were ignored and attributed only to group level.

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 38,557 ZC files, which contained at least 41,864 individual bat calls (numerous files included multiple call passes from two or more species).

Positive identification was achieved for 12,140 calls in 11,511 ZC files. Those calls were reliably assigned to eleven distinct species, plus the undifferentiated *Nyctophilus* genus (see **Table 2**). As many as three *Nyctophilus* spp. potentially occur in the study area , including: *N. corbeni, N. geoffroyi* and *N. gouldi*.

Many of the files used for positive species attribution also contained unresolved calls from other species that were already reliably identified. The remainder of the dataset (another 27,066 files) also contained additional calls from species that were otherwise positively identified. These unresolved and surplus calls represented at least another 29,724 individua bat call passes for the survey.

Several free-tailed bats (*Ozimops* spp.) and Gould's Wattled Bat (*Chalinolobus gouldii*) contributed over 80% (at least 35,266) of the detected calls, while another 5521 (13% of total) were attributable to Chocolate Wattled Bat (*C. morio*) and Little Forest Bat (*Vespadelus vulturnus*).

Sample spectrograms of each identified call type are presented in **Appendix 1** and an explanation of species' call identification criteria is provided in **Appendix 2**.

Table 2 Bats recorded during the VNI West surveys, January-February 2024.
Number of calls allocated per species per site.

Detector/site:	Express-1	Express-2	Express-3	Swift-AB3	Swift-AB4	Species Total
Positively identified calls						
Chalinolobus gouldii	440	19	25	755	873	2112
Chalinolobus morio	372	62	91	133	48	706
Nyctophilus sp.	12	1	1	7	18	39
Scotorepens balstoni	22	4	12	41	22	101
Scotorepens greyii	3	7	2	3	11	26
Vespadelus darlingtoni	6	1	2	5	2	16
Vespadelus regulus	81	18	25	47	63	234
Vespadelus vulturnus	104	12	33	90	137	376
Austronomus australis	3	47		3	2	55
Ozimops petersi	2010	68	400	2113	1833	6424
Ozimops planiceps	20		3	56	36	115
Ozimops ridei	433	62	226	666	549	1936
Unresolved & surplus calls						
C. gouldii / O. petersi / O. ridei	7658	3235	5100	3945	4671	24609
C. morio / V. regulus	238	95	106	94	73	606
O. petersi / O. ridei	25		2	4	10	41
O. petersi / O. planiceps	9		1	11	8	29
V. vulturnus / C. morio	2205	647	593	569	425	4439
Site Total	13641	4278	6622	8542	8781	41864

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.

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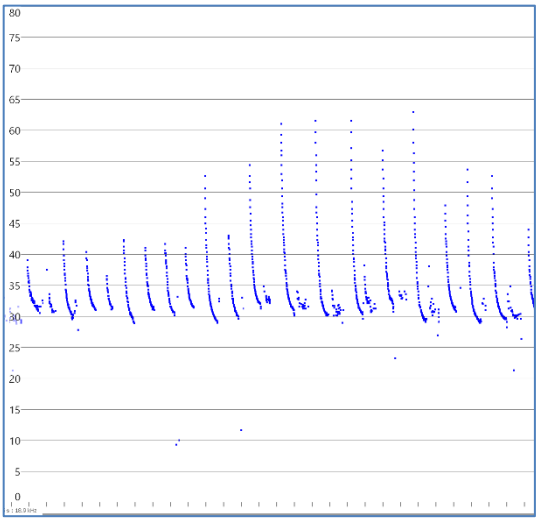
Churchill, S. (2008). *Australian Bats.* Jacana Books, Allen & Unwin; Sydney.

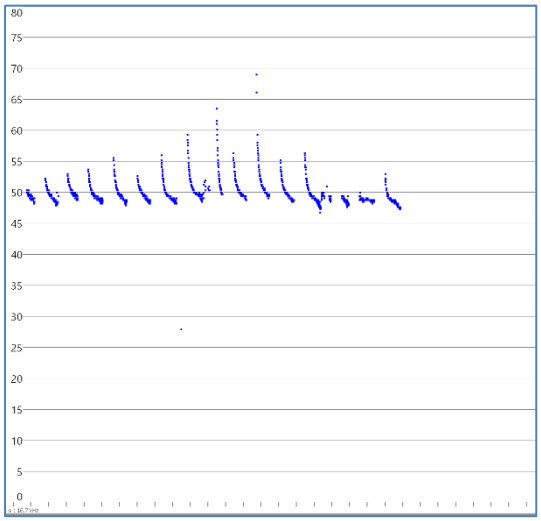
Pennay, M., Law, B. and Reinhold, L. (2004). *Bat Calls of New South Wales*. Department of Environment and Conservation, Hurstville.

Reardon, T. (2003). Standards in bat detector based surveys. *Australasian Bat Society Newsletter* **20**, 41-43.

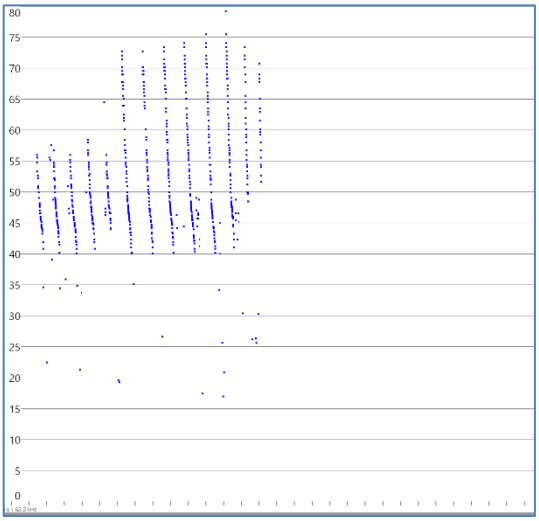
Appendix 1 Representative call sequences from the VNI West survey , Jan.-Feb. 2024 dataset.
x-axis = 10 ms per tick-mark; time between pulses removed ("compressed")



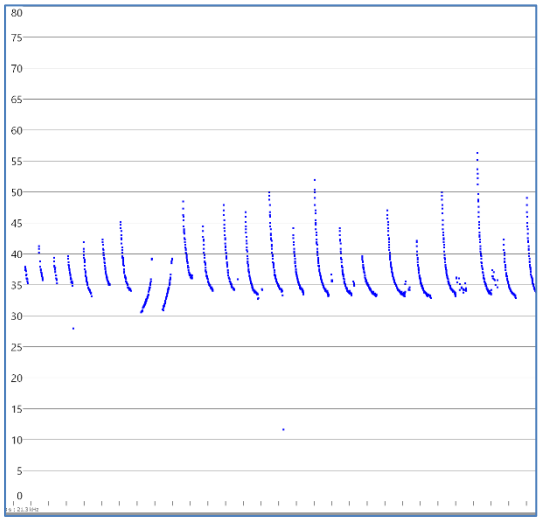
Chalinolobus gouldii



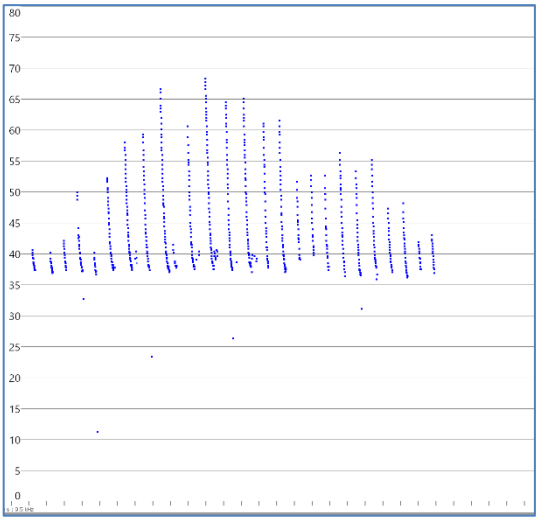
Chalinolobus morio



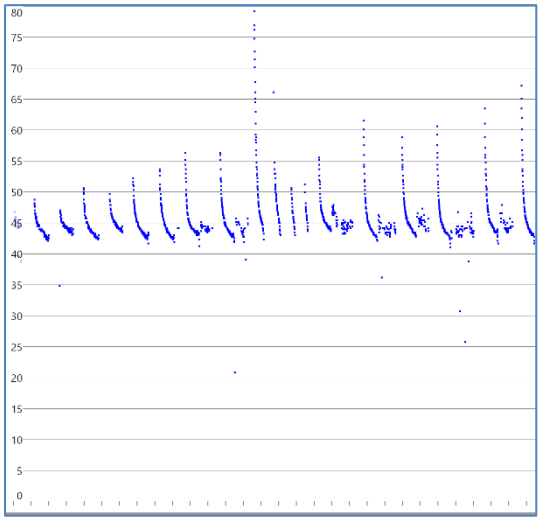
Nyctophilus sp.



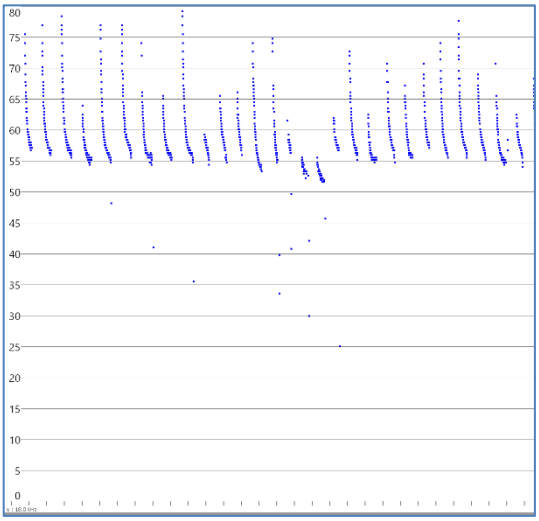
Scotorepens balstoni



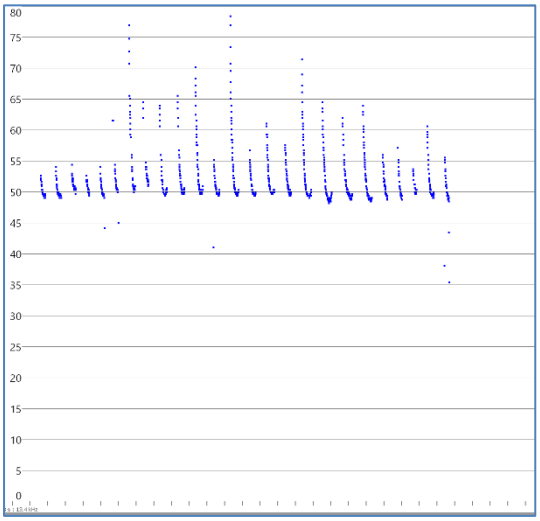
Scotorepens greyii



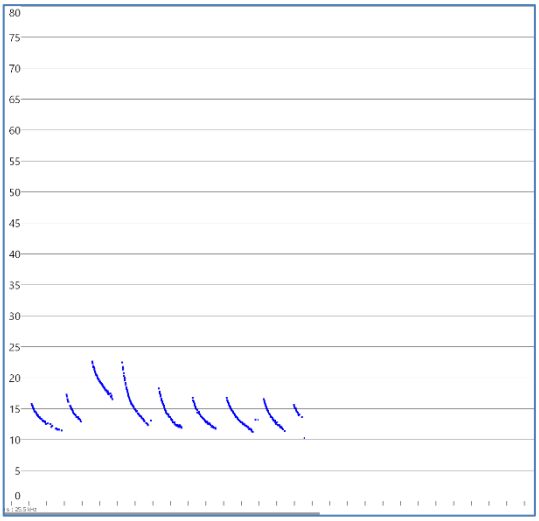
Vespadelus darlingtoni



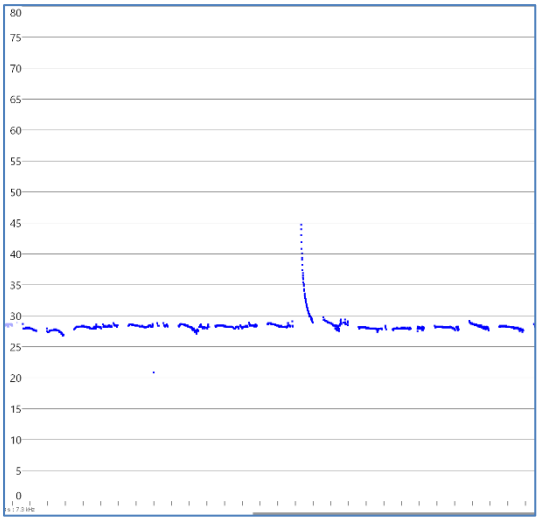
Vespadelus regulus



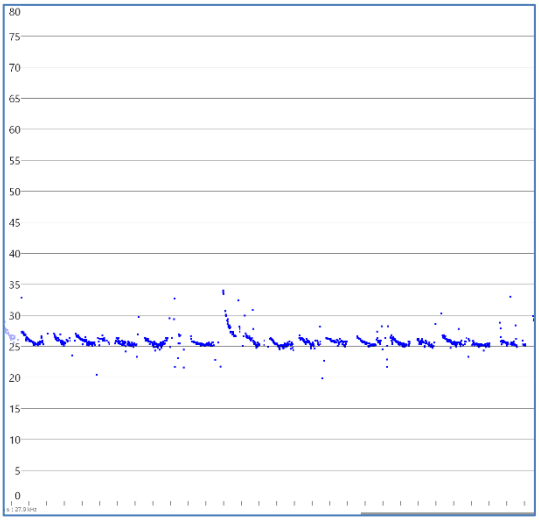
Vespadelus vulturnus



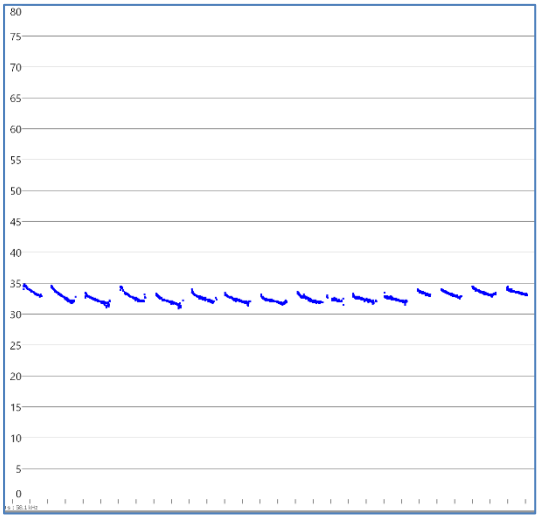
Austronomus australis



Ozimops petersi



Ozimops planiceps



Ozimops ridei

Appendix 3 Call identification notes.

Label	Species	Identification notes
AUAU	*Austronomus australis*	"Typical" *A. australis* calls with narrow-band curvilinear pulses at Fc~10-15 kHz, usually with long TBC; also includes "clutter-adapted" calls with wider bandwidth, often shorter TBC and Fc~15-20 kHz
CHGO	*Chalinolobus gouldii*	Steep initial FM, usually with quite sharp transition through knee into diagonal or near-flat body that often has down-sweeping tail or no tail, but may also be hooked with up-swept tail; clear and unambiguous alternation in Fc between successive pulses; Fc~29-33 kHz
CgOz	*C. gouldii* or *Ozimops* sp.	Very large group of unresolved calls (about 70% of the total dataset); many of the files with this label include multiple individuals producing highly variable pulse types; in some cases, both *Ozimops* and *C. gouldii* are present, in others there may be only one species but multiple individuals using a mix of open-search, clutter, and social pulses that make it difficult to reliably identify or extract positive ID using Anabat Insight metric-based filters
CHMO	*Chalinolobus morio*	Steep initial FM usually with relatively sharp knee transition to diagonal to curved or flattish body, generally with an obvious down-sweeping tail; Fc~47-51 kHz; best positive ID obtained where unambiguous Fc alternation was present, but diagonal-flattish bodies and long pulse duration (Dur>~4ms) used to distinguish from *Vespadelus* spp.
NYSP	*Nyctophilus* species	Steep, near-linear broadband FM sweep terminating around 35-45 kHz; all pulses in sequence are more-or-less parallel; no evidence of highly variable slopes in lower portion of pulses, which is usually indicative of foraging calls from *Myotis macropus*
OZPE	*Ozimops petersi*	Narrow-band (typically <2 kHz) pulses with near-flat or slight curvilinear shape at Fc~27-29 kHz; broader bandwidth pulses with similar Fc values also included and clearly not from *C. gouldii* due to longer pulse duration and absence of Fc alternation.
OZPL	*Ozimops planiceps*	Narrow bandwidth (typically <2 kHz) almost-flat to shallow curvilinear pulses with Fc~24-26 kHz; clearly distinct from higher-frequency (Fc>29 kHz) *O. ridei* and from steep, alternating *C. gouldii* calls
OZRI	*Ozimops ridei*	Narrow-band pulses with near-flat or slight curvilinear shape at Fc~31-35 kHz; broader bandwidth pulses with similar Fc values also included and clearly not from *C. gouldii* due to longer pulse duration and absence of Fc alternation.
OpeOri OplOpe	*O. petersi* or *O. ridei* *O. planiceps* or *O. petersi*	Calls with Fc values intermediate between those described above for *Ozimops* spp. were assigned to one of these pairs.
SCBA	*Scotorepens balstoni*	Steep, broad-band, curvilinear calls with the body a distinctive terminal "hook" or more-or-less flat with no tail; many calls have multiple pulses with a distinctive, sharp up-sweep (often starting lower than the final Fc value) at the beginning of each "typical" down-sweeping pulse; Fc~32-35 kHz with Fk<37 kHz
SCGR	*Scotorepens greyii*	Steep, broad-band, curvilinear calls with the body a distinctive terminal "hook" or more-or-less flat with no tail; some pulses with a distinctive, sharp up-sweep (often starting lower than the final Fc value) at the beginning of each "typical" down-sweeping pulse (but this feature not as strongly evident as in *S. balstoni*); Fc~36-39 kHz with Fk typically >38 kHz
VEDA	*Vespadelus darlingtoni*	Fc ~42-44 kHz; steep initial FM sweep of narrow-to-moderate bandwidth; pulse bodies straight-diagonal to curved, often terminating a short down-sweeping tail; some of these calls look like those of *Miniopterus orianae oceanensis*, but that species is unlikely to occur in the study area
VERE	*Vespadelus regulus*	Fc typically ~53-57 kHz; pulses often have diagonal or slightly-curved body with a distinctive down-swept tail
CmVr	*C. morio* or *V. regulus*	As above but Fc~51-53 and unclear which of these two species it is due to similar pulse shapes exhibited by the two species
VEVU	*Vespadelus vulturnus*	Fc~46-51 kHz; typically short-duration pulses (Dur<4 ms); most pulses in a sequence have distinctive "hooked" bodies; shorter sequences generally show uniform Fc; longer sequences often exhibit marked Doppler shift
VvCm	*V.s vulturnus* or *C. morio*	Calls at Fc~47-51 containing mixed or intermediate pulse shapes and with no clear alternation suggestive of *C. morio*

Detector_name	Detector_serial	Latitude	Longitude	First night	Last night
Express-1	575458	-35.2785	143.8468	29/01/2024	5/02/2024
Express-2	575424	-35.2781	143.8457	30/01/2024	5/02/2024
Express-3	409353	-35.2786	143.8474	30/01/2024	5/02/2024
Swift-AB3	669203	-35.2784	143.8469	19/02/2024	22/02/2024
Swift-AB4	657470	-35.0708	143.9315	19/02/2024	22/02/2024

Detector/site	Label	Count
Express_Unit 1_575458	AUAU	3
Express_Unit 1_575458	CHGO	440
Express_Unit 1_575458	CHMO	372
Express_Unit 1_575458	CgOz	7658
Express_Unit 1_575458	CmVr	238
Express_Unit 1_575458	NYSP	12
Express_Unit 1_575458	OZPE	2010
Express_Unit 1_575458	OZPL	20
Express_Unit 1_575458	OZRI	433
Express_Unit 1_575458	OpeOri	25
Express_Unit 1_575458	OplOpe	9
Express_Unit 1_575458	SCBA	22
Express_Unit 1_575458	SCGR	3
Express_Unit 1_575458	VEDA	6
Express_Unit 1_575458	VERE	81
Express_Unit 1_575458	VEVU	104
Express_Unit 1_575458	VvCm	2205
Express_Unit 2_575424	AUAU	47
Express_Unit 2_575424	CHGO	19
Express_Unit 2_575424	CHMO	62
Express_Unit 2_575424	CgOz	3235
Express_Unit 2_575424	CmVr	95
Express_Unit 2_575424	NYSP	1
Express_Unit 2_575424	OZPE	68
Express_Unit 2_575424	OZRI	62
Express_Unit 2_575424	SCBA	4
Express_Unit 2_575424	SCGR	7
Express_Unit 2_575424	VEDA	1
Express_Unit 2_575424	VERE	18
Express_Unit 2_575424	VEVU	12
Express_Unit 2_575424	VvCm	647
Express_Unit 3_409353	CHGO	25
Express_Unit 3_409353	CHMO	91
Express_Unit 3_409353	CgOz	5100
Express_Unit 3_409353	CmVr	106
Express_Unit 3_409353	NYSP	1
Express_Unit 3_409353	OZPE	400
Express_Unit 3_409353	OZPL	3
Express_Unit 3_409353	OZRI	226
Express_Unit 3_409353	OpeOri	2
Express_Unit 3_409353	OplOpe	1
Express_Unit 3_409353	SCBA	12
Express_Unit 3_409353	SCGR	2
Express_Unit 3_409353	VEDA	2
Express_Unit 3_409353	VERE	25
Express_Unit 3_409353	VEVU	33

Sum of Count	**Column Labels**						
Row Labels	**Express_Unit 1_575458**	**Express_Unit 2_575424**	**Express_Unit 3_409353**	**Swift_AB3_669203**	**Swift_AB4_657470**	**(blank)**	**Grand Total**
CHGO	440	19	25	755	873		2112
CHMO	372	62	91	133	48		706
NYSP	12	1	1	7	18		39
SCBA	22	4	12	41	22		101
SCGR	3	7	2	3	11		26
VEDA	6	1	2	5	2		16
VERE	81	18	25	47	63		234
VEVU	104	12	33	90	137		376
AUAU	3	47		3	2		55
OZPE	2010	68	400	2113	1833		6424
OZPL	20		3	56	36		115
OZRI	433	62	226	666	549		1936
CgOz	7658	3235	5100	3945	4671		24609
CmVr	238	95	106	94	73		606
OpeOri	25		2	4	10		41
OplOpe	9		1	11	8		29
VvCm	2205	647	593	569	425		4439
(blank)							
Grand Total	**13641**	**4278**	**6622**	**8542**	**8781**		**41864**

Express_Unit 3_409353	VvCm	593
Swift_AB3_669203	AUAU	3
Swift_AB3_669203	CHGO	755
Swift_AB3_669203	CHMO	133
Swift_AB3_669203	CgOz	3945
Swift_AB3_669203	CmVr	94
Swift_AB3_669203	NYSP	7
Swift_AB3_669203	OZPE	2113
Swift_AB3_669203	OZPL	56
Swift_AB3_669203	OZRI	666
Swift_AB3_669203	OpeOri	4
Swift_AB3_669203	OplOpe	11
Swift_AB3_669203	SCBA	41
Swift_AB3_669203	SCGR	3
Swift_AB3_669203	VEDA	5
Swift_AB3_669203	VERE	47
Swift_AB3_669203	VEVU	90
Swift_AB3_669203	VvCm	569
Swift_AB4_657470	AUAU	2
Swift_AB4_657470	CHGO	873
Swift_AB4_657470	CHMO	48
Swift_AB4_657470	CgOz	4671
Swift_AB4_657470	CmVr	73
Swift_AB4_657470	NYSP	18
Swift_AB4_657470	OZPE	1833
Swift_AB4_657470	OZPL	36
Swift_AB4_657470	OZRI	549
Swift_AB4_657470	OpeOri	10
Swift_AB4_657470	OplOpe	8
Swift_AB4_657470	SCBA	22
Swift_AB4_657470	SCGR	11
Swift_AB4_657470	VEDA	2
Swift_AB4_657470	VERE	63
Swift_AB4_657470	VEVU	137
Swift_AB4_657470	VvCm	425

Deteector/site:	Express-1	Express-2	Express-3	Swift-AB3	Swift-AB4	Species Total
Positively identified calls						
Chalinolobus gouldii	440	19	25	755	873	2112
Chalinolobus morio	372	62	91	133	48	706
Nyctophilus sp.	12	1	1	7	18	39
Scotorepens balstoni	22	4	12	41	22	101
Scotorepens greyii	3	7	2	3	11	26
Vespadelus darlingtoni	6	1	2	5	2	16
Vespadelus regulus	81	18	25	47	63	234
Vespadelus vulturnus	104	12	33	90	137	376
Austronomus australis	3	47		3	2	55
Ozimops petersi	2010	68	400	2113	1833	6424
Ozimops planiceps	20		3	56	36	115
Ozimops ridei	433	62	226	666	549	1936
Unresolved & surplus calls						
C. gouldii / O. petersi / O. ridei	7658	3235	5100	3945	4671	24609
C. morio / V. regulus	238	95	106	94	73	606
O. petersi / O. ridei	25		2	4	10	41
O. petersi / O. planiceps	9		1	11	8	29
V. vulturnus / C. morio	2205	647	593	569	425	4439
Site Total	13641	4278	6622	8542	8781	41864

Targeted species*	Common name	Recorded (Y/N)	Credit type.
Nyctophilus corbeni	Corben's Long-eared Bat	No, however a Nyctophilus sp. was recorded	Predicted
Vespadelus baverstocki	Inland Forest Bat	N	Predicted
Miniopterus orianae oceanensis	Large Bent-winged Bat	N	Dual
Chalinolobus dwyeri	Large-eared Pied Bat	N	Candidate
Chalinolobus pictus	Little Pied Bat	N	Predicted
Myotis macropus	Southern Myotis	N	Candidate
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	N	Predicted

**Species listed acquired from the PBA Appendix B.*

Appendix H

Recorded fauna species

H1 Recorded fauna species

Table H.1 Recorded fauna species

Scientific name	Common name
Mammals	
Antechinus agilis	Agile Antechinus
Antechinus flavipes	Yellow-footed Antechinus
Austronomus australis	White-striped Freetail Bat
Camelus dromedarius	Camel
Chalinolobos gouldii	Gould's Wattled Bat
Chalinolobus morio	Chocolate Wattled Bat
Felis catus	Feral Cat
Hydromys chrysogaster	Water-rat
Scotorepens balstoni	Inland Broad-Nosed Bat
Vespadelus darlingtoni	Large Forest Bat
Lepus europaeus	European Hare
Macropus fuliginosus	Western Grey Kangaroo
Macropus giganteus	Eastern Grey Kangaroo
Mus musculus	House Mouse
Nyctophilus geoffroyi	Lesser Long-Eared Bat
Nyctophilus gouldii	Gould's Long-Eared Bat
Oryctolagus cuniculus	European Rabbit
Osphranter rufus	Red Kangaroo
Ozimops petersi	Inland Free-Tailed Bat
Ozimops planiceps	South-Eastern Free-Tailed Bat
Ozimops ridei	Eastern Free-Tailed Bat
Petaurus notatus	Krefft's Glider
Rusa unicolor	Sambar Deer
Scotorepens greyii	Little Broad-Nosed Bat
Sus scrofa	Feral Pig
Trichosurus vulpecula	Brushtail Possum
Vespadelus bravestocki	Inland Forest Bat
Vespadelus regulus	Southern Forest Bat

Scientific name	Common name
Vespadelus vulturnus	Little Forest Bat
Vulpes vulpes	Fox
Birds	
Acanthiza apicalis	Inland Thornbill
Acanthiza chrysorrhoa	Yellow-rumped Thornbill
Acanthiza nana	Yellow Thornbill
Acanthiza reguloides	Buff-rumped Thornbill
Acanthiza uropygialis	Chestnut-rumped Thornbill
Acridotheres tristis	Common Mynah
Acrocephalus australis	Australian Reed-Warbler
Aegotheles cristatus	Owlet Nightjar
Anas gracilis	Grey Teal
Anas superciliosa	Pacific Black Duck
Anhinga novaehollandiae	Australasian Darter
Anthus novaeseelandiae	Australasian Pipit
Aphelocephala leucopsis	Southern Whiteface
Aquila audax	Wedge-tailed Eagle
Ardea alba	Great Egret
Ardea pacifica	White-necked Heron
Artamus cinereus	Black-faced Woodswallow
Barnardius zonarius	Australian Ringneck
Barnardius zonarius barnardi	Mallee Ringneck
Burhinus grallarius	Bush Stone-curlew
Cacatua galerita	Sulphur-crested Cockatoo
Cacatua sanguinea	Little Corella
Chalcites basalis	Horsfield's Bronze-cuckoo
Chenonetta jubata	Australian Wood Duck
Cincloramphus cruralis	Brown Songlark
Cincloramphus mathewsi	Rufous Songlark
Circus assimilis	Spotted Harrier
Climacteris picumnus victoriae	Brown Treecreeper
Colluricincla harmonica	Grey Shrike-thrush
Coracina novaehollandiae	Black-faced Cuckoo-shrike

Scientific name	Common name
Corcorax melanorhamphos	White-winged Chough
Corvus coronoides	Australian Raven
Cracticus nigrogularis	Pied Butcherbird
Cracticus torquatus	Grey Butcherbird
Dacelo novaeguineae	Laughing Kookaburra
Daphoenositta chrysoptera	Varied Sittella
Dicaeum hirundinaceum	Mistletoebird
Dromaius novaehollandiae	Emu
Egretta novaehollandiae	White-faced Heron
Elanus axillaris	Black-shouldered Kite
Entomyzon cyanotis	Blue-faced Honeyeater
Eolophus roseicapilla	Galah
Epthianura albifrons	White-fronted Chat
Falco berigora	Brown Falcon
Falco cenchroides	Nankeen Kestrel
Falco longipennis	Australian Hobby
Falco subniger	Black Falcon
Gavicalis virescens	Singing Honeyeater
Geopelia placida	Peaceful Dove
Gerygone fusca	Western Gerygone
Grallina cyanoleuca	Magpie-lark
Gymnorhina tibicen	Australian Magpie
Haliaeetus leucogaster	White-bellied Sea-eagle
Haliastur sphenurus	Whistling Kite
Hieraaetus morphnoides	Little Eagle
Hirundo neoxena	Welcome Swallow
Lalage tricolor	White-winged Triller
Lichenostomus leucotis	White-eared Honeyeater
Malurus leucopterus	White-winged Fairy-wren
Maluruscyaneus	Superb Fairywren
Manorina melanocephala	Noisy Miner
Melithreptus brevirostris	Brown-headed Honeyeater
Merops ornatus	Rainbow Bee-eater

Scientific name	Common name
Microeca fascinans	Jacky Winter
Milvus migrans	Black Kite
Mirafra javanica	Horsfield's Bushlark
Myiagra inquieta	Restless Flycatcher
Neophema chrysostoma	Blue-winged Parrot
Ninox boobook	Southern Boobook
Northiella haematogaster	Blue Bonnet
Nymphicus hollandicus	Cockatiel
Ocyphaps lophotes	Crested Pigeon
Pachycephala rufiventris	Rufous Whistler
Pardalotus punctatus	Spotted Pardalote
Pardalotus striatus	Striated Pardalote
Pedionomus torquatus	Plains-wanderer
Pelecanus conspicillatus	Australian Pelican
Petrochelidon ariel	Fairy Martin
Petrochelidon nigricans	Tree Martin
Petroica goodenovii	Red-capped Robin
Phalacrocorax carbo	Black Cormorant
Phalacrocorax varius	Pied Cormorant
Phaps chalcoptera	Common Bronzewing
Philemon citreogularis	Little Friarbird
Platalea regia	Royal Spoonbill
Platycercus elegans	Crimson Rosella
Platycercus eximius	Eastern Rosella
Platycerus elegans flaveolus	Yellow Rosella
Plectorhyncha lanceolata	Striped Honeyeater
Podargus strigoides	Tawny Frogmouth
Pomatostomus temporalis	Grey-crowned Babbler
Porphyrio porphyrio	Purple Swamphen
Psephotus haematonotus	Red-rumped Parrot
Ptilotula penicillata	White-plumed Honeyeater
Rhipidura leucophrys	Willie Wagtail
Smicrornis brevirostris	Weebill

Scientific name	Common name
Struthidea cinerea	Apostlebird
Sturnus vulgaris	Common Starling
Taeniopygia guttata	Zebra Finch
Threskiornis moluccus	Australian White Ibis
Threskiornis spinicollis	Straw-necked Ibis
Todiramphus sanctus	Sacred Kingfisher
Tribonyx ventralis	Black-tailed Native-hen
Turdus merula	Common Blackbird
Vanellus tricolor	Banded Lapwing
Reptile	
Amphibolurus muricatus	Jacky Dragon
Lucasium byrnei	Gibber Gecko
Pogona barbata	Eastern Bearded Dragon
Suta suta	Curl Snake
Tiliqua scincoides	Eastern Blue-tongue Lizard
Tiliqua rugosa	Singleback Lizard
Varanus varius	Lace Monitor
Amphibian	
Crinia parainsignifera	Eastern Sign-bearing Froglet
Crinia signifera	Common Eastern Froglet
Limnodynastes dumerilii	Eastern Banjo Frog
Limnodynastes interioris	Giant Banjo Frog
Limnodynastes tasmaniensis	Spotted Marsh Frog
Litoria peronii	Peron's Tree Frog
Litoria raniformis	Southern Bell Frog

Appendix I

Species expert reports

Transgrid

July 2025

Victoria to New South Wales Interconnector West (VNI West) (NSW)

Species Expert Report | Brush-tailed Phascogale and Squirrel Glider

Question today
Imagine tomorrow
Create for the future

Victoria to New South Wales Interconnector West (VNI West) (NSW)
Species Expert Report | Brush-tailed Phascogale and Squirrel Glider

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Rev	Date	Details
Final	20/06/2025	Final

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Approved by:	Rodney van der Ree	20/06/2025	

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 Associated PCTs in the subject land

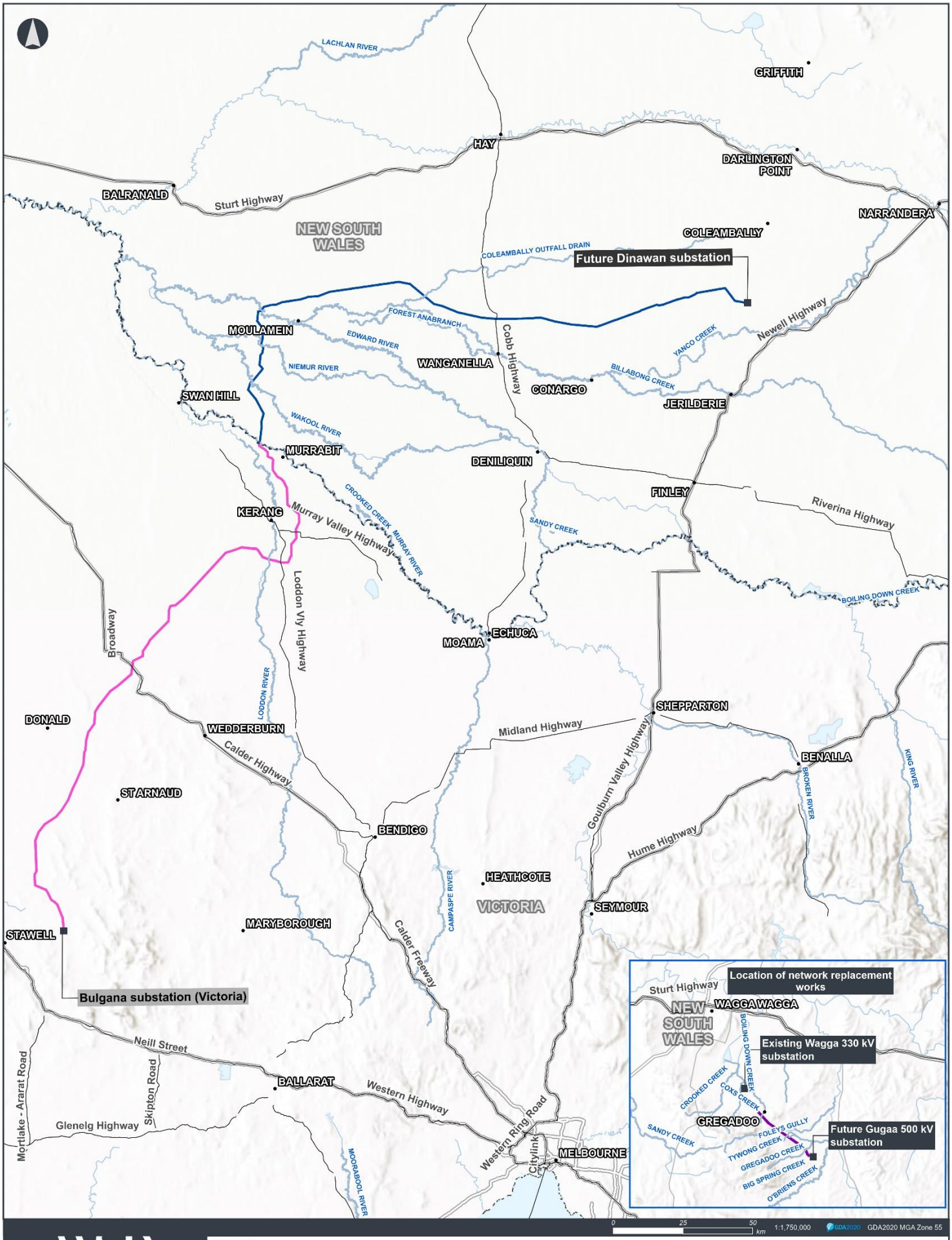
1 Introduction

1.1 Project description

Transgrid and Transmission Company Victoria are jointly building the Victoria to NSW Interconnector West (VNI West), a high voltage (500 kV) transmission line between Wagga Wagga NSW and Swan Hill Victoria (Figure 1.1 and Figure 1.2).

Transgrid (the proponent) is responsible for developing the NSW component of VNI West in the Riverina Region of NSW (the project). This includes the construction of the transmission line between the NSW/Victorian border and the future Dinawan substation (Figure 1.1) as well as the replacement of approximately nine kilometres of an existing single circuit 330 kV transmission line with a double circuit 330 kV transmission line generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation (hereafter network augmentation works) and which is subject to separate planning approval under the HumeLink project (Figure 1.2).

The project occurs within the Riverina and NSW South Western Slopes IBRA bioregions and spans the Murrumbidgee, Murray Fans and Inland Slopes subregions. Within the Riverina bioregion, the project occurs within the Hay Plains, a landscape renowned for being one of the flattest in the world, whilst the topography within the NSW South Western Slopes bioregion consists of low hills, some of which contain granite outcrops. Across the whole project area, there are two areas protected by the *National Parks and Wildlife Act 1974* (NPW Act) which are within close proximity of the project, these being the Murray Valley National Park and South West Woodland Nature Reserve. The project passes through numerous patches of woodland along its length, including used and unused roadside reserves, along waterways, patches of varying size and scattered trees in cleared farmland.



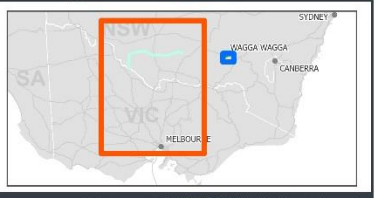
wsp

VNI West (NSW)

Figure 1.1
Overview of VNI West

Legend

- Project transmission line corridor (NSW/Victorian border to Dinawan substation)
- Network replacement between the existing Wagga 330 kV substation and future Gugaa 500 kV substation
- Victorian project transmission line corridor (subject to separate assessment)
- NSW/Victorian border
- Substation
- Watercourse
- Roads



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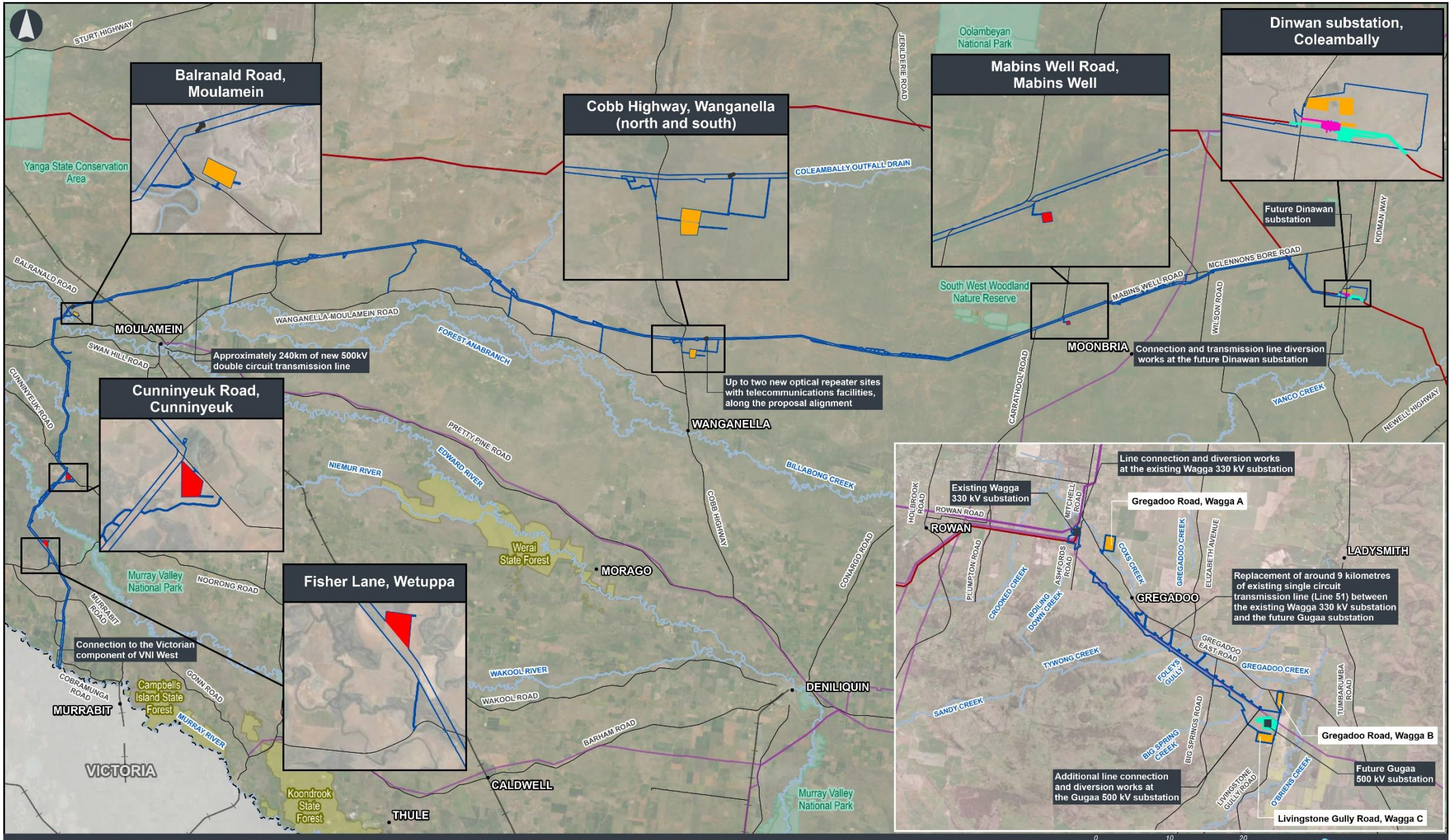
Data sources: NSW EPI, DELWP, WSP, EnergyConnect



VNI West (NSW)

Figure 1.2
Overview of the VNI West (NSW) Project

Data sources: NSW EPI, DELWP, WSP, EnergyConnect

1.2 Justification of use of an expert report

Box 3 of the *Biodiversity Assessment Method* (BAM) (DPIE 2020) states that 'An expert report can be used instead of a species survey for all proposals to determine whether a species is present or not present on the subject land. Where an assessor assumes the species is present (except for a proposed biodiversity stewardship site), an expert report may be used to determine the location and area of fauna/flora habitat for the species polygon, and the estimated number of individuals of the flora species'.

Two threatened fauna species, namely the Brush-tailed Phascogale (*Phascogale tapoatafa*) and Squirrel Glider (*Petaurus norfolcensis*) potentially occur in the subject land and may be impacted by the project.

Targeted surveys were undertaken for Squirrel Glider and Brush-tailed Phascogale in April and May 2024, consisting of 13 sites surveyed by 44 cameras across a total of 3,349 trap nights.

However, due to a combination of access restrictions, seasonal limitations and large areas of suitable habitat, gaps remained in targeted fauna survey effort. To address these gaps and add to existing survey results, an expert report was commissioned to assess the likely presence of the Squirrel Glider and Brush-tailed Phascogale within the subject land.

1.3 Species expert credentials

Dr Rodney van der Ree is an approved Species Expert for the Squirrel Glider and Brush-tailed Phascogale and is registered as such under the BAM, with the following qualifications:

- Bachelor of Science (1st Class Hons), Deakin University (1994)
- Doctor of Philosophy, Deakin University (2000).

The breadth of his relevant experience in relevant ecological research and survey methods includes, but is not limited to:

- surveyed for Squirrel Gliders and Brush-tailed Phascogales and undertook detailed studies of their ecology as a central part of PhD in central Victoria, 1995–2000
- surveyed for Squirrel Gliders and Brush-tailed Phascogales as part of arboreal marsupial studies about the impacts of roads and traffic on wildlife in northern Victoria and South West slopes of NSW, 2005–2015
- developed and tested the effectiveness of different mitigation treatments to ameliorate the impacts of roads and traffic on both species, including the use of rope bridges and glider poles, 2005–ongoing
- radio-tracked Brush-tailed Phascogales in central Victoria during PhD, 1998–2000
- targeted surveys for Brush-tailed Phascogales for VicRoads/MRPV 2013 – 15, 2019, and Hume City Council 2018
- targeted surveys for Squirrel Gliders Phascogales using spotlighting, cage and Elliot traps and infra-red remotely triggered camera traps for VicRoads/MRPV and NSW RMS/TfNSW between 2000 and present on numerous projects
- targeted surveys for Squirrel Gliders using cage traps for NSW OEH in approximately 2005–2012 on the SW slopes of NSW, including Albury, Thurgoona, Burrumbuttock, Wagga Wagga, Tarcutta, Holbrook, etc
- targeted surveys for Squirrel Gliders for Transgrid for various transmission line projects
- developed a monitoring program for Squirrel Gliders at Thurgoona and Wirlinga.

His involvement in relevant projects over the past 10 years include but are not limited to the following:

- Echuca-Moama 2nd bridge crossing, Victoria and NSW, Australia (2015–current): VicRoads/MRPV and TfNSW Biodiversity Specialist
- EnergyConnect (NSW – Eastern Section) project, Wagga Wagga to Hay Plains, NSW, Australia 2020–2022
- Shepparton Bypass, Shepparton, Victoria, Australia (2017–2019): VicRoads, Biodiversity Specialist
- Western Highway Duplication Project, Sages 1, 2 and 3, western Victoria, Australia (2014–2019): VicRoads and Major Roads Project Authority, Biodiversity Specialist
- Jumping Creek Road Upgrade Project, Victoria, Australia (2021 to present): City of Manningham
- Surveys for Northern Phascogale, Mornington Wildlife Sanctuary, Kimberley, W.A. (2018–2019): Australian Wildlife Conservancy
- Yan Yean Road Stage 1 widening, Yan Yean, Victoria, Australia (2017–2019): VicRoads and MRPA, Biodiversity Specialist.

1.4 Species expert report

1.4.1 BAM assessment requirements

The requirements of an expert report are outlined in Box 3 of the BAM and the location of each component in this expert report are summarised in Table 1.1.

Table 1.1 BAM requirements for the species expert report

Box 3 Requirement for expert report		Squirrel Glider	Brush-tailed Phascogale
1	Identify the species or population	Sections 1.5.1 and 3.1	Sections 1.5.2 and 4.1
2	Justify the use of an expert report	Section 1.2	
3	Justify the likelihood of occurrence of the species or population and prepare a species polygon as per Subsection 5.2.5 of BAM	Section 3.6	Section 4.6
4	Estimate the area of habitat (if the species is assessed by area) or the maximum number of individuals (if the species is assessed by count of individuals) on the subject land. Evidence such as a population estimate from a reference site could be used to justify this estimation	Section 3.6	Section 4.6
5	Include the information considered in making this determination	Sections 1.5.1 and 3.1 Section 5	Sections 1.5.2 and 4.1 Section 5
6	State the expert's credentials	Section 1.3	

1.4.2 Report structure

This expert report covers two distinct project areas, being the NSW/Victorian border to future Dinawan substation component and the network augmentation works components. Because the two areas are distinctly different, and located more than 100 km apart, they are treated separately in this expert report.

- Section 1.5 provides a summary of relevant aspects of the ecology and biology of the two target species relevant to both the NSW/Victorian border to future Dinawan substation component and the network augmentation works components.
- Section 2 describes the methods used for the desktop and field-assessments undertaken to prepare this expert report.
- Section 3 provides the Squirrel Glider expert report pertaining to both sections of the subject land.
- Section 4 provides the expert report for Brush-tailed Phascogale pertaining to both sections of the subject land.
- Section 5 identifies the relevant references used to support the assessment.

1.5 Target species

The two target species of this expert report are the Squirrel Glider *Petaurus norfolcensis* (Photo 1.1) and the Brush-tailed Phascogale *Phascogale tapoatafa* (Photo 1.2).

Photo 1.1 Squirrel Glider *Petaurus norfolcensis* Photo: Troy Jennings, WSP

Photo 1.2 Brush-tailed Phascogale *Phascogale tapoatafa*. Photo: Danelle Scicluna, WSP

1.5.1 Squirrel Glider

The Squirrel Glider is a medium sized (approximately 190–300 grams) arboreal gliding marsupial that occurs in dry sclerophyll forests and woodlands in eastern mainland Australia, typically up to 300 metres above sea level (van der Ree and Suckling 2023). The species distribution extends along the Great Dividing Range from central Cape York in Queensland, south to central Victoria with some isolated occurrences in eastern South Australia (van der Ree and Suckling 2023). In northern NSW and Queensland, Squirrel Gliders extend into coastal forests and wetter swamp forests (Rowston et al. 2002, Smith and Murray 2003).

The Squirrel Glider is threatened with extinction by the loss and fragmentation of habitat for agricultural (Claridge and van der Ree 2004) and urban development (Goldingay and Sharpe 2004, Francis et al. 2015), habitat degradation primarily through the decline in hollow-bearing trees, mortality through predation, entanglement on barbed wire fencing (van der Ree 1999) and wildlife-vehicle collision (McCall et al. 2010, Soanes et al. 2016). Consequently, the Squirrel Glider is listed as:

- vulnerable in NSW under the *Biodiversity Conservation Act 2016* (BC Act), including the listing of the species in the Wagga Wagga Local Government Area and on the Barrenjoey Peninsula north of Sydney as 'endangered populations'.

Squirrel Gliders are not listed nationally under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Squirrel Gliders feed mainly on arboreal insects, nectar, pollen and tree sap, and occasionally vertebrates and eggs (Menkhorst and Collier 1987, Holland 2001, Holland et al. 2007). Squirrel Gliders are more common and abundant in areas of dry forest and woodland that support a mix of three to four overstorey species of *Eucalyptus*, *Corymbia* and/or *Angophora* species that ideally provide overlapping flowering during winter and spring (Rowston et al. 2002, van der Ree and Suckling 2023). The mid-storey in high-quality habitat includes *Acacia* and *Banksia* species. A list of associated Plant Community Types (PCTs) of the Squirrel Glider that occur within the subject land can be found in Appendix A.

Squirrel Gliders live in groups of related individuals which defend a local territory. Social groups generally consist of an adult male, an adult female and their offspring or siblings and can include up to eight individuals. Squirrel Gliders den communally in the hollows of old growth trees, commonly utilising multiple den trees within their home range (Traill and Lill 1997, van der Ree 2000, Crane et al. 2008, Crane et al. 2010). Hollow bearing trees are a critical resource, without which Squirrel Gliders are unable to shelter and raise young. Female Squirrel Gliders usually give birth to one or two young between April and November and may produce a second litter if sufficient resources are available (van der Ree 2002).

The average home range of the Squirrel Glider is between two and 10 hectares and in some locations up to 15 hectares in size, with home range size influenced by the shape and quality of the available habitat (Quin 1995, van der Ree and Bennett. 2003, Sharpe and Goldingay 2007, Goldingay et al. 2010, Brearley et al. 2011). Squirrel Gliders are capable of utilising relatively small patches of habitat, including narrow strips along roads and waterways and within urban areas, provided they are well-connected to larger areas of habitat.

Squirrel Gliders primarily move by gliding from tree to tree, with average glide lengths of 30–40 metres, and a maximum of approximately 70 metres (depending on tree height) (van der Ree and Bennett. 2003). Squirrel Gliders are unable to move efficiently across the ground and are easily preyed on by predators such as owls, foxes and cats. Consequently, their movements are limited by the availability of canopy cover within gliding distance.

1.5.2 Brush-tailed Phascogale

The Brush-tailed Phascogale *Phascogale tapoatafa* is a small (~110–310 grams), semi-arboreal marsupial carnivore with a broad but highly fragmented distribution around the periphery of Australia (Aplin et al. 2015). A recent reconsideration of the species has concluded there are indeed two species, with *P. pirata* endemic to the top end in the Northern territory and *P. tapoatafa* elsewhere. *P. tapoatafa* is made of three geographically disjunct subspecies:

- *P. tapoatafa tapoatafa* – southeast Australia from South Australia to mid-coastal Queensland
- *P. tapoatafa wambenger* – southwest Western Australia
- *P. tapoatafa kimberleyensis* – Kimberley region of Western Australia.

P. tapoatafa tapoatafa is the only sub-species to occur in NSW and unless otherwise explicitly stated, all references to the Brush-tailed Phascogale refers to this sub-species.

The Brush-tailed Phascogale is threatened with extinction by the loss and fragmentation of habitat for agricultural and urban development, habitat degradation primarily through the decline in hollow-bearing trees, mortality through predation by foxes and cats, and wildlife-vehicle collision (Terry 2020). Consequently, the Brush-tailed Phascogale is listed as vulnerable in NSW under the BC Act. The species is not listed nationally under the EPBC Act.

Brush-tailed Phascogales are rat-sized dasyurids, with a head and body length of ~20 centimetres and bottle-brush shaped tail of similar length (Soderquist and Rhind 2008). The species mainly feed on large insects, spiders and nectar, and given the opportunity, will take small vertebrates such as skinks (Traill and Coates 1993, Scarff et al. 1998, Soderquist and Rhind 2008). Most foraging occurs on trees with rough bark because they are easier to climb and contain more food items under the peeling bark than smooth-barked trees (Traill and Coates 1993, Soderquist and Rhind 2008). Larger-diameter trees are also preferred for foraging (including for *P. pirata* Geyle et al. 2020), likely because they contain more microhabitats and food resources than smaller trees. Despite these preferences, the species can still utilise smooth-barked trees, particularly when they are in flower and provide an abundant source of nectar. Large fallen logs and branches are also used for foraging (Scarff et al. 1998) and providing shelter for the species as they move between trees at ground level.

Brush-tailed Phascogales are generally associated with box, ironbark, and stringybark eucalypt species in dry sclerophyll forests with sparse ground cover of grasses, herbs, shrubs and leaf litter (Cuttle 1982, Biosis Research 2001). The species can also be found in a wide range of other habitat types, including heath, swamps, rainforest and wet sclerophyll forest (Soderquist and Rhind 2008).

Brush-tailed Phascogales are hollow-dependent, utilising multiple habitat trees within their territories, and appear to preferentially use hollows with small entrance sizes (2.5 to four centimetres across) in standing trees, tree stumps and fallen logs for denning and raising young (Soderquist 1993, Traill and Coates 1993, Rhind 1996, van der Ree et al. 2006). The species prefer to utilise hollows in large-diameter trees, with average DBH of den trees in central Victoria being greater than 80 centimetres (van der Ree et al. 2006), although hollows in very small trees (e.g. down to 25 centimetres DBH), in coppice stumps and tree stumps will also be used. Multiple hollows are used by individuals, with seven females in central Victoria using an average of 11 hollow-bearing trees over an average er of 25 tracking days (van der Ree et al. 2006). However, preliminary results of a radiotracking program of 16 female and 13 male Brush-tailed Phascogales in regrowth forest in central Victoria found them using smaller trees, with standing dead trees providing a significant proportion of selected den trees (Terry 2022).

The species normally den alone, although some records of communal denning have been observed (Rhind 2003). Maternity dens are particularly important because females will deposit their young at an early age (approx. 48 days old) while they forage nearby, frequently returning to the den to feed their young (Soderquist 1993). Maternity dens are preferentially located in large tree hollows with tight entrance holes to prevent access by potential predators.

Brush-tailed Phascogales have relatively large home ranges for their body size, with females traversing 20–40 hectares, and males occupying 100 hectares or more (Soderquist 1995, van der Ree et al. 2001). However, in high-quality habitats, their home ranges can be much smaller, even down to five hectares in size (van der Ree et al. 2001, Terry 2022). Female home ranges do not overlap with each other, while the home ranges of males overlap extensively with both females and other males (Soderquist 1995, van der Ree et al. 2001). Importantly, the species will traverse cleared farmland up to distances of a few hundred metres (van der Ree et al. 2001, Terry 2022).

2 Methods

2.1 Desktop assessment

Areas of woodland in the subject land were identified from satellite imagery and patches or groups of scattered trees in excess of approximately two to five hectares in size were selected for field assessment as this is the minimum size that can support Squirrel Gliders and Brush-tailed Phascogales in the short-term. Both species can traverse gaps of cleared farmland of varying size, and hence this small patch size was adopted to be conservative.

Records of Squirrel Gliders and Brush-tailed Phascogales were downloaded from BioNet, the Atlas of Victorian Wildlife and the Atlas of Living Australia (ALA) for NSW and Victoria on 13th February 2025. Records from ALA were included in the search on 4th March 2025, including unverified records as a conservative approach. Records from the Atlas of Victorian Wildlife were assessed for the Murray Fans component of the study area where potential habitat occurs along the NSW/Victoria border and therefore informs the likely presence of these species in those areas. Duplicate records from overlapping databases were excluded.

The following desktop parameters were assessed when considering the potential presence of each of the target species:

- distribution of existing records
- extent of overlap between species records and IBRA subregions
- extent of overlap between species records and habitat types in the subject land
- size of patches of woodland habitat
- degree of connectivity among patches of woodland within the subject land and adjacent areas
- results of surveys conducted by the project team.

2.2 Field assessment

Two WSP ecologists assess habitat suitability for Brush-tailed Phascogales and Squirrel Gliders in the NSW/Victorian border to future Dinawan substation component of VNI West February 3–6, 2025. A habitat assessment was completed by two ecologists from February 24–27 2025 for the network augmentation works components (Wagga to Gugaa).

During the site visits, the following habitat characteristics were assessed and noted:

- species composition of the overstory vegetation
- presence and abundance of any *Acacia* mid-storey
- presence and abundance of large old trees and trees with hollows suitable for use by the target species (minimum entrance size of 4–5 cm for Squirrel Gliders and 2.5–5 cm for Brush-tailed Phascogales)
- extent of connectivity among patches of woodland.

2.3 Species polygons

Field vegetation surveys were undertaken by WSP ecologists to determine the presence of suitable habitat characteristics for the Squirrel Glider and Brush Tailed Phascogale as listed in section 2.2. Due to limitations such as seasonal survey constraints, adequate targeted fauna surveys for these species could not be completed. In these areas, species polygons were identified and mapped at locations where sufficient suitable habitat for the target species was recorded. Sufficient suitable habitat was determined based on the associated Plant Community Types, TBDC (2025) survey requirements and scientific literature (see section 1.5). Habitat polygons included specific requirements such as:

- composition of the overstorey and mid-storey tree and shrub species to provide food resources and suitable climbing substrate for Brush-tailed Phascogales and Squirrel Gliders
- size of the patch of woodland
- presence and abundance of suitably-sized tree hollows
- proximity to other patches of woodland, the size of the gap between the patches of woodland and the presence of significant barriers to movement, such as farmland, roads and urban areas.

3 Squirrel Glider

3.1 Geographic range and distribution

3.1.1 NSW/Victorian border to future Dinawan substation component

The Squirrel Glider occurs along the coast in NSW and on the inland slopes of the Great Dividing Range in NSW and Victoria (Figure 3.1). The closest record of a Squirrel Glider is located 29.5 kilometres to the south of the subject land, just north of Moonahcullah Cemetery, and was collected in 2011.

The NSW/Victorian border to future Dinawan substation component of VNI West is well outside the current known distribution of the Squirrel Glider.

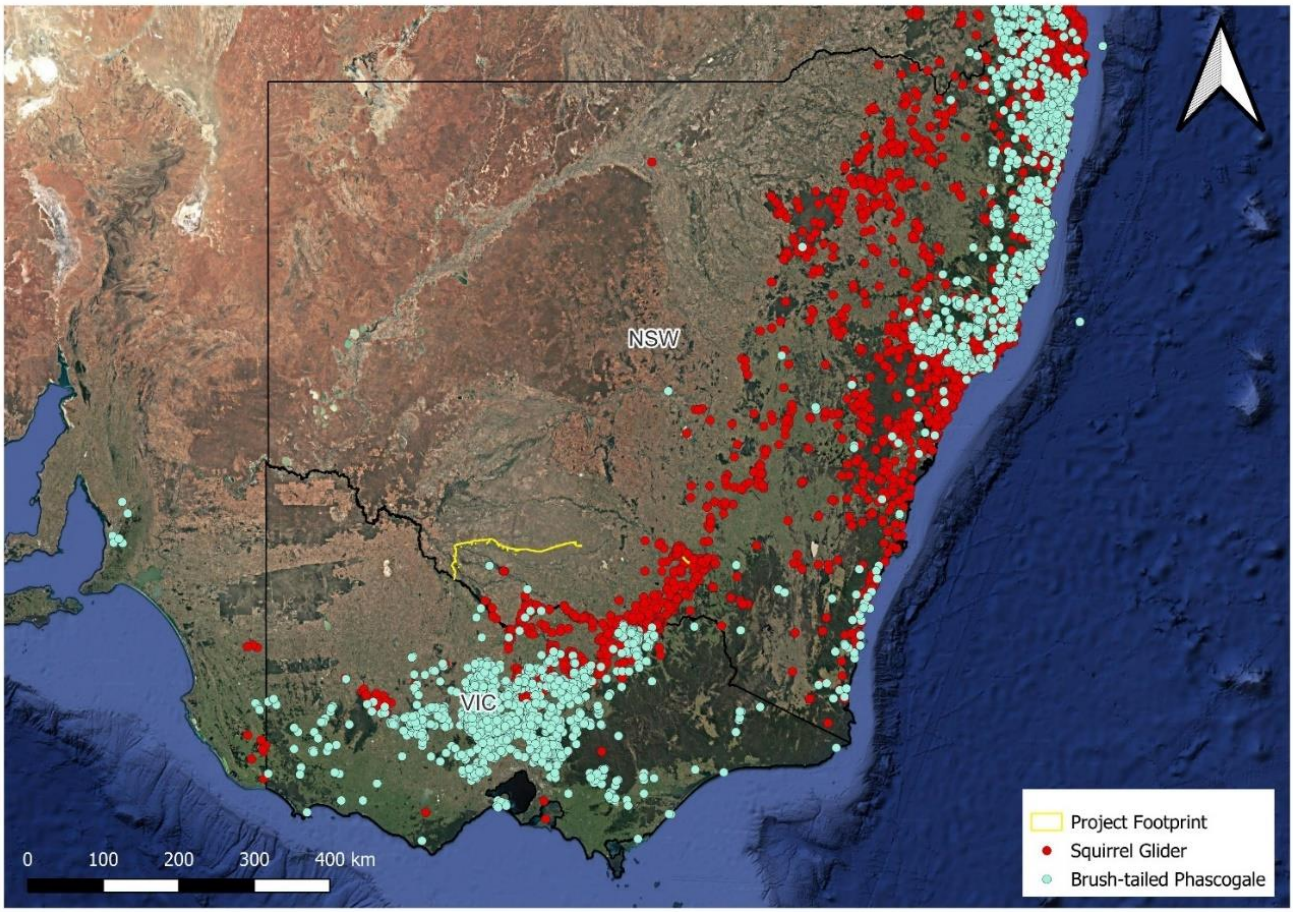


Figure 3.1 Records of the Brush-tailed Phascogale and Squirrel Glider in south-east Australia. Data from Atlas of Victorian Wildlife, BioNet and Atlas of Living Australia

There are records of Squirrel Glider within the Murray Fans IBRA subregion. Importantly, all records of Squirrel Glider within the Murray Fans IBRA subregion are associated with major waterways, including the Murray River and Edward River (Figure 3.2).

There are no records of Squirrel Glider in the Murrumbidgee IBRA subregion, in which the majority of the subject land is located.

There are no records of Squirrel Glider in woodland that isn't associated with major waterways in the vicinity of the Dinawan substation to the NSW/Victorian border section.

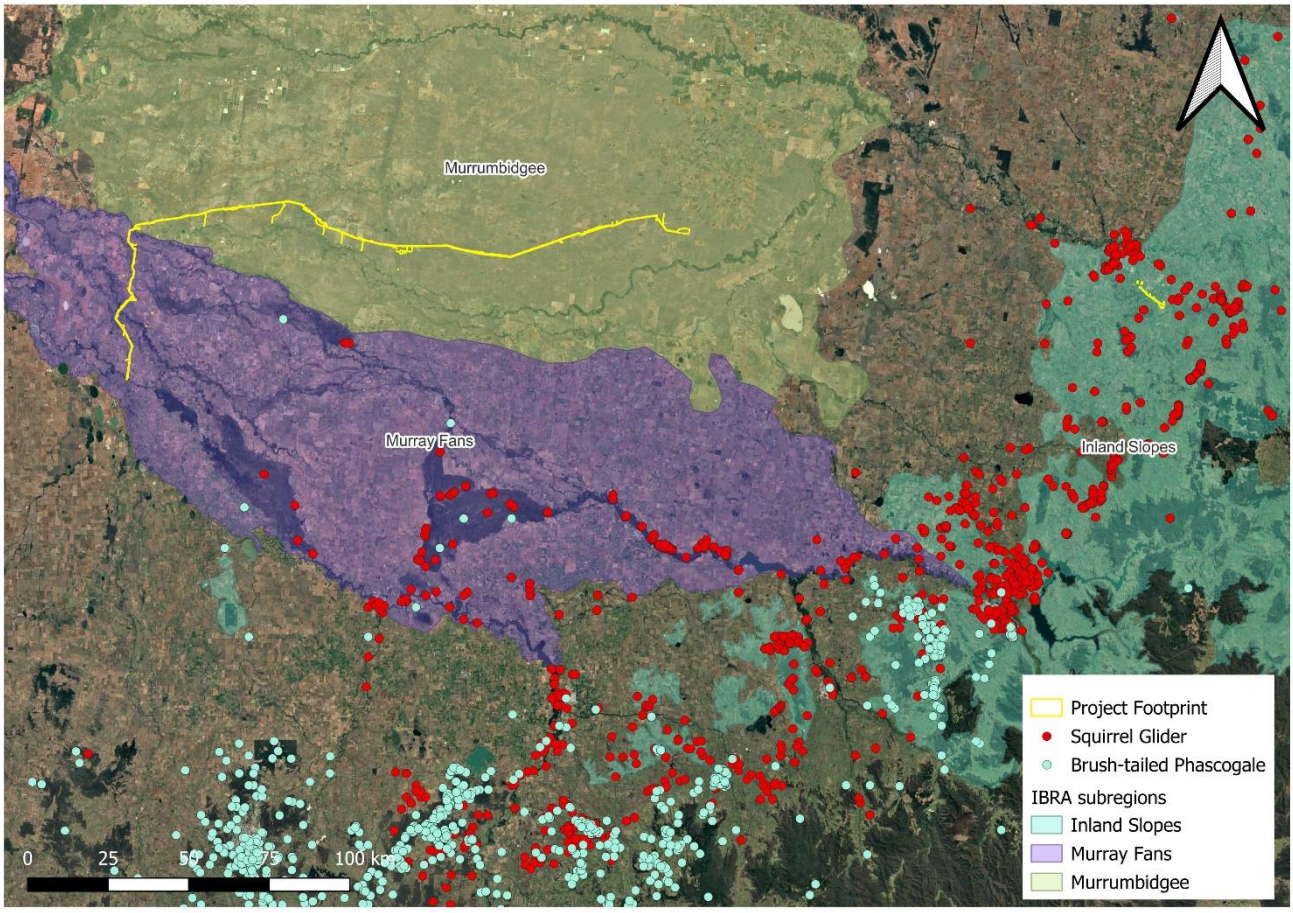


Figure 3.2 Map of Subject Land and IBRA subregions, showing VBA and BioNet records for each target species

3.1.2 Network augmentation works components

The subject land for this component of the project occurs within the known geographic range of the Squirrel Glider (Figure 3.1), with numerous records occurring within 10 kilometres of the subject land (Figure 3.3). The closest record of a Squirrel Glider to the network augmentation works components is located along Kyeamba Creek, 2.7 kilometres to the east of the portion of the subject land situated in Gregadoo and was recorded in January 2025. This section is located within the Inland Slopes IBRA subregion, in which the Squirrel Glider is also known to occur (Figure 3.2).

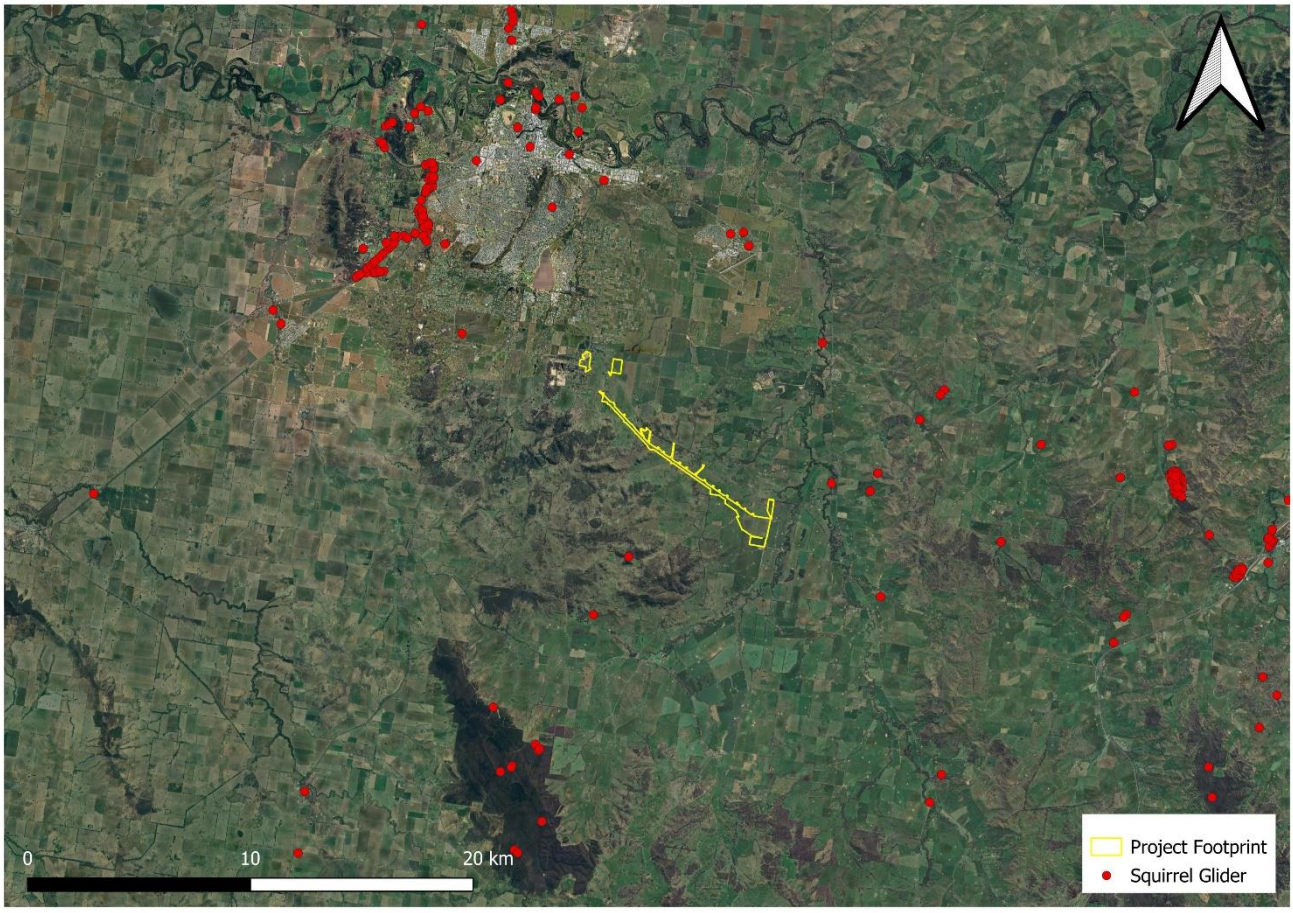


Figure 3.3 Squirrel Glider records in the vicinity of the network augmentation works from Wagga substation to Gugaa substation. Data from BioNet and Atlas of Living Australia (no Brush-tailed Phascogale records present)

3.2 Suitability of habitat structure for shelter and movement

3.2.1 NSW/Victorian border to future Dinawan substation component

The primary feature of the structure of the habitat for Squirrel Gliders is sufficient suitably sized tree hollows, with a minimum entrance size of 4–5 cm, for denning and raising young.

The majority of locations inspected within the subject land between Dinawan substation, and the NSW/Victorian border contained numerous hollows for Squirrel Gliders and thus the habitat is generally structurally suitable for the species to occupy and persist in.

3.2.2 Network augmentation works components

The woodland habitat along this section of the subject land contains sufficient hollow bearing trees to provide shelter and denning opportunities for Squirrel Gliders.

3.3 Suitability of habitat for feeding

3.3.1 NSW/Victorian border to future Dinawan substation component

The Squirrel Glider prefers woodland and forest with mixed-species of *Eucalyptus* and *Corymbia*, and a mid-storey with gum-producing *Acacia*, *Banksia* and *Grevillea* species, which when combined, provides flower resources throughout the year, and especially during winter. While Squirrel Gliders can persist in single-species stands of woodland, this primarily occurs in south-east Australia in areas that support high quality woodland, such as on fertile soils and areas with higher and/or more reliable rainfall (van der Ree 2000, van der Ree and Suckling 2023).

The Black Box woodlands throughout the subject land, except those associated with the major waterways, were primarily single-species stands of eucalypt woodland, and are unable to provide the year-round resources required to support viable populations of Squirrel Gliders.

The woodlands along the major waterways were dominated by River Red Gum, which graded into Grey Box and then Black Box with increasing distance from the waterway. These areas are suitable for Squirrel Gliders because the combination of these three *Eucalyptus* species, along with scattered *Acacia* in the mid-storey, are able to provide resources across a larger portion of the year for Squirrel Gliders.

In summary, the pure stands of Black Box woodlands are unlikely to provide sufficient year-round resources for Squirrel Gliders while the woodland along the major waterways with a multi-species overstorey is likely able to support Squirrel Gliders.

3.3.2 Network augmentation works components

The woodland habitat in this section includes a mix of Grey Box, White Box, Yellow Box and other overstorey species to provide flowering resources spanning multiple months. However, the middle-storey is largely absent and provides no additional resources for Squirrel Gliders.

3.4 Patch sizes and connectivity

3.4.1 NSW/Victorian border to Dinawan substation component

There is no published data on the minimum sizes of habitat patches and extent of habitat connectivity required for the persistence of Squirrel Gliders in the south-west of NSW. In the absence of such information, typical or expected home range sizes in this low-suitability woodland can be a useful guide. The size of home ranges of Squirrel Gliders in high-quality woodland on fertile soils near Euroa was approximately 2–5 hectares and up to 15 hectares in regrowth box-ironbark woodland on rocky soils in northern Victoria (Traill 1995) and similarly at a site on the north coast of NSW (Goldingay et al. 2010). Therefore, patches in habitat on the edge of the species range for this area of subject land would likely need to be 10–20 hectares in size to support a single colony or family group of Squirrel Gliders and would need to be at 100 hectares in size to support a small number of colonies. In addition, these patches would need to be relatively well-connected to enable gliders to move among patches and recolonise patches after local extinctions, which is likely to occur more frequently at the edge of their range than within core areas. Therefore, the only patches of woodland habitat that are likely large enough and well-connected to support Squirrel Gliders is likely to occur along the Murray and Edward rivers.

3.4.2 Network augmentation works component

The woodland habitat in the subject land is highly cleared and fragmented however the existing woodland, which occurs primarily in road reserves and along waterways, is similar in extent and connectivity to areas where the species has been detected across the Inland Slopes of NSW and north-east Victoria, including within the vicinity of Wagga Wagga. Therefore, much of the woodland within the subject land, especially that which occurs along and adjacent to waterways and roadsides, is expected to support Squirrel Gliders.

3.5 Field survey results

3.5.1 NSW/Victorian border to Dinawan substation component

Spotlighting and arboreal camera trapping was undertaken by WSP at various locations within the subject land as part of general and targeted surveys for the BDAR. The detailed methods and results are given in section 2.5.3 and section 5.3, respectively, in the BDAR.

The most frequently detected arboreal marsupials were the Common Brushtail Possum and Krefft's Gliders.

No Squirrel Gliders were detected during these surveys.

Additional habitat suitability assessments were undertaken in early February 2025 and are discussed in more detail in section 2.2 of this report.

3.5.2 Network augmentation works component

No targeted surveys or general fauna surveys that may incidentally detect Squirrel Gliders were undertaken in this section of the subject land. An assessment to determine the presence hollow bearing trees and habitat suitability was undertaken in February 2025 and these results have been collated for the species polygon.

3.6 Conclusion

3.6.1 NSW/Victorian border to Dinawan substation component

The only woodland that has the potential to support Squirrel Gliders in the vicinity of the Dinawan to the border section is the River Red Gum/Grey Box/Black Box woodland (refer to relevant River Red Gum/Grey Box/Black Box PCTs in Appendix A) along the major waterways (i.e. Murray River and Edward River). However, the subject land is well outside the current known distribution of Squirrel Gliders and this expert report concludes that there are no Squirrel Gliders within the subject land or even within the vicinity of the subject land.

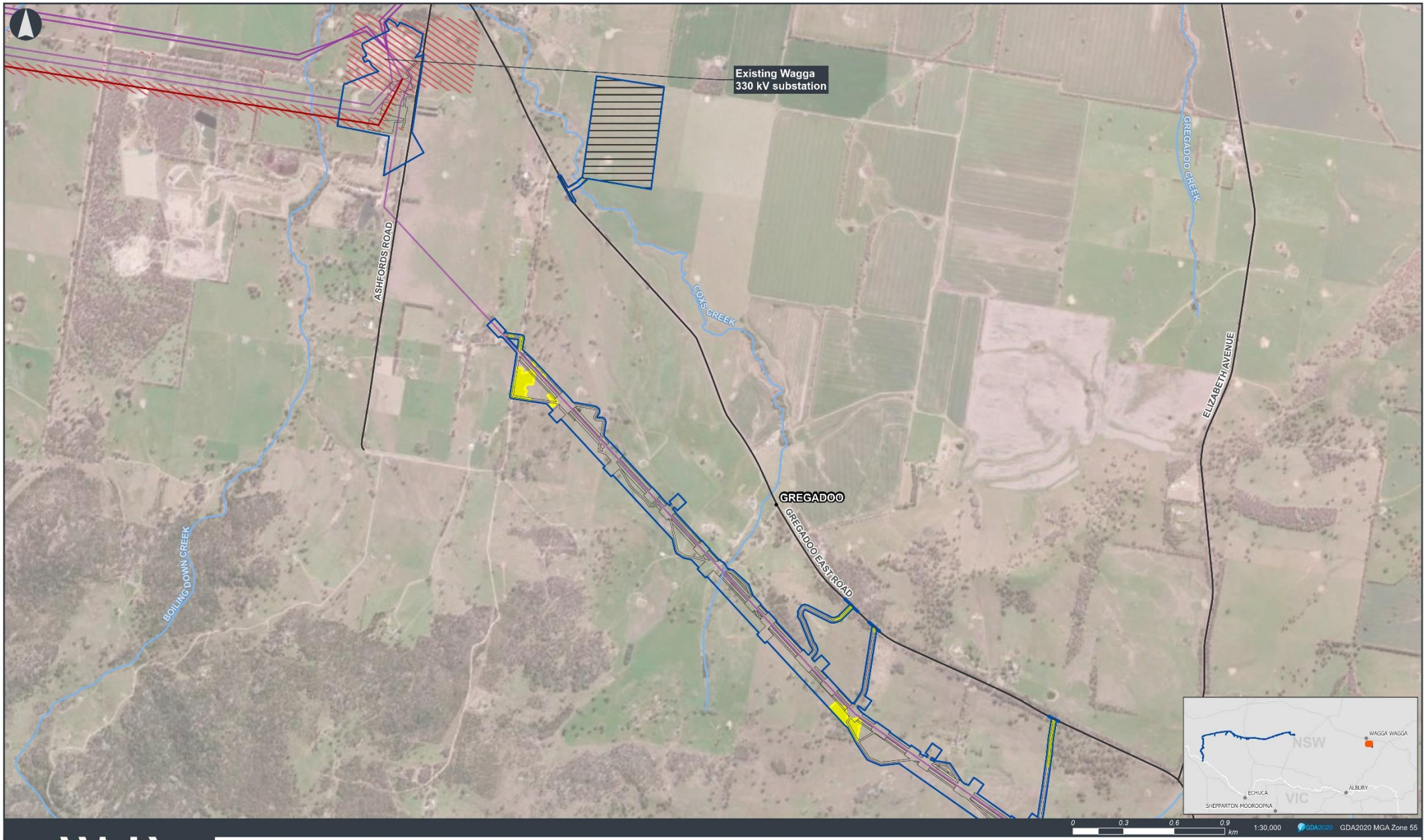
3.6.2 Network augmentation works component

The network augmentation works from Wagga substation to Gugaa substation is within the distribution of the Squirrel Glider, is surrounded by recent records, has sufficient suitable and well-connected habitat within and outside the subject land that it is expected to support the species.

As such, a Squirrel Glider species polygon has been prepared based on the area where suitable hollow bearing trees are present and with suitably sized hollows and connectivity. The plant community types with suitable hollow bearing trees to support Squirrel Gliders include:

- 0.28 hectares PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions in thinned condition
- 0.27 hectares of PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion in moderate-good and thinned condition
- 0.29 hectares of PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion in thinned condition
- 0.08 hectares of PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion in moderate-good and thinned condition.

A total of 0.92 hectares of habitat for the species has been mapped within the network augmentation works from Wagga substation to Gugaa substation subject land and the species polygon is shown in Figure 3.4.



VNI West – BDAR
Figure 3.4
Squirrel glider
(*Petaurus norfolcensis*) habitat
Page 1 of 2

Legend

- Main road
- Named waterway
- EnergyConnect (NSW - Eastern section) (under construction)
- Existing transmission line
- Squirrel glider (*Petaurus norfolcensis*) habitat
- Subject land
- Combined temporary worker accomodation facility
- Indicative disturbance footprint
- PECe disturbance area

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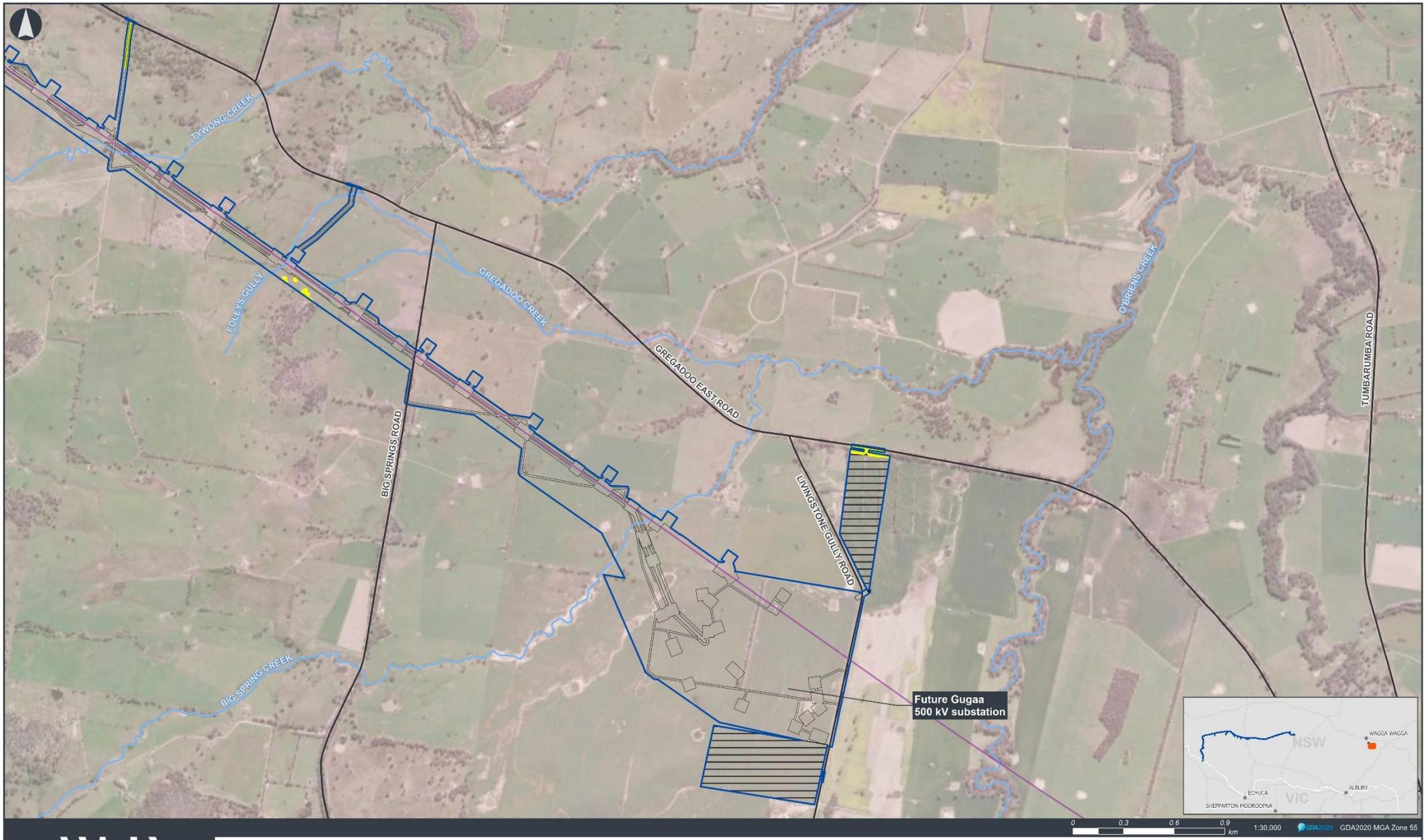
Data sources: NSW EPI, DELWP, WSP, EnergyConnect



Legend

- Main road
- Named waterway
- Existing transmission line
- Squirrel glider (*Petaurus norfolcensis*) habitat
- Subject land
- Combined temporary worker accomodation facility
- Indicative disturbance footprint

VNI West – BDAR
Figure 3.4
Squirrel glider
(*Petaurus norfolcensis*) habitat
Page 2 of 2

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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

4 Brush-tailed Phascogale

4.1 Geographic range and distribution

4.1.1 NSW/Victorian border to Dinawan substation component

There are seven records of Brush-tailed Phascogale within the Murray Fans IBRA subregion. Importantly, all records within the Murray Fans IBRA subregion are associated with major waterways, including the Murray River and Edward River (Figure 3.2).

There are no records of Brush-tailed Phascogale in the Murrumbidgee subregion, in which the majority of the subject land is located.

There are no records of either species in woodland that isn't associated with major waterways in the vicinity of the Dinawan to the NSW/Victorian border section of VNI West.

The Brush-tailed Phascogale occurs along the coast in NSW and on the inland slopes of the Great Dividing Range in NSW and Victoria (Figure 3.1). The closest record of a Brush-tailed Phascogale to the Dinawan to the NSW/Victorian border section of the project is situated north of Burraboi along the Niemur River, 29.6 kilometres south of the subject land and was recorded in November 1994.

The Dinawan to the NSW/Victorian border section of VNI West is outside the current known distribution of the Brush-tailed Phascogale.

4.1.2 Network augmentation works component

This section of the subject land sits within the known geographic range of the Brush-tailed Phascogale (Figure 3.2). The nearest record approximately 88 kilometres from the subject land and was recorded in October 2022. Within the Inland Slopes, all known records of Brush-tailed Phascogale occur within the southern end of this IBRA subregion.

4.2 Suitability of habitat structure for shelter and movement

4.2.1 NSW/Victorian border to Dinawan substation component

The primary feature of the structure of the habitat for Brush-tailed Phascogales is sufficient suitably sized tree hollows, with a minimum entrance size of 2.5 – 5cm, for denning or nesting and raising young - lactating females show a preference for large tree cavities with small entrances (2.5–4 centimetres across) and construct nests with bark, feathers and fur (OEH 2021).

Almost all locations inspected within the subject land contained numerous suitable hollows for Brush-tailed Phascogales and thus the habitat is structurally suitable for the species to occupy and persist in.

A second important consideration for Bush-tailed Phascogales is the presence of rough-barked trees which they prefer over smooth-barked trees for climbing and foraging under bark for invertebrates and small vertebrates. Black Box and Grey Box trees are rough-barked which facilitate climbing and foraging while River Red Gum trees are only rough-barked at the base, which are less suited for climbing and foraging by Brush-tailed Phascogales.

In summary, the extent and floristic composition of woodland habitat in the Dinawan to the NSW/Victorian border section provides favourable structural habitat for the denning, foraging and climbing behaviours of the Brush-tailed Phascogale.

4.2.2 Network augmentation works component

The woodland habitat along this section contained sufficient hollow bearing trees to provide shelter and denning opportunities for Brush-tailed Phascogales and the box-dominated woodlands contained sufficient rough-barked eucalypts for their climbing and movement.

4.3 Suitability of habitat for feeding

4.3.1 NSW/Victorian border to Dinawan substation component

The Brush-tailed Phascogale feeds on invertebrates and vertebrates found under peeling bark and rotting branches and logs on the ground. Black Box is a rough-barked species, but it does not form peeling ribbons or large flakes that invertebrates and small vertebrates can shelter under. In addition, the single-species stands of Black Box would only provide limited seasonal availability of nectar and pollen. Therefore, the black box dominated woodlands are unlikely to provide sufficient food resources for Brush-tailed Phascogales.

The woodlands along the major waterways were dominated by River Red Gum, which graded into Grey Box and then Black Box with increasing distance from the waterway. These mixed-species woodlands would likely provide sufficient foraging resources for Brush-tailed Phascogales.

4.3.2 Network augmentation works component

The woodland habitat in this section provides suitable foraging resources for Brush-tailed Phascogales in the form of eucalypts with rough and peeling bark that supports invertebrates and small vertebrates. In addition, the floral resources provided by the eucalypts and acacia species provides additional resources for the species.

4.4 Patch sizes and connectivity

4.4.1 NSW/Victorian border to Dinawan substation component

There is no published data on the minimum sizes of habitat patches and extent of habitat connectivity required for the persistence of Brush-tailed Phascogales in the south-west of NSW. The home range size of Brush-tailed Phascogales in high quality woodland on fertile soils near Euroa Victoria was between 2.3 and 8.0 hectares for females and at least 20 hectares for a single male (van der Ree et al. 2001) compared to home ranges that were 50–100 hectares in areas of poorer-quality regrowth forest on rockier soils (Traill and Coates 1993, Soderquist 1995). Based on this data, the home range size for Brush-tailed Phascogales in low-quality habitat is up to approximately 100 hectares for individual animals, and therefore at least 500 hectares of connected woodland habitat is likely required to support multiple adjacent territories. Therefore, the only patches of woodland habitat likely able to support viable populations of Brush-tailed Phascogale are along the Murray and Edward Rivers.

4.4.2 Network augmentation works component

The size of many of the patches of woodland are too small to support individual Brush-tailed Phascogales who are likely to have home ranges in the 50–100-hectare size range. In addition, the low levels of habitat connectivity in the area further limit the ability of Brush-tailed Phascogales to persist in the subject land. Therefore, they are unlikely to persist in the vicinity of the network augmentation works from Wagga substation to Gugaa substation.

4.5 Field survey results

4.5.1 NSW/Victorian border to Dinawan substation component

Spotlighting and arboreal camera trapping was undertaken by WSP at various locations within the subject land as part of general and targeted surveys for the BDAR. The detailed methods and results are given in section 2.5.3 and section 5.3, respectively, in the BDAR.

The most frequently detected arboreal marsupials were the Common Brushtail Possum and Krefft's Gliders.

No Brush-tailed Phascogales were detected during these surveys.

Additional habitat suitability assessments were undertaken in early February 2025 and are discussed in more detail in section 2.2 of this report.

4.5.2 Network augmentation works component

No targeted surveys or general fauna surveys that may incidentally detect Brush-tailed Phascogale were undertaken in this section of the subject land. An assessment to determine the presence of hollow bearing trees and habitat suitability was undertaken in February 2025 and these results have been collated for the species polygon.

4.6 Conclusion

4.6.1 NSW/Victorian border to Dinawan substation component

The only woodland that has the potential to support Brush-tailed Phascogales in the vicinity of the Dinawan to the NSW/Victorian border section is the River Red Gum/Grey Box/Black Box woodland (refer to River Red Gum/Grey Box/Black Box dominant PCTs listed in Appendix A) along the major waterways (i.e. Murray River and Edward River). However, the subject land is well outside the current known distribution of Brush-tailed Phascogale and this expert report concludes that there are no Brush-tailed Phascogales within the subject land or within the vicinity.

4.6.2 Network augmentation works component

While the woodland habitat in the vicinity of this section of the project is suitable for Brush-tailed Phascogales, the extent of habitat loss, low levels of ecological connectivity and lack of any records within 65 kilometres of the subject land renders the area unsuitable for the species and therefore an associated species polygon has not been created.

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Appendix A

Associated PCTs in the subject land

PCTs associated with Squirrel Glider habitat are identified in Table A.1.

Table A.1 Associated PCTs within the subject land

Species	IBRA region	IBRA subregions	Vegetation formation	PCT
Squirrel Glider	Riverina and NSW South Western Slopes	Murray Fans	Inland Riverine Forests	2 – River Red Gum-sedge dominated very tall open forest in frequently flooded forest wetland along major rivers and floodplains in south
		Murray Fans		7 – River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		Murray Fans		10 – River Red Gum – Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		Murray Fans		11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion)
		Murray Fans Murrumbidgee	Inland Floodplain Woodlands	13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		Inland Slopes	Floodplain Transition Woodlands	70 – White Cypress Pine woodland on sandy loams in central NSW wheatbelt
		Murray Fans		237 – Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		Inland Slopes	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		266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		Inland Slopes		277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		Inland Slopes	Inland Rocky Hill Woodlands	319 - Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		Inland Slopes	Dry Sclerophyll Forests (Shrubby sub-formation)	343 – Mugga Ironbark – Red Box – Red Stringybark – Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta – Gundagai region, NSW South Western Slopes Bioregion

Species	IBRA region	IBRA subregions	Vegetation formation	PCT
Brush-tailed Phascogale	Riverina NSW South Western Slopes	Murray Fans	Inland Riverine Forests	7 – River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		Murray Fans	Floodplain Transition Woodlands	237 – Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
		Inland Slopes	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		266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion
		Inland Slopes		277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		Inland Slopes	Dry Sclerophyll Forests (Shrubby sub-formation)	343 – Mugga Ironbark – Red Box – Red Stringybark – Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta – Gundagai region, NSW South Western Slopes Bioregion

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Appendix J

Transmission line impacts on birds

J1 Introduction

Ecologically, birds encounter power transmission infrastructure in two 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 two 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 collision risks that power transmission infrastructure represents are more likely to affect birds which are unfamiliar with its presence or distracted by important behaviours.

Both behavioural groups are at risk from electrocution, for the same two 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, being hunted, or displaying aerially, 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.

J2 Power transmission and electric and magnetic fields

J2.1 Measurement

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 Hz frequency range. ELF EMFs exist wherever electricity is generated, transmitted or distributed in power lines or cables, or used in electrical appliances (2020). Although ELF EMFs 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 Hz in Australia or 60 Hz 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).

J2.2 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 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 are 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. Birds of prey, storks and cranes, magpies and the corvids are the groups that are most likely to use the tallest power line infrastructure for nesting purposes.

While several small open country birds, such as larks, pipits and finches have been observed to use power lines, 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 and cover.

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 are generally 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, birds appear more likely to use them, due to the increased opportunity to perch on power infrastructure where it is more conveniently accessible, because of the similarity of adjacent canopy heights.

J3 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. These studies are described below and have found that:

- there are measurable physiological effects to birds subjected EMFs
- effects to birds exposed to EMFs are variable, in response to levels of discernible response, across different species, sexes, and time period, but those effects are not always cumulative
- it is somewhat difficult to predict responses by individuals to EMF exposure due to the range of different variables individuals encompass.

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 (Fernie and Reynolds, 2005). They report 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) observed that some bird groups reproduce within the influence of EMFs from transmission lines, and that critical survival processes are dependent on melatonin, noting that 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 (two breeding seasons) breeding behaviours, and compared the results to observed changes in body mass (FernieBird and Petitclerc, 1999). 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 (FernieBird and Petitclerc, 1999). 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 (FernieBird and Petitclerc, 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 (Fernie et al., 2000a). 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 two consecutive annual breeding seasons. The kestrels were separated into separate control and EMF effect groups (Fernie et al., 2000a). 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 (Fernie et al., 2000a). In both breeding events pairs subjected to EMF exposure, experienced higher fertility and lower hatching success than control pairs (Fernie et al., 2000a). 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 (Fernie et al., 2000a). 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 (FernieLeonard and Bird, 2000b). 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 (FernieLeonard and Bird, 2000b). 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 (FernieLeonard and Bird, 2000b). As with female EMF kestrels, male EMF kestrels were observed to be more active than control males during courtship, and more alert during incubation (FernieLeonard and Bird, 2000b). 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 (FernieLeonard and Bird, 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 (Fernie and Bird, 2001). 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 (Fernie and Bird, 2001). Long-term (two breeding seasons) studies also resulted in a suppression of hematocrits in the first half of the reproductive period (Fernie and Bird, 2001). 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 nine (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%) (Tomas et al., 2012). 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 (Tomas et al., 2012). In comparison to Great Tit breeding events not associated with artificial EMF influences, researchers noted Great Tit breeding events subjected to artificial EMFs influences realise the same breeding success, but with a greater expenditure of energy resources (Tomas et al., 2012).

J4 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:

- there is 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; and
- 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 three 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 (Before-After-Control-Impact) level studies to determine the effectiveness of different wire-marking/bird avoidance devices and strategies (Bernardino et al., 2018).

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 eleven percent (11%) were caused by electrocution (LossWill and Marra, 2014). Variations in mortality rates were a product of the relatively small number of rigorous studies available that deal with the study of bird mortality (LossWill and Marra, 2014). 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 (LossWill and Marra, 2014).

J5 Power transmission line impacts and the proposal

J5.1 Collision risks

J5.1.1 Alignment geographical context

The alignment commences at Dinawan at its eastern extremity and traverses west southwest to the south of Mabins Well, Steam Plains and crosses Willurah Road south of Willurah and the Cobb Highway north of Wanganella. It continues west to the Moulamein area and turns south through Cunninyeuk to the Murray River near Murrabit in Victoria.

The subject land occurs in south-western NSW across the Murrumbidgee and Murray Fans IBRA subregions.

The landscape through which the alignment traverses is very flat, with much of it cleared or managed for agriculture, and native forested communities are largely associated with riparian contexts, several of which are traversed by the alignment.

There are no mountain ranges associated with the landscape in which the alignment occurs, but it occurs in a landscape that contains the major river systems of the Murray, both to its south, and at its completion, and the Murrumbidgee more distant to the north. While the alignment traverses country that is largely distant from the major water courses of the Hay Plain it traverses many tributaries, lakes and depressions that are subject to periodic inundations. Those inundation events often represent important foraging and sometimes breeding opportunities for nomadic and migratory bird species.

The region through which the alignment traverses roughly surrounds Deniliquin through the southern portions of the Hay Plain. At its closest extent, Deniliquin occurs some 45 kms south of the alignment's central sections and occurs ~92 km southwest of its commencement and ~100 km east of its completion respectively. Therefore, weather statistics from Deniliquin largely approximate the weather conditions experienced by the landscapes through which the alignment traverses.

At Deniliquin Airport weather records report that January is the warmest month with a mean maximum temperature of 33.3ºC and a mean minimum 16.7ºC. July is its coolest month with a mean maximum temperature of 14.4ºC and a mean minimum of 3.3ºC. Generally, the summers are hot, and the winters are cold. Spring and Autumn are relatively mild in temperature and the highest average rainfall period generally occurs from late winter through spring to early summer.

Through its course it traverses locations where a range of habitats frequented by birds occur, notably, many associated with water. The range of wetland habitats occurring adjacent (near and more distant) vary considerably in their extent, access and permanence. Critical in determining the levels of risk infrastructure might represent to birds within the landscape, are habitat types and the birds they attract, their proximity to the alignment and their permanence.

J5.1.2 Alignment description and wetland habitats

A general description of locations where wetland habitats are associated with the alignment is given below in a review of its course through the landscape.

The alignment commences at its eastern extremity near the Dinawan substation, around the eastern extremity of the Delta Creek drainage area on the eastern side of Kidman Way. From its commencement it traverses west across Kidman Way then turns northwest to follow an unsealed track in a west south-westerly heading. It runs roughly parallel to the meandering Delta Creek to Carrathool Road skirting the eastern extremity of the Steam Plains section of South West Woodland Nature Reserve. It continues west southwest for around 10 km and turns west northwest to follow unsealed tracks across Willurah Road, skirting north of the meandering Delta Creek. Continuing west it traverses a mosaic of ephemeral depressions and small lakes including Dillons Swamp on the eastern side of the Cobb Highway.

From the Cobb Highway it turns northwest to cross the Coleambally Outfall Drain then turns west southwest below a cluster of ephemeral depressions then continues west southwest across Maude Road to pass south under The Forest Creek around 5 km south of Lake Lyle. The alignment then crosses Balranald Road and the Edward River before turning south to cross Swan Hill Road and, in turn, the Northern Branch Canal, Yarrein Creek and then the Mallan Branch Canal. The alignment's southern path follows Pike Pike Lane to the east of the highly ephemeral Lake Nangtree and approximately5 km west of Mortons Lake.

The alignment continues south through Black Box communities to cross the Niemur River and to its south Wood Lane, and the forested Cunninyeuk Creek. It then continues south through rural landscapes across the ephemeral Magpie Creek to Cunninyeuk Road, following its southeast orientation before turning southwest to cross the Black Box communities associated with the Murray Valley National Park – Wetuppa State Forest associated with the Wakool River. The crossing passes through broken landscapes at a point where clearing for the alignment minimises the loss of native woodland communities.

It then continues southwest to cross Larry's Creek before turning southeast to follow an unsealed rural road, through Black Box Woodland, skirting ephemeral wetland habitats and crossing Larry's Creek again. The alignment then continues southeast along the path of the unsealed rural road through rural lands spanning an ephemeral depression (in a pastoral paddock) and an associated creek-line before Black Box Woodlands associated with Noorong Road and another ephemeral wetland (again occurring in a pastoral paddock).

The alignment then turns to the south southwest through pastoral lands to cross Murrabit Road and the billabongs of Bullockhide Creek. Aerial mapping shows that pastoral lands associated with the alignment through this area are subject to inundation and may provide ephemeral habitats for waterbird species that are prone to respond to flooding events.

The alignment continues in a southerly direction through pastoral landscapes characterised by scant stands of trees before reaching the end of its NSW alignment at the Murray River.

J5.1.3 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, including those that occur to the north and south of the proposal study area. Apart from resident waterbirds, large numbers of international migratory shorebirds also respond to such variations in water availability during their seasonal occupation of Australian habitats.

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 and extreme temperature. 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 (McEvoy, 2015). During McEvoy's (2015) 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).

Considering the orientation of the alignment from east to west, it likely intersects flight lines between inland and coastal wetlands. As such, there is a likelihood that large numbers of waterbirds would periodically cross the alignment from south to north and back again, often during nocturnal hours. This suggests that an increase in the number of power lines in the landscape may realise an increase in potential for bird strike.

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 because 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. The larger birds of prey, with some of the largest wingspans (WS) of Australia's birds, have been 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 m), Square-tailed Kite (WS~1.3 m), Little Eagle (WS~1.3 m), Spotted Harrier (WS~1.2 m) 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 (LossWill and Marra, 2014), a proportion of different migrating or nomadic bird species are likely to be impacted by the introduction of additional infrastructure into their flight paths.

J5.1.4 Resident birds

A substantial proportion of birds that occur in territories in the subject land, 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, such as River Red Gum communities along major river system 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 birds considered as species to be of higher collision risk include local birds that fall into the larger and higher-flying bird categories, and which and which also reside over larger territories, such as birds of prey, ravens and magpies, cockatoos and some parrots, waterbirds, and waterfowl.

J5.1.5 Specific risks

Terrestrial birds

The alignment traverses a range of different terrestrial habitat types, which fall into two broad categories: those with treed canopies and those that are of an open nature with no treed canopies. Terrestrial birds occur widely across all terrestrial habitats associated with the alignment and largely fall into three habitat frequenting groups: those that frequent woodland habitats to the exclusion of other habitat types, those that frequent open habitats to the exclusion of other habitat types, and those that frequent both woodland habitats and adjacent open habitats. As addressed above, most smaller classes of terrestrial bird, whether open country or wooded country birds are unlikely to use powerline infrastructure beyond perching on the lower struts of towers. Smaller open country birds forage and breed in available grassy or shrubby understorey strata, often displaying aerially at elevations that are usually below conductor cabling. As such the smaller open country and wooded country birds are very unlikely to be significantly affected by the installation of the electrical infrastructure itself.

Larger terrestrial birds like magpies, corvids and birds of prey, occur across both wooded and open habitats, but are usually limited by the lack of trees for nesting opportunities in open habitats. However, such species are enabled to use large areas of open habitats whenever there are elevated nesting opportunities. Natural habitat features that enable such species to use open habitats are taller vegetation types/elements such as trees, even when they are widely spaced in the landscape. The lack of elevated nesting structures in naturally open areas, preclude the use of such habitats by bird species preferring elevated nest sites. However, the introduction of electricity transmission towers, enables these species to colonise naturally open habitats that are not naturally subjected to their influence. The installations of transmission towers which offer nesting opportunities for larger bird species may facilitate the introduction of such species into open habitats, which is likely to have negative flow on effects to small open country bird species such as quails, pipits, songlarks, chats, fairywrens, wintering parrots including Blue-winged Parrots and even threatened open country birds such as the Plains-wanderer, by the introduction of predatory birds.

Waterbirds

Waterbirds encompass a diverse range of bird species groups including, waterfowl (ducks and swans), plovers, sandpipers, snipe, terns and gulls, rails and hens, herons and egrets, ibis and spoonbills, cranes and a range of small aerial birds such as swallows and martins which feed on the insects attracted by water. Water habitats across the landscape in which the alignment traverses are highly variable structurally, and include large rivers and smaller creeks, lakes, depressions, swamps and in some areas gilgais. Due to the variability of topographic contexts in which the project occurs, wetland habitats are very variable in their capacity to retain water. Large rivers, such as the Murray River generally retain water continually, while small depressions may only hold water for days. Therefore, risk to waterbirds from powerline strike will be a function and scale of water presence in the landscape and how close powerline infrastructure occurs to wetland habitats. While many waterbird species may not fly at elevations that would naturally pose power lines as a risk to them when they travel long distances during migration or nomadic movements, wetland habitats close to power lines represent the greatest risk to waterbirds. The presence of water close to power lines increases collision risks to birds, as they are encouraged by the water to ascend or descend through powerline elevations.

The alignment occurs in relatively close proximity to a number of permanent lakes and ephemeral depressions and creeks, which may encourage waterbirds to descend to them through powerline elevations. However, risk levels will be strongly determined by the presence of water in the landscape and its return rates. Return rates are the periods of time where water bodies and drainage lines are dry between filling episodes by rainfall or flood events. In respect to the significance of water return rates and their effects on waterbirds, in the Australian context, including the landscape within the subject land traverses, it can mean that the availability of habitat opportunities for waterbirds in inland areas may only occur at frequencies measured in years, sometimes decades. Large areas of the Hay Plain were completely inundated in the spring of 2022 and the previous event of that magnitude was recorded in 1974 and then back in the 1930's. Therefore, the return rate of water in the landscape moderates the risk waterbirds may be subjected to across time and has a strong influence on the level of impact a development may have on waterbirds that are only present when water is abundant in the landscape.

J5.2 Mitigation of collision risks to birds

Power lines represent a collision risk to birds, because in many cases, they occur within spaces where they do not expect to encounter obstacles. As a consequence of their 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.

J5.3 EMF and electrocution risks

J5.3.1 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 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). Separation distances between tower arms and conductors achieved by insulators are shorter than between different conductors (7,200 mm and smaller designs 5,700 mm), but the separation, at 3,720 mm, 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 tower components. While most are not migratory many periodically move in relation to variations of ecological productivity, since dryer and wetter periods drive increases and lulls in resources, and birds of prey respond by moving to areas where greater productivity increases survival and breeding-cycle success. The larger bird of prey species 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 m), Square-tailed Kite (WS~1.3 m), Little Eagle (WS~1.3 m), Spotted Harrier (WS~1.2 m) Black Kite (WS~1.2) Whistling Kite (WS~1.2 m), Brown Falcon (WS~1.2 m), Peregrine Falcons (WS~0.95 m), Australian Hobby (WS~0.9 m) and Nankeen Kestrel (WS~0.8 m) (Pizzey and Knight, 2012). All bird of prey species display 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 EMFs to 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 to experience longer periods of exposure to EMFs because they often use the infrastructure for perching, and more importantly, they often use the infrastructure for nesting, particularly in open habitats. While there are areas where the subject land occurs within areas where woodlands and forests are present and offer an abundance of nesting alternatives to electricity infrastructure, for the most part such opportunities are absent from the landscape, and electrical infrastructure offer the most available nesting opportunities for such species.

J5.3.2 Resident birds

Those birds that occur as residents in the habitats surrounding power line infrastructure are the 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 largely as it did prior to 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 towers for perches.

Those species most likely to ascend to power lines and the tops of towers are those species that are tolerant of open spaces, and which habitually fly at those elevations and above. The most likely resident birds to use powerline 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, when available, 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 extends to smaller aerial foragers, much of

the time, which also prefer to perch low when foraging close to the ground. Nevertheless, magpies and the corvids (ravens and crows) do use towers for nesting purposes when there are no other elevated options to build their nests.

Although there is a small group of birds for which transmission towers are preferable for nest building, including ravens and crows, and medium to large birds of prey, in the landscapes surrounding the subject land 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 work carried out throughout the subject land by a wide range of field personnel, but it is considered likely that large birds from the group described above may occasionally use infrastructure where there are limited natural options.

There is a small group of birds for which transmission towers are preferable for nest building, especially in open country with an absence of trees, which include the corvids, medium to large birds of prey and, in some areas, storks and cranes. Many nests located in the top of transmission line towers have been observed during field surveys on the Hay Plain, although not all could be assigned to species. Most nests were in the size range as built or used by magpies or corvids and medium sized birds of prey, although due to the longevity of nests, it isn't always the builders that utilise the nests in subsequent breeding seasons. Several nests of sufficient size to be built by Wedge-tailed Eagles or Black Falcons, some active, have been observed on existing transmission line towers to the north on the Hay Plain (WSP Ecologists pers. obs.), and a pair of Peregrine Falcons were observed using a tower in an existing easement in mallee country north of Buronga for nesting, and were raising young at the time of observation (WSP Ecologists pers. obs.).

When there are limited natural nest site opportunities, it is 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 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 large transmission towers likely to be used for the project, the dimensions of transmission tower structures were considered. The minimum distance from conductors to earthed infrastructure that birds might build nests on is 3,930 mm, 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 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 period of 85 days. 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 Black-breasted Buzzard, 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.

From data derived from a range of studies, it is considered likely that EMFs may influence the physiology of birds nesting on transmission 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.

J5.4 Mitigation of EMF impacts to birds

Mitigation for EMF impacts are best implemented by tower designs that discourage birds from building nest on them. As it is an important priority for managers maintaining power transmission lines to ensure that nesting birds do not constitute a risk to power delivery, 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.

J6 Conclusions and recommendations

Based on the available research, the following conclusions on potential impacts have been reached:

- 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 EMFs may influence the physiology of birds nesting on transmission 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 “diverters” are well known throughout the world to be an effective mitigation strategy to warn birds of the presence of power lines and may be included in the project design.
- Towers would be designed to discourage nesting to reduce both potential collision and EMF impacts.
- A monitoring program could be considered for implementation to assess the ongoing risk to fauna, particularly birds, from the proposal, but chances of significant risk to local birds is assessed to be low.

J7 Bird collision likelihood assessment

Legend

		Records within 50 km of proposed alignment	Sedentary = 1 Migratory/ dispersive = 1 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	PCTs

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Anseranas semipalmata	Magpie Goose	Y	1 and occasionally 3	1	1	<5 – Moderate – As with other waterfowl their greatest risk of powerline strike occurs when wetland access is associated with obstacles that they have to negotiate. Where power lines occur close to wetlands the risk of waterfowl strike increases. Few records of this species so overall risk is moderate.	15, 24, 45, 47, 53, 160, 163
Anthochaera phrygia	Regent Honeyeater	Y Barham Deniliquin	1	1	0	2 – Low – Movements occur below the canopy and are limited to woodland habitats associated with the subject land.	Species excluded from assessment due to no mapped important habitat for this species in the subject land (see section 5.1.1 of the BDAR).

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Aphelocephala leucopsis	Southern Whiteface	Y	1	2	0	3 – Low – A ground foraging species that breeds in hollows of trees and flies at low elevations.	277, 266
Ardeotis australis	Australian Bustard	N	3	0	3	6 (0) – Low – No records within Bionet mapping or within 50 km of the subject land, species not present. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be risk of power line strike based on the elevations it is known to fly.*	11, 15, 24, 26, 28, 44, 45, 46, 53, 160, 163, 164, 216
Artamus cyanopterus cyanopterus	Dusky Woodswallow	Y Woodland throughout	1	3	0	4 – Moderate – Occurs throughout the area but risk reduced due to flight heights and rapid habituation to line presence and would likely use as perches on occasion.	2, 7, 10, 11, 13, 15, 17, 19, 22, 26, 28, 44, 45, 46, 47, 53, 58, 153, 157, 160, 163, 164, 166, 216, 237, 266, 277, 319, 343
Botaurus poiciloptilus	Australasian Bittern	Y	3	1	3	7 – High – Population records occur in the locality of the subject land, and a high risk is associated if power lines are close to wetlands and foraging habitats. This risk is heightened due to the species making local movements at elevations that may be similar to the powerline heights, between and around wetland habitats.	10, 11, 13, 17, 24, 160

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Burhinus grallarius	Bush Stone-curlew	Y	1	1	0	2 – Low – movements below canopy and population is sparse.	7, 10, 11, 13, 15, 26, 28, 237, 343
Calidris ferruginea	Curlew Sandpiper	Y	1 & 3 (rarely)	1	0	<4 – Moderate – Records present in the region, likely limited to flooding events. Long distance movements are likely at high elevations, but this species is at risk if infrastructure is located close to wetlands, where descending birds may encounter power lines.	24, 53
Callocephalon fimbriatum	Gang-gang Cockatoo	N	1	0	1	2 (0) – Low – No regional records within Bionet mapping or within 50 km of the indicative disturbance area, species not present. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a moderate risk of power line strike when local vegetation occurs at power line elevations.*	343

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Calyptorhynchus lathami	Glossy Black-Cockatoo	N	1	0	1	2 (0) – Low – No regional records within Bionet mapping or within 50 km of the indicative disturbance area, species not present. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a moderate risk of power line strike when local vegetation occurs at power line elevations.*	26, 53, 266, 237, 343
Certhionyx variegatus	Pied Honeyeater	N	1	0	0	1 (0) – Low – No Bionet records in NSW associated with the broader landscapes that the subject land occurs within. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a low risk of power line strike due to its preference for habitats with low vegetation.*	10, 11, 13, 15, 22, 24, 26, 28, 58, 153, 163
Chthonicola sagittata	Speckled Warbler	Y	1	1	0	2 – Low – Due to the species occurring below woodland canopies.	237, 266, 277, 319, 343
Circus assimilis	Spotted Harrier	Y	1	2	1	3 – Low – Due to limited densities and a general tendency to hunt for terrestrial prey.	2, 7, 10, 11, 13, 15, 17, 22, 26, 28, 44, 45, 46, 47, 53, 58

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Climacteris affinis	White-browed Treecreeper (endangered population)	N	1	0	0	0 (1) – Low – Species excluded due to subject land not occurring within the endangered population distribution. *In regions where power lines traverse habitats where this species' threatened population is confirmed to occur, it is likely to be at a low risk of power line strike due to its preference for habitats with low vegetation.*	n/a
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	N	1	0	0	0 (1) – Low – In NSW the threatened subspecies of the Brown Treecreeper (*Climacteris picumnus victoriae*) does not occur west of Wagga Wagga. Therefore, the subject land does not occur in landscapes where this subspecies of the Brown Treecreeper occurs. *In regions where power lines traverse habitats where this species' threatened subspecies is confirmed to occur, it is likely to be at a low risk of power line strike due to its preference for habitats within canopy elevations.*	237, 266, 277, 343

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Daphoenositta chrysoptera	Varied Sittella	Y	1	1	1	3 – Low – Due to the species occurring below woodland canopies and slow flight speeds.	2, 7, 10, 11, 13, 15, 22, 26, 28, 58, 237, 266, 277, 319, 343
Epthianura albifrons	White-fronted Chat	Y	1	2	0	3 – Low – Due to preference to open habitats and slow flight speeds.	17, 24, 44, 45, 46, 47, 53, 153, 157, 160, 163, 164, 166, 216
Falco hypoleucos	Grey Falcon	Y	1	0 No resident individuals in region	1	2 – Low – Due to general scarcity (sightings largely stochastic) and a general tendency to hunt for terrestrial prey. Species known to use transmission infrastructure for roosting and nesting. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a low risk of power line strike due to its preference for using powerline infrastructure.*	10, 11, 13, 15, 17, 19, 22, 16, 28, 44, 45, 46, 47, 53, 58, 153, 157, 160, 163, 164, 166, 216, 237
Falco subniger	Black Falcon	Y	1	1	1	3 – Low – Due to general scarcity and a general tendency to hunt for terrestrial prey. Species known to use transmission infrastructure for roosting and nesting.	13, 15, 24, 44, 46, 58, 157, 163, 164, 170, 216, 277
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	Y	1	1	1	3 – Low – Was not present in Bionet regional data sets, but occasional records in eBird databases are present. Low due to general scarcity and habits limited to woodland canopies.	2, 7, 10, 11, 266

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Glossopsitta pusilla	Little Lorikeet	Y	1	1	1	3 – Low – Was not present in Bionet regional data sets, but occasional records in eBird databases are present. Low due to general scarcity and habits limited to woodland canopies.	2, 7, 266, 277, 319, 343
Grantiella picta	Painted Honeyeater	Y	1	1	1	3 – Low – Due to general scarcity and habits limited acacia woodlands. Elsewhere in its range it prefers mistletoes, especially the Grey Mistletoes (*Amyema quandang*), which habitually parasitises acacias, including *Acacia pendula* whose range extends to west to Deniliquin and the eastern sections of the subject land.	2, 7, 10, 11, 13, 15, 26, 28, 58, 237, 266, 277, 319, 343
Grus rubicunda	Brolga	Y	1 and 3	2	3	6-8 – High – High risk if power lines occur close to wetlands and other foraging habitats such as pastures and tilled ground. Birds migrating north or south are likely to be at greater risk with power lines occurring across their movement regions.	7, 10, 11, 13, 15, 17, 24, 26, 45, 47, 53, 160, 163, 166
Haliaeetus leucogaster	White-bellied Sea-Eagle	Y	1	2	3	6 – High – High risk if power lines close to wetlands and foraging habitats.	7, 10, 11, 13, 15, 17, 24, 26, 28, 44, 45, 46, 53, 157, 160, 163, 164, 216, 237, 319, 343

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Hamirostra melanosternon	Black-breasted Buzzard	N	1	0	1	2 (0) – Low – No records within Bionet mapping or within 50 km of the indicative disturbance area, species not present. Very rare occurrences cannot be entirely discounted during stochastic climatic events – may use power lines for perching or roosting. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a low – moderate risk of power line strike based on the elevations it is known to fly.*	7, 10, 11, 13, 15, 17, 28, 46, 58, 160, 163, 216
Hieraaetus morphnoides	Little Eagle	Y	1	2	3	6 – High – High risk due to flight heights but reduced due to familiarity with local habitat features.	7, 10, 11, 13, 15, 17, 24, 26, 28, 44, 45, 46, 53, 157, 160, 163, 164, 216, 237, 319, 343
Hirundapus caudacutus	White-throated Needletail	Y	1	1	1	3 – Low – Due to generally high flight heights and limited records in the region. Possible over all PCTs.	2, 7, 10, 11, 13, 15, 17, 24, 26, 44, 45, 46, 47, 53, 157, 160, 216, 237, 266, 277, 319, 343

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Lathamus discolor	Swift Parrot	N	1	0	3	4 (0) – Low – No Bionet records in NSW associated with the subject land region. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a moderate risk of power line strike based on the elevations it is known to fly.*	7, 10, 11, 13, 15, 24, 26, 237, 319, 343
Leipoa ocellata	Malleefowl	N	1	0	1	2 (0) – Low – No Bionet records in NSW associated with the subject land and there are no mallee habitats associated with the subject land. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a low risk of power line strike based on the elevations it is known to fly.*	343

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Limosa limosa	Black-tailed Godwit	N	1-3	1	3	5–7 (0) – Low – As with other waterbird their greatest risk of powerline strike occurs when wetland access is associated with obstacles that they have to negotiate. Where power lines occur close to wetlands the risk of waterbird strike increases. One record in eBird west of Tullakcool. This species, as with many long-distance migratory birds, may use ephemeral habitats in the region, particularly during stochastic flood events.	53, 166
Lophochroa leadbeateri	Pink Cockatoo	N	1	2	1	4 – Moderate – Records throughout the region. Flight heights are largely confined to local woodland elevations but also observed to fly at high elevations during longer movements, which represents some risk to local individuals.	7, 10, 11, 13, 15, 26, 28, 45, 163, 237
Lophoictinia isura	Square-tailed Kite	Y	1	2	3	6 – High – High risk due to flight heights but may be reduced due to familiarity with local habitat features.	7, 10, 11, 13, 15, 26, 28, 45, 237

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Melanodryas cucullate cucullata	Hooded Robin (south-eastern form)	Y	1	2	0	3 – Low – Due to moderate population. However, the flight height of the species occurs under power lines.	2, 7, 10, 11, 13, 15, 19, 22, 26, 28, 58, 237, 266, 277, 319, 343
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Y	1	1	1	3 – Low – Due to moderate population, and flight height occurring under power lines.	2, 7, 11, 237, 277, 319, 343
Neophema chrysostoma	Blue-winged Parrot	Y	1	1	3	4 – Moderate – Generally, uses more open habitats and forages at ground level, but often flies at higher elevations for local and more extensive movements.	2, 7, 10, 11, 13, 15, 17, 19, 22, 24, 26, 16, 28, 44, 45, 46, 53, 58, 153, 157, 160, 163, 164, 166, 216
Neophema pulchella	Turquoise Parrot	Y	1	1	0	2 – Low – Species records are limited to Deniliquin. Low risk due to low population, not using open country, and flights occurring within woodland and forest elevations.	237, 266, 277, 319, 343
Ninox connivens	Barking Owl	Y	1	1	0	2 – Low – Due to sparse population, and flight height is likely to be confined to woodlands at elevations below power lines.	7, 10, 11, 13, 15, 53, 237, 319, 343

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Oxyura australis	Blue-billed Duck	Y	1 and occasionally 3	1	0	2-4 – Moderate – A specialist deep water species with local movements confined to low elevations within water bodies, but may fly at higher elevations during more extensive movements.	17, 160
Pachycephala inornata	Gilbert's Whistler	Y	1	1	0	2 – Low – The species occupies dense shrub layers for both foraging and breeding. No regular large-scale movements occur, and flights are common to be of low elevation.	10, 11, 13, 17, 19, 28, 58, 170
Pedionomus torquatus	Plains-wanderer	Y	1	1	0	2 – Low – Due to presence of the species within the vicinity of the subject land in Bionet records. However, the species is ground-dwelling and only occurs in grassland habitats.	44, 46
Petroica boodang	Scarlet Robin	Y	1	2	0	3 – Low – Due to moderate population, and flight heights occurring under power lines.	7, 11, 26, 266, 277, 343
Petroica phoenicea	Flame Robin	Y	1	2	0	3 – Low – Due to moderate population, and flight heights occurring under power lines.	7, 266, 277, 343

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Polytelis anthopeplus monarchoides	Regent Parrot (eastern)	N	1	0	1	2 (0) – Low – no Bionet or eBird records in NSW associated with the subject land. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a moderate to high risk of power line strike based on the elevations it is known to fly.*	10, 11, 13, 15, 22, 58, 170
Polytelis swainsonii	Superb Parrot	Y	1	2	1	4 – Moderate – Species occurrences across the Hay Plain are associated with the distribution of Weeping Myall (*Acacia pendula*), which does not extend significantly into the subject land, although rare outlying records exist. *This species may be at greater risk of power line strike where it frequents habitats with tall vegetation, but local habitats used by this species are largely below powerline height, particularly in the region of the subject land, and further reduced by familiarity with local features.*	7, 10, 11, 13, 26, 28, 45, 46, 237, 343

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Y	1	1	0	2 – Low – Due to the species habits being limited to strata below the canopy top in woodlands associated with the indicative disturbance area.	10, 13, 15, 19, 22, 26, 28, 58, 237, 266, 277, 319
Pyrrholaemus brunneus	Redthroat	N	1	0	0	1 (0) – Low – No records in the region of the subject land. The species is confined to shrubby substrates and does not ascend significantly above such habitats. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a low risk of power line strike due to its exclusive preference for habitats with low vegetation.*	17, 153, 163
Rostratula australis	Australian Painted Snipe	Y	1 and 3	1	1	3-5 – Moderate – A wetland species that spends almost all of its time foraging in wet substrates. Movements randomly follow the ever-changing distributions of water in the landscape. The species flight patterns and elevations are not documented.	2, 7, 10, 11, 13, 17, 24, 47, 53, 160

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Stagonopleura guttata	Diamond Firetail	Y	1	1	0	2 – Low – Due to general scarcity and habits limited to strata below canopy top in woodlands associated with the indicative disturbance area.	2, 7, 10, 11, 13, 19, 22, 26, 28, 44, 45, 46, 58, 237, 266, 277, 319, 343
Stictonetta naevosa	Freckled Duck	Y	1 and occasionally 3	1	0	<4 – Moderate – As with other waterfowl their greatest risk of powerline strike occurs when wetland access involves obstacles that they have to negotiate. Where power lines occur close to wetlands the risk of waterfowl strike increases.	2, 7, 10, 11, 13, 17, 24, 53, 160

Scientific name	Common name	Records within 50 km of proposed alignment	Flight movement type	Population size occurrence average	Typical flight pattern	Likelihood of potential collision	PCT habitats
Tyto novaehollandiae	Masked Owl	Y	1	0	0	1 (0) – Low – There are no records for this species close to the subject land, but a record occurs to the south of the Dinawan substation at Jerilderie alongside another regional record at Deniliquin. There are no close records for this species in other databases, and Barn Owls are often mistakenly identified as this species. The species is considered unlikely to occur. *In regions where power lines traverse habitats where this species is confirmed to occur, it is likely to be at a low risk of power line strike due to its nocturnal vision and familiarity of home range habitats.*	7, 10, 11, 13, 24, 26, 53, 237

J8 References

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Appendix K

Habitat connectivity

K1 Impacts to regional habitat connectivity

K1.1 Introduction

The key impacts on terrestrial connectivity from the proposal will be associated with the construction requirements of Disturbance area A, which refers to an area 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.

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 brake and winch 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).

The remaining disturbance areas within the transmission line corridor (Disturbance area B and Disturbance area HZ) will retain vegetation to a height of 4 metres within an inner zone (Disturbance area B4) and 10 metres height in an outer zone (Disturbance area B10).

This gradual reduction in vegetation removal heights within discrete management zone was specifically designed to minimise impacts on biodiversity, including indirect impacts on terrestrial connectivity.

The retention of understorey vegetation, ground timber within these zones is likely to maintain existing shelter and cover requirements for movement across the corridor.

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 with the exception of canopy dependent arboreal mammals (Squirrel Glider). See Figure K.1 for explanation.

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.

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.

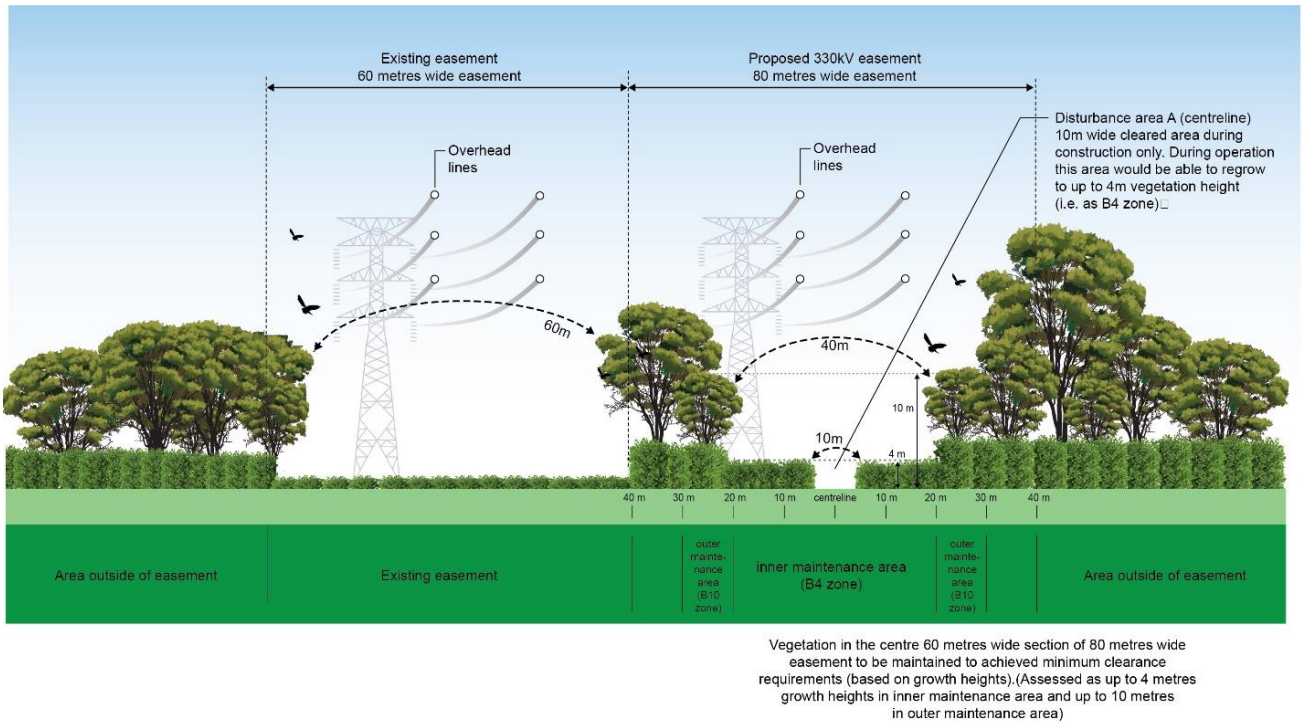

Figure K.1 Steppingstone cross-section of management zones and adjoining easement

K1.2 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 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 emphasize 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 1,000 m.

- 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 m. However, gaps less than 100 m 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 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 K.1 Candidate species impacted by terrestrial connectivity (semi-mobile and sedentary species)

Common name	Barriers	Estimated gap crossing	Use of mitigation structures
Semi-mobile species			
Woodland birds (Brown Treecreeper, Varied Sittella, Black-chinned Honeyeater, 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 — Maintained vegetated understorey within B4 and B10 zones — Maintained vegetated corridors <10 metres 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 — Maintained vegetated understorey within B4 and B10 zones — Maintained vegetated corridors <10 metres in height.

Common name	Barriers	Estimated gap crossing	Use of mitigation structures
Amphibians (Sloane's Froglet, Booroolong Frog, Southern Bell Frog, Painted Burrowing Frog)	Fragmentation of areas of riparian, permanent water, depressions within grassy woodlands and Mallee communities where clearing to ground level is required	Species assumed unlikely to cross unvegetated gap >50 m	— Maintained vegetated understorey within B4 and B10 zones — Maintained vegetated corridors <10 m in height.
Plains-wanderer	PCT's 44, 46 Habitat constraint: As per important mapped areas	Plains-wanderer is an open country species Known to occupy existing transition line corridors (David Parker pers com 2021)	— Maintained vegetated understorey within B4 and B10 zones.
Sedentary species			
Squirrel Glider	Squirrel Gliders are 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	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 — Maintained vegetated corridors <10 m in height.
Reptiles (Gray Snake, Striped Legless Lizard, Pink-tailed Legless Lizard)	Fragmentation of areas of habitats and grassy woodlands	Species assumed unlikely to cross unvegetated gap >50 m	— Maintained vegetated understorey within B4 and B10 zones — Maintained vegetated corridors <10 m in height.
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 — Maintained vegetated understorey within B4 and B10 zones — Maintained vegetated corridors <10 m in height.

Common name	Barriers	Estimated gap crossing	Use of mitigation structures
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	— Maintained vegetated understorey within B4 and B10 zones — Maintained vegetated corridors <10 m in height.

K1.2.1 Under-transmission line glider poles

A novel approach to mitigate the barrier impacts of the transmission line for gliders is the use of under-transmission glider poles which can include timber poles and/or where possible retained tall tree stumps (refer to Photo K.1).

It is proposed that these will be installed in areas of identified Squirrel Glider habitat subject to proposal clearing in key connectivity locations. The intention is to retain a single row or ideally a 10–20 m wide strip of poles and/or tall tree stumps which allows gliders to traverse the gap using multiple small glides, rather than a single long glide or rope ladder. The use of 'natural' glider poles (i.e. retained tall tree stumps) offers a number of likely advantages over timber poles (Photo K.1) 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 proposal 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 proposal 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 proposal 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 glide ratio (glide distance divided by height dropped) of Squirrel Gliders has been calculated at 1.84 (equivalent to a glide angle of 29° (Goldingay & Taylor 2009). With this ratio, the maximum distance between stumps that are 10 m in height is 18.4 m. However, gliders should land at least 2 to 3 m above the ground and shorter glides are typically steeper in descent initially because of the effect of a steep launch and less distance to level off, and therefore, stumps that are 10 m in height should be a maximum of 10–15 m apart.
- The retained stumps should be located away from the proposal structure so that if they collapse, they do not damage the tower. If the stumps, branches or coppice regrowth is within striking distance of the proposal , 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 proposal 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 K.2 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).

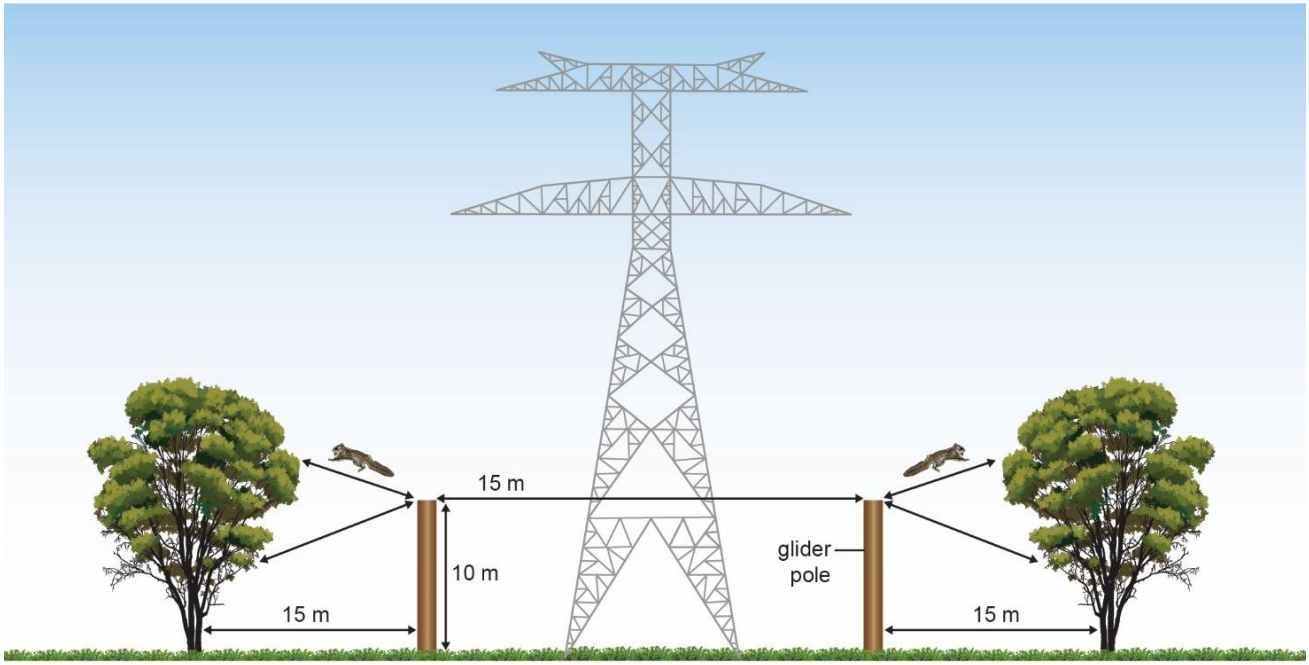

Figure K.2 Conceptual under-transmission glider poles

Photo K.1 Two arrays of artificial glider poles under a road in Ontario, Canada, installed for the Northern Flying Squirrel and (right) retained tree stumps under bridge along Pacific Highway NSW for Squirrel Gliders. Glider poles under bridges should only be used where retained tree stumps are not feasible (left). Photo at left courtesy of Christine Kelly

Appendix L

Secretary's Environmental Assessment Requirements

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-72887208
Project	Victoria to New South Wales Interconnector West (VNI West), which includes: • approximately 235 km of new 500kV double-circuit overhead transmission line between the NSW and Victoria border near Murrabit and the new Dinawan substation; • expansion of the new Dinawan 330 kV substation; • connection and line diversion works at the existing Wagga Wagga substation, new Dinawan substation; and the new Gugaa substation; and • ancillary works, such as temporary facilities including construction compounds and laydown areas, upgrading or establishing new access tracks, concrete batching plants, stockpiling areas, accommodation facilities, and site offices.
Location	• From the Victorian border at Murrabit to the new Dinawan substation in NSW, traversing the Murray River, Edward River and Murrumbidgee local government areas (LGAs). • From the Wagga Wagga substation and finishing at the new Gugaa substation, within the Wagga Wagga LGA.
Proponent	Transgrid
Date of Issue	4 October 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 Project Area (as per Table 1 of the SSI guidelines – preparing an environmental impact statement) and Development Footprint (disturbance area including but not limited to areas for infrastructure, road works, access tracks); - consistency in information presented in the EIS and all technical reports,

	including distances, development footprint, project design and infrastructure proposed, construction timeframes and receiver numbers; • 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; and - 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; and - 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; • a risk assessment of the potential environmental impacts of the project, identifying the key issues for further assessment; • 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), and any other significant issues identified in the risk assessment, focusing on the specific issues identified 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 site and 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 Cumulative Impact Assessment Guideline (DPIE); and - actions proposed to deal with any uncertainties associated with the assessment; and • 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 *NSW Biodiversity Conservation Act 2016*, 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, including Murray Valley National Park (including the Wetuppa Forest) and South West Woodlands Nature Reserve;
  - assess the impacts associated with all ancillary infrastructure, including the transport route road upgrades;
  - include an assessment for SAII in accordance with Section 9.1 of the BAM; and
  - be finalised by an accredited assessor as BAM-compliant within 14 days of submission;
- an assessment of the likely direct and indirect impacts 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;
- a cumulative impact assessment of biodiversity values in the region from nearby developments; 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 adequate 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; and
- an assessment of the impact to historic heritage having regard to the *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 Murray River, Edward-Wakool system, Billabong-Yanco system, the Murrumbidgee River and other watercourses present within the proposed corridor, having regard to NSW Water Quality Objectives;
- details of water requirements, supply arrangements and wastewater disposal arrangements for construction and operation (including consultation with suppliers);
- 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;
- identify potential biosecurity risks and appropriate strategies to prevent, eliminate or minimise those risks;
- an assessment of the risk of soil contamination and disturbance of land (including associated with naturally occurring asbestos in the vicinity of the site); and
- an assessment of impacts of the project on agricultural land, land reserved under the *National Parks and Wildlife Act 1974*, Crown lands including State Forests, travelling stock reserves, mineral resources and exploration licenses, rail reserves and pipeline corridors.

Transport:

- an assessment of the peak and average traffic generation, including light vehicles, shuttle buses, heavy vehicles and high risk heavy vehicles requiring escort and construction worker transportation;
- an assessment of the likely transport impacts to the site access route(s), including the above listed vehicles, site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance;
- a cumulative impact assessment of traffic from nearby developments (including mining operations);
- provide details of measures to mitigate and / or manage potential impacts (developed in consultation with the relevant road / rail authorities) including:
  - a schedule of all required road upgrades (including resulting from heavy vehicle and over mass / over dimensional traffic haulage routes);
  - clear figures of proposed road upgrades (including the site access point); and
  - road maintenance contributions, and any other traffic control measures; and
- details of the ongoing maintenance works required to service assets, outlining the measures to maintain the road;

Visual:

- a detailed assessment for the whole project of the likely visual impacts of the project on surrounding residences, scenic or significant vistas, night lighting, air traffic and road corridors in the public domain; and
- provide details of measures to mitigate and / or manage potential impacts.

Noise:

- including an assessment of the construction noise impacts of the project in accordance with the *Interim Construction Noise Guideline* (ICNG), blasting impacts, cumulative noise impacts (considering other developments in the area), and operational noise impacts in accordance with the *NSW Noise Policy for Industry* (2017), including corona noise; and
- provide details of measures to mitigate and / or manage potential impacts.

Air Quality:

- an assessment of the air quality impacts of the project, including from dust.

Hazards:

- 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, the handling and use of any dangerous goods 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 Bushfire Protection Guideline* (RFS 2019); and

	• 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 certified aerodromes within 30km of the transmission line and uncertified aerodromes and landing areas within 10km of the transmission line, and consider the impact to nearby aerodromes, aircraft landing areas; - address impacts on obstacle limitation surfaces; and - identify aviation marking requirements, if any. **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 waste facilities, including Council). **Social Impact:** • an assessment of the social impacts in accordance with *Social Impact Assessment Guideline* (DPIE) and *SIA Guideline - Technical Supplement* (DPE) and 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 consideration of construction workforce accommodation. **Economic:** • an assessment of the economic benefits of the project for the region and the State as a whole, including: - 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 EP&A 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, infrastructure and 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.

Attachment A

Guidelines for preparing assessment documentation relevant to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for proposals being assessed under the NSW Assessment Bilateral

Victoria NSW Interconnector West Project (EPBC 2024/09871)

Introduction

1. On 4 September 2024, a delegate of the Federal Minister for the Environment and Water determined that the Victoria NSW Interconnector West Project was a controlled action under section 75 of the *Environment Protection* and *Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act controlling provisions for the proposed actions are:
    i. listed threatened species and communities (sections 18 and 18A).
2. The proposed action will be assessed in accordance with the bilateral assessment agreement Amending Agreement No. 1, and as such, is required to be assessed in the manner specified in Schedule 1 to that Agreement, including, addressing the matters outlined in Schedule 4 of the *Environment Protection and Biodiversity Conservation Regulations 2000* (EPBC Regulations).
3. The proponent must undertake an assessment of all protected matters that may be impacted by the development under the controlling provision identified in paragraph 1. The Federal Minister for the Environment and Water considers that the proposed action is likely to have a significant impact on threatened species and communities listed in **Appendix A**.
4. The proponent must consider each of the protected matters under the triggered controlling provisions that may be impacted by the action. Note that this may not be a complete list and it is the responsibility of the proponent to undertake an analysis of the relevant impacts and ensure all protected matters that are likely to be impacted are assessed for the Commonwealth Minister's consideration.

General Requirements

Relevant Regulations

5. The Environmental Impact Statement (EIS) must address all matters outlined in Schedule 4 of the EPBC Regulations and all matters outlined below in relation to the controlling provisions.

Project Description

6. The title of the action, background to the action and current status.
7. The precise location and description of all works to be undertaken (including associated offsite works and infrastructure), structures to be built or elements of the action that may have impacts on Matters of National Environmental Significance (MNES).
8. How the action relates to any other actions that have been, or are being taken in the region affected by the action.
9. How the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts on MNES.

Impacts

10. The EIS must include an assessment of the relevant impacts of the action on the matters protected by the controlling provisions, including:
    i. a description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short term and long term relevant impacts;
    ii. a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;
    iii. analysis of the significance of the relevant impacts; and
    iv. any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

Avoidance, mitigation and offsetting

11. For each of the relevant matters protected that are likely to be significantly impacted by the action, the EIS must provide information on proposed avoidance and mitigation measures to manage the relevant impacts of the action including:
    i. a description, and an assessment of the expected or predicted effectiveness of the mitigation measures;
    ii. any statutory policy basis for the mitigation measures;
    iii. the cost of the mitigation measures;
    iv. an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;
    v. the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

12. Where a significant residual adverse impact to a relevant protected matter is considered likely, the EIS must provide information on the proposed offset strategy, including discussion of the conservation benefit associated with the proposed offset strategy.

13. For each of the relevant matters likely to be impacted by the action the EIS must provide reference to, and consideration of, relevant Commonwealth guidelines and policy statements including any:
    i. conservation advice or recovery plan for the species or community;
    ii. relevant threat abatement plan for the species or community;
    iii. wildlife conservation plan for the species; and
    iv. any strategic assessment.

Note: the relevant guidelines and policy statements for each species and community are available from the Department of Climate Change, Energy, the Environment and Water Species Profiles and Threats Database: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

14. In addition to the general requirements described above, specific information is required with respect to each of the determined controlling provisions. These requirements are outlined in paragraphs 15-17.

Key Issues

Biodiversity (threatened species and communities)

Assessment Requirements

15. The EIS must identify each EPBC Act listed threatened species and communities likely to be impacted by the action. For any species and communities that are likely to be impacted, the proponent must provide a description of the nature, quantum and consequences of the impacts. For species and communities potentially located in the project area or in the vicinity that are not likely to be impacted, provide evidence why they are not likely to be impacted.

16. For each of the EPBC Act listed threatened species and communities likely to be impacted by the action the EIS must provide a separate:

    i. description of the habitat (including identification and mapping of suitable breeding habitat, suitable foraging habitat, important populations and habitat critical for survival), with consideration of, and reference to, any relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans;
    ii. details of the scope, timing and methodology for studies or surveys used and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements;
    iii. description of the relevant impacts of the action having regard to the full national extent of the species or community's range;
    iv. description of the specific proposed avoidance and mitigation measures to deal with relevant impacts of the action;
    v. identification of significant residual adverse impacts likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account;
    vi. a description of any offsets proposed to address residual adverse significant impacts and how these offsets will be established;
    vii. details of how the current published NSW Biodiversity Assessment Method (BAM) has been applied in accordance with the objects of the EPBC Act to offset significant residual adverse impacts; and
    viii. details of the offset package to compensate for significant residual impacts including details of the credit profiles required to offset the action in accordance with the BAM and/or mapping and descriptions of the extent and condition of the relevant habitat and/or threatened communities occurring on proposed offset sites.

Note: For the purposes of approval under the EPBC Act, it is a requirement that offsets directly contribute to the ongoing viability of the specific protected matter impacted by a proposed action and deliver an overall conservation outcome that improves or maintains the viability of the MNES i.e. 'like for like'. Like-for-like includes protection of native vegetation that is the same ecological community or habitat being impacted (preferably in the same region where the impact occurs), or funding to provide a direct benefit to the matter being impacted e.g. threat abatement, breeding and propagation programs or other relevant conservation measures.

17. Any significant residual impacts not addressed by the BAM may need to be addressed in accordance with the EPBC Act 1999 Environmental Offset Policy. www.dcceew.gov.au/environment/epbc/publications/epbc-act-environmental-offsets-policy.

Other approvals and conditions

18. Information in relation to any other approvals or conditions required must include the information prescribed in Schedule 4 Clause 5 (a) (b) (c) and (d) of the EPBC Regulations.

Environmental Record of person proposing to take the action

19. Information in relation to the environmental record of a person proposing to take the action must include details as prescribed in Schedule 4 Clause 6 of the EPBC Regulations.

Information Sources

20. For information given in an EIS, the EIS must state the source of the information, how recent the information is, how the reliability of the information was tested; and what uncertainties (if any) are in the information.

REFERENCES

- *Environment Protection and Biodiversity Conservation Act 1999* - section 51-55, section 96A(3)(a)(b), 101A(3)(a)(b), section 136, section 527E
- *Environment Protection and Biodiversity Conservation Regulations 2000* Schedule 4
- Amending Agreement No. 1 (2020) - Item 18.1, Item 18.5, Schedule 1
- *Matters of National Environmental Significance - Significant impact guidelines 1.1* (2013) EPBC Act
- *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy October 2012

The international conventions, management plans and principles that must be considered in relation to this proposal include:

- Australia's obligations under the:
  - Convention on Biological Diversity (Biodiversity Convention);
  - the Convention on Conservation of Nature in the South Pacific (Apia Convention);
  - the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); and
- Any relevant recovery plans or threat abatement plans.

The policies and plans that must be considered in relation to this proposal include:

- Relevant conservation advice and other relevant policies for each species or ecological community available on the department's SPRAT Database (https://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl)
- Bioregional plans
- Relevant strategic assessment reports.

Commonwealth Listing Advice, Survey Guidelines and Referral Guidelines contain information on threatened species and ecological communities which may provide further support to proponents and NSW DPHI in considering and evaluating the significance of residual impacts on the action's controlling provisions. These documents may be found on the department's SPRAT Database.

Appendix A

Protected matters relevant to the Victoria NSW Interconnector West Project (EPBC 2024/09871)

Specific risks

Key risks associated with the proposed action from the Commonwealth perspective include the potential for:

- Direct impacts to threatened ecological communities:
  - reduce the extent of an ecological community
  - fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines
  - adversely affect habitat critical to the survival of an ecological community
  - interfere with the recovery of an ecological community
- Direct and indirect threats to listed species:
  - habitat clearing
  - displacement from important foraging, nesting and/or breeding habitat
  - reshaping of the topography
  - disturbance and reduced habitat quality due to noise, dust and light spill during construction and operation
  - invasive species or weed dispersal
  - changes to fire regimes.

Listed threatened species and communities and migratory species

Based on the information in the referral documentation, the location of the action, species records and likely habitat present in the area, there are likely to be significant impacts to:

- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered
- Weeping Myall Woodlands – Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered.

Additionally, there is some risk that there may be significant impacts on the following matters and further assessment to determine if the communities and species listed below are present in the proposed action area and, if so, the extent to which they may be impacted by the proposed action, is required:

- *Austrostipa metatoris* (a perennial spear grass) – Vulnerable
- Blue-winged Parrot (*Neophema chrysostoma*) – Vulnerable
- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions – Endangered
- Chariot Wheels (*Maireana cheelii*) – Vulnerable
- Diamond Firetail (*Stagonopleura guttata*) – Vulnerable
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – Endangered
- Grey Snake (*Hemiaspis damelii*) – Endangered

- Grey-headed Flying Fox (*Pteropus poliocephalus*) – Vulnerable
- Major Mitchell's Cockatoo (*Lophochroa leadbeateri leadbeateri*) – Endangered
- Painted Honeyeater (*Stagonopleura guttata*) – Vulnerable
- Pink Tailed Worm Lizard (*Aprasia parapulchella*) – Vulnerable
- Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions – Critically Endangered
- Plains-wanderer (*Pedionomus torquatus*) – Critically Endangered
- Red Darling-pea (*Swainsona plagiotropis*) – Vulnerable
- Slender Darling-pea (*Swainsona murrayana*) – Vulnerable
- Southern Bell Frog (*Litoria raniformis*) – Vulnerable
- Superb Parrot (*Polytelis swainsonii*) – Vulnerable
- Winged Pepper-cress (*Lepidium monoplocoides*) – Endangered.

Note: uncertainty around the extent and number of protected matters that may be impacted will need to be resolved through the assessment process once final alignment and construction plans have been completed.

Note: this may not be a complete list and it is the responsibility of the proponent to ensure any protected matters under these controlling provisions are assessed for the Commonwealth decision-maker's consideration.

Appendix M

Aquatic biodiversity impact assessment

Design
for a better
future /

Transgrid

Victoria to New South Wales Interconnector West (VNI West) (NSW)

Aquatic Assessment

July 2025

Question today
Imagine tomorrow
Create for the future

Victoria to New South Wales Interconnector West (VNI West) (NSW)
Aquatic Assessment

Transgrid

WSP
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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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Glossary of terms and abbreviations

Term	Definition
Aquatic ecology study area (the study area)	All the watercourses within the project footprint, including a 50-metre buffer, to capture habitat impacts
Commonwealth DCCEEW	(Commonwealth) Department of Climate Change, Energy, the Environment and Water
Cth EPBC	(Commonwealth) *Environment Protection and Biodiversity Conservation Act 1999*
Deleterious substance	Any substance that, if added to any water would degrade or alter the water quality such that it could directly or indirectly harm fish, fish habitat, or the use of fish by humans.
EEC	Endangered Ecological Community
Interconnector	An electricity interconnector is a connection that allows power to flow in both directions between regions in the National Electricity Market (NEM), providing access to a larger number of electricity generators and greater ability to meet varying demand where and when it is needed most.
MNES	Matters of National Environmental Significance
NSW EP&A Act	(NSW) *Environment Planning and Assessment Act 1979*
Transgrid (or 'the proponent')	The manager and operator of the high voltage electricity transmission network in NSW and the Australian Capital Territory with connections to Victoria and Queensland. Transgrid manages the network that is the backbone of the NEM, which enables energy trading between Australia's three largest states along the east coast.
Project footprint (the)	Refers to the generally 200 m wide corridor area that may be directly impacted by the project including all proposed infrastructure elements (including the proposed transmission line corridor, substation site works and other ancillary works) as well as locations for proposed construction elements such as temporary worker accommodation facilities, construction compounds, access tracks and site access points, laydown and staging areas, concrete batching plants, brake and winch sites and site offices.
Project transmission line corridor	A generally 200 m wide corridor along the length of the transmission line within which the transmission line, structures and easement would be located (sub set of the project footprint).
Transmission line easement	The area surrounding and including the transmission lines that allows access, construction and maintenance work to take place. The easement grants a right of access and for construction, maintenance and operation of the transmission line and other operational assets. The easements for the new 500 kV transmission line between the NSW/Victorian border and the future Dinawan substation would typically be 70 m wide. However, transposition locations would require wider easements up to 110 m wide. The replacement of the 330 kV transmission line generally between Ivy Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation would occur within the existing 60 m wide easement.

Term	Definition
Transmission line alignment	The location of the transmission line structures along the middle of the transmission line easement.
Transmission line structure	A free standing steel tower structure to support the transmission line cables. Structures can consist of two types of supporting steel lattice structures being: a suspension structure and strain structure (also known as tension structure).
Transposition	Transposition is the periodic swapping of positions of the conductors of a transmission line to improve transmission voltage balance.
VNI West	An interconnector of about 480 km between the power grids of NSW and Victoria. Specifically, VNI West would connect the EnergyConnect (NSW – Eastern section) project (at the future Dinawan substation in NSW) with the Western Renewables Link proposal (at Bulgana in Victoria) via a new substation near Kerang (in Victoria).
VNI West (NSW) ('the project')	The NSW component of VNI West includes: — a new 500 kV transmission line connection between the NSW/Victorian border and Transgrid's Dinawan substation (currently under construction as part of the EnergyConnect (NSW – Eastern section) project) — replacement of a section of existing single circuit 330 kV transmission line to a double circuit 330 kV line generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation (subject to separate planning approval as part of the HumeLink project) — expansion of the future Dinawan 330 kV substation to include a new 500 kV switchyard and two new 330 kV bays — connection and transmission line diversion works at both the existing Wagga 330 kV substation and the future Gugaa 500 kV substation to connect the new transmission line infrastructure — ancillary activities to support construction and operation of the project.

1 Introduction

This chapter provides an overview and background to the NSW component of the Victoria to NSW Interconnector West (VNI West) project, including a summary of the project and the purpose and structure of this technical paper.

1.1 Project overview

Transgrid and Transmission Company Victoria (TCV) are jointly developing a new electrical connection between NSW and Victoria called the Victoria to NSW Interconnector West project (VNI West). VNI West would form a second transmission link between NSW and Victoria to harness clean, low-cost electricity from Renewable Energy Zones (REZ) in both states and improve the reliability and security of electricity supply. VNI West is a priority project for the Australian Energy Market Operator (AEMO), and the Commonwealth and NSW and Victorian governments.

VNI West proposes the construction, operation and ongoing maintenance of a high voltage, 500 kilovolt (kV) double circuit overhead transmission line that would connect the high voltage electricity grids in NSW and Victoria. Specifically, VNI West would connect the Western Renewables Link proposal (at Bulgana in Victoria) with the EnergyConnect (NSW – Eastern section) project (SSI-9172452) at the future Dinawan substation in NSW (currently in construction) via a new substation near Kerang (in Victoria) (refer to Figure 1.1).

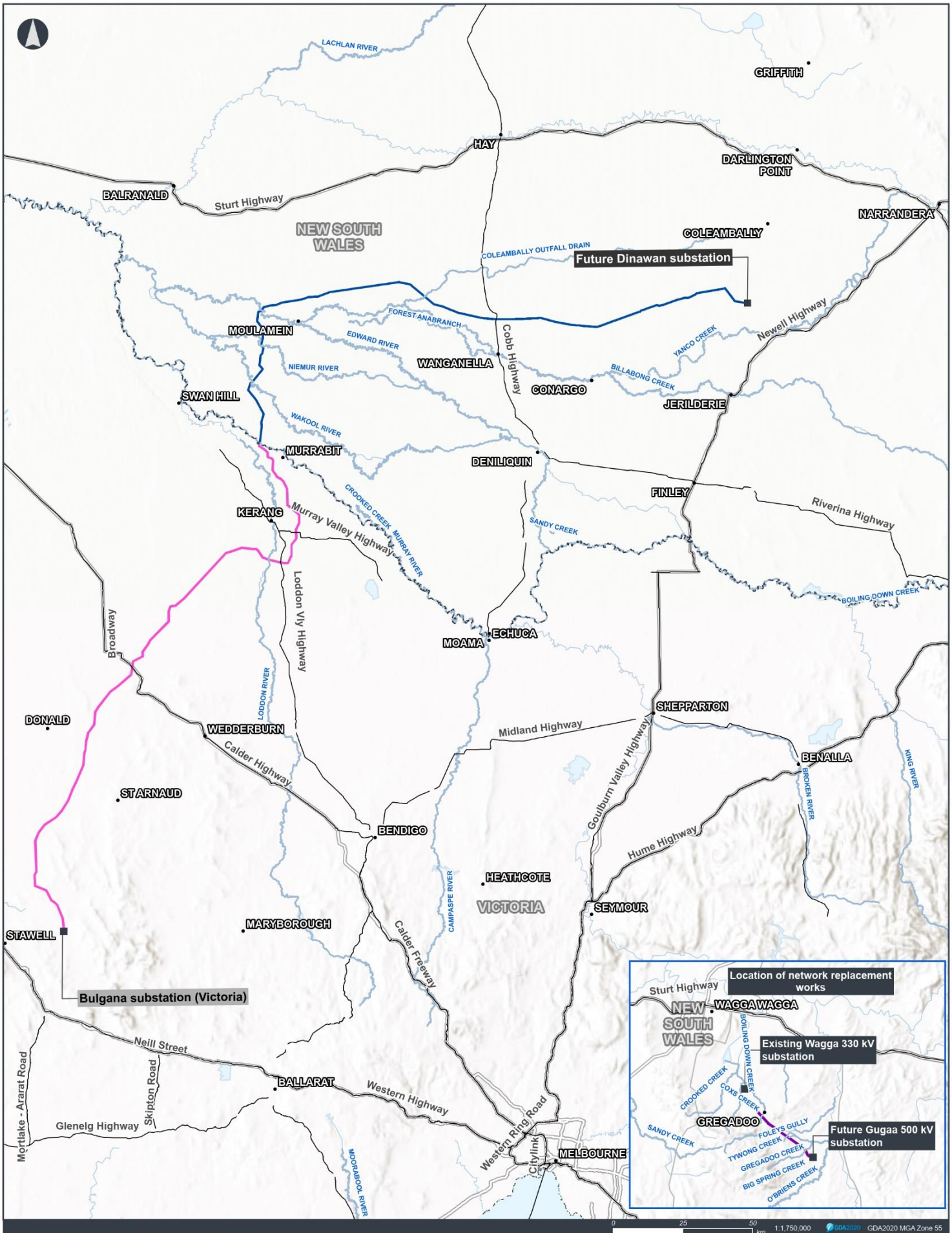
Transgrid (the proponent) is responsible for seeking the required planning approval and delivering the NSW component of VNI West (referred to as 'the project' or 'VNI West (NSW)') in the Riverina Region of NSW and would provide the 500 kV transmission line component of the connection for the VNI West project. The project would be located between the NSW/Victorian border near Murrabit in Victoria and the future Dinawan substation (the 330 kV component of which is currently being constructed under the EnergyConnect (NSW – Eastern section) project approval). The project would also include replacement of around nine kilometres of an existing single circuit 330 kV transmission line (Line 51) with a double circuit 330 kV transmission line generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road (which is subject to separate planning approval as part of the HumeLink project (SSI-36656827)). The project would also include an expansion of the future Dinawan substation and substation connection works at both the existing Wagga 330 kV substation and the future Gugaa 500 kV substation, Livingstone Gully Road.

TCV, in association with the AEMO Victoria, is responsible for seeking the required planning approval and the delivery of the Victorian component of the VNI West project (VNI West (Victoria)), from the crossing point on the NSW/Victorian border to a connection with the Western Renewables Link near Bulgana, via a new proposed substation near Kerang. The Victorian component is subject to a separate planning and environmental approvals under the applicable Victorian State and Commonwealth jurisdictional requirements.

1.1.1 Project objectives

The primary objective of VNI West is to reduce the cost of providing secure electricity transmission between NSW and Victoria in the near term and facilitate the longer-term transition of the energy sector across the National Electricity Market (NEM) to low emission energy generation sources. More specifically, the project aims to:

- provide reliable and affordable electricity to customers
- improve energy security of the south western transmission network, enable greater sharing of energy between NSW and Victoria and help to unlock the potential capacity of proposed REZs in the region
- support the national transition to a lower carbon emission energy system by enabling more renewable energy generation to enter the market, supporting Australia's emissions reduction targets
- support the development of a greater mix of renewable energy in the NEM.



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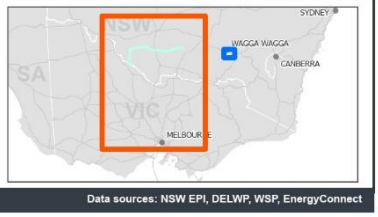
VNI West (NSW)

Figure 1.1
Overview of VNI West

Legend

- Project transmission line corridor (NSW/Victorian border to Dinawan substation)
- Network replacement between the existing Wagga 330 kV substation and future Gugaa 500 kV substation
- Victorian project transmission line corridor (subject to separate assessment)
- NSW/Victorian border
- Substation
- Watercourse
- Roads



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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

1.2 The project

Transgrid is seeking approval under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (the EP&A Act) to construct and operate the project. The project was declared as Critical State Significant Infrastructure (Critical SSI) under Section 5.13 of the EP&A Act on 19 June 2024.

The project was also declared a 'controlled action' on 4 September 2024 (EPBC Act 2024/09871) by the (Commonwealth) Department of Climate Change, Energy, the Environment and Water ((Commonwealth DCCEEW) and as such also requires a separate approval under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). As a result of the need for Commonwealth approval, the project will be subject to the bilateral assessment process that has been established between the Australian and NSW governments.

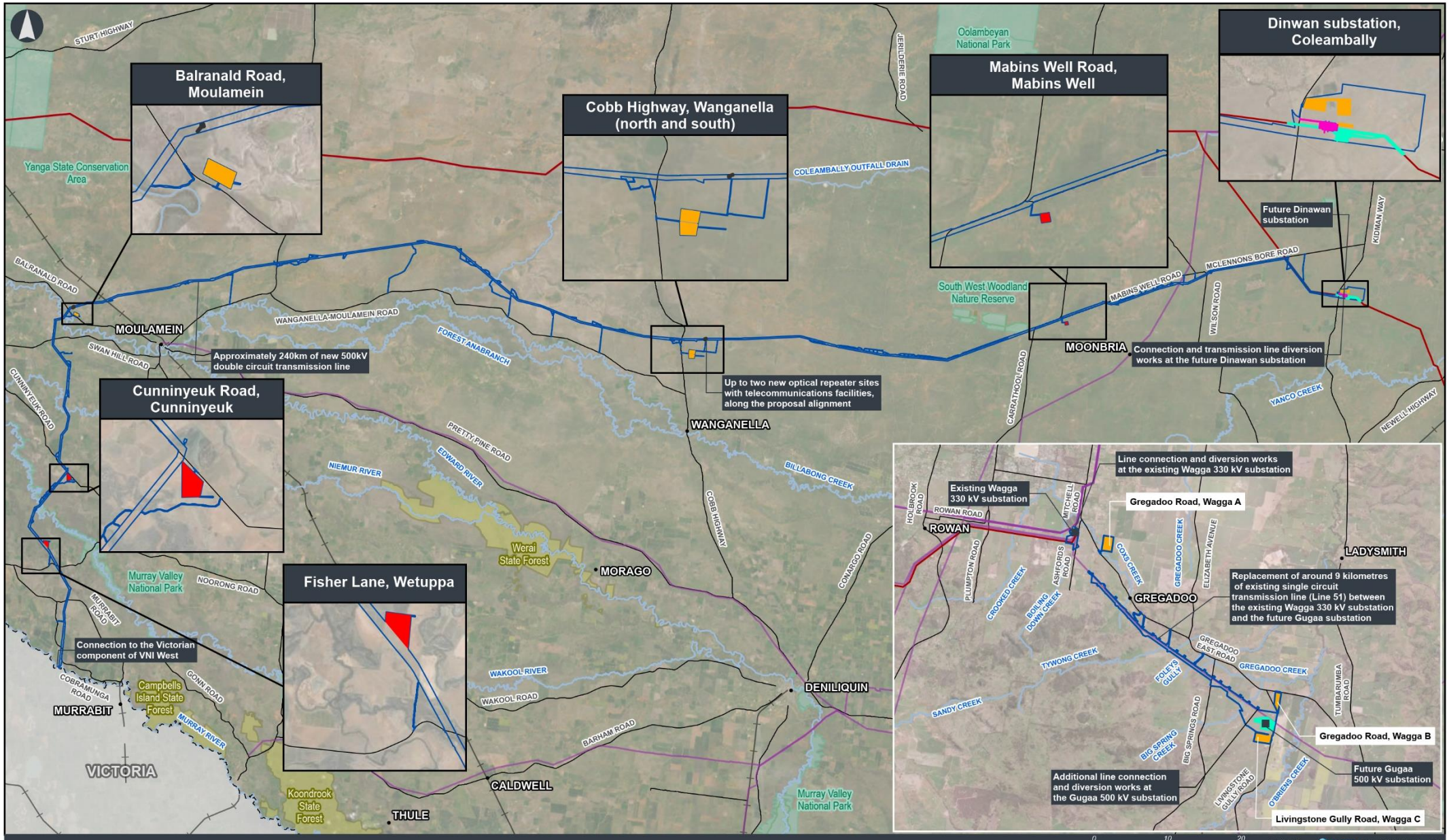
1.2.1 Key features of the project

The key elements of the project would be located within the project footprint and would include infrastructure such as the transmission lines and transmission line structures, the 500 kV expansion component of the future Dinawan substation and some additional ancillary features. The overall scope of the project includes the following key components:

- transmission line works comprising:
  - a new 500 kV double circuit overhead transmission line around 240 kilometres in length between the NSW/Victoria border near Murrabit, and the future Dinawan substation
  - replacement of around nine kilometres of an existing 330 kV single circuit overhead transmission line (Line 51), generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road, with a new 330 kV double circuit overhead transmission line. The new transmission line structures for this section of the project would be up to around 56 metres in height
- substation works comprising:
  - connection and line diversion works at the future Dinawan substation to allow for connection of the proposed 500 kV switchyard
  - expansion of the future Dinawan substation to include a new 500 kV switchyard and two new 330 kV transformer bays
  - connection and line diversion work at the existing Wagga 330 kV substation and at the future Gugaa 500 kV substation, Livingstone Gully Road to allow for connection to the newly replaced Line 51
- ancillary activities comprising:
  - new and upgraded temporary and permanent access tracks
  - construction of utilities infrastructure and power supply
  - installation and operation of two telecommunication facilities (optical repeater sites) along the transmission line between the NSW/Victorian border and future Dinawan substation including connections to the local power supply
  - temporary facilities required for construction of the project including construction compounds, temporary worker accommodation facilities, laydown and staging areas, stockpiling areas, concrete batching plants, brake and winch sites, site offices, parking areas, and utilities supplies.

All components of the project would be located within the project footprint shown in Figure 1.2.

The project footprint is the area that has been assessed in this EIS as being directly affected by the construction, operation and maintenance of the project.



VNI West (NSW)

Figure 1.2
Overview of the VNI West (NSW) Project

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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

The 500 kV transmission line between the NSW/Victorian border and the future Dinawan substation would be located within an easement approximately 70 metres wide except at two transposition locations (where the conductors of a transmission line swap positions to improve transmission voltage balance) requiring a wider 110 metre easement for around one kilometre in length.

The section of the transmission line to be replaced generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road would be contained within the existing 60 metre easement. These easements would provide a legal right of access to construct, operate and maintain the transmission lines and other operational assets associated with these lines.

A detailed description of the project features and construction methods is further described in Chapter 3 (Project description) of the main EIS document.

1.2.2 Construction

1.2.2.1 Key construction work

Key construction work for the project would typically include (but not be limited to):

- pre-construction minor works which would include:
  - installation of mitigation measures, including but not limited to erosion and sediment controls, temporary exclusion fencing and monitoring equipment
  - property acquisition adjustment work including installation of property fencing, barricades and gates
- site establishment works, which may include (but not be limited to):
  - establishment of combined temporary worker accommodation facilities and construction compounds, including excavations, surface preparation, access roads and utility connections
  - vegetation clearing
  - road and intersection improvement works (where required)
  - establishment of access tracks and watercourse crossings
  - relocating, adjusting or protecting utilities
- construction of the proposed transmission lines, which would include (but not be limited to):
  - earthwork (including establishment of construction pads) and the construction of footings and foundations for each transmission line structure
  - erection of the new transmission line structures using crane(s) and/or helicopter(s), noting, where cranes are proposed, is assumed that the final height of the cranes would extend around 20 metres above the respective transmission line structure heights
  - stringing of the conductors and overhead earth wires and optical ground wire (utilising either ground-based and/or helicopter/drone stringing construction methods)
  - installation of earthing conductors
  - testing and commissioning of the transmission lines

- works to replace around nine kilometres of Line 51 generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road, which would include (but not be limited to):
  - demolition of existing transmission line structures and footings and removal of waste materials
  - erection of the new transmission line structures
  - stringing of the conductors and overhead earth wires and optical ground wire
  - testing and commissioning of the new transmission lines
- expansion of the future Dinawan substation, which would include (but not be limited to):
  - civil construction works including earthworks
  - slab construction for the new 500 kV switchyard and 330 kV transformer bays
  - electrical fit out with new substation equipment
  - testing and commissioning of the new substation equipment
- utility service connections to telecommunication facilities (optical repeater sites) and construction compounds/temporary worker accommodation facilities, and adjustments of existing utilities that intersect the transmission line corridor (as required)
- connection and transmission line diversion works at the existing Wagga 330 kV substation and future Gugaa 500 kV substation, Livingstone Gully Road.

Prior to energisation of the infrastructure, a series of pre-commissioning activities would be conducted. This would include testing the new transmission lines and additional substation infrastructure.

A detailed description of construction work for the project is further outlined in Chapter 3 (Project description) of the main EIS document.

1.2.2.2 Construction program

Subject to NSW and Commonwealth planning approvals and potential construction staging, the project is expected to commence in late 2026 (site establishment works phase). Once construction has commenced, the project is estimated to take around two years to complete. Initial operation is anticipated to commence by early 2029, and at full capacity by late 2029. Site decommissioning and remediation would extend up to around six months beyond the initial commissioning (operational) phase, with estimated completion by the end of 2029.

The final construction program would be confirmed as part of the finalisation of the project development following approval of the project.

1.2.2.3 Indicative duration of transmission line construction activities

Construction at each transmission line structure would be intermittent and construction activities would not occur for the full duration at any one location. Figure 1.3 presents an indicative duration of construction activities associated with the transmission line structures. These durations could vary and breaks between activities may be shorter, which may lead to longer inactive periods in subsequent stages of construction at an individual transmission line structure. Duration of any particular construction activity, and respite periods, may vary for a number of reasons including (but not limited to), multiple work fronts, resource and engineering constraints, works sequencing, and location.

These activities would also have multiple work fronts, therefore (for example) foundation works or structure erection would be occurring in several locations, along the transmission line easement, at the same time.

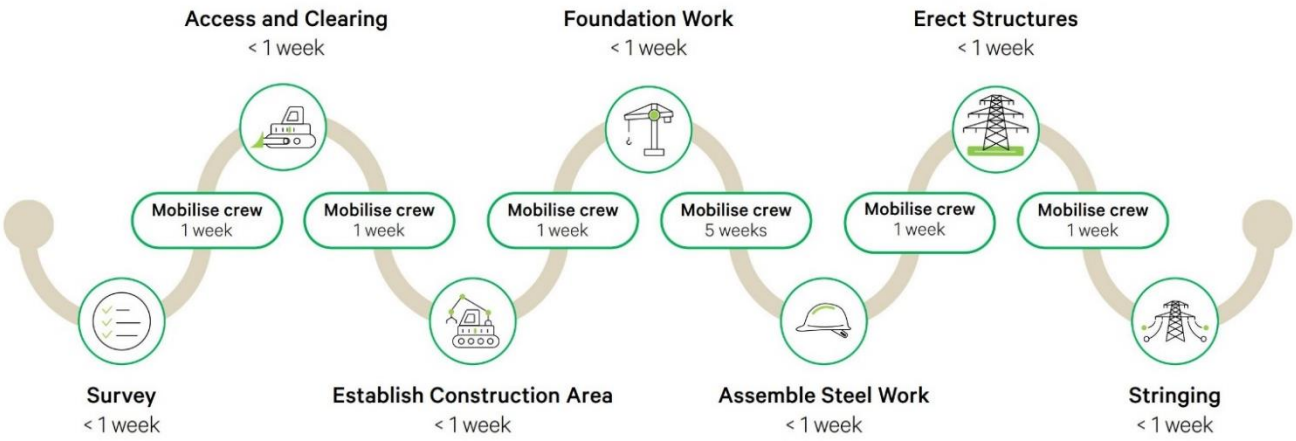


Figure 1.3 Indicative duration and sequence of construction activities for transmission line structures

1.2.3 Operation

Once operational, the new infrastructure would be inspected by field staff and contractors on a regular basis, with other operational activities occurring in the event of an emergency (as required). Key maintenance activities would include:

- regular inspection (ground and aerial) and maintenance of transmission lines and structures, including annual fly overs and routine ground inspections on an approximate six-yearly cycle
- vegetation clearing/trimming within the transmission line easement, and access along road/tracks
- inspection and maintenance of the future Dinawan substation including:
  - routine substation infrastructure inspection (such as transformers, electrical plant and equipment and fire detection systems) throughout the year
  - routine/planned substation maintenance of equipment, property and switchyard areas on a scheduled basis
  - ad hoc fault and emergency works for repair of any damaged infrastructure (for example through a weather event or other failure of infrastructure)
  - maintenance of asset protection zones (as required)
- inspection and maintenance of other ancillary infrastructure including the telecommunication facilities and associated asset protection zones
- stormwater drainage maintenance.

It is expected that these activities would only require light vehicles and/or small to medium plant (depending on the work required).

1.3 Purpose of this assessment

The purpose of this assessment is to identify and assess the potential aquatic ecology impacts in relation to the construction and operation of the project and has been prepared to support and inform the EIS. It responds directly to the project's Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning, Housing and Infrastructure (DPHI) on 22 May 2025 (refer to section 1.3.1).

The report has the following objectives:

- identify watercourses that contain Key Fish Habitat and potential habitat for threatened aquatic species within the project footprint
- identify potential impacts the project may have on aquatic ecosystems
- identify mitigation and management measures to minimise identified impacts.

1.3.1 Secretary's Environmental Assessment Requirements

This report addresses the SEARs relevant to the assessment of aquatic ecology and is appended to *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a). The requirements specific to this assessment and where these aspects are addressed in this report are outlined in Table 1.1.

Table 1.1 Secretary's Environmental Assessment Requirements – Aquatic ecology

Reference	SEAR	Where principally addressed in this report
Biodiversity		
Key issues	an assessment of the biodiversity impacts of the project, including impacts associated with transport route road upgrades, in accordance with the NSW Biodiversity Conservation Act 2016, the Biodiversity Assessment Method (BAM) and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must: — be prepared using the approved BDAR template	*Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a), which has been prepared in accordance with the BC Act and the BAM.
	— document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the BAM	*Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a.)
	— assess any impacts to nearby conservation areas, including Murray Valley National Park (including the Wetuppa Forest) and South West Woodlands Nature Reserve;	*Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a).
	— assess the impacts associated with all ancillary infrastructure, including the transport route road upgrades;	This assessment considers the aquatic ecology impacts of ancillary infrastructure as described in Chapter 3 (Project description) within the defined project footprint.
	— include an assessment for SAII in accordance with Section 9.1 of the BAM; and	*Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a).

Reference	SEAR	Where principally addressed in this report
	— be finalised by an accredited assessor as BAM-compliant within 14 days of submission;	*Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a).
	— an assessment of the likely direct and indirect impacts 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;	Chapter 5 and 6 of this report.
	— a cumulative impact assessment of biodiversity values in the region from nearby developments; and	Appendix O of *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a)
	— if an offset is required, details of the measures proposed to address the offset obligations	Section 6.3 of this report, and in *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a)
Water and soils (extract)		
	— 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;	Section 4.2 of this report. The assessment of impacts to groundwater dependent ecosystems (GDEs) in *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a). Impacts to groundwater aquifers and GDEs is discussed in *Technical paper 10 – Groundwater impact assessment* (WSP, 2025b).
	— 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 and guidelines for fish habitat conservation and management* (DPI, 2013); and	Section 5.1 and section 5.2 of this report. This is further considered in *Technical paper 9 – Hydrology, flooding and water quality* (WSP, 2025c).

1.3.2 Matters of National Environmental Significance

As identified in section 1.2, the project is a controlled action and requires an additional approval under the EPBC Act. The project is a controlled action due to impacts on listed threatened species and ecological communities (EPBC section 18 and 18A) and would be assessed under the NSW Assessment Bilateral Agreement. The listed threatened species and ecological communities identified by Commonwealth DCCEEW when making this decision did not include any aquatic species.

The NSW Assessment Bilateral Agreement supports certain actions that are considered SSI to be assessed and public exhibited by the NSW Government on behalf of the Commonwealth DCCEEW. As a requirement of the NSW Assessment Bilateral Agreement, the SEARs issued for the project set out the relevant Commonwealth requirements. These requirements are addressed in *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a), which this report is appended (refer to Appendix L of that technical paper for further detail). This report assesses impacts to EPBC listed aquatic threatened species and communities in Chapter 5 and Appendix A.

1.3.3 Related technical papers

This report is appended to *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a) and is linked to the assessments completed in the following technical papers:

- *Technical paper 9 – Hydrology, flooding and water quality impact assessment* (WSP, 2025c)
- *Technical paper 10 – Groundwater impact assessment* (WSP, 2025b).

1.4 Structure of this report

The structure and content of this report is as follows:

- Chapter 1 – Introduction
- Chapter 2 – Legislation and policy context. This chapter outlines the key legislation and policies that are relevant to this assessment.
- Chapter 3 – Methodology. This chapter describes the assessment methodology for the assessment and defines the study area.
- Chapter 4 – Existing environment. This chapter discusses the existing environment within the study area
- Chapter 5 – Potential impacts. This chapter discusses the potential impacts during construction and operation of the project.
- Chapter 6 – Management of impacts. This chapter identifies mitigation measures, and presents the risk to aquatic ecology following the implementation of the mitigation measures
- Chapter 7 – Conclusion
- Chapter 8 – References
- Appendix A – Commonwealth EPBC Act assessment of significance
- Appendix B – Test of significance.

2 Legislation and policy context

2.1 Commonwealth legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act (Cth) is the Commonwealth Government's key piece of environmental legislation. It enables the Commonwealth Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation. The EPBC Act (Cth) focuses Commonwealth Government interests on the protection of Matters of National Environmental Significance (MNES), with the states and territories having responsibility for matters of state and local significance.

As identified in section 1.2, the project is 'controlled action' and requires a separate approval under the EPBC Act (Cth). This was on the basis that the project will have or is likely to have a significant impact on MNES, specifically threatened species and ecological communities. This report assesses the potential impacts on EPBC Act listed threatened aquatic species that have the potential to occur within the project footprint, specifically:

- Silver Perch (*Bidyanus bidyanus*)
- Murray Hardyhead (*Craterocephalus fluviatilis*)
- Flathead Galaxias (*Galaxias rostratus*)
- Trout Cod (*Maccullochella macquariensis*)
- Murray Cod (*Maccullochella peelii*).

2.2 NSW legislation and policies

2.2.1 Fisheries Management Act 1994

The *Fisheries Management Act 1994* (NSW) (FM Act) is the primary piece of legislation to conserve important aquatic values and develop NSW fishery resources. This act has eight main objectives, however, the following three are the most pertinent to this project and assessment:

- conserve fish stocks and key fish habitats
- to conserve threatened species, populations and ecological communities of fish and marine vegetation
- to promote ecologically sustainable development, including the conservation of biological diversity.

Part 7 of the FM Act (NSW) relates to the protection of fish and aquatic habitats with the objective of conserving the biodiversity of fish and aquatic vegetation. In accordance with section 5.23 of the EP&A Act (NSW), permits under sections 201 (dredging and reclamation), 205 (permit to harm to marine vegetation) and 219 (permit to obstruct fish passage) of the FM Act (NSW) are not required for Critical SSI or SSI projects.

Part 7A of the FM Act (NSW) lists threatened species, populations and ecological communities and key threatening processes (KTPs) for species, populations and ecological communities in NSW waters. Schedule 4, 4A and 5 of the FM Act (NSW) list the threatened aquatic species, communities and populations.

Under section 220ZW, a licence is required for actions that would likely result in harm to threatened species, populations or ecological communities listed under the FM Act (NSW), or damage to critical habitat or habitat of a threatened species, population or ecological community listed under the FM Act (NSW). A licence is not required if the action is essential to the carrying out of an approved SSI project (section 220ZF of the FM Act (NSW)).

An assessment of the potential impact on threatened species, populations and communities listed under the FM Act (NSW), and is presented in this report in accordance with SEARs. This includes assessment of significance against the factors listed in section 220ZZ of the FM Act (NSW). An assessment of the potential impacts to areas of key fish habitat and Key Threatening Processes also forms part of this assessment.

2.2.2 *Water Management Act 2000*

The *Water Management Act 2000* (NSW) (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 resource 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.

Section 89 of the WM Act relates to water use approvals and section 90 relates to water management works approvals. There are three kinds of water management work approvals, namely, water supply work approvals, drainage work approvals and flood work approvals.

Under Section 91 of the WM Act a controlled activity approval is required for certain types of developments and activities that have the potential to affect water quality that are carried out at a specified location in, on or under waterfront land.

However, under section 5.23 of the EP&A Act, a water use approval, water management works or an activity approval (including a controlled activity approval) under sections 89, 90 and 91 of the WM Act are not required for SSI projects. The design and construction of the project would consider the NSW Department of Planning and Environment (DPE) guidelines for controlled activities for riparian corridors and watercourse crossings on waterfront land (refer to section 2.2.5 and section 2.2.6) to enable the mitigation of potential impacts to hydrology and water quality.

2.2.3 *Policy and guidelines for fish habitat conservation and management (Update 2013) (DPI, 2013)*

The *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) provides policies and guidelines to maintain and enhance fish habitats for native and threatened species in marine, estuarine, and freshwater environments. It also:

- defines key fish habitat for the purposes of the FM Act (NSW)
- outlines the requirements of an aquatic ecology assessment for impacts to fish or key fish habitats
- establishes the policy position of no net loss of key fish habitat, and requirements for offsets where impacts cannot be avoided. This includes a minimum 2:1 offset for the total area of the three ‘Types’ of key fish habitat lost (as defined in the policy) to help redress direct and indirect impacts of development
- outlines the specific policy and guidelines for the design and construction of fish friendly watercourse crossings.

The policy considers the classification of a watercourse according to habitat sensitivity (Type) and characteristics for fish passage (Class), which is adapted from *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). This uses the following classifications:

- Type 1 (highly sensitive Key Fish Habitat), Type 2 (Moderately sensitive Key Fish Habitat) and Type 3 (Minimally sensitive Key Fish Habitat)
- Class 1 (Major Key Fish Habitat), Class 2 (Moderate Key Fish Habitat), Class 3 (Minimal Key Fish Habitat) and Class 4 (Unlikely Key Fish Habitat).

All watercourse crossings would be designed, installed and maintained in accordance with the *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013).

Under this policy, NSW DPI generally require riparian buffers to be established and maintained for developments or activities in or adjacent to Type 1 or 2 habitats or Class 1 to 3 waterways. The policy states that this requirement does not apply to developments involving the maintenance to existing, or construction of new roads or bridges crossing a watercourse, but applies to developments involving roads that are adjacent to, but do not cross a watercourse (with examples listed as subdivisions, rezonings or new road developments). The policy provides a guide for the recommended riparian buffer zone on the habitat Type and waterway Class:

- Type 1 Class 1: 100 metres
- Type 2 Class 2: 50 metres
- Type 3 Class 4-3: 10 to 50 metres.

The design of the riparian buffer zone is to incorporate the maintenance of lateral connectivity between aquatic and riparian habitat. It states that the installation of infrastructure should be avoided or minimised, that any development should ensure that existing native vegetation is retained to the greatest extent possible, that revegetation should use local native species and that stabilisation and re-establishment of disturbed areas should include weed control and should be monitored.

2.2.4 *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge 2003)*

The *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) sets out the requirements for the design and construction of fish friendly watercourse crossings in NSW. All watercourse crossings would be designed, installed and maintained in accordance with this guideline.

2.2.5 *Controlled activities – Guidelines for riparian corridors on waterfront land (DPE, 2022a)*

The *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022a) provides information on defining the riparian corridor (RC) which is now combined with the vegetated buffer into a single vegetated riparian zone (VRZ). The width of the VRZ is based on watercourse order as classified under the Strahler System of ordering watercourses.

The objectives of the guideline that are relevant to the project include:

- minimise disturbance and harm to the recommended RC/VRZ
- minimise the number of creek crossings and provide perimeter road separating development from the RC/VRZ
- locate services and infrastructure outside of the RC/VRZ. Within the RC/VRZ provide multiple service easements and/or utilise road crossings where possible
- treat stormwater run-off before discharging into the RC/VRZ.

The project is an essential service and therefore project activities can occur on waterfront land and in riparian corridors with consideration of the above objectives.

VRZ width on either side of the watercourse depends on the Strahler Order of the watercourse which includes:

- 1st order has a 10 metre VRZ width
- 2nd order has a 20 metre VRZ width
- 3rd order has a 30 metre VRZ width
- 4th order and above has a 40 metre VRZ width.

In cases where a watercourse does not exhibit the features of a defined channel with bed and banks, the NSW DCCEEW may determine that the watercourse is not waterfront land for the purposes of the WM Act. The implementation of this guideline for this project is discussed further in section 5.1.2.

2.2.6 *Controlled activities – Guidelines for watercourse crossings on waterfront land (DPE, 2022b)*

The *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b) relates to the design and construction of watercourse crossings and ancillary works, such as roads on waterfront land. Crossings have the potential to disrupt the hydrologic, hydraulic, and geomorphic functions of a watercourse affecting flows, bed and bank stability and the ecological values and functions of the riparian corridor.

The guideline is to be read in conjunction with the *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE 2022b) (refer to section 2.2.5). The *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b) proposes that bed level crossings or bridges which fully span the watercourse channel provide the best opportunities for maintaining channel functions. The design and construction of crossings should consider as a minimum:

- maintaining natural geomorphic processes
- maintain natural hydrologic regimes, and
- protect against scour.

The project would involve multiple access tracks which have the potential to intersect with watercourses and transmission line structures may be located within lower order streams (first, second and third order). The implementation of this guideline for this project is discussed further in section 5.1.2.

3 Methodology

3.1 Overview

To inform this assessment, the following key steps and tasks were carried out:

- a desktop review and collation of publicly available data, including national and state databases and publicly available reports on the Murray-Darling Basin
- a review of applicable legislation and policy for assessing aquatic ecology, particularly the requirements set out in *Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013)* (DPI, 2013) used to protect aquatic habitats
- an assessment of the potential threatened species and ecological communities that may be present within the study area
- an assessment of the potential impacts of the project on the aquatic sensitive receptors (including threatened aquatic species and communities and key fish habitat during both construction and operation
- identification of project mitigation measures, during both construction and operation, to address any potential impacts of the project to aquatic ecology.

3.2 Study area

The aquatic ecology study area includes all the watercourses within the project footprint, including a 50-metre buffer, to capture habitat impacts (study area). This captures watercourses crossings that are proposed or impacted during the construction and/or operation of the project.

A broader search area that encompassed the project footprint plus 10 kilometres was conducted to determine threatened fish species likely to inhabit watercourses within the study area (threatened species search area) as few large-scale fish studies have recently been completed.

3.3 Database and literature review

A search of publicly available databases was conducted to identify aquatic ecology values present within the study area. The following publicly available databases were accessed in January 2025:

- Fisheries Spatial Data Portal (DPI, 2025)
- EPBC Act (Cth) protected matters search tool (DCCEEW, 2025)
- Atlas of Living Australia (Atlas of Living Australia, 2024)
- Groundwater dependent ecosystems atlas (Bureau of Meteorology, 2024) (only river base flow groundwater dependant ecosystems are included in this report).

The aquatic habitats within the study area was assessed against the following policy and guidelines for fish habitat conservation and management:

- *Policy and guidelines for fish habitat conservation and management (Update 2013)* (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* (Department of Planning, 2003).

3.4 Likelihood of occurrence assessment

The likelihood of occurrence of threatened aquatic species and endangered ecological communities (EEC) were determined based on the criteria shown in Table 3.1. This method considers the habitat requirements of the species, habitat connectivity, records of historical and recent presence.

Relevant databases were searched in January 2025 for records of threatened aquatic fauna species and significant aquatic habitat (i.e. key fish habitat). 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 study area and the broader locality. The likelihood of occurrence assessment was subsequently updated based on the field survey completed for *Technical paper 1 – Biodiversity Development Assessment Report* (WSP 2025a).

Table 3.1 Likelihood of occurrence criteria for threatened flora and fauna species

Likelihood	Description
Low	Species or the EEC are considered to have a low likelihood of occurrence include species that: — have not been recorded previously in the study area and surrounds and for which the study area is beyond the current distribution range — rely on specific habitat types or resources that are not present in the study area — are considered locally extinct.
Moderate	Species or the EEC are considered to have a moderate likelihood of occurrence include species that: — have infrequently been recorded previously in the study area and surrounds — use habitat types or resources that are present in the study area, although generally in a poor or modified condition — are unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically during variable seasons or migration.
High	Species or the EEC are considered to have a high likelihood of occurrence include species that: — have frequently been recorded previously in the study area and surrounds — use habitat types or resources that are present in the study area, that are abundant and/or in good condition within the study area — are known or likely to maintain resident populations surrounding the study area — are known or likely to visit the study area during regular seasonal movements or migration.

4 Existing environment

4.1 Catchment areas

The project is located within the Murray-Darling Basin and spans across two catchment areas. The most western portion of the project spans north from the Murray River to Edward River and the portion of the alignment from Coleambally Outfall Dam to 10 kilometres east of Cobb Highway are located within the Central Murray catchment, whereas the rest of the project is located within the Murrumbidgee catchment as is all of the network augmentation works component of the project (Murray-Darling Basin Authority, 2025; Murray–Darling Basin Authority, 2025a).

The central Murray catchment includes the longest river in Australia, the Murray River. This river spans 2,500 kilometres starting at Mount Kosciuszko in the Australian Alps to the Southern Ocean at Goolwa in South Australia. Of the three catchments that make up the Murray River, the central Murray catchment is roughly 1,200 kilometres long and makes up three per cent of the total area of the Murray-Darling Basin and is considered to be a broad floodplain that regularly floods (Murray–Darling Basin Authority, 2025). The average rainfall within this catchment is the highest in east (700 millimetres) and decreases as the river flows west toward Mildura (300 millimetres to 500 millimetres). Historically this catchment supported a large diversity of native fish, but unfortunately the decline of stream health resulting from increased blackwater events, reduced water quality, and the impact of droughts on river flow there has been a decrease of native fish populations (Koehn, 2022).

The Murrumbidgee River is the third longest river in Australia which spans 1,485 kilometres starting in the Australian Alps to the Murray River near Balranald. This catchment makes up eight per cent of the total area of the Murray-Darling Basin (Murray–Darling Basin Authority, 2025a). The average rainfall within this catchment is the highest within the alpine regions (1,600 millimetres) and decreases as the river flows west towards the Murray River (350 millimetres). The Murrumbidgee River provides water to various wetlands within the catchment including 16 nationally significant wetlands.

Murray – Darling Basin Authority released a report in 2012 that rated the ecosystem health of the catchments within the basin (Murray–Darling Basin Authority, 2012). This assessment determined that the overall ecosystem health rating for the central Murray and the Murrumbidgee catchment are both rated as poor. The rating for each biological theme is outlined in Table 4.1.

Table 4.1 Ecosystem health rating for Central Murray and Murrumbidgee catchment

Biological theme	Central Murray catchment	Murrumbidgee catchment
Fish	**Very Poor:** This area has experienced a reduction in number of native fish species, however, 84% of all fish captured were native species. The native fish that were captured were mostly small bodied as they only made up 44% of the total biomass captured, suggesting the invasive species capture were larger fish.	**Extremely Poor**: This area has experienced reduced numbers of native fish with invasive species making up 84% of the biomass sampled. Recruitment of 10 of the 12 native species in the valley area has been observed.
Macro Invertebrates	**Poor:** Of the sites surveyed only 6% were in good condition and 47% were rated as poor. This catchment contained 55% of all families found within the Murray–Darling Basin	**Moderate:** This area has experienced a reduce in family biomass, however, the catchment contained 78% of all families found within the Murray–Darling Basin

Biological theme	Central Murray catchment	Murrumbidgee catchment
Vegetation	**Good:** The riparian vegetation within this area is in good condition	**Moderate:** Vegetation in the montane and lowland areas are in good condition whereas the slope zones experience a lack of native vegetation.
Physical Form	**Moderate:** This catchment exhibits signs of channel simplification; however, bank morphology was rated good. Channel form, bed and floodplain dynamic were all deemed to be of moderate condition.	**Good:** The morphology of the river including river channel form and bank dynamics were rated as good whereas the streambed and floodplain dynamics were moderately rated.
Hydrology	**Poor:** Large difference in flow seasonality and variability and moderate alteration in high over bank floods, low over bank floods, flow variability and low- and zero-flow events	**Poor:** Large difference in flow variability and low and zero-flow events and flow gross volume and moderate difference in flow seasonality.
Overall Ecosystem Health	**Poor**	**Poor**

Source: (Murray–Darling Basin Authority, 2012)

4.2 River-based groundwater dependant ecosystems

Groundwater dependent ecosystems (GDEs) are communities of plants, animals, and other organisms whose extent and life processes are dependent on groundwater. GDEs include a diverse range of ecosystems, from those entirely dependent on groundwater to those that may use groundwater while not having a dependency on it for survival (i.e. ecosystems or organisms that use groundwater opportunistically or as a supplementary source of water) (Hatton & Evans, 1998).

There are six GDE classifications that are distinguished by geography settings, and these include:

1. terrestrial vegetation
2. river base flow system
3. aquifer and cave ecosystems
4. wetlands
5. terrestrial fauna
6. estuarine and near-shore marine ecosystems.

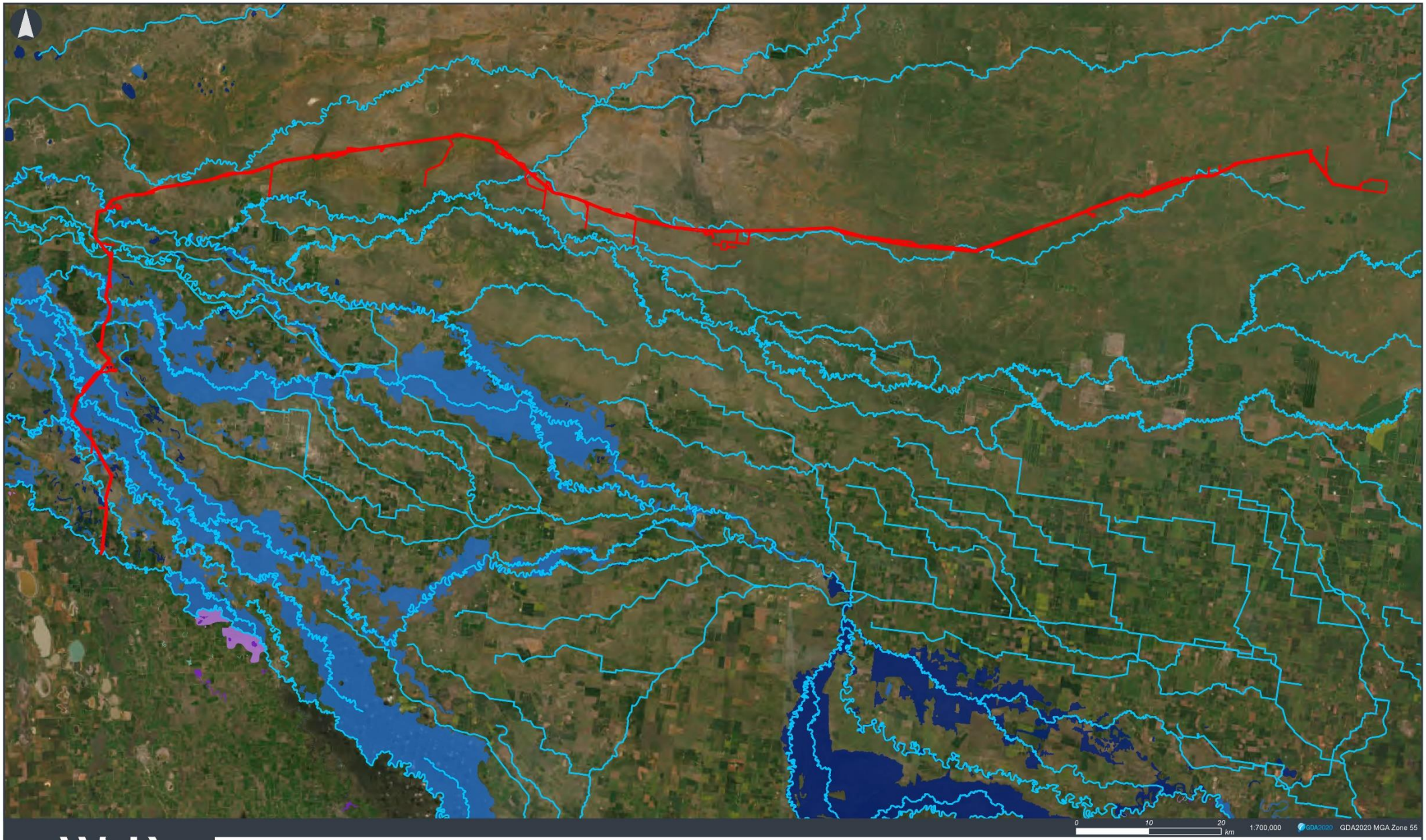
For the purpose of this assessment only the potential for river base flow system GDEs are discussed. The river base flow system GDE are the most likely GDE to directly interact with watercourses, resulting in potential interactions with aquatic habitats. According to the Groundwater Dependent Ecosystems Atlas (2024), 17 watercourse crossings in the study area are identified as containing aquatic GDE (Figure 4.1). No aquatic GDE were located in the network augmentation works project area. These watercourses include:

- Delta Creek (moderate potential aquatic GDE)
- Unnamed Watercourse crossing 37 (high potential aquatic GDE)
- Berambong Creek (moderate potential aquatic GDE)
- Yarrein Creek (moderate potential aquatic GDE)
- Mallan Branch Canal (moderate potential GDE)

- Unnamed Watercourse 45 (high potential aquatic GDE)
- Cunninyeuk Creek (high potential aquatic GDE)
- Niemur Creek (high potential aquatic GDE)
- Magpie Creek (high potential aquatic GDE)
- Wyam Creek (high potential aquatic GDE)
- Jaffrey Creek (high potential aquatic GDE)
- Unnamed Watercourse 52 (high potential aquatic GDE)
- Unnamed Watercourse 54 (high potential aquatic GDE)
- Bullockhide Creek (high potential aquatic GDE)
- Merran Creek (high potential aquatic GDE)
- Coobool Creek (medium potential aquatic GDE)
- Larrys Creek (high potential aquatic GDE).

River base flow systems have a component of base flow which originates from groundwater discharge. The base flow is not solely comprised of groundwater discharge, it also includes banks storage and lateral unsaturated movement, however, the majority of the volume originates from groundwater. The dependency of an ecosystem on groundwater can be determined by the volume of this baseflow and its variability as opposed to the mean annual flow of the river (Hatton & Evans, 1998). The quality of groundwater that discharges into the associated watercourse is a factor that determines the overall health of the watercourse therefore care would need to be taken during works that have potential of interacting with groundwater. Mitigation measures used to manage ground water impacts are included in *Technical paper 10 – Groundwater impact assessment* (WSP, 2025b)

Technical paper 10 – Groundwater impact assessment (WSP, 2025b) identifies that the high priority GDEs are terrestrial GDEs and that there is limited groundwater-surface water connectivity within the groundwater study area (which is larger than the aquatic ecology study area), with connectivity generally limited to recharge of groundwater via leakage from overlying surface water features. *Technical paper 10 – Groundwater impact assessment* (WSP, 2025b) concludes that any change in groundwater levels due to construction or operation of the project is considered a very low risk, and that any change to groundwater quality due to increased salinity arising from groundwater mounding or changes to recharge is considered low. As such, no further assessment of impacts to aquatic GDEs is considered in this assessment. Direct impacts to vegetation associated with river base flow system GDEs is considered further in *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a).



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VNI West – Aquatic Assessment

Figure 4.1a
Aquatic GDE overview

Legend

- Project footprint
- Watercourses

Aquatic GDEs
Potential

- High potential GDE - from national assessment
- High potential GDE - from regional studies
- Low potential GDE - from national assessment
- Low potential GDE - from regional studies
- Moderate potential GDE - from national assessment
- Moderate potential GDE - from regional studies
- Unclassified potential GDE - from regional studies

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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

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VNI West – Aquatic Assessment

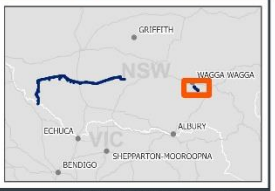
Figure 4.1b
Aquatic GDE overview

Legend

- Project footprint
- Watercourses

Aquatic GDEs
Potential

- High potential GDE - from national assessment
- High potential GDE - from regional studies
- Low potential GDE - from national assessment
- Low potential GDE - from regional studies
- Moderate potential GDE - from national assessment
- Moderate potential GDE - from regional studies
- Unclassified potential GDE - from regional studies



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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

4.3 Fish habitat within the study area

Mapped key fish habitat and the indicative distribution of threatened species are independent of each other. A watercourse can be mapped as not containing key fish habitat but can be mapped as having an indicative distribution of threatened species. This discrepancy may occur as the watercourse does not contain all the habitat features to be deemed to be key fish habitat, or the watercourse has not been fully assessed.

The key fish habitat and associated sensitivity classification scheme is summarised in Table 1 of *the Policy and guidelines for fish habitat conservation and managemen*t (DPI, 2013). Under this scheme any known or expected protected or threatened species habitat or area of declared 'critical habitat' under the FM Act (NSW) is defined as "TYPE 1 – Highly sensitive key fish habitat".

According to the Fisheries NSW Spatial Data Portal, the study area contains mapped distribution for:

- Flathead Galaxias – EPBC Act (Cth): Critically Endangered, FM Act (NSW): Critically Endangered
- Silver Perch – EPBC Act (Cth): Endangered, FM Act (NSW): Vulnerable
- Murray Hardyhead – EPBC Act (Cth): Endangered, FM Act (NSW): Critically Endangered
- Murray Spiney Crayfish – FM Act (NSW): Vulnerable.

Key Fish Habitat and mapped distribution of threatened aquatic species occur throughout various named watercourse and unnamed watercourses within the project footprint for the NSW/Victorian to the future Dinawan substation component. This is discussed further in section 4.3.1, and are as listed in Table 4.2 and Table 4.3 and as shown in Figure 4.2.

Watercourses within the project footprint for the network augmentation works are not mapped as Key Fish Habitat and are not within the indicative distribution of a threatened aquatic species listed under the EPBC Act (Cth) or FM Act (NSW).

An assessment of the likelihood of occurrence of aquatic species identified was undertaken to determine the potential for these species to occur within the project footprint (refer to section 4.3.2.2). It was determined that three species are highly likely and three are moderately likely to inhabit the identified watercourses intersected by the NSW/Victorian border to future Dinawan substation component of the project.

4.3.1 Watercourses

A total of 22 named watercourses within the project footprint for the NSW/Victorian border to the Dinawan substation component are mapped as Key Fish Habitat or are within the indicative distribution of a threatened aquatic species (refer to Table 4.2 and Figure 4.2). Table 4.2 also identifies what elements of the project that cross the watercourse or would be constructed within the VRZ.

The classification of watercourses depends on various factors including type of native aquatic vegetation, habitat structure and streambed composition that the watercourse is associated as outlined in the *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). As this is a largely desktop assessment, the classification (Type and Class) of watercourses within the project footprint has not been provided as a field assessment is required to assign watercourse classification.

Table 4.2 Named watercourses crossings within the project footprint – NSW/Victorian border to the future Dinawan substation

Watercourse name	Strahler order	Mapped Key Fish Habitat	Indicative distribution of threatened species	Number of times the watercourse crosses through the project footprint	Project feature
Berambong Creek	10	Yes	Silver Perch and Murray Hardyhead	1	Project transmission line corridor
Bullockhide Creek	10	Yes	Murray Hardyhead	1	Project transmission line corridor
Carroonboon Creek	1, 2 and 3	Yes (Strahler order 3 only)	Murray Hardyhead	3	Project transmission line corridor, including 3 watercourse crossings (2 existing, 1 new)
Coleambally Outfall Drain	9	Yes	Silver Perch and Murray Hardyhead	1	Project transmission line corridor, 1 watercourse crossing (existing)
Cunninyeuk Creek	3	Yes	Murray Hardyhead, Silver Perch and Flathead Galaxias	1	Project transmission line corridor, including 1 brake and winch site within buffer
Deadmans Creek	10	No	Murray Hardyhead	1	Project transmission line corridor, including watercourse crossings (1 existing, 1 new)
Delta Creek	1 and 2	No	Silver Perch and Flathead Galaxias	5	Project transmission line corridor, including 5 watercourse crossings
Edward River	10	Yes	Murray Hardyhead, Silver Perch and Flathead Galaxias	1	Project transmission line corridor
Jaffrey Creek	10	Yes	Silver Perch, Murray Spiney Crayfish and Flathead Galaxias	1	Project transmission line corridor, including 1 watercourse crossing (existing)

Watercourse name	Strahler order	Mapped Key Fish Habitat	Indicative distribution of threatened species	Number of times the watercourse crosses through the project footprint	Project feature
Larrys Creek	10	Yes	Murray Hardyhead	2	Project transmission line corridor, including 2 watercourse crossings (existing)
Magpie Creek	2	Yes	Murray Hardyhead	2	Project transmission line corridor, including 2 watercourse crossing (1 new, 1 existing) and brake and winch site within buffer
Mallan Branch Canal	0[1]	No	Murray Hardyhead	3	Project transmission line corridor
Merran Creek	10	Yes	Murray Hardyhead	1	Project transmission line corridor, including 1 watercourse crossing (existing) and 500 kV transmission line structure pad within buffer
Moore Creek	1	No	Murray Hardyhead	1	Project transmission line corridor, including 1 watercourse crossing (existing)
Murray River	10	Yes	Silver Perch, Murray Spiney Crayfish and Flathead Galaxias	1	Project transmission line corridor
Niemur River	10	Yes	Silver Perch, Murray Spiney Crayfish and Flathead Galaxias	1	Project transmission line corridor
Northern Branch Canal	0[1]	No	Murray Hardyhead	1	Project transmission line corridor

Watercourse name	Strahler order	Mapped Key Fish Habitat	Indicative distribution of threatened species	Number of times the watercourse crosses through the project footprint	Project feature
Southern No 26 Channel	0[1]	No	Murray Hardyhead	1	Project transmission line corridor, including 1 watercourse crossing (new)
Southern No 26 (A) Channel	0[1]	Yes	Murray Hardyhead	2	Project transmission line corridor
Wakool River	10	Yes	Murray Hardyhead, Silver Perch, Murray Spiney Crayfish and Flathead Galaxias	1	Project transmission line corridor
Wyam Creek	10	Yes	Murray Hardyhead Silver Perch, Murray Spiney Crayfish and Flathead Galaxias	1	Project transmission line corridor, including 1 watercourse crossing (existing)
Yarrein Creek	10	Yes	Murray Hardyhead Silver Perch, and Flathead Galaxias	1	Project transmission line corridor

(1) Watercourses assigned the Strahler Order "0" were assessed as being an independent watercourse that does not flow into a larger hydrological system. These watercourses are typically man-made for agricultural and social uses.

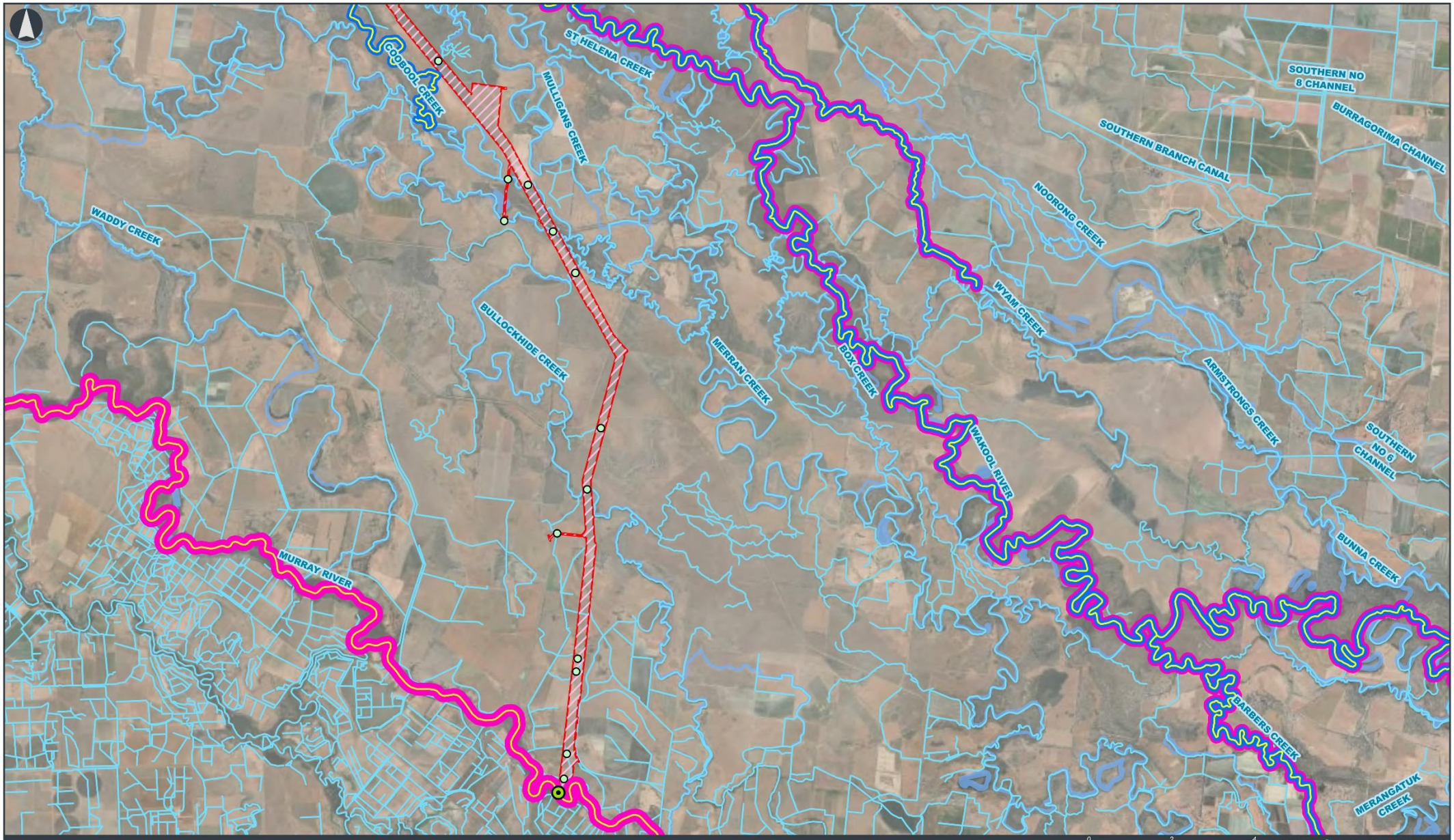
Approximately 83 unnamed watercourses are within the project footprint for the NSW/Victorian border to the future Dinawan substation component. Of these, 39 unnamed watercourses are mapped as being within the distribution area of Murray Hardyhead habitat and seven of these are also mapped as Key Fish Habitat (refer to Table 4.3). Table 4.3 also identifies what elements of the project that cross or would be constructed within the VRZ.

Table 4.3 Unnamed watercourse within the project footprint – NSW/Victorian border to the future Dinawan substation

Strahler order	Number of watercourses with the project footprint	Number of watercourses with mapped Key Fish Habitat	Number of watercourses with indicative distribution of Murray Hardyhead	Project feature in context of watercourses with mapped Key Fish Habitat or threatened species habitat
10	2	1 watercourse	2 watercourses	Project transmission line corridor, including watercourse crossing
3	1	1 watercourse	None	Project transmission line corridor, including watercourse crossing and works within buffer associated with a 500 kV transmission line structure and a brake and winch site
2	5	None	2 watercourses	Project transmission line corridor, including watercourse crossings (2
1	22	2 watercourses	16 watercourses	Project transmission line corridor, including watercourse crossings (12), or works within buffer (2) associated with 500 kV transmission line structure pads, proposed Dinawan substation expansion, construction compound and combined temporary worker accommodation facility.
0[1]	52	3 watercourses	18 watercourses	Project transmission line corridor, including watercourse crossings (3) or works within buffer (2) associated with 500 kV transmission line structure pad or brake and winch site

(1) Watercourses assigned the Strahler Order "0" were assessed as being an independent watercourse that does not flow into a larger hydrological system. These watercourses are typically man-made for agricultural and social uses.

No key fish habitat is mapped within named and unnamed watercourses within the network augmentation works project area. A total of 3 named watercourses, Cox Creek, Gregadoo Creek, Foley Creek and 21 crossings of unnamed watercourses and drainages are expected to be crossed by the network augmentation works (Figure 4.2).



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VNI West – Aquatic Assessment

Figure 4.2a
Mapped threatened species habitat within the VNI Project

Legend

- Waterways
- Project footprint
- Key fish habitat

Key fish habitat threatened species

- Silver perch
- Flathead galaxias
- Murray crayfish
- Murray hardyhead

Threatened fish occurance

- Murray hardyhead
- Silver perch, murray crayfish, murray hardyhead

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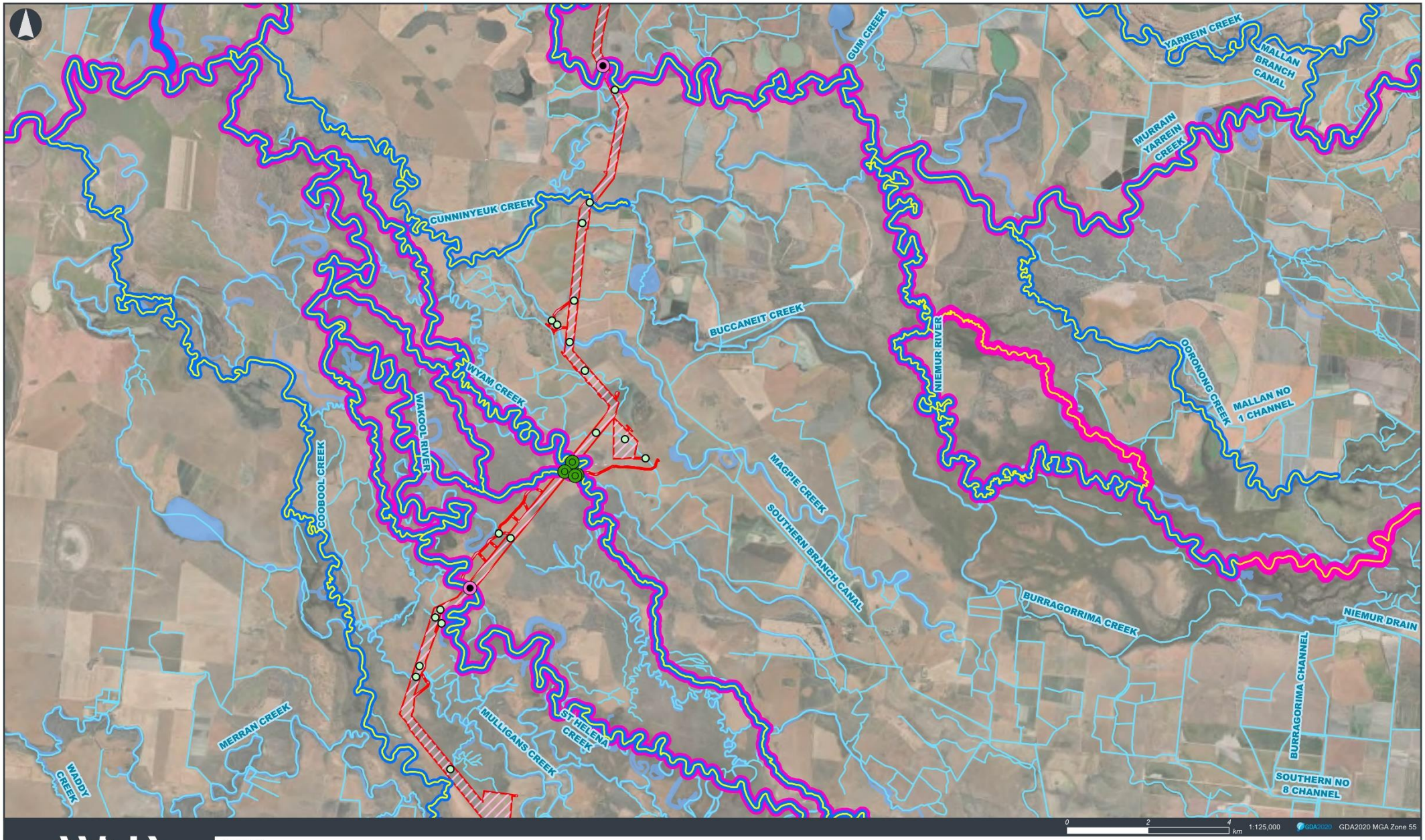
Data sources: NSW EPI, DELWP, WSP, EnergyConnect



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VNI West – Aquatic Assessment

Figure 4.2b
Mapped threatened species habitat within the VNI Project

Legend

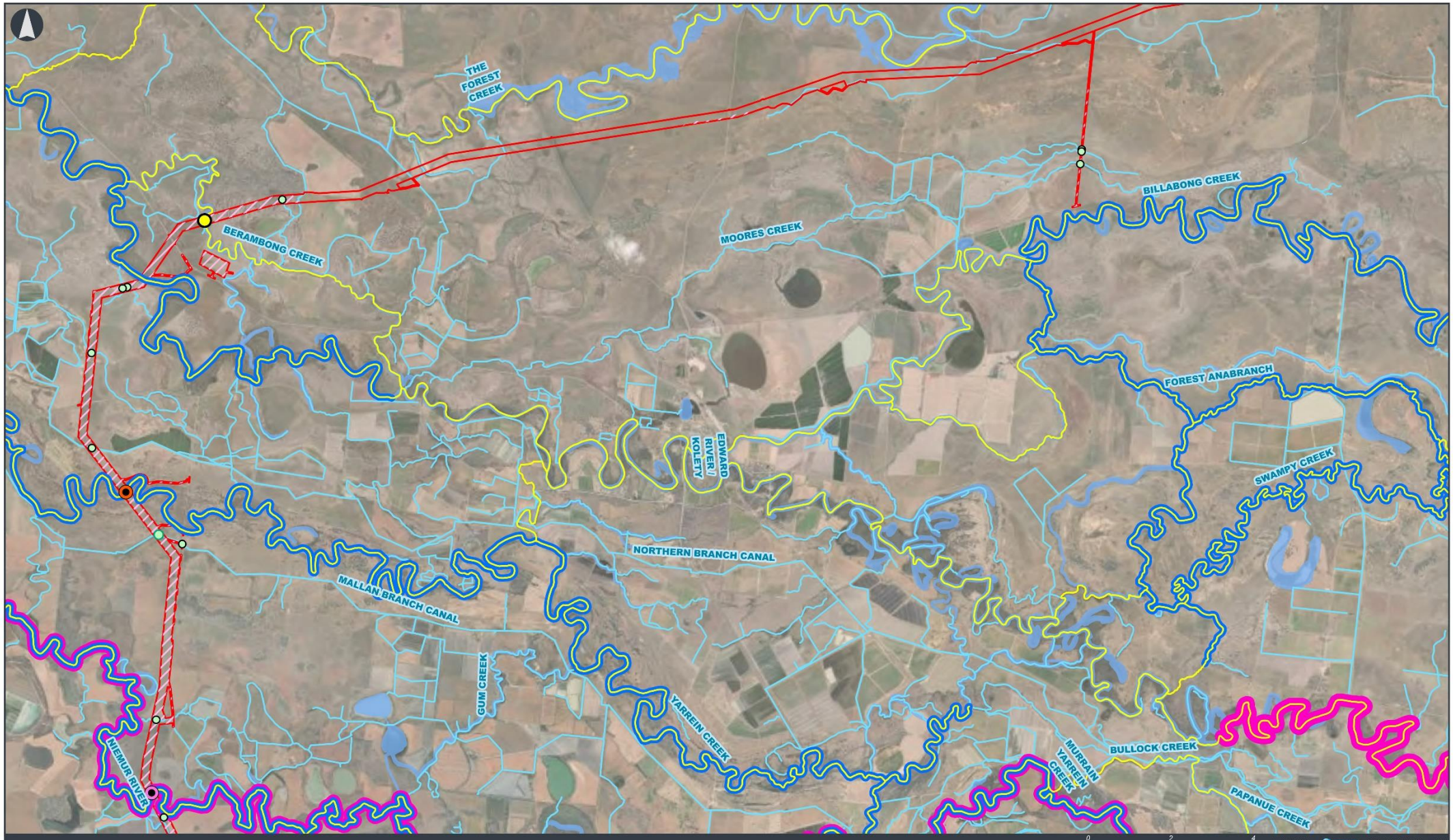
- Waterways
- Project footprint
- Key fish habitat

Key fish habitat threatened species

- Silver perch
- Flathead galaxias
- Murray crayfish
- Murray hardyhead

Threatened fish occurance

- Murray hardyhead
- Silver perch, murray crayfish, flathead galaxias
- Silver perch, murray crayfish, flathead galaxias, murray hardyhead



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VNI West – Aquatic Assessment

Figure 4.2c
Mapped threatened species habitat within the VNI Project

Legend

- Waterways
- Project footprint
- Key fish habitat

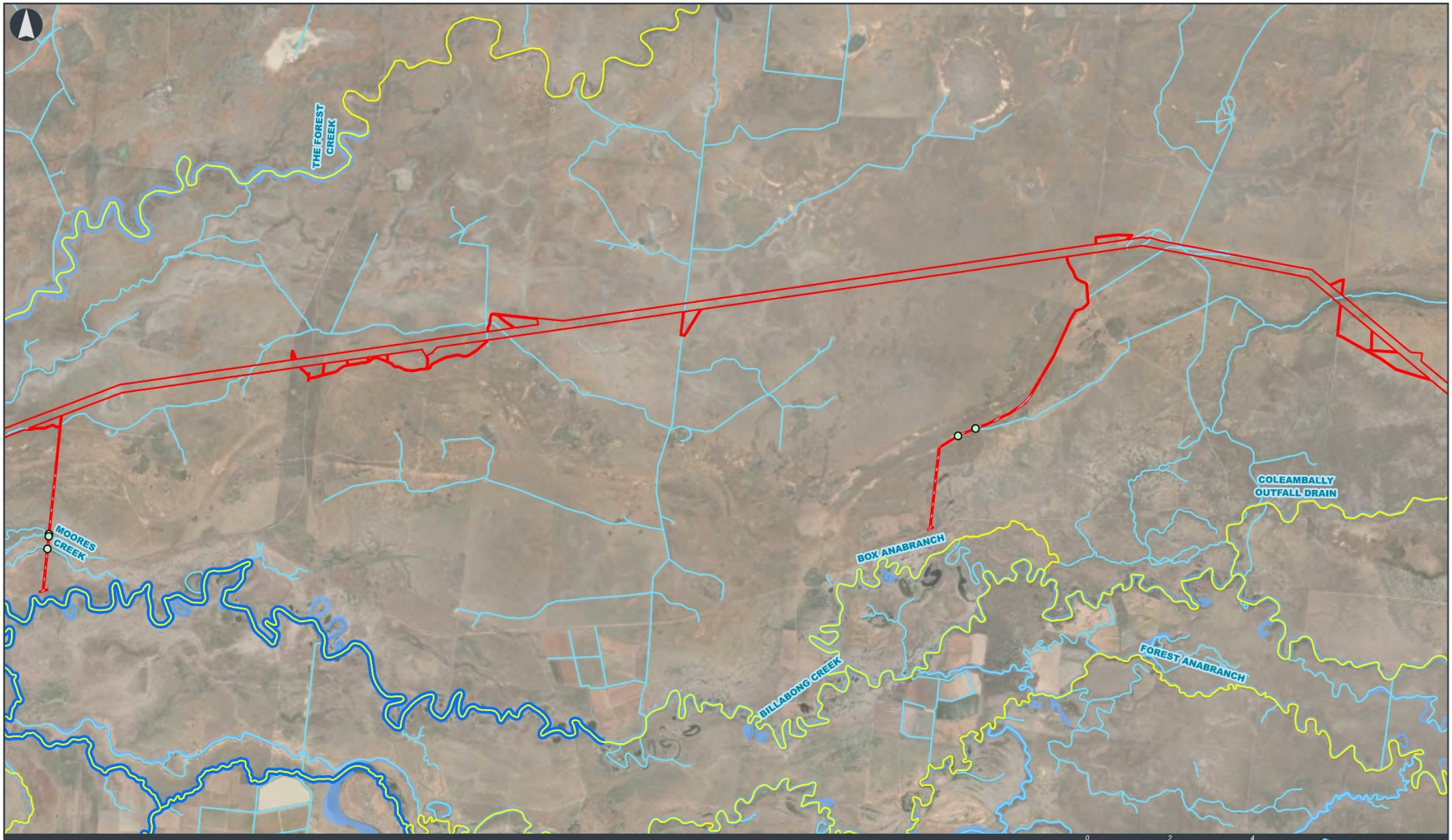
Key fish habitat threatened species

- Silver perch
- Flathead galaxias
- Murray crayfish
- Murray hardyhead

Threatened fish occurance

- Murray hardyhead
- Murray hardyhead, flathead galaxias
- Silver perch, flathead galaxias, murray hardyhead
- Silver perch, murray crayfish, flathead galaxias, murray hardyhead
- Silver perch, murray hardyhead

Data sources: NSW EPI, DELWP, WSP, EnergyConnect



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VNI West – Aquatic Assessment

Figure 4.2d
Mapped threatened species habitat within the VNI Project

Legend

- Waterways
- Project footprint
- Key fish habitat

Key fish habitat threatened species

- Silver perch
- Flathead galaxias
- Murray hardyhead

Threatened fish occurance

- Murray hardyhead

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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

wsp

VNI West – Aquatic Assessment

Figure 4.2e
Mapped threatened species habitat within the VNI Project

Legend

- Waterways
- Project footprint
- Key fish habitat

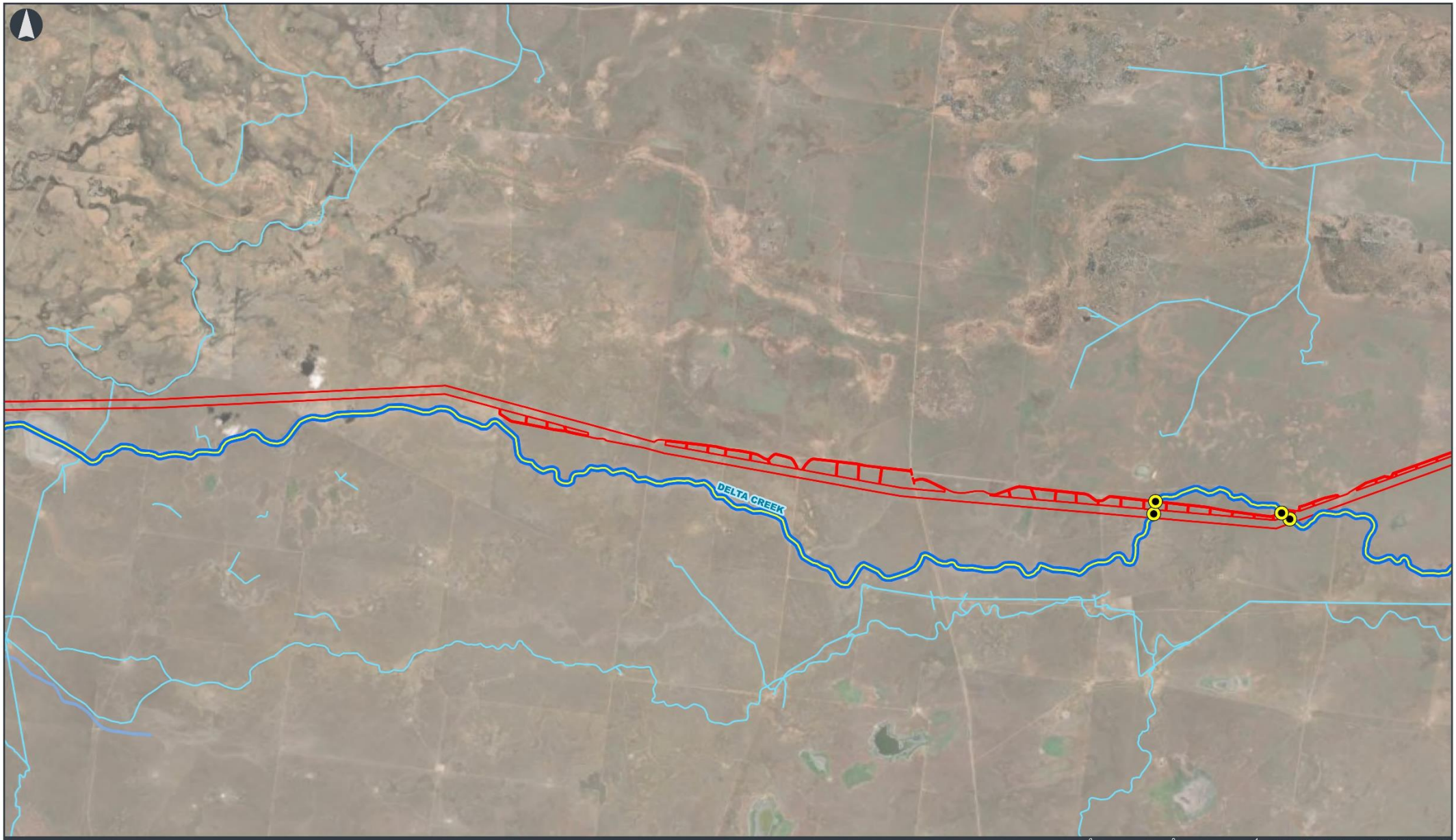
Key fish habitat threatened species

- Silver perch
- Flathead galaxias
- Murray hardyhead

Threatened fish occurance

- Murray hardyhead
- Silver perch, flathead galaxias
- Silver perch, murray hardyhead

Data sources: NSW EPI, DELWP, WSP, EnergyConnect



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VNI West – Aquatic Assessment

Figure 4.2f
Mapped threatened species habitat within the VNI Project

Legend

- Waterways
- Project footprint
- Key fish habitat

Key fish habitat threatened species

- Silver perch
- Flathead galaxias

Threatened fish occurance

- Silver perch, flathead galaxias

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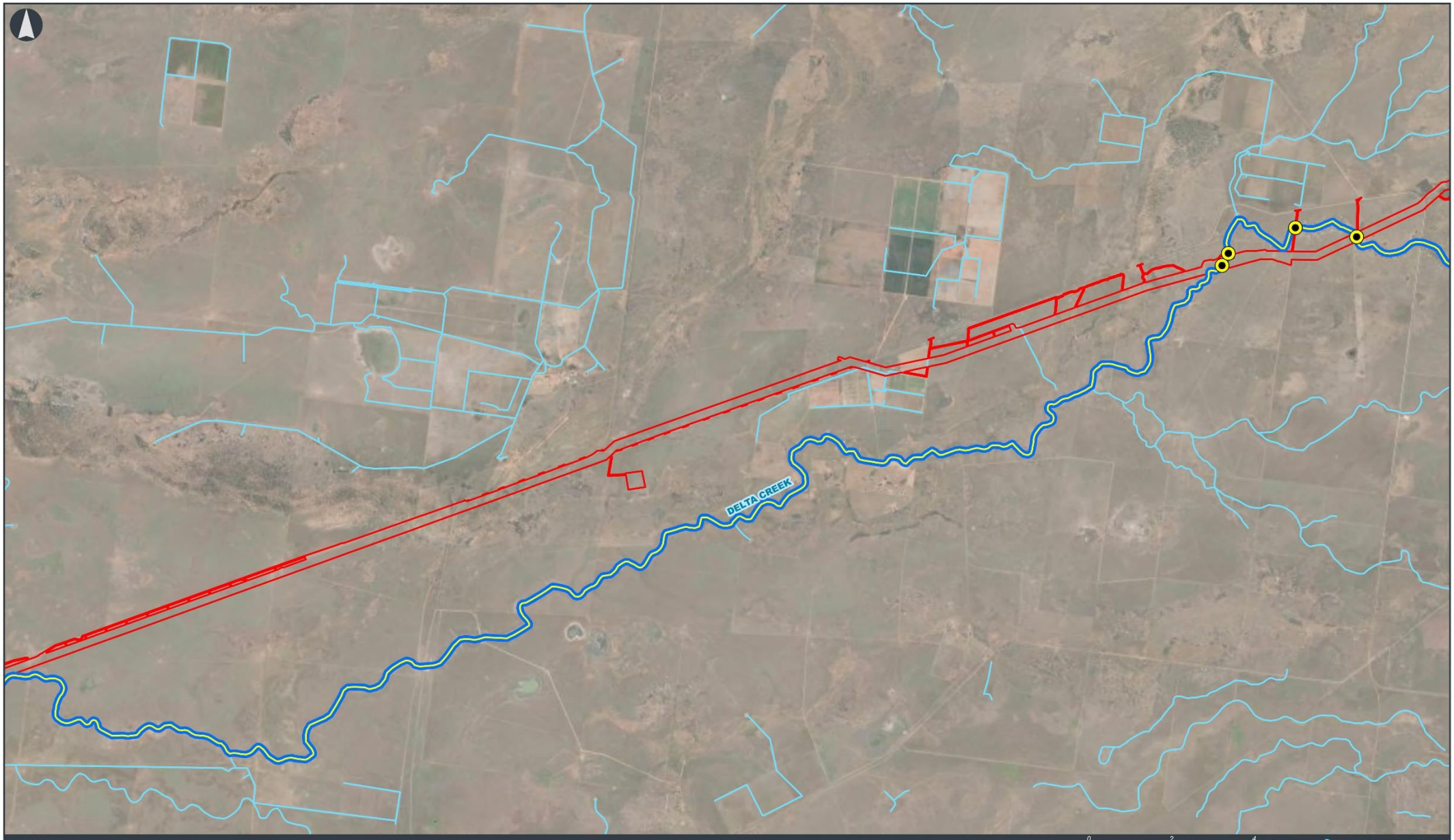
Data sources: NSW EPI, DELWP, WSP, EnergyConnect



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VNI West – Aquatic Assessment

Figure 4.2g
Mapped threatened species habitat within the VNI Project

Legend

- Waterways
- Project footprint
- Silver perch
- Flathead galaxias

Threatened fish occurance

- Silver perch, flathead galaxias

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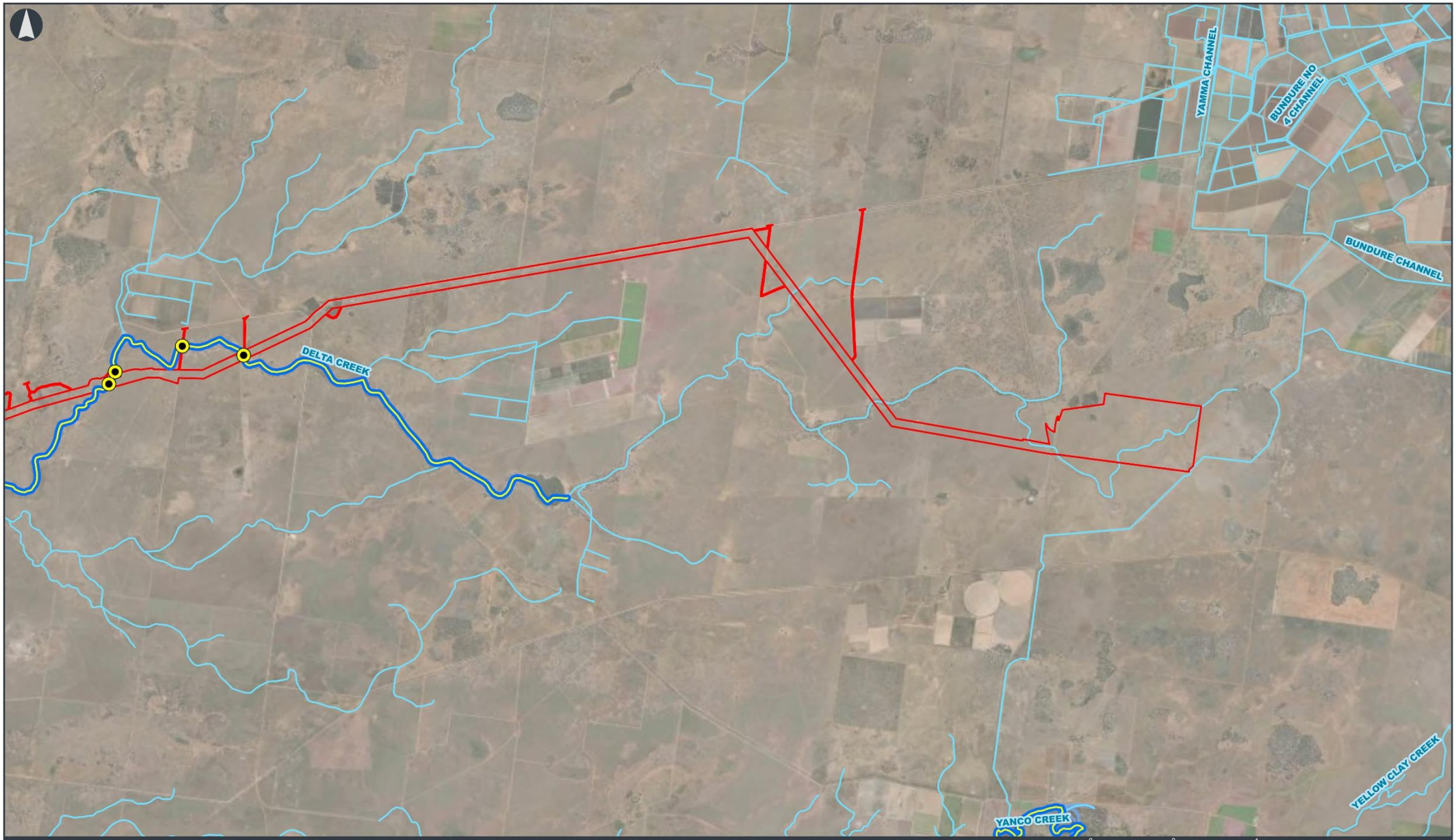
Data sources: NSW EPI, DELWP, WSP, EnergyConnect



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VNI West – Aquatic Assessment

Figure 4.2h
Mapped threatened species habitat within the VNI Project

Legend

- Waterways
- Project footprint
- Key fish habitat

Key fish habitat threatened species

- Silver perch
- Flathead galaxias

Threatened fish occurance

- Silver perch, flathead galaxias

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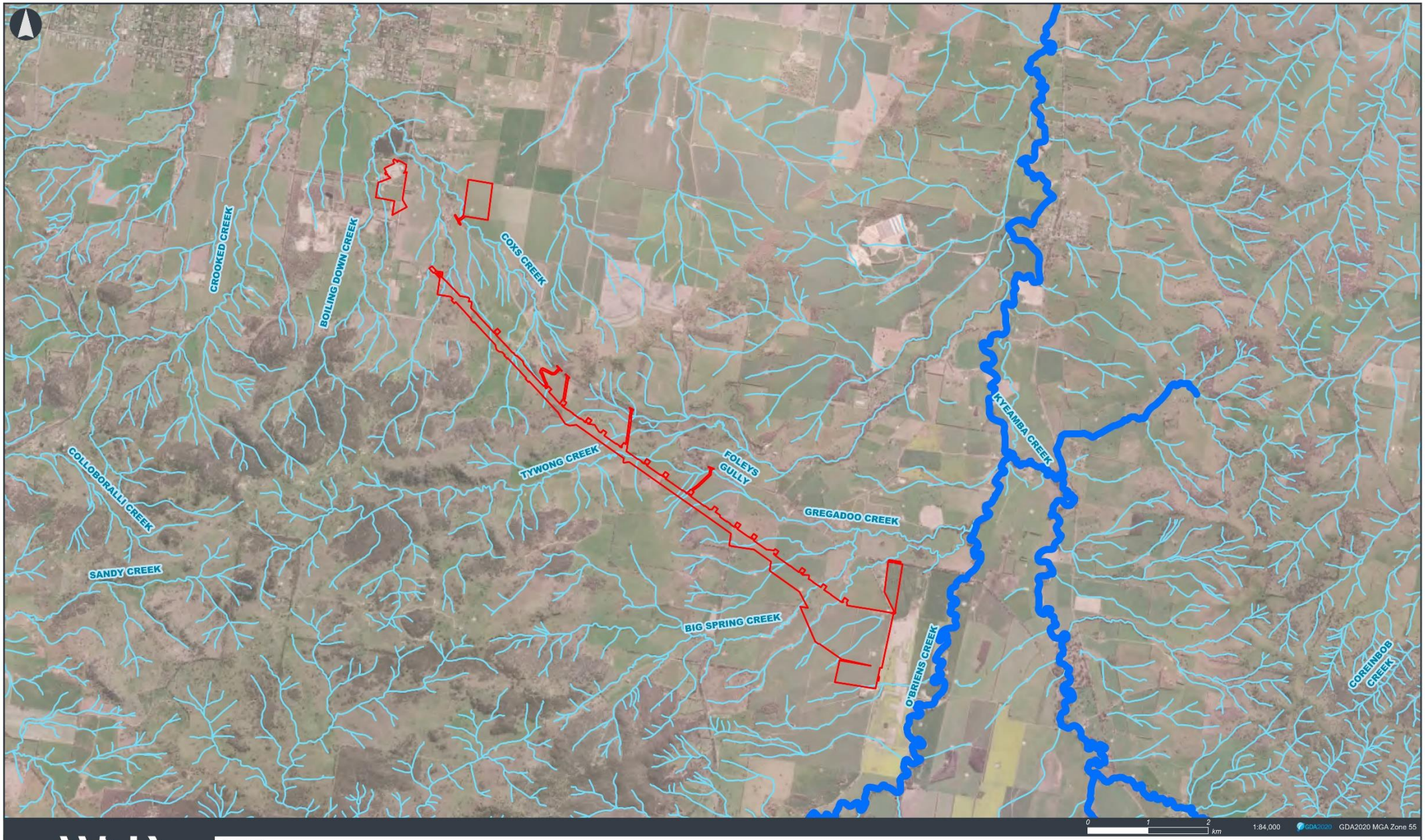
Data sources: NSW EPI, DELWP, WSP, EnergyConnect



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VNI West – Aquatic Assessment

Figure 4.2i
Mapped threatened species habitat within the VNI Project

Legend

- Waterways
- Project footprint
- Flathead galaxias

Data sources: NSW EPI, DELWP, WSP, EnergyConnect

4.3.2 Threatened aquatic species and communities

4.3.2.1 Endangered ecological communities

There are three endangered ecological communities (EEC) listed in Schedule 4 Part 3 of the FM Act. Of these EEC, one overlaps with the entire study area, which is the Aquatic Ecological Community in the Natural Drainage System of the Lower Murray River Catchment (Lower Murray River Catchment EEC).

The Lower Murray River Catchment EEC spans a large area and includes all native fish and aquatic invertebrates within all natural creeks, rivers and associated lagoons, billabongs and lakes of the regulated portions of the Murray, Murrumbidgee and Tumut rivers, as well as all their tributaries and branches (Fisheries Scientific Commitee, N.D). A list of watercourses containing the EEC include:

- Murray River downstream of Hume Weir
- Murrumbidgee River downstream of Burrinjuck Dam
- Tumut River downstream of Blowering Dam and all their tributaries' anabranches and effluents including Billabong Creek, Yanco Creek, Colombo Creek, and their tributaries
- Edward River and the Wakool River and their tributaries, anabranches and effluents
- Frenchmans Creek
- Rufus River and Lake Victoria.

4.3.2.2 Threatened species

A database search of the study area was conducted in January 2025 using the EPBC Act (Cth) protective matters search tool (DCCEEW, 2025) and the Fisheries Spatial Data Portal (DPI, 2025).

The search identified that a total of six threatened fish species listed under the EPBC Act (Cth) may occur in the study area. One species (Flathead Galaxias) is listed as critically endangered, four species (Silver Perch, Murray Hardyhead, Trout Cod and Macquarie Perch) are listed as endangered, and one species (Murray Cod) is listed as vulnerable under the EPBC Act (Cth).

Five of the six EPBC (Cth) listed species are also listed under the FM Act (NSW) with two (Flathead Galaxias and Murray Hardyhead) being critically endangered, two (Murray Cod and Macquarie Perch) being endangered and one (Silver Perch) being vulnerable. One crustacean (Murray Spiney Crayfish) is listed as vulnerable under the FM Act (NSW) and has the potential to occur within the study area.

A likelihood of occurrence assessment for the listed threatened species is presented in Table 4.4.

Table 4.4 Threatened aquatic species identified within 10 kilometres of the project footprint

Scientific name	Common name	EPBC Act (Cth)	FM Act (NSW)	Habitat description	Likelihood of occurrence
Bidyanus bidyanus	Silver Perch	E	V	This species exists in the primarily within the northern and southern extent of the Murray-Darling Basin, with smaller population scattered in between. Silver Perch inhabit free-flowing riverine environments containing clear water. Silver Perch displays no preference for instream microhabitats (i.e. woody debris, instream rocks, riparian vegetation types) and can be found reaches that contain limited instream habitat features (Department of Climate Change, Energy, the Environment and Water, 2024a)	High – previously recorded near the project footprint (ALA, 2025)
Craterocephalus fluviatilis	Murray Hardyhead	E	CE	This species is endemic to the mid and lower Murray-Darling River system in south-eastern Australia. They are commonly found in open water habitats, particularly in highly saline wetlands, floodplains and lakes (Fishes of Australia , 2025). During the dry season Murray Hardyhead are confined to isolated waterbodies and floodplains. For their reproductive success, Murray Hardyhead depend on eel grass, which they deposit their eggs when they spawn (Fishes of Australia , 2025).	Moderate – the project footprint intersects with key fish habitat for this species; however, the known populations of this species do not occur in NSW
Euastacus armatus	Murray Spiney Crayfish	–	V	This species has a large range which includes Murray and Murrumbidgee Rivers as well as many of their tributaries. Murray Spiney Crayfish habitat include cool, fast-flowing water containing deep pools, boulder-rich streambeds, and areas with extensive riparian vegetation (ALA, 2025).	High – the project footprint intersects with key fish habitat for this species
Galaxias rostratus	Flathead Galaxias	CE	CE	This species exists in the southern half of the Murray-Darling Basin system in various habitats such as billabongs, lakes, swamps and rivers, with a preference for still or slow flowing waters (Threatened Species Scientific Committe, 2016) Flathead Galaxias habitat prefer habitats containing coarse sand or mud substrate and aquatic vegetation (NSW Department of Primary Industries, 2014).	Moderate – the project footprint with key fish habitat for this species, however, there have been no records since 1995

Scientific name	Common name	EPBC Act (Cth)	FM Act (NSW)	Habitat description	Likelihood of occurrence
Maccullochella macquariensis	Trout Cod	E	E	Only one known "natural" breeding population of Trout Cod are known to occur within NSW, which is downstream of the Yarrawonga Weir between Yarrawonga and Barmah (Trout Cod Recovery Team, 2008). This species is known to inhabit deeper rivers that contain a high surface velocity which contain large quantities of woody debris (Trout Cod Recovery Team, 2008).	Moderate – potential for stocked fish to inhabit the larger watercourses within project footprint
Maccullochella peelii	Murray Cod	V	–	Murray Cod inhabit all major catchments within the Murray-Darling Basin that contain warmer waters. Murray Cod prefer habitats that contain large rocks, woody debris and undercut banks with overhanging vegetation (Fishes of Australia, 2025).	High –previously recorded near the project footprint (ALA, 2025)
Macquaria australasica	Macquarie Perch	E	E	This species is primarily located within the upstream reaches of the Murray-Darling Basin including Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW. Macquarie Perch prefer habitats with copious cover including aquatic vegetation, woody debris, boulders and overhanging banks (NSW Department of Primary Industries and Regional Development, 2025).	Low – outside known range

V = Vulnerable, E = Endangered, CE = Critically Endangered

5 Potential impacts

The aquatic receptors most likely to be impacted by the project includes:

- key fish habitat
- aquatic invertebrates
- water quality
- aquatic vertebrates
- native plants inhabiting the riparian zone (i.e. removal or introduction of invasives).

The assessment of the existing environment determined that:

- 22 named watercourses within the project footprint contain Key Fish Habitat and/or watercourses within the indicative distribution area for threatened species listed under the EPBC Act (Cth) or FM Act (NSW)
- 39 unnamed watercourses that are mapped as being Key Fish Habitat or are within the distribution area of Murray Hardyhead habitat.

All watercourses are located within the project footprint for the NSW/Victorian border to the future Dinawan substation component. The general approach in defining the project footprint has been to conservatively assume that any area within the project footprint has the potential to be directly impacted by the project. However, not all the land within the project footprint would be used for construction and/or operation. This provides flexibility for future design development and provides an assessment of the potential 'worst-case impacts' despite the project only impacting a portion of the project footprint. The exception to this is the biodiversity assessment as presented in *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a) (which this report is appended to) which has assumed an indicative disturbance area. The indicative disturbance area for transmission line structures and brake and winch sites have been used in the following assessment to identify potential impacts to aquatic habitats.

The potential impacts during construction and operational and how they relate to aquatic receptors are discussed in the following sections.

5.1 Construction assessment

Construction of the project is expected to interact with the aquatic environment and/or riparian vegetation, resulting in direct and indirect impacts. The potential impacts are summarised in Table 5.1. These potential impacts are largely associated with the construction of transmission line structures in the vicinity of watercourses, the construction of new or upgraded access tracks with watercourse crossings, or the establishment of construction compounds or temporary worker accommodation facilities that directly impact a watercourse. These potential impacts from these activities are discussed section 5.1.1, section 5.1.2 and 5.1.3.

Table 5.1 Potential construction impacts

Impact	Description	Relevant construction activities
Introduction of invasive species and diseases	Common diseases include Epizootic Haematopoietic Necrosis Virus, Asian tape worms, protozoans and funguses and common invasive species include Redfin, Goldfish and Carp (refer to Appendix A. for further information)	All activities within or in the vicinity of a watercourse.
Riparian vegetation removal, change in habitat structure and cover and/or removal of Key Fish Habitat Die off of riparian vegetation	Instream works or removal of riparian vegetation may also result in the removal of habitat features, such as snags, overhanging habitat, aquatic vegetation and large boulders. Die off may occur as a result tree removal or pruning.	All activities where direct impacts to riparian areas occur.
Change in quantity and quality of food supply	The removal of riparian vegetation or trimming of riparian vegetation may result in a change in the quantity or composition of the food supply (e.g. plants and organic debris) that falls into a watercourse, or the nutrient inputs into a watercourse.	All activities where direct impacts to riparian areas occur.
Reduction in water quality within watercourses	May include sedimentation of watercourses, increased nutrient concentrations or chemicals entering watercourses (if not properly managed). Impacts may include degradation of aquatic habitats or mortality of fish, eggs or ova due to smothering by sediments. This would be associated with instream activities, clearing, grubbing, excavation activities within or near a watercourse, runoff from stockpiles, construction compounds, temporary worker accommodation facilities, use of equipment and vehicles near or on a watercourses, improper management of wastes, or accidental spills.	All activities within or in the vicinity of a watercourse
Blockage of fish passage	While any instream works would be conducted to avoid full blockage of fish passage, incidents could occur that result in full fish blockage.	Where instream works are proposed for watercourse crossings, or where works occur in proximity to a watercourse.
Changes to flows within watercourses	Changes to the duration, timing or volume of flows into a watercourse due to changes in flow distribution, or placement of materials or structures within a watercourse that fully or partially obstruct the flow of water temporarily. Impacts include fish becoming stranded due to reduction in flow.	Changes in flow may occur due to the construction of transmission line structures or watercourse crossings, or where changes to surface levels occur due to the establishment of construction compounds and combined temporary worker accommodation facilities.

Impact	Description	Relevant construction activities
Fish, eggs or ova mortality due to direct impact	Sedimentation result in death of egg or ova via suffocation or habitat removal.	Direct impact may occur when construction equipment or construction vehicles enters a watercourse during construction or when crossing.

5.1.1 Transmission lines

The construction of the transmission line is not expected to have a major impact on aquatic receptors. No transmission line structures would be constructed within 50 metres from the edge of the higher order watercourses (being stream order four and above), which would satisfy the vegetated riparian zone (VRZ) requirement. Around 14 transmission line structures would be located within 50 metres of a lower order watercourses, and six are located within 50 metres of an irrigation channel.

However, the construction of a transmission line structure would temporarily require a larger cleared area of up to 70 metres by 70 metres for the 500 kV transmission line structures. Some additional areas would also be cleared to support stringing activities from the ground (brake and winch sites). The construction areas associated with 48 transmission line structures (including brake and winch sites) for the NSW/Victorian border to the future Dinawan substation component would be located within 50 metres from the edge of watercourses. Of these, five are within the applicable VRZ of a watercourse that has been mapped as Key Fish Habitat and/or mapped in the distribution of a threatened aquatic species (being two unnamed watercourses (Strahler order 0 and 3), Merran Creek (Strahler order 2), Magpie Creek (Strahler order 2) and Cunninyeuk Creek (Strahler order 3).

Construction of the transmission lines would also involve:

- construction work within the larger riparian buffers as identified in *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). For example, the construction area for a new transmission line structure would be constructed within 50 to 100 metres of the Murray River.
- trimming of riparian vegetation to enable the stringing of transmission lines or to achieve minimal separation with the transmission line, once operational
- potential stringing activities being supported by watercraft.

Direct impacts to watercourses could result in a change in flow paths and direct disturbance to banks and channels, resulting in direct impacts to fish and fish habitat. Removal of riparian vegetation would increase the susceptibility to bed and bank erosion, resulting in sedimentation and the release of deleterious substances into aquatic habitats and contributing to the degradation of aquatic habitats. General construction activity in, on or within the vicinity of watercourse may also present water quality impacts (if not properly managed). Following construction, disturbed areas within riparian areas would be stabilised and rehabilitated following the completion of construction activities.

Construction of the transmission line within the vicinity of larger order watercourses is unlikely to result in long-term harmful alteration, disruption and destruction to fish and fish habitat given that direct, instream impacts would not occur. Indirect impacts to fish or fish habitat that may occur, if not properly managed, include:

- introduction of invasive species and diseases
- change in quantity and quality of food supply
- riparian vegetation die-off
- reduction in water quality.

Construction of transmission lines within the riparian area and within the instream area would directly impact lower order watercourses. For watercourses that have the potential support aquatic fauna or contain Key Fish Habitat, the direct and indirect impacts are likely to result in long-term harmful alteration, disruption and destruction to fish and fish habitat. Direct and indirect impacts to fish and fish habitat include:

- introduction of invasive species and diseases
- removal of riparian vegetation, change in habitat structure and cover, and/or direct removal of fish or Key Fish Habitat
- change in quantity and quality of food supply
- reduction in water quality
- direct impact to fish, eggs or ova
- blockage of fish passage
- potential mortality of fish/eggs/ova due to direct impacts by vehicles or plant and equipment
- change in water flows within a watercourse.

5.1.2 Access tracks

Access tracks would need to be established to accommodate safe access of construction machinery and vehicles to the project footprint, including work areas along the project transmission line corridor, combined temporary worker accommodation facilities and construction compounds. The access tracks proposed include new tracks or upgrades to existing tracks, which may require new or upgraded watercourse crossings. While the selection of the proposed access tracks has sought to avoid crossing watercourses where possible, it is anticipated that a number of watercourse crossings would be required. Structural assessments of existing crossings would be completed during detailed design, which may identify the need for existing crossings to be upgraded.

All new or upgraded crossings would be designed, installed and maintained in accordance with relevant guidelines for watercourse crossings including:

- *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013)
- *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003)
- *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE, 2022b)
- *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022c)
- *Managing Urban Stormwater: Soils and Construction – Volume 1, 4th Edition* (Landcom, 2004)
- *Guidelines for the planning, construction and maintenance of tracks* (Department of Land and Water Conservation, 1994)
- *Managing Urban Stormwater: Soils and Construction – Volume 2C Unsealed Roads* (DECC, 2008a).

Where a new or upgraded crossing is required, the design would be determined based on the habitat attributes of the watercourse would be confirmed following a site visit in accordance with *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). This is discussed in section 5.3.

The construction of new access track crossings or the upgrade of existing access track crossings is likely to have both direct and indirect impacts to the aquatic habitats. Depending on the extent of construction required, removal of riparian vegetation and excavation of the streambeds may be required. Other project-related activities that may result in impacts to fish or fish habitat include:

- placement of materials or structures in water: this could include the placement of structures that either fully or partially obstruct the flow of water and may include temporary structures
- use of industrial equipment: the use of mechanical equipment for the purpose of construction, maintenance and/or transportation
- resurfacing of the current access tracks. This could result in the runoff of chemicals that could impact water quality
- change in timing, duration and frequency of flows within a watercourse. This includes the construction of temporary exclusion zones.

For watercourses that have the potential support aquatic fauna or contain Key Fish Habitat, the potential direct and indirect impacts to fish and fish habitat include:

- introduction of invasive species and diseases
- removal of riparian vegetation, change in habitat structure and cover, and/or direct removal of fish or Key Fish Habitat
- change in quantity and quality of food supply
- reduction in water quality
- direct impact to fish, eggs or ova
- blockage of fish passage
- potential mortality of fish/eggs/ova due to direct impacts by vehicles, plant and equipment
- change in water flows within a watercourse.

The named watercourses that are expected to be directly impacted by a watercourse crossing is outline in Table 5.2. Four new access tracks are expected to be constructed at watercourses that have mapped Key Fish Habitats, which also within the indicative distribution area of threatened species. An additional 16 watercourse crossings may require works to upgrade the existing crossing, for the purpose of this assessment, the worse-case scenario that all existing roads will require upgrading has been presumed, however, it is likely many will be adequate and not require instream works. As a result, the potential impacts on threatened species at these access track locations is increased, as instream works are potentially required. However, it is noted that any upgrade to existing crossings for Southern No. 26 Channel and the Coleambally Outfall Drain (also referred to as the West Coleambally Channel) would be designed to maintain existing channel widths and not obstruct channel flows to ensure the continued delivery of regulated flows.

Table 5.2 Named watercourse name and access tracks watercourse crossings

Watercourse name	Stream order	Number of crossings	Existing – to be upgraded	New access track	Mapped Key Fish Habitat	Indicative threatened species distribution
Carroonboon Creek	2	3	2	1	Yes	Murray Hardyhead
Coleambally Outfall Drain	9	1	1	0	Yes	Silver Perch and Murray Hardyhead
Deadmans Creek	10	2	1	1	Yes	Murray Hardyhead
Delta Creek	3	5	5	0	Yes	Silver Perch and Flathead Galaxias
Jaffrey Creek	10	1	1	0	Yes	Silver Perch, Murray Spiney Crayfish and Flathead Galaxias
Larrys Creek	10	2	2	0	Yes	Murray Hardyhead
Magpie Creek	2	2	1	1	Yes	Murray Hardyhead
Merran Creek	10	1	1	0	Yes	Murray Hardyhead
Morres Creek	1	1	1	0	Yes	Murray Hardyhead
Southern No. 26	0	1	0	1	Yes	Murray Hardyhead
Wyam Creek	10	1	1	0	Yes	Silver Perch, Murray Spiney Crayfish and Flathead Galaxias
Total			**16**	**4**		

In addition to the named watercourses, 19 unnamed watercourses or drainage lines that are mapped as Key Fish Habitat or within the indicative distribution of a threatened species would be directly impacted by an access track with a watercourse crossing (new or upgraded). This consists of:

- Strahler order 0 watercourses – three
- Strahler order 1 watercourses – 12
- Strahler order 2 watercourses – two
- Strahler order 3 watercourses – one
- Strahler order 10 watercourses – one.

The area surrounding Dillons Swamp appears to have favourable habitat for various species of fish, specifically for breeding and juvenile rearing, as it provides ample food supply and protection from larger fish species. Multiple watercourses within the area feed into the wetland and therefore would impact the health of the waterbody (if not properly managed). The project footprint crosses the southern portion of the Dillon Swamp wetland complex, which has the potential to be utilised by the FM Act (NSW) and EPBC Act (Cth) listed Flathead Galaxias and Silver Perch as the watercourse feeding into the wetland is mapped as being likely to be used by these species, however, the Flathead Galaxias has not been record within this catchment since 1995, so the likelihood of this species using this wetland system is low (Threatened Species Scientific Committe, 2016).

Instream works should aim to be completed in dry conditions and outside breeding periods of aquatic species, particularly threatened species. Table 5.3 outlined the spawning periods for each threatened species that has a moderate or likely likelihood of occurring within the project footprint

Table 5.3 Breeding periods for threatened aquatic species

Species	Spawning period
Silver Perch	October to March
Murray Hardyhead	September to April
Murray Spiney Crayfish	March to May (Autumn)
Flathead Galaxias	August to September (water temperatures must exceed 10.5°C)
Trout Cod	October to November (water temperatures must be 17–18°C)
Murray Cod	September to November (Spring) (water temperatures must be 20°C
Macquarie Perch	October to January

As some species above, including Flathead Galaxias, Trout Cod, and Murray Cod require a specific temperature to trigger spawning events, it is important that works that may impact the temperature of the water be avoided during the spawning period. Activities that may dewater warmer water or cooler water into watercourses shall be avoided.

5.1.3 Construction compounds and temporary worker accommodation facilities

A number of construction compounds or combined temporary worker accommodation facilities would be constructed along the project footprint to support construction. One site, the Cunninyeuk Road, Cunninyeuk construction compound (western option 2) contains an unnamed watercourse that is mapped as being within indicative distribution of the Murray Hardyhead species. This construction compound is one of two options being considered for the NSW/Victorian border to the future Dinawan substation component of the project near the NSW/Victorian border.

The construction compound would store construction equipment, construction materials, chemicals and fuels, there is a high risk of impacts to aquatic habitat (if not properly managed), if this option is selected. A larger area that required has been assessed to allow flexibility and micro siting of the final construction compound layout. Based on the larger, worst-case footprint, the establishment of the construction compound within the watercourse could result in direct significant impacts, if Murray Hardyhead habitat was verified to exist at this watercourse. Direct impacts to Murray Hardyhead may include removal of in stream features and increased risk of deleterious substances release into the watercourse.

During detailed design, detailed site planning of the construction compound (if selected) would consider opportunities to avoid direct impacts to the watercourse and provide a riparian zone to the watercourse. However, if avoided, there remains the potential for changes the watercourse, such as changes to flows that would need to be minimised where possible through the implementation of mitigation measures described in section 6.2 and *Technical paper 9 – Hydrology, flooding and water quality impact assessment* (WSP, 2025c).

The potential direct and indirect impacts include:

- introduction of invasive species and diseases
- removal of riparian vegetation, change in habitat structure and cover, and/or direct removal of Murray Hardyhead habitat
- change in quantity and quality of food supply
- release of deleterious substances into the watercourse.
- reduction in water quality

- direct impact to fish, eggs or ova
- blockage of fish passage
- change in water flows within a watercourse.

5.2 Operational assessment

Operational activities including the maintenance activities are not expected to interact with the aquatic environment and/or riparian vegetation, therefore direct impacts are not expected. Operational activities are expected to result in minimal activities occurring near watercourses, however, indirect impacts to aquatic receptors are possible. Potential indirect effects to fish and fish habitat from operational activities include:

- introduction of invasive species and disease: via vehicle during a maintenance check of transmission line structures
- change in sediment concentrations into the stream: from permanent access tracks
- change in water quality: resulting from accidental spills
- riparian vegetation die-off: as a result of tree removal or pruning as result of maintenance.

The instances of where these impacts occur during the operational phase of the project is unlikely.

Some access tracks and crossings constructed for construction would be retained for operational purposes, and some access tracks would be constructed for operational purposes. The potential long-term impacts to aquatic habitats is discussed in section 5.2.1.

5.2.1 Access tracks

Where required, access tracks watercourse crossings would be designed in accordance with *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull & Witheridge 2003) and *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). Depending on the nominated crossing at each access track, long-term impacts would differ. As outlined in section 6.2 where a watercourse crossing is required, this would be undertaken to avoid the following, where possible:

- sharp bends, sections of unstable channel, or major "riffle" systems
- locating crossings over "meandering" watercourses
- works that may change the frequency or spacing of an existing pool – riffle system
- disturbances to sections of a waterway channel or its associated bank vegetation, particularly where such areas represent either a unique, endangered or highly valued section of the waterway
- the removal of essential shade trees especially on waterways.

The avoidance of the above areas would decrease the long-term impact of each crossing, however, the exact impacts at each crossing would differ depending on the quality of the surrounding aquatic habitat at each watercourse and the chosen crossing type. Overall, the crossings are not expected to have a major impact to the surrounding aquatic environment assuming all crossing are designed appropriately to accommodate high flows, are well maintained and fish passage is maintained.

5.3 Threatened species and community assessment

The project footprint contains mapped habitat for the EPBC (Cth) and/or FM Act (NSW) listed Silver Perch, Murray Hardyhead and Flathead Galaxias and Murray Spiney Crayfish. Although Murray Cod and Trout Cod specific habitat have not been mapped, there is potential that this species could inhabit the impacted watercourses. The likelihood of occurrence assessment completed for these species determined that the Silver Perch, Murray Spiney Crayfish, and Murray Cod had a 'high' likelihood of occurrence, while the Murray Hardyhead, Flathead Galaxias and Trout Cod had a 'moderate' likelihood of occurrence (see Table 4.4). To assess what impacts the project would have on these species an EPBC Act (Cth) assessment of significance and a test of significance under Part 7A Division 12, Section 221ZV of the FM Act (NSW) was conducted and the outcome is available in Appendix A and Appendix B. An EPBC Act (Cth) assessment of significance was not completed for Trout Cod and Macquarie Perch as these species are not expected to have natural populations inhabiting the watercourses within the project footprint.

The Lower Murray River Catchment EEC is likely to occur within the project footprint, where the project footprint intersects with the Edward River and the Wakool River and their tributaries and the Murray River. The occurrence of the Lower Murray River Catchment EEC is considered to be "high", especially in mapped key fish habitats. Where the project crosses the EEC there is potential for this community to be negatively impacted. The main issues contributing to the decline of the Lower Murray Catchment EEC as a result of the project would include:

- degradation of the riparian (riverbank) zone
- removal of in-stream large woody debris
- introduction of diseases and invasive species
- flow modification.

However, mitigation measures outlined in section 6.2 would be implemented to minimise impacts to this EEC.

The extent of impact to watercourses, water quality, and hydrological processes is overall expected to be minor throughout the project, specifically when the appropriate management measures are implemented. The highest risk of impact to aquatic species results from the construction of new or upgraded watercourse crossings for access tracks as this would result in direct impacts to aquatic habitats including vegetation removal and instream works. A total of 20 new or existing access tracks would cross named watercourses, of theses 16 may require an upgrade and four would be newly constructed. All four proposed newly constructed access tracks would occur over watercourses mapped as key fish habitat and as indicative distribution of Murray Hardyhead. The newly construct access track crossing type would need to be designed in accordance with *Why Do Fish Need to Cross the Road?* (Fairfull and Witheridge, 2003), and the *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). The required access track crossing types are outlined in Table 5.4.

Table 5.4 Waterway crossing type in relation to watercourse class

Classification	Minimum recommended crossing type (in order of preference)
Class 1 (Major key fish habitat)	1. Bridge 2. Arch structure 3. Tunnel
Class 2 (Moderate key fish habitat)	1. Bridge 2. Arch structure 3. Culvert 4. Ford
Class 3 (Minimal key fish habitat)	1. Culvert (box culverts are preferred) 2. Ford
Class 4 (Unlikely key fish habitat)	1. Culvert 2. Ford 3. Causeway

If the appropriate crossing type is erected the long-term impacts to the aquatic environments at the access tracks is expected to be minor, however short-term impacts associated with construction are expected at these crossing. Instream construction may result in negative impacts such as release of deleterious substances into the watercourse, create barriers to fish passage, stranding fish, removal of instream habitat features etc. During the construction period the impacts to aquatic ecology within the immediate surrounding would be considered moderate.

The project would construct transmission line structures and access tracks in the area surrounding Dillon Swamp. This wetland complex is highly connected with surrounding watercourses (including unnamed) that has the potential to support threatened fish, including Flathead Galaxias and Silver Perch. As wetland complexes tend to be highly sensitive, potential impacts would be managed through the implementation of mitigation measures detailed in section 6.2 including undertaking surveys prior construction to confirm the presence of fish habitat to be avoided and/or impacts minimised.

It is anticipated that the likelihood of impacts to most of the threatened species could be minimised through restriction of direct impacts to the watercourses which contain mapped species habitat (excluding Murray Hardyhead habitat within the four access track crossings). The proposed mitigation and management measures outlined in section 6.2 are designed to manage impacts to fish habitat and to avoid or minimise 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 key fish habitat areas. The use of existing watercourse crossings for construction and operation would be used, where possible. In the event additional watercourse crossings are required by the project or existing crossings require an upgrade, they would be designed in accordance with the relative guidelines and implement the appropriate mitigation measures.

5.4 Key threatening processes

Key threatening processes are threats to aquatic habitat (particularly fish) that could either adversely impact threatened species, populations or ecological communities, or cause species, populations or ecological communities that are not threatened to become threatened. This project has the potential to contribute to four key threatening processes including:

- degradation of native riparian vegetation along New South Wales watercourses
- human-caused climate change
- installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams
- removal of large woody debris from New South Wales rivers and streams.

However, the impact to these key processes are expected to be limited to the construction phase of the project. The project aims to minimise the impacts to aquatic habitats within the project footprint. Table 5.5 outlines the project impacts and the management proposed to limit the impacts on the four key threatening processes.

Table 5.5 Key threatening processes relevant to the project (FM Act)

Key threatening process	Impact	Rehabilitation or management
Degradation of native riparian vegetation along New South Wales water courses	The project may require temporary degradation of native riparian during the construction period. During the construction of transmission line infrastructure, the impact is anticipated to be limited to the trimming of tree canopy's to facilitate the construction and operation of the transmission line spanning each riparian area. Trunk root balls would be removed; however understorey would be retained. Full removal of riparian vegetation for new access tracks would be required, however this impact would be contained to the footprint of the access track.	Riparian areas subject to disturbance would be stabilised and rehabilitated, using endemic vegetation (where required), to restore the area to pre-existing conditions as far as reasonably practicable. The project will use hurdles to minimise the impact stringing of transmission lines will have on the riparian area and watercourse.
Human-caused climate change	The project is likely to generate temporary emissions during construction mostly through vehicle and equipment emissions.	Once the project has been built and is fully functional, it would facilitate development of renewable energy zones in the which would strive to reduce climate change impacts associated with energy production.

Key threatening process	Impact	Rehabilitation or management
Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams	Access tracks proposed for the project include new tracks or upgrades to existing tracks, which may require new or upgraded watercourse crossings. Any new or upgraded watercourse crossing may result in impacts to the natural flow.	The project would prioritise utilisation of existing watercourse crossings for construction and operation, and in the event additional watercourse crossings or existing crossings need to be upgraded by the project, they would be designed in accordance with the *Why Do Fish Need to Cross the Road?* (Fairfull and Witheridge, 2003), and the *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013).
Removal of large woody debris from New South Wales rivers and streams	The project may require the removal of large woody debris to facilitate construction of watercourse crossings.	Where impacts to large woody debris cannot be avoided, lopping would be considered as the first priority for the management. Where lopping is not practicable, realignment would be considered as the next possibility, followed by relocation.

6 Management of impacts

6.1 Environmental management

This chapter describes the actions already undertaken to avoid and minimise impacts. It also describes how the project would be managed to reduce potential environmental impacts throughout detailed design, construction and operation.

The approach to environmental management and mitigation of potential aquatic ecology impacts for the construction of the project would be carried out through the development of a project specific Construction Environmental Management Plan (CEMP) for the main construction works, and the implementation of individual property management plans developed in consultation with landowners.

Operation of the project would be managed through Transgrid's EMS, which is accredited to ISO 14001 requirements. The EMS includes an *Environmental Assessment Framework*, which contains checklists, procedures, guidance notes and an *Environmental Handbook* (Transgrid, 2021d) to assess and manage the potential impacts of maintenance activities.

6.2 Mitigation measures

Site-specific mitigation measures have been proposed to minimise aquatic ecology impacts associated with the project. Mitigation measures are presented in Table 6.1. Mitigation measures in other technical papers that are relevant to the management of aquatic ecology impacts include:

- *Technical paper 1 – Biodiversity Development Assessment Report* (WSP, 2025a)
- *Technical paper 9 – Hydrology, flooding and water quality impact assessment* (WSP, 2025c)
- *Technical paper 10 – Groundwater impact assessment* (WSP, 2025b).

Table 6.1 Proposed mitigation measures – Aquatic ecology impact assessment

Identification no.	Issue	Mitigation measure	Timing	Location
A1	Instream works for access tracks and relevant construction compounds	The following factors will be considered during the detailed design and micro siting process for waterway crossings or the layout of the Cunninyeuk Road, Cunninyeuk construction compound and combined temporary worker accommodation facilities (western option 2) to minimise potential impacts to aquatic environments, wherever practicable: — any existing crossings will be re-used or upgraded in preference to establishing new crossings — disturbance to waterways (bed, banks and associated riparian zones), will be avoided or minimised — the crossing design and construction work sites will minimise disturbance to any native vegetation, including native instream, fringing, and riparian vegetation within the access track alignment — watercourse crossings will be constructed perpendicular to the flow of the water and be positioned away from channel bends (where erosive forces are typically greatest). Preferably crossings will be located in straight stream sections with well-defined channel geometries and shallow stream gradients, in stable dry reaches — micro-siting will avoid direct and indirect (erosion or sedimentation) impacts to riverine features such as riffles and rapids and sensitive habitat features (ie snags, coarse woody debris, instream macrophytes) — all works within watercourse will be completed outside spawning periods of fish that inhabit the stream, which is typically spring through autumn — where instream structures are required, considerations to potential flooding and erosive effects will be made in the design and construction of the crossing. Any dewatering required during works, will be carried out with consideration of native fauna and appropriate measures will be implemented to relocate native aquatic fauna as required.	Detailed design	New or upgraded watercourse crossings, Cunninyeuk Road, Cunninyeuk (western option 1)

Identification no.	Issue	Mitigation measure	Timing	Location
A2	Impacts to Key Fish Habitat, threatened species and communities	Pre-construction surveys will be carried out for any watercourse connected to Dillons Swamp, identified as being Key Fish Habitat and / or indicative distribution for threatened species that would be directly impacted by project infrastructure to determine: — the Type and Class of watercourses in accordance with *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) — the presence/absence or likelihood of threated aquatic species occurring — determine any additional mitigation measures e.g. timing of works — recommendations as to micro-siting and design in order to minimise potential impacts to threatened aquatic species.	Detailed design	Watercourses directly impacted that are identified as being key fish habitat and/or indicative distribution for threatened species
A3	Instream works associated with watercourse crossings	Watercourse crossings will be designed, microsite and constructed in accordance with *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull & Witheridge 2003) and will include maintaining existing nominal flow velocity where possible or at less than 0.3 m/sec to avoid damage to aquatic habitats. Any temporary watercourse crossings will be removed and rehabilitated at the completion of their operational use.	Detailed design, construction	New or upgraded watercourse crossings
A4	Offsets for residual impacts to key fish habitat	During the detailed design and micro-siting process, potential impacts to key fish habitat will be minimised wherever practicable and where residual impacts are identified these will be quantified and offset in accordance with *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). In addition, opportunities for stockpiling and supply of felled trees for Key Fish Habitat rehabilitation or improvement works will be investigated in consultation with NSW DPI.	Detailed design, construction	Where key fish habitat is impacted

Identification no.	Issue	Mitigation measure	Timing	Location
A5	Instream works and bank stabilisation for watercourse crossings	Any sections of stream or watercourse banks that are impacted or modified by the project will be reformed or remediated to resemble the pre-work condition and form wherever possible or alternatively to a stable design form, as appropriate following the completion of construction work. Felled trees from the project will be used as instream habitat in the form of large woody debris where practicable.	Construction	Watercourses impacted within the project footprint
A6	Biosecurity risks at watercourse crossings	The following measures will be implemented to manage biosecurity risks associated with any instream work: — all vehicles, vessels and personal protective gear (PPE) will be disinfected prior to entering a watercourse — equipment used during any instream works will be cleaned, drained, and dried before storing or moving it to a different body of water — all sands and sediments used as infill shall be clean and have not been previously used in another watercourse — any invasive aquatic species encountered during instream works and dewatering activities will be captured and humanely euthanised.	Construction	Watercourses within the project footprint
A7	Management of large woody debris	Large woody debris in the vicinity of watercourse crossings will be managed in accordance with *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). Where impacts cannot be avoided, lopping will be considered as the first priority for the management of large woody debris. Where lopping is not practicable, realignment will be considered as the next possibility, followed by relocation.	Construction	Watercourses within the project footprint

6.3 Offset requirements

As per the *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) habitat compensation for aquatic habitats must be completed on a minimum 2:1 basis for all key fish habitat (including type 1–3), however a greater compensation ratio may be considered if opportunities for compensation are not available in the vicinity of, or of the type of, habitat that has been lost. Offsets would be required if a project is deemed to have significant environmental impacts. Compensation to offset fisheries resource or habitat losses would be considered only after it is demonstrated that the proposed loss is unavoidable.

As a site surveys have not been conducted to inform this assessment, the offset requirements cannot be determined. A habitat assessment to classify the watercourse (Type 1–4) would need to be completed on all crossing expected to undergo instream works. If the project requirements for access tracks result in the removal of instream and riparian features, it is likely offsets at a 2:1 basis would be required.

6.4 Residual aquatic risk assessment

This residual aquatic risk assessment was completed to identify potential risks, assess their intensity, likelihood, consequence, and ultimately their overall significance 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. A matrix presenting risk consequence and likelihood is outlined in Table 6.2.

The potential impacts associated with the construction activities on the project 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 6.3 outlines the results of this project risk assessment.

Table 6.2 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.				

	Consequence				
	Catastrophic	**Major**	**Moderate**	**Minor**	**Insignificant**
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 6.3 Risk ratings (before and after the implementation of mitigation measures)

Impacts from project	Receptor impacted (Red is impacted)					Initial impact	Proposed mitigation measures	Residual effect
	Key fish habitat	Aquatic invertebrate	Aquatic Vertebrates	Water Quality	Riparian vegetation			
Introduction of invasive species and diseases						High	— Mitigation measure A6	Low
Blockage of fish passage						Medium	— Mitigation measure A3	Low
Removal of riparian vegetation and potential riparian die-off						Medium	— Mitigation measure A1 — Watercourses and aquatic habitats adjacent construction sites and access tracks would be protected by exclusion zones established in accordance with mitigation measure B17	Medium
Change in habitat structure and cover:						Medium	— Mitigation measure A1 — Mitigation measure A5	Medium
Reduction in water quality within watercourses						High	— Mitigation measure HF9 (erosion and sediment controls) — Mitigation measure A7 — Mitigation measure WM5 (waste management)	Medium
Change in quantity and quality of food supply						Moderate	— Mitigation measure A1 — Watercourses and aquatic habitats adjacent construction sites and access tracks would be protected by exclusion zones established in accordance with mitigation measure B17	Low
Potential mortality of fish/eggs/ova						Moderate	— Mitigation measure A1	Low
Changes to flows within watercourses						Medium	— Mitigation measure A3	Low

7 Conclusion

The entire project area, particularly the area around the Edward River and the Wakool River and their tributaries, and the Murray River contains indicative distribution of the EEC of the lower Murray River Catchment. A total of six threatened fish species listed under the EPBC Act (Cth) are found to possibly occur in the study area. One species (Flathead Galaxias) is listed as critically endangered, four species (Silver Perch, Murray Hardyhead, Trout Cod and Macquarie Perch) are listed as endangered, and one species (Murray Cod) is listed as vulnerable under the EPBC Act (Cth).

The project footprint is anticipated to cross 22 named and 83 unnamed watercourses. Of these all 22 named and 29 unnamed watercourses within the project footprint contain key fish habitat and/or watercourses within the indicative distribution area for threatened species listed under the EPBC Act (Cth) or FM Act (NSW).

The project aims to limit impacts by using previously constructed access tracks, over constructing new tracks and micro siting transmission infrastructure to fall outside riparian buffers and VRZ as outlined in *Policy and guidelines for fish habitat conservation and management (Update 2013) (DPI, 2013)* and *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022c).

Although mostly avoided, four new access tracks, and one construction compound are located within Key Fish Habitat or within an indicative distribution of a threatened species would need to be constructed. Additionally five transmission line structures are located within the VRZ of a watercourse mapped as Key Fish Habitat or in the distribution of a threatened aquatic species This direct interaction with watercourses and its associated riparian area would result in impacts to aquatic habitats, particularity during the construction phase of the project. It is expected that during the construction phase of the project that moderate impacts to fish habitat may occur, however, the impacts are anticipated to be temporary and managed using mitigation measures outlined in section 6.2. Operational impacts of the access tracks may result in a change in flow regime and fish passage issues; however, this is expected to be mitigated through design and ongoing maintenance. Habitat assessments are required to determine the crossing specific impact and to determine offset requirements that result from each crossing, transmission structure and compound that are located within the riparian buffer.

Overall, the impacts of the project are expected to be moderate during the construction phase of the crossing, but are not anticipated to result in significant long-term impacts to the threatened species that may inhabit the project footprint, nor to the EEC within the project footprint. However, habitat assessments are required to be completed prior to construction to determine specific mitigation measures, rehabilitation and offset requirements for each structure to be completed within the riparian buffer.

7.1 Limitation of the desktop assessment

As this assessment is largely informed by publicly available databases, the watercourse classification (habitat type and watercourse classification), watercourse crossing requirements to ensure adequate flow to allow for fish passage and offset cannot be determined at this stage. Watercourse classification depends on various factors including type of native aquatic vegetation, habitat structure and streambed composition that the watercourse is associated (DPI, 2013). While these habitat features could not be confirmed during the assessment, mitigation measures have been included to minimise and/or mitigate potential impacts as required.

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Appendix A

Commonwealth EPBC Act assessment of significance

A1 Silver Perch *(Bidyanus bidyanus)*

The Silver Perch is listed as Endangered under the EPBC Act (Cth) and Vulnerable under the FM Act (NSW).

A1.1 Description

Silver Perch inhabit the northern and southern extent of the Murray-Darling Basin, with smaller population scattered in between. Silver Perch have been translocated to watercourses outside of the Murray-Darling Basin for recreational usage. This species inhabits free-flowing riverine environments containing clear water. Silver Perch displays no preference for instream microhabitats (i.e. woody debris, instream rocks, riparian vegetation types) and can be found in watercourses that contain limited instream habitat features in a wide temperature range (2–37°C).

Spawning occurs during the spring and summer months between October and March during the nighttime (21:00–01:00) following a rise in water temperature and an upstream migration. Hatching of the eggs occur within 36 hours within spawning.

A1.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

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

- *Conservation advice Silver Perch (Bidyanus bidyanus)* (Department of Climate Change, Energy, the Environment and Water, 2024a)
- *NSW Silver Perch Recovery Plan* (NSW Department of Primary Industries, 2006)
- *Survey guidelines for Australia's threatened fish* (Pogonoski, 2011).

A1.3 Specific impacts

The project footprint contains mapped key fish habitat and mapped indicative distribution of Silver Perch. No project specific surveys for this species have been conducted, therefore a conservative approach should be taken, assuming Silver Perch inhabit these mapped watercourses. It is expected that habitat within and around waterbodies within the project footprint would be avoided or minimised, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the project where the transmission line spans riparian areas. Upgraded access tracks (and associated watercourse crossings) and construction have the potential to directly impact aquatic habitats in the form of instream works, run-off of deleterious substances, and removal of vegetation, however if appropriate mitigation measures are implemented, limited impacts to aquatic habitats would be observed.

If works are to be conducted within 40 metres of top of bank of any river, lake or wetlands project activities are to be designed and implemented in accordance with *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022a), *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b), *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) and *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). Additionally, the project expects that:

- permanent removal or degradation of aquatic habitat that would result in the loss of dispersal or spawning opportunities for an important population would not occur
- there would be no alteration of aquatic vegetation diversity or structure
- there would be no alteration to the hydrology, diversity and structure of watercourse within the project footprint

- there would be limited to no instream works that would result in the permanent degradation of fish habitat
- there would be no introduction of invasive fish
- there would be no introduction of deleterious substances (i.e. sedimentation, petrol, chemicals, household rubbish) into the watercourses
- there would be no net reduction in the number and/or diversity of water bodies available to an important population
- there would be no removal or alteration of available aquatic habitat corridors
- there would be no construction of physical barriers to resulting in fish passage issues.

A1.4 Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

This species has been divided into 17 important populations containing poorly known levels of genetic diversity, uniqueness, and connectivity amongst them. It has been determined that all populations of the Silver Perch are important for the long-term recovery, evolutionary potential, and survival of the species, therefore the population within the project footprint is considered to be important (Department of Climate Change, Energy, the Environment and Water, 2024a). The population within the project footprint includes parts of the Murray (Torrumbarry- Wenworth) and Edward sub-population. (Department of Climate Change, Energy, the Environment and Water, 2024a).

A1.5 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

Potential habitat for this species exists within the project footprint in the form of watercourses and the associated riparian habitat and instream features that may be impacted by the project. If the construction of new or upgraded access tracks involve instream works, the project is expected to have a moderate impact to the immediate and downstream area temporarily. Aside from the temporary instream works, long-term impacts to permanent watercourse that are likely to provide suitable spawning habitat is not anticipated and would be avoided through micrositing. To mitigate these impacts mitigation measures from section 6.2 would be implemented to protect Silver Perch habitat.

Reduce the area of occupancy of an important population

The project footprint contains mapped key fish habitat and mapped indicative distribution of Silver Perch. No project specific surveys for this species have been conducted, therefore a conservative approach has been taken, assuming Silver Perch inhabit these mapped watercourses. A total of eight existing crossings over named watercourses are expected to be upgraded as a result of this project. Temporary moderate impacts as a result of construction may occur, however the project is considered unlikely to have long-term impacts and significantly reduce the area of the occupancy of any important population.

Fragment an existing important population into two or more populations

Silver Perch are found in two major geographic regions including the North and South of the Murry-Darling Basin, which is separated by the Menindee weir, however, within each geographic region these fish are highly mobile, moving up to 1,200 kilometres. Due to the highly mobile nature of this species, and lack of significant permanent impacts imposed by the project it is unlikely this project would result in the fragmentation of this species into two or more populations.

Adversely affect habitat critical to the survival of a species

Habitat critical to the survival of a species can be defined 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. (Department of the Environment Water Heritage and the Arts 2013).

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat (Department of Climate Change, Energy, the Environment and Water, 2024a). Habitat critical to the survival of the Silver Perch includes the area of known subpopulations and areas of similar habitat adjoining known subpopulations. These areas include a wide range of aquatic habitats including, alluvial meandering structure to lowland reaches to clear, rocky upland reaches. Siver Perch are a highly mobile species, with individual recorded traveling 1,200 kilometres. Their association with aquatic habitat feature is relatively unknown, therefore preferred habitat types are unknown. As the project is not likely to be directly impacting aquatic habitats in the long-term it is unlikely the project would affect habitat critical to the survival of this species.

Disrupt the breeding cycle of an important population

Silver Perch spawn between October and March during the nighttime following a rise in water level, temperature and an upstream migration. The eggs would remain within the bottom half of the water column where they would drift downstream and hatching within 36 hours.

If the construction of new or upgraded access tracks involves instream works, the project is expected to have a moderate impact to the immediate and downstream area temporarily. Mitigation measures would be implemented to avoid or minimise impacts to Silver Perch habitat. To avoid impacts to Silver Perch population works should be conducted outside of the spawning period during time of low flow.

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

Although the project is expected to cross a number of watercourses containing key fish habitat, this habitat is not likely to be directly impacted by the majority of the project. Upgraded access tracks may directly interact with aquatic habitats through vegetation removal, ruff-off from road surfacing, sedimentation and instream works, however, these impacts are expected to be temporary (with moderate impacts) and mitigation measures would be implemented.

The operational usage of the upgraded access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

Overall, the project is considered unlikely to result in the significant modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures would be implemented to avoid or minimise indirect and direct impacts to aquatic habitats.

Result in invasive species that are harmful to an endangered species becoming established in an endangered species' habitat

This species is adversely impacted by Common Carp (*Cyprinus carpio*) and Redfin (*Perca fluviatilis*). The Common Carp act as both direct competition for resources and contributes to the destruction of Silver Perch habitat by raising turbidity and destroying submergent macrophytes. Redfin are carriers of the Epizootic Haematopoietic Necrosis Virus which results in the high mortality of native fish. Mitigation measures would aim at controlling and preventing the introduction of exotic fish species within all watercourses in the project footprint.

Introduce disease that may cause the species to decline

This species is susceptible to Epizootic Haematopoietic Necrosis Virus which has been identified as the cause of population decline for this species. This virus results in necrosis of the renal haematopoietic tissue, liver spleen and pancreas and has a high mortality and transmission rate. Although the transmission of Epizootic Haematopoietic Necrosis Virus is not fully understood, it is hypothesized that that fish can be infected by bath inoculation, oral transmission may occur, and infection through the gills or skin (CFSPH, 2007). To avoid transferring this virus from other watercourses, mitigation measures would be implemented as part of the project works, including wash down areas and hygiene protocols to avoid or minimise contamination and minimising the spread of disease and viruses.

Interfere substantially with the recovery of the species

Although Threatened Species Scientific Committee has not recommended that a recovery plan be required for this species, various plans outline objectives surrounding the recovery of Silver Perch. The *Conservation advice Silver Perch (Bidyanus bidyanus)* (2024) and *NSW Silver Perch Recovery Plan* (2006) outlines the following specific objectives for recovery of the Silver Perch:

- research and information collection
- habitat protection and restoration
- manage impacts of introduced species and diseases
- develop education programs around Silver Perch angling
- management of aquaculture and stocking
- establish ongoing monitoring program.

The project is unlikely to interfere with any of the recovery actions that have been identified to meet the specific objectives outlined above.

A1.6 Conclusion

Silver Perch are likely to occur within the project footprint as part of the Murray (Torrumbarry -Wenworth) and Edward sub-population, however the habitat within and around watercourses in the project footprint would generally be avoided. Impacts as a result of transmission line infrastructure would be limited to the removal or trimming of tree canopy on riverbanks and operation of the project where transmission lines span riparian areas. Upgraded access tracks (and associated crossings) have the potential to directly impact aquatic habitats via sedimentation, run-off and instream works, albeit this would only be temporary with the implementation of mitigation measures outlined in section 6.2.

The operational usage of the upgraded access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

Given instream works would be temporary (access tracks) and the operational usage of the access tracks would be maintained and designed in accordance with the above policies, and mitigation measures would be implemented to avoid or minimise indirect impacts to habitat on adjacent watercourses, it is unlikely that the project would have significant impact on the population of these species.

A2 Murray Hardyhead *(Bidyanus bidyanus)*

The Murray Hardyhead is listed as Endangered under the EPBC Act (Cth) and Critically Endangered under the FM Act (NSW).

A2.1 Description

This schooling species is endemic to the mid and lower Murray-Darling River system in south-eastern Australia. They are commonly found in open water habitats, particularly in highly saline wetlands, floodplains and lakes. During the dry season Muray Hardyhead are confined to isolated waterbodies and floodplains. Murray Hardyhead prefer occurs in open water habitats that have a silty and sandy substrate that supports aquatic plants such as *Cumbungi* species, *Juncus* species, and macrophytes including *Ruppia* species and *Potamogeton* species.

Murray Hardyhead spawn in late spring and summer where they, which they deposit their eggs on aquatic vegetation such as *Ruppia* species (Backhouse et al. 2008). Very little is known about this species.

A2.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

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

- *National Recovery Plan for the Murray Hardyhead (Craterocephalus fluviatiles)* (Backhouse et al. 2008)
- *Approved Conservation Advice for Craterocephalus fluviatilis (Murray Hardyhead)* (Department of Sustainability, Environment, Water, Population and Communities, 2012)
- *Survey guidelines for Australia's threatened fish* (Pogonoski, 2011).

A2.3 Specific impacts

The project footprint contains mapped key fish habitat and mapped indicative distribution of Murray Hardyhead. No project specific surveys for this species have been conducted, therefore a conservative approach should be taken. It is expected that habitat within the project footprint would be avoided. Impacts related to transmission line infrastructure would be limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the project where transmission lines span riparian areas. New and upgraded access tracks (and associated crossings)have the potential to indirectly impact aquatic habitats in the form of instream works, run-off of deleterious substances, and removal of vegetation, however if appropriate mitigation measures are implemented, limited impacts to aquatic habitats would be observed. It is proposed that a Cunninyuek construction compound (western option 2) would directly interact with a unnamed watercourse that is mapped as being indicative mapped habitat for Murray Hardyhead. The construction compound would store construction equipment, construction materials, chemicals and fuels therefore there is a high risk of impacts to aquatic habitat (if not properly managed), if this option is selected. A larger area that required has been assessed to allow flexibility and micro siting of the final construction compound layout, to allow for the potential to move the compound outside of the watercourse.

If works are to be conducted within 50 metres of top of bank of any river, lake or wetlands project activities are to be designed and implemented in accordance with the *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022a), *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b), *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) and *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). Additionally, the project expects that:

- permanent removal or degradation of aquatic habitat that would result in the loss of dispersal or spawning opportunities for an important population would not occur
- there would be no alteration of aquatic vegetation diversity or structure
- there would be no alteration to the hydrology, diversity and structure of watercourse within the project footprint
- there would be limited to no instream works that would result in the permanent degradation of fish habitat
- there would be no introduction of invasive fish
- there would be no introduction of deleterious substances (i.e. sedimentation, petrol, chemicals, household rubbish) into the watercourses
- there would be no net reduction in the number and/or diversity of water bodies available to an important population
- there would be no removal or alteration of available aquatic habitat corridors
- there would be no construction of physical barriers to resulting in fish passage issues.

This species relies on flooding to disperse between different waterbodies, with that said, floodplains, specifically during high flow events, are considered habitat for Murray Hardyhead, therefore any project works located within the floodplain have the potential, albeit low, to interact with Murray Hardyhead habitat.

A2.4 Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

As a result of droughts and introduced fish species, the Murray Hardyhead has experienced a large population decline. As of 2012, this species was only found in only a small number of saline lakes in Victoria and South Australia, in the middle and lower reaches of the Murray River which is downstream of the VNI project.

A2.5 Significant impact criteria

An action is likely to have a significant impact on a 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

The known remaining populations of Murray Hardyhead do not exist within the project footprint, however, recent records have shown a resurgent of this species in NSW in areas surrounding Swan Hill and Mildura (on the NSW side of the border) (NSW Department of Primary Industries, 2025). The construction of new and upgraded access tracks are expected to involve instream works, which is expected to have a moderate impact to the immediate and downstream habitat area, albeit temporarily. To mitigate these impacts mitigation measures from section 6.2 would be implemented. Aside from the temporary instream works, long-term impacts to permanent watercourse that are likely to provide suitable spawning habitat.

It is proposed that a Cunninyuek construction compound (western option 2) would directly interact with a unnamed watercourse that is mapped as being indicative mapped habitat for Murray Hardyhead. The construction compound would store construction equipment, construction materials, chemicals and fuels therefore there is a high risk of impacts to aquatic habitat (if not properly managed), if this option is selected. A larger area that required has been assessed to allow flexibility and micro siting of the final construction

Although the project is expected to conduct instream works in the mapped indicative distribution of Murray Hardyhead, it is unlike this species would be impacted as no known populations inhabit the project footprint

Reduce the area of occupancy of an important population

The project footprint contains mapped key fish habitat and mapped indicative distribution of Murray Hardyhead. The known populations are in Victoria and South Australia which are outside of the project footprint; however, recent records have shown a resurgent of this species in NSW (NSW Department of Primary Industries, 2025) . No project specific surveys for this species have been conducted, therefore a conservative approach should be taken, assuming Murray Hardyhead have the potential to inhabit these mapped watercourses. A total of nine named watercourses are expected to be upgraded and four are to be newly constructed as a result of this project. In addition one construction compound is proposed to directly interact with a unnamed watercourse that is mapped as being indicative mapped habitat for Murray Hardyhead, however, it is recommended the this compound be relocated to avoid these impacts. If the compound is not relocated, this watercourse has no known population of Murray Hardyhead, therefore it is unlikely it would reduce the area of occupancy of an important population.

Moderate impacts as a result of construction may occur, however the project is considered unlikely to have long-term impacts and significantly reduce the area of the occupancy of any important population.

Fragment an existing important population into two or more populations

Murray Hardyhead are associated with the Murray River and its associated saline lakes and wetlands within Victoria and South Australia, however, recent records have suggested that this species has expanded into NSW. Murray Hardyhead are known to be a mobile schooling species, that has the potential to swim great distances during favourable flooding conditions. Due to the temporary impacts imposed by the project and the lack of known populations within the area, it is unlikely this project would result in the fragmentation of this species into two or more populations.

Adversely affect habitat critical to the survival of a species

Habitat critical to the survival of a species can be defined 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 (Department of the Environment Water Heritage and the Arts 2013).

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat (Department of Climate Change, Energy, the Environment and Water, 2024a). Habitat critical to the survival of this species includes the area of known populations and areas of similar habitat within the mapped indicative Murray Hardyhead range. Watercourses within this area that have elevated salinity levels, open-water structure and fringing aquatic vegetation should be treated as critical habitat for the Murray Hardyhead. As the project is not likely to be directly impacting aquatic habitats in the long-term it is unlikely the project would affect habitat critical to the survival of this species.

Disrupt the breeding cycle of an important population

Murray Hardyhead spawn in late spring and summer where they deposit their eggs on aquatic vegetation such as *Ruppia s*pecies (Backhouse et al. 2008).

If the construction of new or upgraded access tracks involves instream works, the project is expected to have a moderate impact to the immediate and downstream area temporarily. Mitigation measures would be implemented to avoid or minimise impacts to Silver Perch habitat. To avoid impacts to the Murray Hardyhead population works should be conducted outside of the spawning period during time of low flow.

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

Although the project is expected to cross a number of watercourses containing key fish habitat, this habitat is not likely to be directly impacted by the majority of the project. Upgraded access tracks may directly interact with aquatic habitats through vegetation removal, ruff-off from road surfacing, sedimentation and instream works, however, these impacts are expected to be temporary (with moderate impacts) and mitigation measures would be implemented.

The operational usage of the access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

It is proposed that a Cunninyuek construction compound (western option 2) would directly interact with a unnamed watercourse that is mapped as being indicative mapped habitat for Murray Hardyhead. The construction compound would store construction equipment, construction materials, chemicals and fuels therefore there is a high risk of impacts to aquatic habitat (if not properly managed), if this option is selected. A larger area that required has been assessed to allow flexibility and micro siting of the final construction. If the compound is not relocated, this watercourse has no known population of Murray Hardyhead, therefore it is unlikely it would reduce quality habitat for Murray Hardyhead.

Overall, the project is considered unlikely to result in the significant modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures would be implemented to avoid or minimise indirect and direct impacts to aquatic habitats.

Result in invasive species that are harmful to an endangered species becoming established in an endangered species' habitat

This species is adversely impacted by common carp (*Cyprinus carpio*), goldfish (*Carrasius auratusI)*, redfin (*Perca fluviatilis)* and eastern gambusia (*Gambusia holbrooki*). This species poses a threat to Murray Hardyhead, through predation, competition, disease transmission and other effects such as causing habitat degradation, although the exact impact is unknown. Mitigation measures would aim at controlling and preventing the introduction of exotic fish species within all watercourses in the project footprint.

Introduce disease that may cause the species to decline

Limited information surrounding disease impact is known of this species, however it is safe to assume typical fish diseases virus, arising from virus, bacteria, fungi infections have the potential to impact this species. In addition, introduced parasites, such as the asian fish tapeworm is predicted to have an impact on Murray Hardyhead as it has resulted in heavy mortalities on smaller fish species, however, the extent is still unknown. To avoid transferring this virus from other watercourses, mitigation measures would be implemented as part of the project works, including wash down areas and hygiene protocols to avoid or minimise contamination and minimising the spread of disease and viruses.

Interfere substantially with the recovery of the species

The *National Recovery Plan for the Murray Hardyhead (Craterocephalus fluviatiles)* (Backhouse et al. 2008) outlines the following specific objectives for recovery of the Murray Hardyhead:

- investigate and manage threats to populations and habitats
- determine population persistence and trends
- determine habitat preferences
- investigate important life history attributes
- establish and maintain the Murray Hardyhead in captivity
- establish new populations of Murray Hardyhead in the wild
- increase community awareness of Murray Hardyhead conservation.

The project is unlikely to interfere with any of the recovery actions that have been identified to meet the specific objectives outlined above.

A2.6 Conclusion

Murray Hardyhead may occur within the project footprint, especially if populations continue to re-establish in NSW within the mapped indicative distribution of this species. Favourable habitat within and around watercourses in the project footprint would generally be avoided, with the majority of impact being limited to the removal or trimming of tree canopy on riverbanks and operation of the project where transmission lines span riparian areas. New or upgraded access tracks (and associated crossings) have the potential to directly impact aquatic habitats via sedimentation, run-off and instream works, albeit this would only be temporary with the implementation of mitigation measures outlined in section 6.2. Although it is unlikely that Murray Hardyhead would be in the vicinity of the project footprint, all watercourses and floodplains in the western portion of the project footprint (NSW/Victorian border to the future Dinawan substation) is mapped as Murray Hardyhead habitat and would need to be protected as such.

The operational usage of the access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

The current design of Cunninyuek construction compound is anticipated to interact with a unnamed watercourse that is mapped as being indicative mapped habitat for Murray Hardyhead resulting in impacts to the unnamed watercourse. If the compound is not relocated, this watercourse has no known population of Murray Hardyhead, therefore it is unlikely it would result in a significant impact to this species.

Given instream works would be temporary (access tracks) and the operational usage of the access tracks would be maintained and designed in accordance with the above policies, and mitigation measures would be implemented to avoid or minimise indirect impacts to habitat on adjacent watercourses, it is unlikely that the project would have significant impact on the population of these species.

A3 Flathead Galaxias *(Galaxias rostratus)*

The Flathead Galaxias is listed as Critically Endangered under the EPBC Act (Cth) and Critically Endangered under the FM Act (NSW).

A3.1 Description

Flathead Galaxias inhabit the southern half of the Murray-Darling Basin system in various habitats such as billabongs, lakes, swamps and rivers, with a preference for still or slow flowing waters (Threatened Species Scientific Committee, 2015). Flathead Galaxias prefer habitats containing coarse sand or mud substrate and aquatic vegetation (NSW Department of Primary Industries, 2014).

Spawning occurs between August and September, when water temperatures rise above 10.5°C. Eggs are randomly spawned within the water column where they eventually settle onto the streambed. Eggs would hatch after 9 days when the water temperature is between 9–14°C.

A3.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

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

- *Conservation Advice Flathead Galaxias (Galaxias rostratus)* (Threatened Species Scientific Committe, 2016)
- *Survey guidelines for Australia's threatened fish* (Pogonoski, 2011).

A3.3 Specific impacts

The project footprint contains mapped key fish habitat and mapped indicative distribution of Flathead Galaxias. No Project specific surveys for this species have been conducted, therefore a conservative approach should be taken. It is expected that habitat within the project footprint would be avoided. Impacts would be limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the project where transmission lines span riparian areas. Upgraded access tracks (and associated watercourse crossings) and construction have the potential to directly impact aquatic habitats in the form of instream works, run-off of deleterious substances, and removal of vegetation, however if appropriate mitigation measures are implemented, limited impacts to aquatic habitats would be observed.

If works are to be conducted within 50 metres of top of bank of any river, lake or wetlands project activities are to be designed and implemented in accordance with the *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022a), *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b), *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) and *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). Additionally, the project expects that:

- permanent removal or degradation of aquatic habitat that would result in the loss of dispersal or spawning opportunities for an important population would not occur
- there would be no alteration of aquatic vegetation diversity or structure
- there would be no alteration to the hydrology, diversity and structure of watercourse within the project footprint

- there would be limited to no instream works that would result in the permanent degradation of fish habitat
- there would be no introduction of invasive fish
- there would be no introduction of deleterious substances (i.e. sedimentation, petrol, chemicals, household rubbish) into the watercourses
- there would be no net reduction in the number and/or diversity of water bodies available to an important population
- there would be no removal or alteration of available aquatic habitat corridors
- there would be no construction of physical barriers to resulting in fish passage issues.

A3.4 Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

This species has not been recorded within the Murrumbidgee catchment for over 20-years, and only seven individuals were found in the Mid-Murray catchment in 2011/ 2012 during a survey, located over 200 kilometres from the project footprint therefore it is unlikely that any individual would inhabit this reach of the project.

A3.5 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

This species has experienced a significant population decline, specifically in NSW, where it is presumed to be locally extinct from the Lachlan, Murrumbidgee and lower Murray River catchments. Although recent surveys have not identified the presence of Flathead Galaxias within the Murrumbidgee, it is still mapped as habitat that could be used by this species.

If the construction of new or upgraded access tracks involves instream works, the project is expected to have a moderate impact to the immediate and downstream area temporarily. Aside from the temporary instream works, long-term impacts to permanent watercourse that are likely to provide suitable spawning habitat. To mitigate these impacts mitigation measures from Chapter 6 would be implemented to protect Flathead Galaxias habitat.

Reduce the area of occupancy of an important population

This species has experienced a huge population decline, specifically in NSW, where it is presumed to be locally extinct from the Lachlan, Murrumbidgee and lower Murray River catchments, despite this, mapped key fish habitat and mapped indicative distribution of Flathead Galaxias exists within the project footprint (Threatened Species Scientific Committe, 2016). A conservative approach for this assessment was taken and assumed Flathead Galaxias could potentially utilize this mapped habitat.

A total of seven named watercourses are expected to be upgraded as a result of this project. Temporary moderate impacts as a result of construction may occur, however the project is considered unlikely to have long-term impacts and significantly reduce the area of the occupancy of any important population.

Fragment an existing important population into two or more populations

The project is not expected to result in permanent impacts that would result in fish passage issues therefore it is unlikely this project would result in the fragmentation of this species into two or more populations.

Adversely affect habitat critical to the survival of a species

Habitat critical to the survival of a species can be defined 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. (Department of the Environment Water Heritage and the Arts 2013).

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat (Department of Climate Change, Energy, the Environment and Water, 2024a). Habitat critical to the survival of the Flathead Galaxias includes the area of known populations and areas of similar habitat adjoining known populations that contains its habitat preference (i.e. slow-flowing watercourses, wetlands and lakes). The project is unlikely to directly impact aquatic habitats in the long-term therefore it is unlikely the project would affect habitat critical to the survival of this species.

Disrupt the breeding cycle of an important population

Flathead Galaxias spawn between August and September, when water temperatures rise above 10.5°C. Eggs are randomly spawned within the water column where they eventually settle onto the streambed, where the eggs would hatch after nine days when the water temperature is between 9–14°C.

Aside from new and upgraded access tracks (and associated crossings), the project would not impact instream aquatic features that would impact the breeding cycle of this species. If instream works is required for new and upgraded access tracks (and associated crossings), it is recommended that works be conducted outside of the spawning period during time of low flow. Mitigation measures would be implemented to avoid or minimise indirect impacts to retained habitat within the project footprint.

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

Although the project is expected to cross a number of watercourses containing key fish habitat for the Flathead Galaxias, this habitat is not likely to be directly impacted by the majority of the project. Upgraded access tracks may directly interact with aquatic habitats through vegetation removal, ruff-off from road surfacing, sedimentation and instream works, however, these impacts are expected to be temporary (with moderate impacts) and mitigation measures would be implemented.

The operational usage of the upgraded access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

Overall, the project is considered unlikely to result in the significant modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures would be implemented to avoid or minimise indirect and direct impacts to aquatic habitats.

Result in invasive species that are harmful to an endangered species becoming established in an endangered species' habitat

This species is adversely impacted by Common Carp (*Cyprinus carpio*), Gambusia (*Gambusia holbrooki*), Salmonids, and Redfin (*Perca fluviatilis)*. These species pose a threat to Flathead Galaxias, through predation, competition, disease transmission and other effects such as causing habitat degradation, although the exact impact is unknown. Mitigation measures would aim at controlling and preventing the introduction of exotic fish species within all watercourses in the project footprint.

Introduce disease that may cause the species to decline

Limited information surrounding disease impact is known of this species, however it is safe to assume typical fish diseases arising from viruses (specifically epizootic haematopoietic necrosis virus), bacteria, fungi infections have the potential to impact this species. To avoid transferring this virus from other watercourses, mitigation measures would be implemented as part of the project works, including wash down areas and hygiene protocols to avoid or minimise contamination and minimising the spread of disease and viruses.

Interfere substantially with the recovery of the species

Although Threatened Species Scientific Committee has not recommended that a recovery plan be required for this species, the *Conservation Advice Flathead Galaxias (Galaxias rostratus)* outlines the following conservation objectives for recovery of the Flathead Galaxias:

- implement Conservation and Management Actions
  - control alien species
  - implement a seeding program of native aquatic plants
  - explore the use of larger environmental flow events
  - implement management and engineering solutions to physical barriers
- implement monitoring programs
- outline information and research priorities.

The project is unlikely to interfere with any of the recovery actions that have been identified to meet the specific objectives outlined above.

A3.6 Conclusion

Flathead Galaxias may occur within the project footprint, especially in lower section near the Murray River. Favourable habitat within and around watercourses in the project footprint would generally be avoided, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks and operation of the project where transmission lines span riparian areas. Upgraded access tracks (and associated crossings) have the potential to directly impact aquatic habitats via sedimentation, run-off and instream works, albeit this would only be temporary with the implementation of mitigation measures outlined in section 6.2.

The operational usage of the access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

Given instream works would be temporary (access tracks) and the operational usage of the access tracks would be maintained and designed in accordance with the above policies, and mitigation measures would be implemented to avoid or minimise indirect impacts to habitat on adjacent watercourses, it is unlikely that the project would have significant impact on the population of these species.

A4 Murray Cod *(Maccullochella peelii)*

The Murray Cod is listed as Vulnerable under the EPBC Act.

A4.1 Description

Murray Cod inhabit all major catchments within the Murray-Darling Basin that contain warmer waters. Murray Cod prefer habitats that contain large rocks, woody debris and undercut banks with overhanging vegetation (Fishes of Australia, 2025). Murray Cod are a slow – maturing, long living fish, known to live 48 years, however, historical catches of this fish suggest they can live up to 114 years.

In the southern portion of the Murray-Darling Basin, Murray Cod spawn during the spring or early summer. This species is known to complete a spawning migration where they move 200 kilometres upstream to spawn in water temperatures are between around 19–20 °C. The males would establish the spawning site by cleaning rocks with their pectoral fins weeks prior to the female arriving at the spawning location. Once the females arrive, they would lay 10,000–110,000 eggs which would hatch within 5–13 day, during this time they are protected by the male fish. The male would continue to protect the larvae for a week following the hatching (Department of Climate Change, Energy, the Environment and Water, 2024).

A4.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

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

- *Conservation advice for Maccullochella peelii (Murray Cod))* (Department of Climate Change, Energy, the Environment and Water, 2024)
- *National Recovery Plan for the Murray Cod (Maccullochella peelii peelii)* (NSW Department of Primary Industries, 2006; National Murray Cod Recovery Team, 2010)
- *Survey guidelines for Australia's threatened fish* (Pogonoski, 2011).

A4.3 Specific impacts

The project is located within the known extent Murray Cod. No project specific surveys for this species have been conducted, therefore a conservative approach should be taken. It is expected that habitat within and around waterbodies within the project footprint would be avoided or minimised, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the project where the transmission line spans riparian areas. Upgraded access tracks (and associated watercourse crossings) and construction have the potential to directly impact aquatic habitats in the form of instream works, run-off of deleterious substances, and removal of vegetation, however if appropriate mitigation measures are implemented, limited impacts to aquatic habitats would be observed.

If works are to be conducted within 50 metres of top of bank of any river, lake or wetlands project activities are to be designed and implemented in accordance with the *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022a), *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b), *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) and *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). Additionally, the project expects that:

- permanent removal or degradation of aquatic habitat that would result in the loss of dispersal or spawning opportunities for an important population would not occur
- there would be no alteration of aquatic vegetation diversity or structure
- there would be no alteration to the hydrology, diversity and structure of watercourse within the project footprint
- there would be limited to no instream works that would result in the permanent degradation of fish habitat
- there would be no introduction of invasive fish
- there would be no introduction of deleterious substances (i.e. sedimentation, petrol, chemicals, household rubbish) into the watercourses
- there would be no net reduction in the number and/or diversity of water bodies available to an important population
- there would be no removal or alteration of available aquatic habitat corridors
- there would be no construction of physical barriers to resulting in fish passage issues.

A4.4 Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. 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
- at or near the limit of the species range.

This species has been divided into various populations within each state including nine in Victoria, seven in NSW, five in South Australian three in Queensland and one in the ACT. It has been determined that all populations of the Murray Cod are important for the long-term recovery, evolutionary potential, and survival of the species, therefore the population within the project footprint is considered to be important (Department of Climate Change, Energy, the Environment and Water, 2024). The population within the project footprint includes the Murray River main channel including minor tributaries and anabranches, downstream, of Yarrawonga population and the Edward River including most major tributaries population.

A4.5 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

Potential habitat for the species exists within the project footprint in the form of watercourses and the associated riparian habitat and instream that may be impacted by the project. If the construction of new and upgraded access tracks involve instream works, the project is expected to have a moderate impact to the immediate and downstream area temporarily. Aside from the temporary instream works, long-term impacts to permanent watercourse that are likely to provide suitable spawning habitat. To mitigate these impacts mitigation measures from section 6.2 would be implemented to protect Murray Cod habitat.

Reduce the area of occupancy of an important population

The project footprint contains mapped key fish habitat that has the potential to be utilised by Murray Cod. No project specific surveys for this species have been conducted, therefore a conservative approach should be taken, assuming Murray Cod inhabit these watercourses. The majority of aquatic habitats within the project footprint, would be avoided, with the maximum impact limited to the removal or trimming of tree canopy on watercourse banks to facilitate the construction and operation of the project where the transmission line spans riparian areas. During the construction of new and upgraded access tracks, temporary moderate impacts as a result of construction may occur, however the project is considered unlikely to have long-term impacts and significantly reduce the area of the occupancy of any important population.

Fragment an existing important population into two or more populations

This species is found throughout the Murray-Darling Basin and has a wide distribution, however, there are a number of sub-populations including seven in NSW. This project would overlap with the following populations:

- Murray River main channel including minor tributaries and anabranches, downstream, of Yarrawonga
- Edward River including most major tributaries.

Although the project would overlap with important populations, the project is unlikely to result in the fragmentation of this species into two or more populations as it would not result in the creation of fish passage barriers as crossings would be maintained or designed as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003)..

Adversely affect habitat critical to the survival of a species

Habitat critical to the survival of a species can be defined 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 (Department of the Environment Water Heritage and the Arts 2013).

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat (Department of Climate Change, Energy, the Environment and Water, 2024a). Habitat critical to the survival of the Murray Cod include flowing water with high water velocity that contains structural features such as rocks, woody debris and instream and riparian vegetation. As the project is not likely to be directly impacting aquatic habitats in the long-term it is unlikely the project would affect habitat critical to the survival of this species.

Disrupt the breeding cycle of an important population

Murray Cod spawn during the spring or early summer in the southern portion of the Murray-Darling Basin. This species is known to complete a spawning migration where they move 200 kilometres upstream to spawn in water temperatures are between around 19–20 °C. The males would establish the spawning site by cleaning rocks with their pectoral fins. Once the females arrive, they would lay 10,000–110,000 eggs which would hatch within five to 13 days, during this time they are protected by the male fish. The male would continue to protect the larvae for a week following the hatching.

Aside from access track crossings (new or upgraded), the project would not impact instream aquatic features that would impact the breeding cycle of this species. If instream works is required for new and upgraded access tracks (and associated crossings), it is recommended that works be conducted outside of the spawning period during time of low flow. Mitigation measures would be implemented to avoid or minimise indirect impacts to retained habitat within the project footprint.

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

Although the project is expected to cross a number of watercourses containing key fish habitat, this habitat is not likely to be directly impacted by the majority of the project. Upgraded access tracks may directly interact with aquatic habitats through vegetation removal, ruff-off from road surfacing, sedimentation and instream works, however, these impacts are expected to be temporary (with moderate impacts) and mitigation measures would be implemented.

The operational usage of the access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

Overall, the project is considered unlikely to result in the significant modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures would be implemented to avoid or minimise indirect and direct impacts to aquatic habitats.

Result in invasive species that are harmful to an endangered species becoming established in an endangered species' habitat

This species is adversely impacted by Common Carp (*Cyprinus carpio*) and Redfin (*Perca fluviatilis*). The Common Carp act as both direct competition for resources and contributes to the destruction of Murray Cod habitat by raising turbidity, destroying submergent macrophytes, reducing planktons and aquatic invertebrates, and proliferating algal blooms. Redfin are ravenous predators which consume the eggs and larva of Murray Cod. In addition, redfin are carriers of the Epizootic Haematopoietic Necrosis Virus which results in the high mortality of native fish. Mitigation measures would aim at controlling and preventing the introduction of exotic fish species within all watercourses in the project footprint.

Introduce disease that may cause the species to decline

This species is susceptible to Epizootic Haematopoietic Necrosis Virus which has been identified as the cause of population decline for this species. This virus results in necrosis of the renal haematopoietic tissue, liver spleen and pancreas and has a high mortality and transmission rate. Murray Cod are also susceptible to parasites (Asian fish tapeworm, anchor worms) protozoans (*Chilodonella* spp., *Icthyophthirius* spp., or *Trichodina* spp.) and fungus (*Aphanomyces invadans, Myxobacteria, Saprolegnia and Achlya, Epistylis, Goussia lomi*). Project activities may contribute to the spread of diseases through the utilization of equipment and PPE used at different project sites that may have come in contact with these diseases, parasites and fungus. To avoid transferring this virus from other watercourses, mitigation measures would be implemented as part of the project works, including wash down areas and hygiene protocols to avoid or minimise contamination and minimising the spread of disease and viruses.

Interfere substantially with the recovery of the species

The *National Recovery Plan for the Murray Cod (Maccullochella peelii peelii)* (2010) outlines the following specific objectives for recovery of the Murray Cod:

- determine the distribution, structure and dynamics of Murray Cod populations
- manage river flows to enhance recruitment to Murray Cod populations
- evaluate the risks of threats and benefits of recovery options on Murray Cod populations for each management unit
- determine the habitat requirements of Murray Cod life stages and populations
- manage the recreational fishery for Murray Cod in a sustainable manner while recognising the social, economic and recreational value of the fishery
- encourage community ownership for Murray Cod conservation
- manage Recovery Plan implementation.

The project is unlikely to interfere with any of the recovery actions that have been identified to meet the specific objectives outlined above.

A4.6 Conclusion

Murray Cod are likely to occur within the project footprint. Habitat within and around watercourses in the project footprint would generally be avoided, with the majority of the project impacts being limited to the removal or trimming of tree canopy on riverbanks and operation of the project where transmission lines span riparian areas. New or upgraded access tracks (and associated crossings) have the potential to directly impact aquatic habitats via sedimentation, run-off and instream works, albeit this would only be temporary with the implementation of mitigation measures outlined in section 6.2.

The operational use of the access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

Given instream works would be temporary (access tracks) and the operational use of the access tracks would be maintained and designed in accordance with the above policies, and mitigation measures would be implemented to avoid or minimise indirect impacts to habitat on adjacent watercourses, it is unlikely that the project would have significant impact on the population of these species.

Appendix B

Test of significance

Test of significance for Silver Perch, Murray Hardyhead, Murray Spiney Crayfish, Flathead Galaxias, Trout Cod, Macquarie Perch and the aquatic ecological community in the natural drainage system of the lower Murray River (as per Part 7A Division 12, Section 221ZV of the Fisheries Management Act 1994)

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.***

Watercourse crossings would be designed in accordance with *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022a), *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b), *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) and *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013). Overall, the extent of impact to waterbodies, water quality and hydrological processes is expected to be minimal 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.

Threats to each individual threatened aquatic species that was identified in the desktop assessment is listed below. It is not expected that the project would not exasperate or add to these threats.

Silver Perch

The project is not likely to have an adverse effect on the life cycle of the Silver Perch such that a viable local population of the species is likely to be placed at risk of extinction.

Silver Perch is threatened by:

- altered flow regime
- barriers to fish movement
- increased frequency and severity of droughts
- invasive species
  - competition with common carp
  - predation by redfin
  - disease (Epizootic Haematopoietic Necrosis Virus (EHNV))
- parasitic invertebrates
- recreational fishing
- collection for breeding.

The project would have a limited impact on these factors that threaten Silver Perch.

Murray Hardyhead

The project is not likely to have an adverse effect on the life cycle of the Murray Hardyhead such that a viable local population of the species is likely to be placed at risk of extinction.

The Murray Hardyhead is threatened due to:

- increasing salinity of preferred habitat resulting in connectivity issues
- river regulation and changes in flow regimes
- irrigation run-off
- high nutrient levels
- acid sulfate soils
- environmental contamination
- sedimentation
- barriers to fish movement
- predation, competition and habitat degradation as a result of invasive species.

The project would have a limited impact on these factors that threaten Murray Hardyhead.

Murray Spiney Crayfish

The project is not likely to have an adverse effect on the life cycle of the Murray Spiney Crayfish such that a viable local population of the species is likely to be placed at risk of extinction.

Murray Spiney Crayfish is threatened by:

- habitat modification
- sedimentation
- river regulation may result in reduced overall flows, alter water temperatures
- agricultural pesticides
- historic commercial and current illegal fishing activities
- low dissolved oxygen concentrations such as those experienced in blackwater events
- predation, competition and habitat degradation as a result of invasive species.

The project would have a limited impact on these factors that threaten Murray Spiney Crayfish.

Flathead Galaxias

The project is not likely to have an adverse effect on the life cycle of the Flathead Galaxias such that a viable local population of the species is likely to be placed at risk of extinction.

Flathead Galaxias is threatened by:

- river regulation and changes in flow regimes resulting in connectivity issues
- habitat degradation as a result of agricultural practices
- environmental contamination resulting in the decrease in water quality
- barriers to fish movement
- predation, competition and habitat degradation as a result of invasive species.

The project would have a limited impact on these factors that threaten Flathead Galaxias.

Trout Cod

The project is not likely to have an adverse effect on the life cycle of the Trout Cod such that a viable local population of the species is likely to be placed at risk of extinction.

Trout Cod is threatened by:

- removal of Large Woody Debris
- river regulation and changes in flow regimes resulting in connectivity issues
- barriers to fish movement
- loss to irrigation
- poor water quality
- sedimentation
- thermal pollution
- predation, competition and habitat degradation as a result of invasive species
- recreation fishing
- low genetic diversity and hybridisation
- disease (*Chilodonella* species, *Ichthyophthirius* species, *Myxosoma* species and *Trichodina* species).

The project would have a limited impact on these factors that threaten Trout Cod.

Macquarie Perch

The project is not likely to have an adverse effect on the life cycle of the Macquarie Perch such that a viable local population of the species is likely to be placed at risk of extinction.

- human activity-induced sedimentation increases
- competition and predation by invasive fish species including carp, gambusia, redfin perch and trout
- barriers to fish movement
- river regulation and changes in flow regimes resulting in connectivity issues

The project would have a limited impact on these factors that threaten Macquarie Perch.

Overall, the majority of the project would have a limited impact on these factors that threaten these species listed above. During the construction of the transmission line, the main impact to occur in an area of key fish habitat would be the removal or trimming of tree canopy on the creek banks to facilitate the construction and operation of the project where transmission lines span each riparian area. All trunk bases and understorey would be retained in-situ adjoining the watercourse banks. All potential indirect impacts associated with erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas.

The addition of new access track crossings and upgrading existing track crossings have the potential to result in sedimentation, release of contamination and potential instream works. Twenty new and upgraded access tracks cross key fish habitat within the indicative distribution of the Silver Perch, Flathead Galaxias Murray Hardyhead and Murray Spiney Crayfish potentially impacting habitat that may be utilised by this species. To avoid this, these works would require mitigation measures, that when implemented would decrease the impacts this works would have on the aquatic habitat. Work in the lower order watercourses may dry up and work may be able to occur, limiting the impact of construction to these species. All instream and riparian works are expected to be temporary and not result in long-term impacts.

If work were to occur during periods of flow and the appropriate mitigation measures outlined in section 6.2 with need to be strictly adhered to. , the most likely impacts during construction would be impacts to water quality and temporary removal of instream habitat features that would leave moderate impacts on the immediate aquatic habitat, however this would be temporary in nature.

The operational usage of the access tracks may result in fish passage issues and a change in flow regime, especially if the crossings are not maintained or designed correctly as per *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003). The project aims to design crossings in accordance with the above policies and would maintain the crossings throughout the access track's lifetime.

Overall, 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.

b ***in the case of an endangered population, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,***

The project footprint overlaps with three known populations of Silver Perch (part of the Murray (Torrumbarry – Wenworth) and Edward sub-population) and one known population of Murray Cod (Murray River main channel including minor tributaries and anabranches, downstream, of Yarrawonga population and the Edward River including most major tributaries). The population of both these species is widespread and are unlikely to be impacted by the project as the only instream works in Key Fish Habitat proposed is the construction of access tracks. These access tracks would be designed and constructed as per the *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013) and *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) to ensure crossing types erected can allow for fish passage. Post construction, the surrounding riparian area and instream habitat would be rehabilitated to ensure aquatic habitat is maintained and the access tracks would be maintained to ensure fish passage is maintained.

c ***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.***

The project footprint, particularly the areas surrounding the Murray River, Edwards River and Wakool River and all their associated tributaries, contains an identified endangered ecological community (EEC) named the aquatic ecological community in the natural drainage system of the lower Murray River. As the project footprint overlaps with mapped key fish habitat within this EEC, it is assumed the mapped key fish habitat contains the EEC.

Overall, the majority of the project would have a limited impact the EEC, as the majority of the project impacts would result from the construction of the transmission line. During the construction of transmission line infrastructure, the main impact to occur in an area of key fish habitat that would contain the EEC would be the removal or trimming of tree canopy on the creek banks to facilitate the construction and operation of the project where transmission lines span each riparian area. All trunk bases and understorey would be retained in-situ adjoining the watercourse banks. All potential indirect impacts associated with erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas.

The project would require the construction of new access track crossings and upgrading existing track crossings which has the potential to result in sedimentation, release of contamination and potential instream works. To avoid this, these works would require mitigation measures, that when implemented would decrease the impacts this works would have on the aquatic habitat. Instream works are anticipated to avoid spawning times (spring – autumn) and work would be completed during dry periods, if possible. All instream and riparian works are expected to be temporary and not result in long-term impacts.

If work were to occur during periods of flow, appropriate mitigation measures outlined in Chapter 6 would need to be strictly adhered to. The most likely impacts during construction would be impacts to water quality and temporary removal of instream habitat features that would leave moderate impacts on the immediate aquatic habitat, however this would be temporary in nature. Overall, 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 and result in an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

d ***In relation to the habitat of a threatened species, population 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 would 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 would be maintained through avoiding the construction of additional watercourse barriers within watercourses. The proposed development`s preference would be to utilise existing watercourse crossings (i.e., bridges, culverts) for construction and operation, to avoid the need to construct additional watercourse barriers, however, it is understood that new crossings are required. These new crossings would be designed in accordance with the *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022a), *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b), *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) and *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013), to ensure impacts on fish passage and habitat connectivity are minimised. New and upgraded access tracks (and associated crossings) may result in a direct impact to aquatic habitats in the form of sedimentation, chemical (bitumen) run-off and if required, instream works. To limit impacts the aquatic environment, mitigation measures would require implementation to decrease the impacts. Instream works are anticipated to avoid spawning times (spring – autumn) and work be completed during dry periods. All instream and riparian works are expected to be temporary and not result in long-term impacts. As these works are only expected to have a moderate impact to the immediate area of works temporarily, it is unlikely this would impact these species.

e ***Whether the proposed development or activity is likely to have an adverse effect on any critical habitat (either directly or indirectly.***

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat (Department of Climate Change, Energy, the Environment and Water, 2024a) for Silver Perch, Murray Hardyhead, Murray Spiney Crayfish, Flathead Galaxias, Trout Cod, Macquarie Perch within the project footprint.

f ***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 are listed in Table B.1.

Table B.1 Priorities action statements for each species

Species	Priorities action statement
Silver Perch Murray Hardyhead Macquarie Perch Murray Spiney Crayfish	— 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.
Flathead Galaxias	— 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 — habitat protection — pest eradication and control — research/monitoring — stocking/translocation — survey/mapping.
Silver Perch	— advice to consent and determining authorities — 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 — research/monitoring — survey/mapping.

Species	Priorities action statement
Trout Cod	— 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 — research/monitoring — stocking/translocation

The project does not interfere with any of the recovery actions for these species.

g ***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. KTPs specific to native fish and marine vegetation are listed under the FM Act (NSW). Of the eight listed KTPs under Schedule 6 of the FM Act (NSW), five are applicable to this assessment (Table B.2).

Table B.2 Key threatening processes relevant to the project (FM Act (NSW))

Key threatening process	Relevance to the project
Degradation of native riparian vegetation along NSW watercourses	Yes. The project may require temporary degradation of native riparian during the construction period. During the construction of transmission line infrastructure the impact is anticipated to be limited to the trimming of tree canopy's to facilitate the construction and operation of the transmission line spanning each riparian area. Trunk root balls would be removed, however understorey would be retained. Full removal of riparian vegetation within the access track would be required, however this impact would be contained to the footprint of the access track. 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.
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 which would 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 would prioritise utilisation of existing watercourse crossings for construction and operation, and in the event additional watercourse crossings are required by the project, they would be designed in accordance with the *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE, 2022a), *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2002b), *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull and Witheridge, 2003) and *Policy and guidelines for fish habitat conservation and management (Update 2013)* (DPI, 2013).
Removal of large woody debris from NSW rivers and streams	Yes. The project may require the removal of large woody debris to facilitate construction of watercourse crossings, if required. Preference would be to utilise existing watercourse crossings.

Conclusion

While there are several KTPs applicable to the threatened species subject to this assessment, and all of which are relevant to the project, it is anticipated that management and mitigation measures are sufficient to reduce or avoid impacts from the KTPs. Anticipated impacts (direct or indirect) from the project to the habitat of Silver Perch, Murray Hardyhead, Murray Spiney Crayfish, Flathead Galaxias, Trout Cod and Macquarie Perch are likely to only be temporary during the construction phase of the project and operational impacts would 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 especially if mitigation measures in section 6.2 are implemented.

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Appendix N

Partial impact assessment

Our ref: PS117658-NCL-ECO-LTR-001 RevA PECW

By email
Luke.Fania@transgrid.com.au

1 April 2025

Luke Fania
Environment and Sustainability Manager
Project EnergyConnect
Transgrid
Level 19, 83 Clarence Street,
Sydney NSW 2000

Dear Luke,

Update on Partial Impacts under the NSW Biodiversity Assessment Method for Project EnergyConnect West

1. Introduction to the project and approach

This letter has been prepared by WSP Australia Pty Ltd (WSP) on behalf of Transgrid for Project Energy Connect Western Section (PECW) (the project).

WSP prepared a Biodiversity Development Assessment Report (BDAR) for the project in accordance with NSW Biodiversity Assessment Method 2020 (BAM) and the project was subsequently approved.

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 (BCS)) a range of assessment approach key considerations were identified, with a particular focus on providing a project specific and evidence-based approach.

This letter presents the finding of the post construction verification survey and assessment of partial impacts for the project.

The project disturbance area assessed within the BDAR was identified based on realistic but predicted project component locations and construction areas, however at the time of approval the disturbance area was still conceptual and indicative. The project disturbance area has the same meaning as ‘development site’ or ‘subject land’ as defined in the BAM.

The actual area of disturbance for the project required the finalisation of design and construction methodology and was developed in consideration of post approval management requirements for avoidance and impact minimisation.

The project considered the disturbance area would have varying degrees of physical disturbance along the transmission line alignment to reflect construction and operational requirements, and these were applied to the biodiversity assessment in the BDAR. For the Final BDAR, disturbance area was divided into the following areas:

- **Disturbance area A** – refers to an area around transmission towers, for access tracks and between transmission towers in which it is assumed vegetation would be removed during construction and

subject to ongoing maintenance during operation (i.e. removal to ground level) (with the exception of temporary access tracks) for operational and safety requirements (including bushfire).

Disturbance area B – refers to an area between transmission towers in which partial vegetation removal would only be required to meet the vegetation clearance heights, which would not generally require disturbance at ground level. However, where trees within this area would or have the potential to exceed vegetation clearance heights, these trees would be removed and may result in temporary ground disturbance. Vegetation clearance heights are set by Transgrid for operational and safety requirements, including bushfire risk management. This zone is a subset to the indicative disturbance area.

- Disturbance area B4 – is a subset of disturbance area B where partial vegetation clearing is restricted to vegetation with growth height above 4 metres.
- Disturbance area B10 – is a subset of disturbance area B where partial vegetation clearing is restricted to vegetation with growth height above 10 metres.

The width of the disturbance areas A, B4 and B10 areas for transmission line components vary for the based on their vegetation clearing requirements and construction methodologies. Figure 1.1 identifies the allocation of each area for each line type.

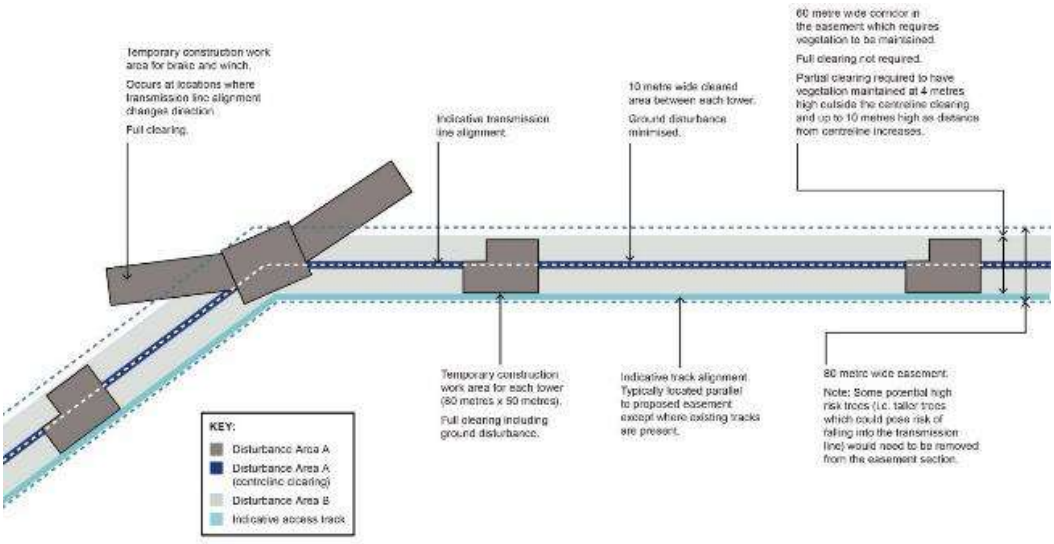

Figure 1-1 Indicative disturbance area definition for a typical twin 330 kV transmission line section

2. Partial impacts in the ETL

2.1 Overview

The Project has identified partial impacts that are applicable to two disturbance zones:

- Disturbance area B4 – is a subset of disturbance area B where partial vegetation clearing is restricted to vegetation with growth height above 4 metres.
- Disturbance area B10 – is a subset of disturbance area B where partial vegetation clearing is restricted to vegetation with growth height above 10 metres.

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 bespoke 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 4 and 10 metres) leaving the midstory and ground layers intact (Figure 2.1).

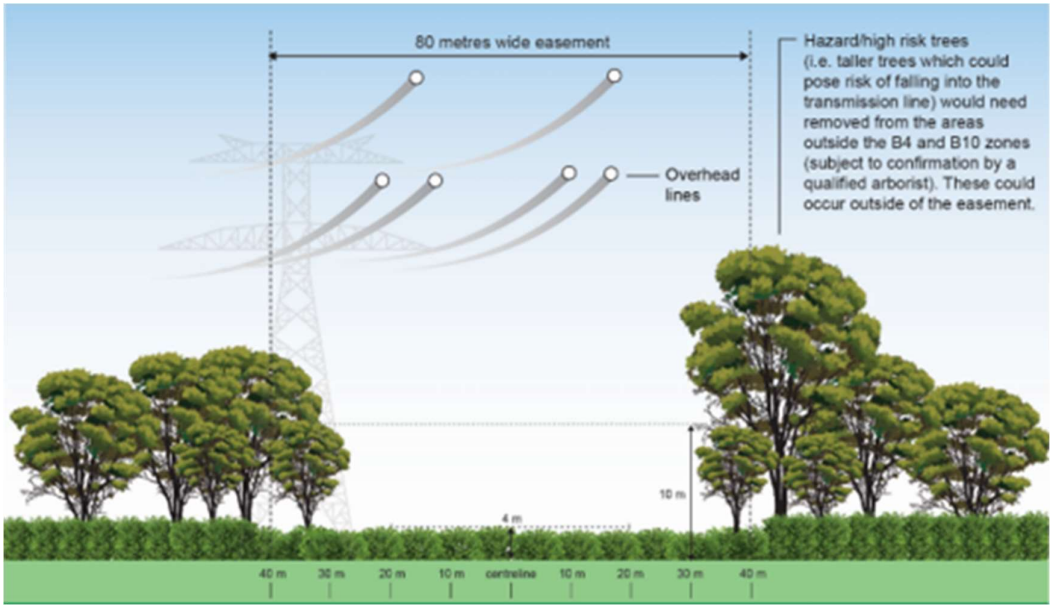

Figure 2-1 Conceptual layout of transmission line project

This partial clearing of the ETL easement forms part of the measures taken to minimise impacts to biodiversity values. Maintaining an understory layer aims to avoid total loss of species richness, encourage native species and limit colonisation opportunities of introduced species (see Clarke and White, 2008).

Key partial impacts to be considered

The construction and maintenance of vegetation will still require the need to trim, spray or otherwise suppress some forms of woody vegetation under powerlines. These impacts require quantification, with the key attributes likely to be affected and assessed under the BAM 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 BCS, the following impacts were specifically identified for potential removal and suppression of the tree and shrub growth forms, which also has the potential to expose all other lower 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 because 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 because 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 because 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 clearings develop 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 outcompeted by more dominant and faster growing 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, the Plant Community Types (PCTs) with existing woody shrub layers would likely see increases 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 Calculator

To facilitate these partial impact scenarios the BAM provides 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 Calculator (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 vegetation integrity score was calculated as zero (assuming total loss of native vegetation).
- For disturbance area B (partial clearing of the transmission line easement) future vegetation integrity scores were calculated through changes to mean average scores in attributes associated with composition condition, structure condition and function condition.

BAM-C key 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 vegetation integrity scores and specifically in that attributes can only be decreased from the recorded mean average.

In addition, attribute scores cannot be increased when using the clearing module. This limitation means the composition, structure and function attributes cannot adjusted to reflect increases in attributes observed or considered likely from existing transmission line easements (e.g. increased shrub cover due to tree removal).

These deficiencies in the BAM-C generate overlapping conservatism in the final measurement of change in VI for partial impacts.

A summary of some key limitations of BAM-C is provided below:

- Only measures reductions in attributes values and not gains (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 falls below the upper benchmark value.

Approved approach to partial impacts in RTS BDAR

The approved approach adopted for the project assessment of partial impact in accordance with BAM incorporated the following conservative, literature-based change in VI scores:

- 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 Semi-arid Woodlands (Grassy sub-formation), Forested Wetlands and Semi-arid Woodlands (Shrubby sub-formation) for the project resulted in VI reductions ranging for individual PCTs from -18.9 to -41.6 in VI scores.

3. Methodology for review of post-construction partial impacts

3.1 Overview

To assess the post-construction partial impact against the predicted effects, field verification of the partial impact area was sampled across the project study area within a selection of PCTs and IBRA Subregions. This field survey provides an evidence-based approach that builds on and refines the previous literature-based assumptions in assessing partial impact.

Due to the known influencing variables of surveyor bias and seasonality on BAM vegetation integrity values, direct analysis of predicted VI scores within the BDAR with current VI scores collected from of the partial impacted zones is uninformative.

To mitigate these influences, paired control plots were collected for each sampled partial impact site. In this way evaluation of changes in VI loss could be directly compared between the post-construction datasets and those predicted within the BDAR.

A total of 20 BAM plots across 10 separate sites and 4 PCTs were sampled, covering Semi-arid Shrublands – Grassy Formation and Semi-arid Shrublands Shrubby Formation.

In addition, a further 14 BAM plots across 7 sites were sampled from the two dominant formations within existing ETLs that have been historically managed by Transgrid for >20 Years.

A summary of sampled PCTs is provided in Table 3.1. The survey site locations are provided in Figure 3.1.

Table 3.1 PCTs subject to field survey

PCT Number	PCT	IBRA Subregion
Semi-Arid Woodland (Grassy)		
13	Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Robinvale Plain
15	Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	South Olary Plain
Semi-Arid Woodland (Shrubby)		
170	PCT 170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)	South Olary Plain
58	PCT 58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	South Olary Plain

Post-approval survey

Plot Reference
Roads
Electricity Transmission Lines
Energy Connect Alignmnet
Western

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC01

C:\Users\AUEB504167\WSP O365\EnergyConnect - General\4_WIP\41_Working\2025\25025_EB_PECw_PairedPlots\PECwPairedPlots\PECwPairedPlots.aprx

Source: NSWSS, ESRI, Transgrid, WSP

Plot Reference
Roads
Electricity Transmission Lines
Energy Connect Alignmnet
Western

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC02

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Source: NSWSS, ESRI, Transgrid, WSP

Plot Reference
Roads
Electricity Transmission Lines

Energy Connect Alignmnet

Western

PECw Disturbance Model

Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC03

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Source: NSWSS, ESRI, Transgrid, WSP

Post-approval survey

Plot Reference
BAM Quadrant
Roads

Energy Connect Alignmnet
Western

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC04

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Source: NSWSS, ESRI, Transgrid, WSP

Post-approval survey

Plot Reference
BAM Quadrant
Roads

Energy Connect Alignmnet
Western

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC05

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Source: NSWSS, ESRI, Transgrid, WSP

Post-approval survey

Plot Reference
BAM Quadrant
Roads
Energy Connect Alignmnet
Western

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC06

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Source: NSWSS, ESRI, Transgrid, WSP

0 0.06 0.11 KM

Post-approval survey

Plot Reference
BAM Quadrant
Energy Connect Alignmnet
Western

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC07

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Source: NSWSS, ESRI, Transgrid, WSP

Post-approval survey

Plot Reference
BAM Quadrant
Roads
Energy Connect Alignmnet
Western

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC09

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Source: NSWSS, ESRI, Transgrid, WSP

0 0.07 0.15 KM

Post-approval survey

Plot Reference
BAM Quadrant
Roads
Energy Connect Alignmnet
Western

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC10

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Source: NSWSS, ESRI, Transgrid, WSP

0 0.04 0.09 KM

Post-approval survey

Plot Reference
BAM Quadrant
Electricity Transmission Lines
Energy Connect Alignmnet
Victoria

PECw Disturbance Model
Disturbance A - Full impact
Disturbance B - Partial 10m
Disturbance B - Partial 4m

Field verified vegetation

Partial Impact Survey Locations
AC11

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Source: NSWSS, ESRI, Transgrid, WSP

3.2 Survey methodology

3.2.1 Survey site selection

To ensure the analysis and assessment of partial impacts is suitably conservative, with limited variability, the following rule set was developed and applied to all sample site locations:

- All sampled post-construction plots were collected from areas of impacted Disturbance area B within 24 months of construction clearing occurring
- For historical managed ETLs, samples were restricted to a minimum of 40 m wide management easement (typically of 330 kV or greater kV)
- All areas sampled were from remnant reference site PCTs in moderate-good condition
- 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 Survey dates and weather observations

Surveys of post-construction sites were undertaken on the 22-26 October 2024. Rainfall leading up to and during the survey period followed below average autumn and winter rainfall conditions. Total annual rainfall conditions in 2024 were similar to the historical Mean rainfall condition for the area. Table 3.2 compares the seasonal rainfall and total annual rainfall of the nearby Mildura weather station.

Mildura weather station (AWS 76031) is approximately 10 kilometre southeast of the most easterly section of the project study area. The mean annual rainfall recorded at this weather station is 285 millimetres.

Table 3.2 Rainfall averages 2023–2024

Period	Summer	Autumn	Winter	Spring	Total
Mildura Airport AWS 76031					
2023	32.7	42.1	123.6	90.4	288.8
2024	56.9	41.9	44.8	122.7 (40)1	266.3
Mean average	**67.5**	**63.5**	**72.1**	**82.8**	**285.9**

Weather conditions observed during the biodiversity field survey period are outlined in Table 3.3.

Table 3.3 Weather conditions observed during biodiversity field survey period

Survey Date	Temperature (°C)		Rainfall (millimetres)
	Minimum	Maximum	
22/10/24 *	15.2	36.3	0
23/10/24 *	14.0	25.8	1
24/10/24 *	9.2	22.6	0
25/10/24 *	6.7	22.6	0

Note: 40 mm of rain received prior to survey

3.2.3 Vegetation integrity plot – method

Vegetation integrity plots were completed in accordance with section 4.3.3 of the BAM. A schematic diagram illustrating the layout of each vegetation integrity plot is provided in Figure 3-2.

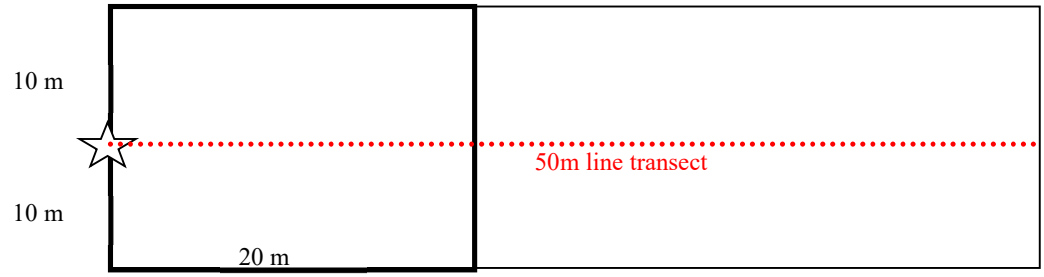


Figure 3-2 Vegetation integrity plot layout

The following site attributes were recorded at each vegetation integrity 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 vegetation integrity 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.

3.2.4 Vegetation integrity score calculations

As outlined in BAM Section 4.3.3, vegetation integrity 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 vegetation integrity 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 vegetation integrity score for each vegetation zone within the partial impact and adjoining remnant control.

The vegetation integrity loss was calculated as the difference between the vegetation integrity of the two condition states.

To further account for the influences of external variables on VI between the BDAR and post-construction data, the assessment also compared percentage loss changes in VI between those predicted within the BDAR and post-construction data with adjoining control sites (paired plots).

3.2.5 Survey and data limitations

Survey access for existing ETLs is challenging and subject to landholder restrictions. Therefore, the partial impact surveys were restricted to the current project and available relevant ETLs for previously constructed and managed Transgrid ETLs.

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 and low native diversity). Therefore, to provide a conservative assessment of the partial impacts, all sample sites were located within moderate to good condition vegetation.

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 influences.

4. Field survey results

4.1 Semi-Arid Woodland (Shrub/Grass)

The summary data of the paired BAM plots for the dominant PCTs (13 and 15) within the Semi-Arid Woodland (Grassy sub 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 ETLs managed for a partial impact is provided in Figures 4.4 and 4.5.

Photographs of indicative sample sites are provided in Photos 4.1 – 4.4.

A summary of the quantum of the actual change in average vegetation integrity values is provided in Figure 4.5.

Photograph 4.1 PCT 15 - Remnant Moderate to good condition

Photograph 4.2 PCT 15 - Post construction Disturbance area B (Q79)

Photograph 4.3 PCT 15 – Disturbance area B showing mulched tree stump and retained tree <10m height in distance

Photograph 4.4 PCT 15 – Disturbance area B showing area of machine tracks into remove canopy and retained shrub-layer in partial impact zone

Table 4-3 Summary average composition and structure data of sampled PCTs within the Semi-arid Woodlands (Grassy sub-formation) within the ETL and adjoining remnant areas

Semi-arid Woodlands (Grassy sub-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 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)																		
Average Remnant	14.0	1.0	9.7	2.0	1.3	0.0	0.0	3.0	1.0	44.7	18.3	25.9	0.3	0.2	0.0	0.0	0.6	0.2
Average Partial Impact	13.0	0.3	7.8	1.8	2.3	0.3	0.0	3.3	0.3	24.2	1.3	18.5	2.8	1.6	0.1	0.0	9.6	0.1
PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)																		
Average Remnant	21	1	11	2	7	0	0	3	0	68.7	15	51.7	0.2	1.8	0	0	0.3	0
Average Partial Impact	19	1	9	1	8	0	0	4	1	46.2	10	33.2	0.1	2.9	0	0	0.6	0.1

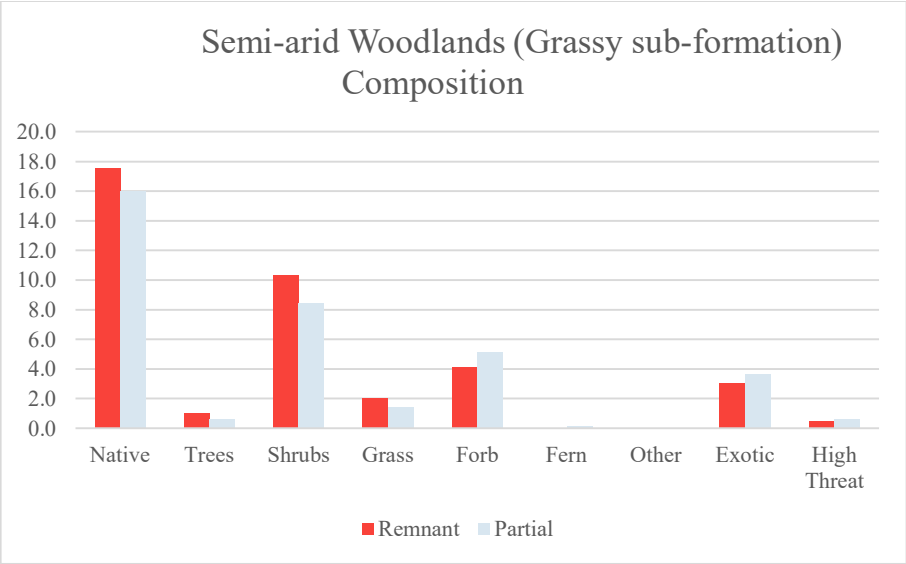


Figure 4-1 Semi-arid Woodlands (Grassy sub-formation) average composition data within the ETL, adjoining remnant vegetation

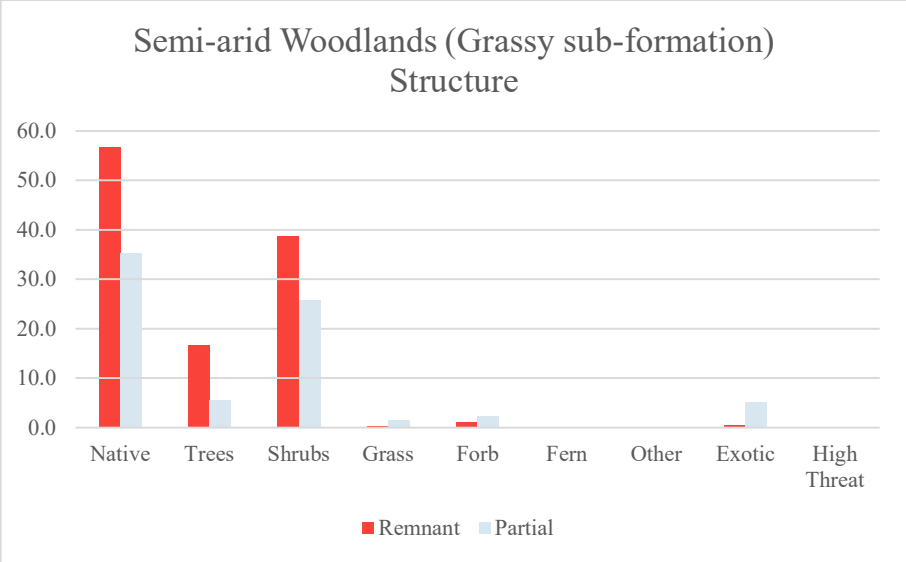


Figure 4-2 Semi-arid Woodlands (Grassy sub-formation) average structure data within the ETL, adjoining remnant vegetation

4.1.1 Key trends for Semi-arid Woodlands (Grassy sub-formation) attribute scores

The following general trends were observed for the Semi-arid Woodlands (Grassy sub-formation) between the post-construction disturbance area B and adjoining remnant vegetation areas:

- the greatest change was associated with loss in canopy cover / composition
- there was an inverse relationship observed within the partial impact areas of increased grass/forb values with the decrease in shrub and canopy cover for some PCTs
- only a marginal increase in weed cover and composition was observed (<5%)
- no significant change in composition or total native cover and
- the assumed 30% reduction in understory values was an overestimate of the partial impact.

4.1.2 Changes in vegetation integrity for Semi-arid Woodlands (Grassy sub-formation)

The summary vegetation integrity data of each of the PCTs within the Semi-arid Woodlands (Grassy sub-formation) following BAM-C calculation is provided below in Table 4.4.

A comparative analysis of observed differences in vegetation integrity values within the ETL, adjoining remnant vegetation and the Final Approved Response to Submissions Revised BDAR is provided in Figure 4.3.

Table 4-4 Summary vegetation integrity data of the Semi-arid Woodlands (Grassy sub-formation) within the ETL, adjoining remnant vegetation and corresponding predicted in the Final Approved BDAR.

Keith Vegetation Formation	Condition	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Change in VI %
Semi-arid Woodlands (Grassy sub-formation)	Average Remnant	69.0	24.1	52.0	42.6	
	Average Partial impact	63.2	20.0	43.7	38.1	
	Post Construction VI Loss				**4.6**	**10.7**
	BDAR Average partial impact VI				35.9	
	BDAR Average Predicted VI loss				**32.3**	**52.5**

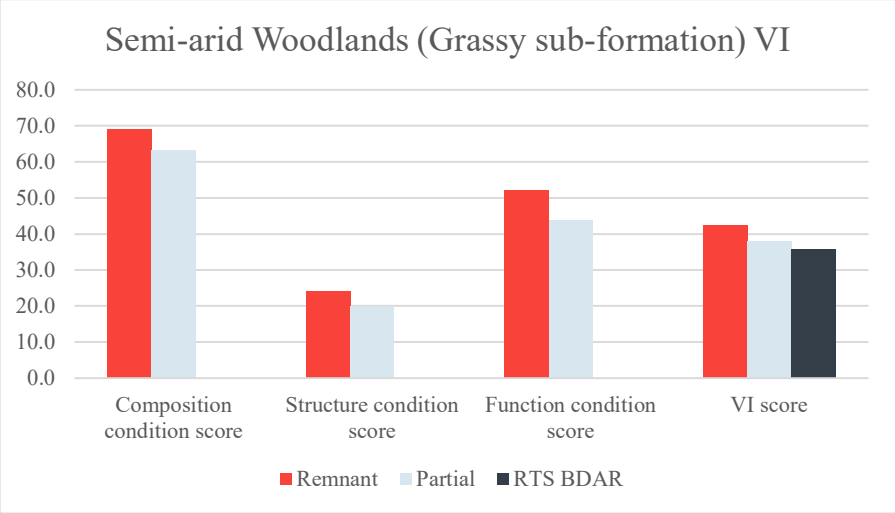


Figure 4-3 Average Semi-arid Woodlands (Grassy sub-formation) vegetation integrity attributes values

4.1.3 Key trends and findings for Semi-arid Woodlands (Grassy sub-formation) vegetation integrity (VI)

Following analysis of the data the following general trends were observed for the Semi-arid Woodlands (Grassy sub-formation) sample sites between the management of ETL and adjoining remnant vegetation areas:

- the average changes composition component to VI is minimal with <10% decrease and with some PCTs actually increasing in native species composition
- the greatest change to VI is attributed to the decreases in structure (17%) and function (15%) scores
- VI changes vary between PCTs with some increasing in VI following partial impact (PCT 13) and a range in change in VI being from -23.7 to -61 (Average of -28.65)
- the observed average VI change was 10.7 % decrease which is much less than the BDAR predicted change of 52%
- field data attribute scores and VI components indicate substantially less impact than previously assumed in the literature based on 30% reduction in values (black line) for all scores
- Predicted VI reductions within the partial impact zone of the Final Approved BDAR is larger (35.8) than that as sampled on the ground (38.1).

4.2 Semi-arid Woodlands (Shrubby sub-formation)

The summary data of the paired BAM plots for each of the PCTs within the Semi-arid Woodlands (Shrubby sub-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 4.4 and 4.5.

Photographs of indicative sample sites are provided in Photos 4.5 and 4.6.

A summary of the quantum of the actual change in average VI values is provided in Figure 4.6.

PCT 170 – Moderate to good condition (AC06R)

PCT 170 – Post construction in Disturbance area B showing retained canopy (<10m) and mulched canopy stumps (AC06P)

Table 4-5 Summary data of the sampled PCTs within the Semi-arid Woodlands (Shrubby sub-formation) within the ETL and adjoining remnant vegetation

Semi-arid Woodlands (Shrubby sub-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 170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)																		
Average Remnant	21.7	2.7	10.7	2.3	5.0	0.0	1.0	0.3	0.0	41.9	21.0	18.9	1.1	0.8	0.0	0.1	0.0	0.0
Average Partial Impact	20.3	2.0	9.3	2.3	5.7	0.0	1.0	0.3	0.0	39.8	15.8	19.2	3.1	1.7	0.0	0.1	0.0	0.0
PCT 58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion																		
Average Remnant	16.0	1.0	10.3	1.3	2.3	0.0	1.0	3.0	0.3	33.1	10.7	19.3	2.4	0.6	0.0	0.1	3.4	0.7
Average Partial Impact	15.0	0.7	10.0	1.3	2.7	0.0	0.3	3.3	0.3	23.1	2.0	17.4	2.8	0.9	0.0	0.0	4.4	1.7

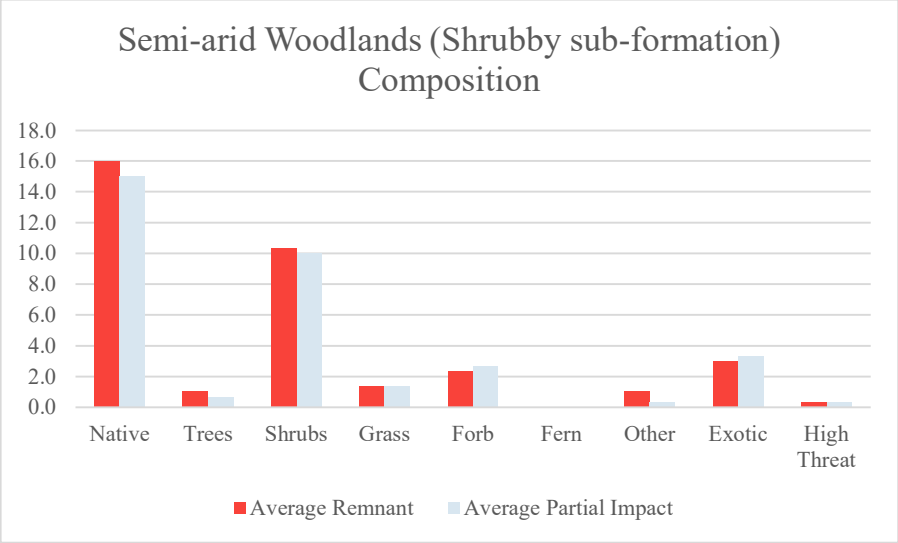


Figure 4-4 Semi-arid Woodlands (Shrubby sub-formation) average structure data within the ETL, adjoining remnant vegetation

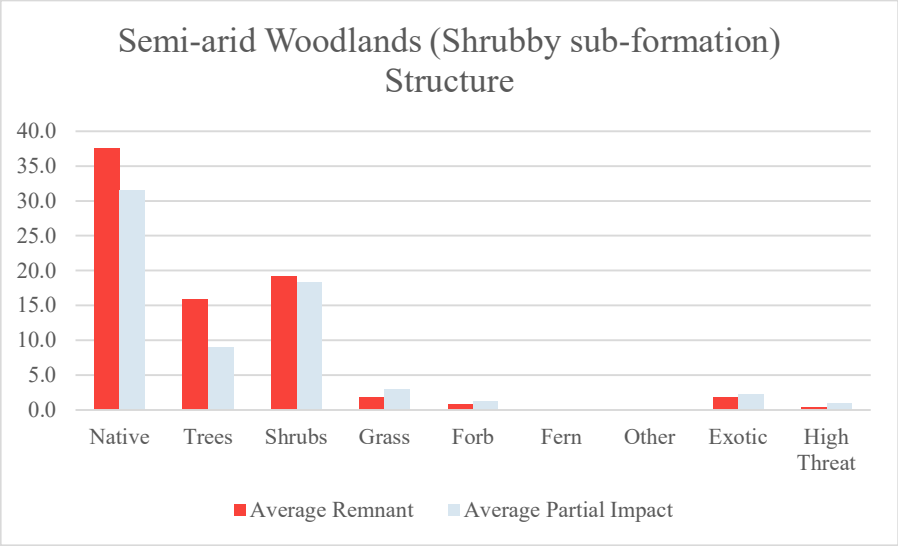


Figure 4-5 Semi-arid Woodlands (Shrubby sub-formation) average structure data within the ETL, adjoining remnant vegetation)

4.2.1 Key trends and findings for Semi-arid Woodlands (Shrubby sub-formation) attribute scores

Following analysis of the data the following general trends were observed for the Semi-arid Woodlands (Shrubby sub-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 composition and cover
- a relatively minor increase in exotic cover and composition, noting it remains below 5% cover.

4.2.2 Changes in vegetation integrity for Semi-arid Woodlands (Shrubby sub-formation)

The summary vegetation integrity data of each of the PCTs within the Semi-arid Woodlands (Shrubby sub-formation) following BAM-C calculation is provided below in Table 4.6. A comparative analysis of observed differences in vegetation integrity values within the ETL partial impact, adjoining remnant vegetation is provided in Figure 4.7.

Table 4-6 Summary vegetation integrity data of the sampled PCTs within the Semi-arid Woodlands (Shrubby sub-formation) within the ETL, adjoining remnant vegetation and corresponding predicted in the Final Approved BDAR.

Keith Vegetation Formation	Condition	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Change in %
	Average Remnant	86.1	58.2	44.5	60.1	
	Average partial impact	72.2	40.7	34.6	46.3	
	Post Construction VI Loss				**13.8**	**22.9**
	BDAR Average partial impact VI				25	
	BDAR Average Predicted VI loss				**38.4**	**60**

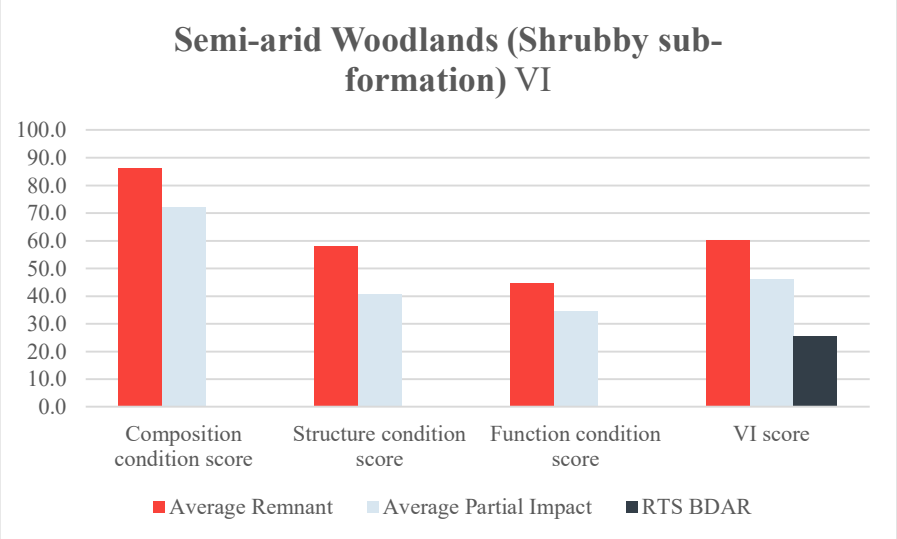


Figure 4-6 Semi-arid Woodlands (Shrubby sub-formation) average change in vegetation integrity values within the ETL partial, adjoining remnant vegetation and predicted BDAR.

4.2.3 Key trends and findings for Semi-arid Woodlands (Shrubby sub-formation) integrity (VI)

Following analysis of the data the following general trends were observed for the Semi-arid Woodlands (Shrubby sub-formation) sample sites between the management of ETL and adjoining remnant vegetation areas:

- the average changes composition component to VI is minimal being <16% decrease
- the greatest change to VI is attributed to the decreases in structure scores (30%)
- VI loss ranges for PCTs from -4 to 18.2.
- the total average VI loss was 13.8 with 22% decrease being much less than the BDAR predicted VI loss of 38 or 60%.
- field sampled partial impacts showed that vegetation condition was substantially better than previously assumed in the literature based 30% reduction values (black line) and predicted VI in the Final Approved BDAR.

4.3 Historically managed easements

In addition to the post-construction PECW easements, additional paired BAM plots for a range of PCTs within the Semi-arid Woodlands (Shrubby sub-formation) in historically managed easements (>20 years management) is also 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 4.7 and 4.8. A summary of the quantum of the actual change in average vegetation integrity values is provided in Figure 4.9.

Table 4-7 Summary data of the sampled PCTs within the historically managed Semi-arid Woodlands (Grassy sub-formation) within the ETL, adjoining remnant vegetation

Semi-arid Woodlands (Grassy sub-formation)	Structure data - Percentage Cover									Composition data - Species Richness								
	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed	Native	Trees	Shrubs	Grass	Forbs	Fern	Other	Exotic	High threat weed
PCT 26																		
Average Remnant	20.8	1	6	3.8	9.4	0.6	0	4.6	0.2	49.32	5.4	16.64	21.24	5.96	0.08	0	11.98	0.2
Average Partial Impact	18.2	0.6	4.8	5.2	7.4	0.2	0	6.6	0.4	54.58	1	8.52	41.58	3.44	0.04	0	23.96	0.24
PCT 15																		
Average Remnant	18.3	1.0	8.3	1.7	7.0	0.3	0.0	7.3	0.0	43.8	11.0	29.0	1.1	2.6	0.1	0.0	16.1	0.0
Average Partial Impact	16.3	0.0	6.7	2.0	7.3	0.3	0.0	9.3	0.7	38.2	0.0	29.2	4.7	4.2	0.1	0.0	23.9	0.1

Figure 4-7 Historically managed Semi-arid Woodlands (Grassy sub-formation) comparative change in vegetation integrity attributes values for partial impact (under transmission line) and remnant (adjacent to transmission line)

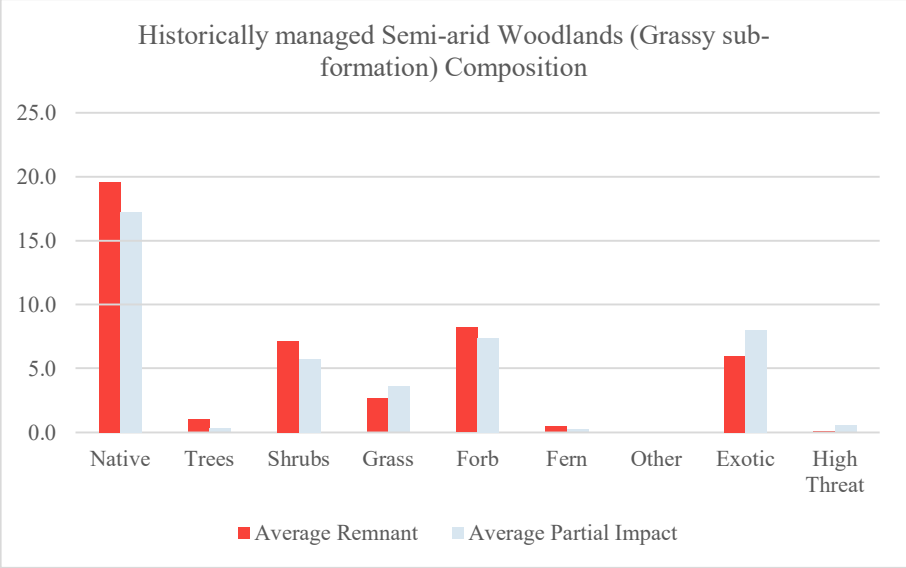
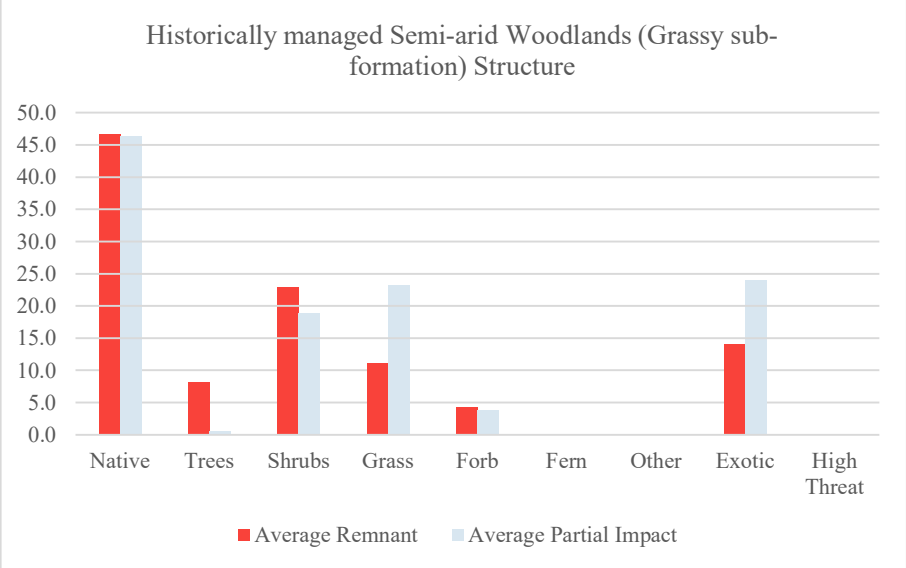


Figure 4-8 Historically managed Semi-arid Woodlands (Grassy sub-formation) comparative change in vegetation integrity attributes values for partial impact (under transmission line) and remnant (adjacent to transmission line)



4.3.1 Key trends and findings for historically managed Semi-arid Woodlands (Grassy sub-formation) attribute scores

The following general trends were observed for the historically managed Semi-arid Woodlands (Grassy sub-formation) sample sites within existing ETL:

- the greatest observed change was associated with loss in canopy cover / composition within the easement
- there was an inverse relationship between the decreased canopy and shrub cover resulting in a substantial increase in grass composition and cover within the easement.

- the exotic cover and composition increased substantially to ~25% cover within the easement

4.3.2 Changes in vegetation integrity for historically managed Semi-arid Woodlands (Grassy sub-formation)

The summary vegetation integrity within the historically managed Semi-arid Woodlands (Grassy sub-formation) following BAM-C calculation is provided below in Table 4.8. A comparative analysis of observed differences in vegetation integrity values within the ETL (Field), adjoining remnant vegetation and corresponding literature based 30% reduction is provided in Figure 4.7.

Table 4-8 Summary vegetation integrity data of the sampled PCTs within the historically managed Semi-arid Woodlands (Grassy sub-formation) within the ETL and adjoining remnant vegetation.

Keith Vegetation Formation	Condition	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Change in %
Semi-arid Woodlands (Shrubby sub-formation	Average Remnant	87.8	39.1	32.1	46.7	
	Average Partial Impact	85.0	21.5	19.2	23.1	
	VI Loss				23.6	50.6

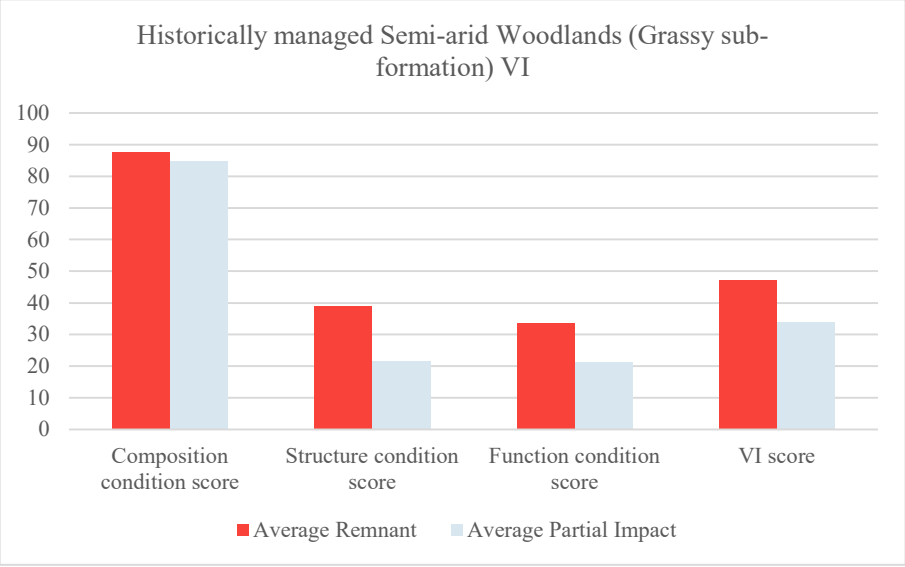


Figure 4-9 Average historically managed Semi-arid Woodlands (Grassy sub-formation) change in vegetation integrity values within ETL, adjoining remnant vegetation.

4.3.3 Key trends and findings for historically managed Semi-arid Woodlands (Grassy sub-formation) vegetation integrity (VI)

The following general trends were observed for the historically managed Semi-arid Woodlands (Grassy sub-formation) vegetation integrity changes:

- the average change in the composition component to VI is minimal, being a ~3% decrease
- the greatest change to VI is attributed to the decreases in structure and function scores (~40%) and
- the total average VI loss was 23.6 or a 50% decrease, which is greater than observed in the post-construction but still less than the Final Approved BDAR predicted.

5. Comparison with other historically managed ETLs

The growing evidence base from a wide range of historically managed existing ETLs further confirms the retained biodiversity values within ETLs and appropriate application of partial impact under the BAM. Data collected by WSP for the Central West Orana Transmission Connections and Hunter Transmission Project (HTP) has consistently recorded vegetation integrity values between 32 and 53.3 within ETL partial impact areas, above the VI estimated from 30% reduction approach adopted within the Final Approved BDAR. A summary of previously sampled and historically managed ETLs assessed within the BAM-C is also provided in Table 5.1 for five vegetation formations, being:

- Grassy Woodlands
- Dry Sclerophyll (Shrub/Grassy)
- Dry Sclerophyll (Grassy)
- Wet Sclerophyll Forest (Grassy) and
- Wet Sclerophyll Forest (Shrub/Grassy).

Table 5-1 Summary vegetation integrity data of the sampled PCTs within the historically managed ETLs (WSP

Keith Vegetation Formation	IBRA Subregion	Method	Composition condition score	Structure condition score	Function condition score	VI Score	VI Change %
Grassy woodlands	Inland Slopes	Remnant	82.1	78.8	67.2	74.9	
		Partial Impact	74.5	58.8	25.2	47.2	37.0
		30% reduction	63.7	50.8	18.3	37.7	49.6
Dry Sclerophyll Forests (Shrubby sub-formation)	Hunter	Remnant	80.9	48.3	68.7	60.8	
		Partial Impact	71.1	27.3	17.4	32.2	47.1
		30% reduction	64.8	22.2	18.7	29.2	52.0
Wet Sclerophyll Forest (Grass	Wyong	Remnant	69.6	54.0	64.9	62.3	
		Partial Impact	78.9	45.8	39.0	51.3	17.6

Keith Vegetation Formation	IBRA Subregion	Method	Composition condition score	Structure condition score	Function condition score	VI Score	VI Change %
Sub-formation)		30% reduction	48.7	37.8	45.4	43.6	30.0
Wet Sclerophyll Forest (Shrubby Sub-formation)	Wyong	Remnant	86.8	65.3	66.9	72.4	
		Average Partial Impact	75.2	39.1	52.2	53.5	18.9
		30% reduction	60.8	45.7	46.8	50.7	21.7
Dry Sclerophyll Forests (Shrub/grass sub-formation)	Hunter	Remnant	81.8	55.7	55.5	63.2	
		Average Partial Impact	61.4	50.7	17.9	38.2	25.0
		30% reduction	57.3	39.0	38.9	44.2	19.0

6. Comparing predicted partial impact offset liability with post-construction data

6.1 Review of predicted reduction in attribute values

The Final Approved BDAR adopted a conservative literature-based assumption for the reduction in attribute values and changes in VI. Following the detailed post-construction field investigations the adopted changes for the Final Approved BDAR were found to generally overestimate the partial impacts for a range of attribute values. A summary of the observed % reduction is provided below in Table 7.1 and Figures 7.1 and 7.2

The key findings identified include:

- The forb, grass and exotic attributes composition and structure generally increased for all PCTs and formations by >10%.
- Decreases in shrub composition and structure were significantly less than estimated in the Final Approved BDAR by 10-20%.
- A tree component is retained in both structure and composition scores.
- Given the extremely low benchmark values and scores for the Fern, Other and Hight threat Exotic attributes, an assessment % change is uninformative

Table 6.1 Observed average percentage adjustment to BAMC attribute scores for partial impacts within the ETL by formation

Formation	Composition (% reduction)									Structure (% reduction)								
	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	High Threat	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	High Threat
Semi-arid Woodlands (Grassy sub-formation)	10.0	53.8	19.5	1.4	-16.6	NI	NI	-28.1	-6.3	20.2	77.0	28.1	-279.4	-238.8	NI	NI	-460.8	12.5
Semi-arid Woodlands (Shrubby sub-formation)	6.2	29.2	7.9	0.0	-13.8	NI	NI	-5.6	NI	17.6	53.1	4.1	-100.6	-79.4	NI	NI	-14.7	NI
BDAR	NA	100.0	30.0	30.0	30.0	30.0	30.0	NA	NA	NA	100.0	30.0	30.0	30.0	30.0	30.0	NA	NA

Notes NA= Not appliable, NI = change in attribute data is insufficient and Not Informative

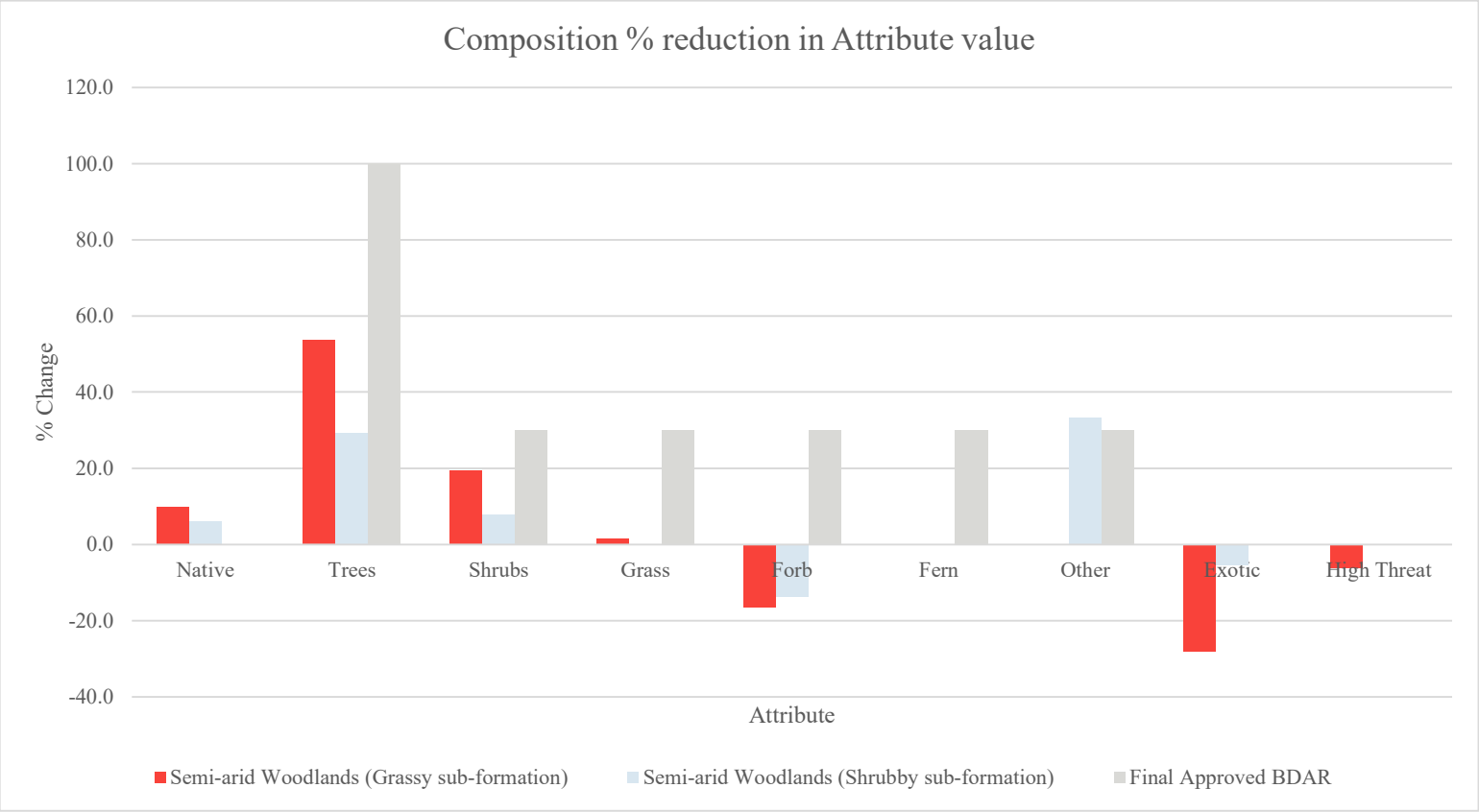


Figure 6-1 Observed percentage change in attribute composition in post construction partial impact area and predicted Final Approved (RTS) BDAR

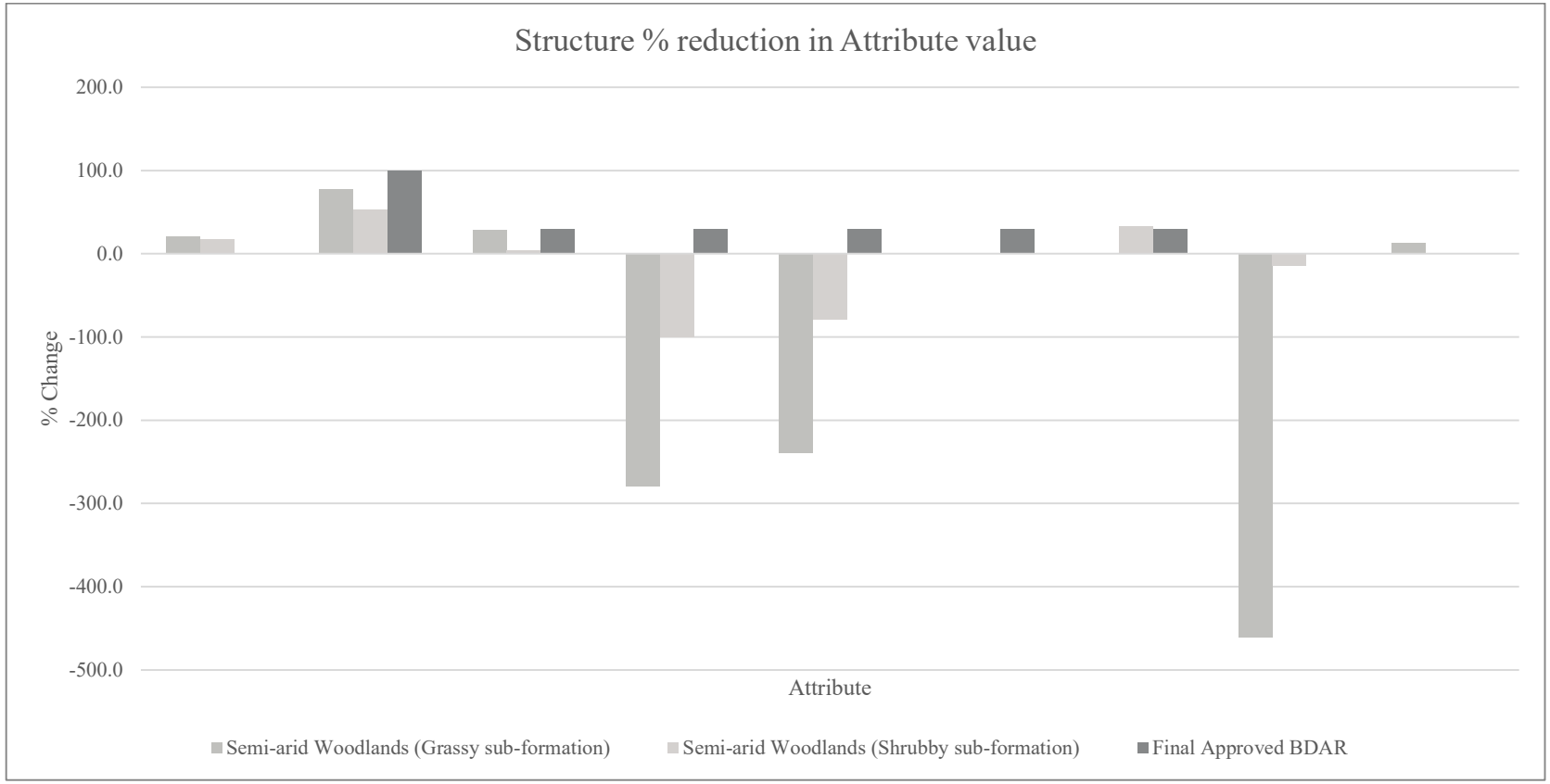


Figure 6-2 Observed percentage change in attribute structure in post construction partial impact area and predicted Final Approved (RTS) BDAR

6.2 Recommended adoption of changes in attributes following post-construction surveys

Based on the results of post construction surveys it is recommended the literature-based assumptions and changes in VI for both Semi-arid Woodlands (Grassy sub-formation) and Semi-arid Woodlands (Shrubby sub-formation) are revised to reflect the field verified evidence base.

A summary of the adopted literature-based reduction in attribute values in the Final Approved BDAR compared to the recommended changes informed by the post construction surveys of Disturbance area B are presented below in Table 7.2.

Table 6.2 Proposed percentage reduction to BAMC vegetation attribute scores for partial impacts within the ETL by formation.

Formation	Composition (% reduction)				Structure (% reduction)				Function (% reduction)	
	Canopy	Shrub	Grass	Forb	Canopy	Shrub	Grass	Forb	Canopy	Fallen Timber and Leaf litter
Semi-arid Woodlands (Grassy sub-formation)										
Final Approved BDAR	100	30	30	30	100	30	30	30	Complete loss	25
Post-construction partial impact	50	20	0	0	80	30	0	0	Complete loss	30
Semi-arid Woodlands (Shrubby sub-formation)										
Final Approved BDAR	100	30	30	30	100	30	30	30	Complete loss	25
Post-construction	30	10	0	0	50	5	0	0	Complete loss	30

6.3 Review of credit liability implication based on post-construction surveys

The field survey of post-construction disturbance areas B identified better condition VI scores than assumed in the Final Approved BDAR.

These differences were ~6% higher than the Final Approved BDAR for Semi-arid Woodlands (Grassy sub-formation) and ~50% higher in the Semi-arid Woodlands (Shrubby sub-formation).

While the project has delivered the projects Biodiversity Offset Strategy in accordance with the Final Approved BDAR liability, the findings following post-construction indicate the true project construction impact would result in a significantly reduced credit liability in accordance with BAM.

An indicative reduction in the project's ecosystem credits requirements with consideration of the observed post-construction partial impacts is outlined in Table 6.3.

Table 6.3 Indicative ecosystem credit liability within the partial impact Disturbance area B following observed changes in post-construction VI with estimated VI impacts in BDAR

Native Vegetation Formation	Final Approved BDAR Ecosystem credit liability in Disturbance area B	Post-construction credit liability in Disturbance area B[1]	Potential credit reduction
Semi-arid Woodlands (Grassy sub-formation)	885	832	**53**
Semi-arid Woodlands (Shrubby sub	2027	1013	**1014**

Note: Credit liability in post-construction Disturbance Area B estimated from the extrapolated percentage improvement in VI Scores as an indicative reduction in credit requirements.

7. Conclusion

Transgrid have undertaken an evidence-based approach to assessing post-construction partial impacts associated with the project.

This approach builds on and compares the results of field-based sampling with previously approved literature-based assumptions used for assessment of partial impacts within the Final Approved BDAR.

The key requirement for the assessment of the post-construction partial impacts was to evaluate the construction impacts of the projects with those predicated impacts within the Final Approved BDAR.

Specifically, this assessment addressed (through collection of paired BAM plots) changes in VI and individual attribute scores across the dominant formations identified with a partial impact.

The post construction VI scores for Semi-arid Woodlands (Grassy sub-formation) and Semi-arid Woodlands (Shrubby sub-formation) were 38.1 and 46.3 respectively and both of these VIs were above those predicted within the Final Approved BDAR.

With further consideration of the control sites for variables in seasonality and survey bias, the post-construction surveys observed significantly less of a percentage change to VI than assessed in the Final Approved BDAR, with <10% change in VI for Semi-arid Woodlands (Grassy sub-formation) and ~25% for Semi-arid Woodlands (Shrubby sub-formation).

Indicative credit liabilities associated within the post construction areas of Disturbance area B are considered likely to be significantly less than those identified within the Final Approved BDAR and delivered in accordance with the projects Biodiversity Offset Strategy.

This assessment has confirmed the Final Approved BDAR estimate of partial impacts was reasonably conservative and that it was likely to have overestimated the extent to partial impact as it relates to VI loss and the BAM-C. The key trends observed throughout the post construction areas of Disturbance Areas B, were;

- while significantly reduced, some canopy composition and structure values are retained within the easement
- the composition and structure for key attributes of grass and forbs was consistently observed to increase in value across a range of PCTs and formations
- exotic composition and structure increased following construction but not to the detriment of native understorey values
- the observed trends are generally supported by the broader scientific literature in areas of disturbance following removal or reduction in canopy and shrub layers.

Yours sincerely

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National Executive - Ecology

Attachment A
Data sheets for Partial Impact

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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.

AC01P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT15			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			19	16	1	9	2	4	0	0	3	1
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			33.2	32.5	5	26.8	0.3	0.4	0	0	0.7	0.2
Schismus barbatus	0.2	30	EX								0.2	
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Atriplex stipitata subsp. stipitata	0.1	5	SG			0.1						
Austrostipa nitida	0.2	10	GG				0.2					
*Carrichtera annua**	0.2	10	HT									0.2
Dissocarpus paradoxus	0.1	5	SG			0.1						
Enchylaena tomentosa	10	40	SG			10						
Eucalyptus largiflorens	5	1	TG		5							
Maireana brevifolia	0.2	5	SG			0.2						
Maireana pentatropis	0.1	10	SG			0.1						
Maireana pyramidata	15	40	SG			15						
*Medicago laciniata**	0.3	30	EX								0.3	
Sclerolaena diacantha	0.2	10	SG			0.2						
Sclerolaena muricata	0.1	5	SG			0.1						
Sclerolaena obliquicuspis	1	10	SG			1						
Sida corrugata	0.1	5	FG					0.1				
solanum spp.	0.1	5	FG					0.1				
Vittadinia cervicularis var. cervicularis	0.1	5	FG					0.1				
Vittadinia spp.	0.1	5	FG					0.1				

Easting	596218
Northing	6248916
Orientation	140
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	No
10-19	No
5-9	No
<5	No
Hollows	1
Length logs (m)	15
BAM Attributes 1x1 plot (%)	
Litter (%)	10

AC01R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT15			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			16	13	1	8	2	2	0	0	3	1
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			47.4	46.7	20	26.2	0.3	0.2	0	0	0.7	0.2
Schismus barbatus	0.2	30	EX								0.2	
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Atriplex stipitata subsp. stipitata	0.2	10	SG			0.2						
Austrostipa nitida	0.2	20	GG				0.2					
*Carrichtera annua**	0.2	5	HT									0.2
Chenopodium desertorum	0.3	10	SG			0.3						
Dissocarpus paradoxus	0.2	10	SG			0.2						
Einadia hastata	0.1	10	FG					0.1				
Enchylaena tomentosa	5	30	SG			5						
Eucalyptus largiflorens	20	9	TG		20							
Maireana pyramidata	20	60	SG			20						
*Medicago laciniata**	0.3	50	EX								0.3	
Sclerolaena diacantha	0.2	30	SG			0.2						
Sclerolaena muricata	0.1	5	SG			0.1						
Sclerolaena obliquicuspis	0.2	5	SG			0.2						
Swainsona spp.	0.1	5	FG					0.1				

Easting	596699
Northing	6248882
Orientation	130
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	3
20-29	4
10-19	1
5-9	No
<5	No
Hollows	4
Length logs (m)	26
BAM Attributes 1x1 plot (%)	
Litter (%)	10.8

AC02P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT15			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			12	10	0	9	1	0	0	0	2	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			25.2	20.1	0	19.9	0.2	0	0	0	5.1	0
Atriplex semibaccata	0.2	10	SG			0.2						
Austrostipa nitida	0.2	15	GG				0.2					
Chenopodium desertorum subsp. desertorum	0.1	5	SG			0.1						
Dissocarpus paradoxus	0.1	5	SG			0.1						
Enchylaena tomentosa	1	10	SG			1						
Maireana pyramidata	18	80	SG			18						
Maireana spp.	0.1	5	SG			0.1						
*Medicago laciniata**	0.1	10	EX								0.1	
Olearia pimeleoides	0.1	2	SG			0.1						
Schismus barbatus	5	100	EX								5	
Sclerolaena diacantha	0.2	5	SG			0.2						
Sclerolaena tricuspis	0.1	5	SG			0.1						

Easting	595928
Northing	6249840
Orientation	130
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	3
20-29	
10-19	
5-9	
<5	No
Hollows	4
Length logs (m)	19
BAM Attributes 1x1 plot (%)	
Litter (%)	32.8

AC02R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT15			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			15	13	1	9	2	1	0	0	2	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			52.1	**51.7**	15	36.2	0.4	0.1	0	0	**0.4**	0
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Atriplex semibaccata	0.2	20	SG			0.2						
Austrostipa nitida	0.3	30	GG				0.3					
Dissocarpus paradoxus	0.1	5	SG			0.1						
Enchylaena tomentosa	0.3	30	SG			0.3						
Eucalyptus largiflorens	15	12	TG		15							
Maireana pyramidata	35	200	SG			35						
Maireana spp.	0.1	5	SG			0.1						
*Medicago laciniata**	0.2	50	EX								0.2	
Schismus barbatus	0.2	30	EX								0.2	
Sclerolaena diacantha	0.2	5	SG			0.2						
Sclerolaena divaricata	0.1	5	SG			0.1						
Sclerolaena obliquicuspis	0.1	5	SG			0.1						
Sclerolaena tricuspis	0.1	5	SG			0.1						
Vittadinia spp.	0.1	5	FG					0.1				

Easting	595896
Northing	6249826
Orientation	140
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	2
30-49	3
20-29	
10-19	
5-9	
<5	No
Hollows	8
Length logs (m)	28
BAM Attributes 1x1 plot (%)	
Litter (%)	14

AC03P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT15			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			15	13	0	10	2	1	0	0	2	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			18.7	**17.6**	0	17.1	0.4	0.1	0	0	**1.1**	0
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Atriplex semibaccata	0.1	5	SG			0.1						
Austrostipa nitida	0.3	30	GG				0.3					
Brachyscome spp.	0.1	5	FG					0.1				
Chenopodium desertorum	0.1	5	SG			0.1						
Dissocarpus paradoxus	0.1	5	SG			0.1						
Enchylaena tomentosa	1	15	SG			1						
Maireana pentatropis	0.1	5	SG			0.1						
Maireana pyramidata	15	60	SG			15						
*Medicago laciniata**	1	60	EX								1	
Rhagodia spinescens	0.1	1	SG			0.1						
Schismus barbatus	0.1	10	EX								0.1	
Sclerolaena diacantha	0.3	15	SG			0.3						
Sclerolaena divaricata	0.1	5	SG			0.1						
Sclerolaena obliquicuspis	0.2	10	SG			0.2						

Easting	594824
Northing	6251125
Orientation	130
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	1
30-49	2
20-29	1
10-19	No
5-9	No
<5	No
Hollows	4
Length logs (m)	24
BAM Attributes 1x1 plot (%)	
Litter (%)	42

AC03R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT15			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			20	16	1	12	2	1	0	0	4	2
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			36.3	**35.7**	20	15.2	0.3	0.2	0	0	**0.6**	0.3
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Atriplex semibaccata	0.1	5	SG			0.1						
Atriplex stipitata subsp. stipitata	0.2	10	SG			0.2						
Austrostipa nitida	0.2	10	GG				0.2					
*Carrichtera annua**	0.2	10	HT									0.2
Dissocarpus paradoxus	0.1	5	SG			0.1						
Enchylaena tomentosa	3	30	SG			3						
Eremophila sturtii	0.2	5	SG			0.2						
Eucalyptus largiflorens	20	20	TG		20							
Maireana pentatropis	0.1	5	SG			0.1						
Maireana pyramidata	10	40	SG			10						
Maireana spp.	0.1	5	SG			0.1						
*Medicago laciniata**	0.2	15	EX								0.2	
Rhagodia spinescens	1	3	SG			1						
Roepera eremaea	0.2	5	FG					0.2				
Sclerolaena diacantha	0.2	10	SG			0.2						
Sclerolaena divaricata	0.1	5	SG			0.1						
Sclerolaena obliquicuspis	0.1	5	SG			0.1						
Sonchus oleraceus	0.1	5	EX								0.1	
*Carrichtera annua**	0.1	5	HT									0.1

Easting	594783
Northing	6251139
Orientation	300
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	3
30-49	1
20-29	1
10-19	1
5-9	
<5	No
Hollows	6
Length logs (m)	25
BAM Attributes 1x1 plot (%)	
Litter (%)	50

AC04P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT58			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			20	17	0	13	1	3	0	0	3	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			24.5	17.3	0	12	5	0.3	0	0	7.2	0
Atriplex stipitata subsp. stipitata	0.1	5	SG			0.1						
Austrostipa nitida	5	150	GG				5					
Dissocarpus paradoxus	0.1	10	SG			0.1						
Enchylaena tomentosa	0.2	5	SG			0.2						
Eremophila sturtii	0.1	5	SG			0.1						
Lepidium leptopetalum	0.3	40	SG			0.3						
Maireana georgei	0.3	10	SG			0.3						
Maireana pentatropis	0.2	20	SG			0.2						
Maireana sedifolia	0.2	2	SG			0.2						
*Medicago laciniata**	5	100	EX								5	
oxalis spp.	0.1	5	FG					0.1				
Schismus barbatus	2	50	EX								2	
Sclerolaena diacantha	0.1	5	SG			0.1						
Sclerolaena obliquicuspis	10	100	SG			10						
Sclerolaena spp.	0.1	5	SG			0.1						
Senna artemisioides subsp. x coriacea	0.1	1	SG			0.1						
Senna artemisioides subsp. x petiolaris	0.2	2	SG			0.2						
*Sisymbrium erysimoides**	0.2	10	EX								0.2	
Teucrium racemosum	0.1	5	FG					0.1				
Vittadinia spp.	0.1	5	FG					0.1				

Easting	500419
Northing	625690
Orientation	90
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
10-19	No
5-9	No
<5	No
Hollows	0
Length logs (m)	12
BAM Attributes 1x1 plot (%)	
Litter (%)	10

AC04R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT58			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			22	20	1	12	1	4	0	2	2	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			31.3	**28.8**	7	18.2	2	1.4	0	0.2	**2.5**	0
Acacia colletioides	1	2	SG			1						
Atriplex stipitata subsp. stipitata	0.1	5	SG			0.1						
Austrostipa nitida	2	30	GG				2					
Cassytha melantha	0.1	1	OG							0.1		
Casuarina pauper	7	1	TG		7							
Dissocarpus paradoxus	0.1	5	SG			0.1						
Enchylaena tomentosa	5	35	SG			5						
Eremophila sturtii	0.2	2	SG			0.2						
Lemooria burkittii	1	50	FG					1				
Lepidium leptopetalum	0.3	40	SG			0.3						
Maireana georgei	5	25	SG			5						
Maireana pentatropis	1	30	SG			1						
Marsdenia spp.	0.1	5	OG							0.1		
*Medicago laciniata**	2	50	EX								2	
Plantago spp.	0.1	5	FG					0.1				
Roepera eremaea	0.1	10	FG					0.1				
Schismus barbatus	0.5	50	EX								0.5	
Sclerolaena diacantha	0.3	30	SG			0.3						
Sclerolaena obliquicuspis	5	50	SG			5						
Senna artemisioides subsp. x coriacea	0.1	1	SG			0.1						
Senna artemisioides subsp. x petiolaris	0.1	5	SG			0.1						
Teucrium racemosum	0.2	20	FG					0.2				

Easting	500362
Northing	6250762
Orientation	130
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
10-19	1
5-9	No
<5	No
Hollows	1
Length logs (m)	37
BAM Attributes 1x1 plot (%)	
Litter (%)	40

AC05P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 58			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 24/10/2024			22	18	1	10	2	4	0	1	4	0
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			30.6	29.8	1	23.3	3.1	2.3	0	0.1	0.8	0
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Austrostipa nitida	3	80	GG				3					
Casuarina pauper	1	1	TG		1							
Chenopodium desertorum subsp. des	0.2	20	SG			0.2						
Dissocarpus paradoxus	2	30	SG			2						
Enchylaena tomentosa	0.5	10	SG			0.5						
Lemooria burkittii	2	100	FG					2				
Lepidium leptopetalum	0.2	50	SG			0.2						
Plantago cunninghamii	0.1	5	FG					0.1				
Maireana georgei	5	20	SG			5						
Maireana pentatropis	10	40	SG			10						
Maireana sclerolaenoides	0.2	25	SG			0.2						
Marsdenia spp.	0.1	5	OG							0.1		
*Medicago laciniata**	0.3	30	EX								0.3	
Roepera apiculata	0.1	5	FG					0.1				
Schismus barbatus	0.3	50	EX								0.3	
Sclerolaena diacantha	0.1	10	SG			0.1						
Sclerolaena obliquicuspis	5	30	SG			5						
Senna artemisioides subsp. x coriace	0.1	5	SG			0.1						
*Sisymbrium erysimoides**	0.1	5	EX								0.1	
Vittadinia cervicularis var. cervicula	0.1	5	FG					0.1				
Asphodelus fistulosus	0.1	5	EX								0.1	

Easting	500823
Northing	6250636
Orientation	130
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	No
Hollows	0
Length logs (m)	13
BAM Attributes 1x1 plot (%)	
Litter (%)	52

AC05R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 58			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 24/10/2024			23	20	1	14	2	2	0	1	3	0
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			48.4	48.1	15	27.7	5.1	0.2	0	0.1	0.3	0
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Austrostipa nitida	5	50	GG				5					
Casuarina pauper	15	7	TG		15							
Chenopodium desertorum subsp. desertorum	0.2	10	SG			0.2						
Dissocarpus paradoxus	3	30	SG			3						
Einadia nutans subsp. nutans	0.1	1	FG					0.1				
Enchylaena tomentosa	1	10	SG			1						
Eremophila sturtii	0.2	1	SG			0.2						
Exocarpos aphyllus	0.3	1	SG			0.3						
Maireana georgei	10	60	SG			10						
Maireana pentatropis	10	80	SG			10						
Maireana pyramidata	0.2	3	SG			0.2						
Maireana sclerolaenoides	0.1	5	SG			0.1						
Maireana sedifolia	0.2	1	SG			0.2						
Marsdenia spp.	0.1	5	OG							0.1		
*Medicago laciniata**	0.1	10	EX								0.1	
Olearia pimeleoides	0.2	5	SG			0.2						
oxalis spp.	0.1	5	FG					0.1				
Schismus barbatus	0.1	5	EX								0.1	
Sclerolaena diacantha	0.2	10	SG			0.2						
Sclerolaena obliquicuspis	2	20	SG			2						
Senna artemisioides subsp. x coriacea	0.1	1	SG			0.1						
*Sisymbrium erysimoides**	0.1	5	EX								0.1	

Easting	500831
Northing	6250694
Orientation	90
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	6
10-19	1
5-9	1
<5	No
Hollows	4
Length logs (m)	34
BAM Attributes 1x1 plot (%)	
Litter (%)	55

AC06P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 170 (moderate-good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 24/10/2024			24	23	2	10	3	8	0	0	1	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			44.3	**44.2**	15.3	21.7	6.1	1.1	0	0	**0.1**	0
Austrostipa nitida	5	50	GG				5					
Austrostipa sp.	0.1	5	GG				0.1					
Brachyscome spp.	0.1	5	FG					0.1				
Calotis hispidula	0.1	5	FG					0.1				
Chenopodium desertorum subsp. desertorum	0.1	10	SG			0.1						
Dodonaea viscosa subsp. angustissima	0.2	1	SG			0.2						
Einadia nutans subsp. nutans	0.2	5	FG					0.2				
Enchylaena tomentosa	0.2	10	SG			0.2						
Eremophila sturtii	0.1	1	SG			0.1						
Eucalyptus leptophylla	15	5	TG		15							
Eucalyptus oleosa	0.3	1	TG		0.3							
Linum marginale	0.1	5	FG					0.1				
Maireana georgei	10	50	SG			10						
Maireana pyramidata	10	50	SG			10						
Myoporum platycarpum subsp. platycarpum	0.3	1	SG			0.3						
Podolepis capillaris	0.2	20	FG					0.2				
Ptilotus exaltatus	0.2	5	FG					0.2				
Roepera apiculata	0.1	5	FG					0.1				
Schismus barbatus	0.1	5	EX								0.1	
Sclerolaena diacantha	0.2	10	SG			0.2						
Sclerolaena obliquicuspis	0.1	10	SG			0.1						
Senna artemisioides subsp. x petiolaris	0.5	4	SG			0.5						
Triodia scariosa subsp. scariosa	1	10	GG				1					
Vittadinia cervicularis var. cervicularis	0.1	5	FG					0.1				

Easting	500978
Northing	6259460
Orientation	90
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	3
10-19	0
5-9	3
<5	No
Hollows	4
Length logs (m)	19
BAM Attributes 1x1 plot (%)	
Litter (%)	33

AC06R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 170 (moderate-good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 24/10/2024			23	22	2	10	3	6	0	1	1	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			39.2	**39.1**	20	17.6	0.8	0.6	0	0.1	**0.1**	0
Acacia nyssophylla	0.2	2	SG			0.2						
Austrostipa nitida	0.5	30	GG				0.5					
Austrostipa sp.	0.2	5	GG				0.2					
Calotis hispidula	0.1	5	FG					0.1				
Chenopodium desertorum subsp. desertorum	0.2	5	SG			0.2						
Eremophila sturtii	10	8	SG			10						
Eucalyptus leptophylla	15	4	TG		15							
Eucalyptus socialis	5	1	TG		5							
Maireana georgei	5	30	SG			5						
Maireana pentatropis	1	10	SG			1						
Marsdenia spp.	0.1	5	OG							0.1		
Olearia pimeleoides	0.2	2	SG			0.2						
Olearia muelleri	0.2	2	SG			0.2						
Paspalidium sp. (no fertile material)	0.1	5	GG				0.1					
Ptilotus exaltatus	0.1	5	FG					0.1				
Roepera apiculata	0.1	5	FG					0.1				
Roepera eremaea	0.1	5	FG					0.1				
Schismus barbatus	0.1	5	EX								0.1	
Sclerolaena diacantha	0.3	10	SG			0.3						
Sclerolaena obliquicuspis	0.1	5	SG			0.1						
Senna artemisioides subsp. x petiolaris	0.4	3	SG			0.4						
Vittadinia cervicularis var. cervicularis	0.1	3	FG					0.1				
Vittadinia cervicularis var. cervicularis	0.1	3	FG					0.1				

Easting	500978
Northing	6259460
Orientation	90
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	3
20-29	5
10-19	3
5-9	2
<5	No
Hollows	3
Length logs (m)	13
BAM Attributes 1x1 plot (%)	
Litter (%)	52

AC07P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 170 (moderate-good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 24/10/2024			21	21	3	10	1	5	0	2	0	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			28.8	**28.8**	12	14	1	1.6	0	0.2	**0**	0
Acacia colletioides	0.2	1	SG			0.2						
Austrostipa nitida	1	50	GG				1					
Chenopodium desertorum subsp. desertorum	0.2	10	SG			0.2						
Einadia nutans subsp. nutans	0.2	5	FG					0.2				
Enchylaena tomentosa	0.2	5	SG			0.2						
Eucalyptus gracilis	5	2	TG		5							
Eucalyptus leptophylla	5	3	TG		5							
Eucalyptus oleosa	2	2	TG		2							
Maireana georgei	1	10	SG			1						
Maireana pentatropis	10	60	SG			10						
Maireana sclerolaenoides	1	20	SG			1						
Maireana triptera	0.2	10	SG			0.2						
Marsdenia spp.	0.1	1	OG							0.1		
Ptilotus exaltatus	0.1	5	FG					0.1				
Roepera apiculata	1	20	FG					1				
Roepera eremaea	0.2	4	FG					0.2				
Sclerolaena diacantha	0.5	20	SG			0.5						
Sclerolaena obliquicuspis	0.2	10	SG			0.2						
Senna artemisioides subsp. x petiolaris	0.5	4	SG			0.5						
Thysanotus patersonii	0.1	5	OG							0.1		
Vittadinia cervicularis var. cervicularis	0.1	5	FG					0.1				

Easting	503668
Northing	6250315
Orientation	90
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	Yes
5-9	Yes
<5	No
Hollows	5
Length logs (m)	16
BAM Attributes 1x1 plot (%)	
Litter (%)	30

AC07R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 170 (moderate-good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 24/10/2024			24	23	3	11	2	5	0	2	0	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			39.3	39.1	17	20.6	0.3	1	0	0.2	0	0
Acacia colletioides	0.2	1	SG			0.2						
Austrostipa nitida	0.2	10	GG				0.2					
Chenopodium desertorum subsp. desertorum	0.1	5	SG			0.1						
Einadia nutans subsp. nutans	0.3	10	FG					0.3				
Enchylaena tomentosa	0.2	10	SG			0.2						
Eremophila sturtii	0.2	10	SG			0.2						
Eucalyptus gracilis	1	1	TG		1							
Eucalyptus leptophylla	1	1	TG		1							
Eucalyptus oleosa	15	10	TG		15							
Lomandra effusa	0.1	5	GG				0.1					
Maireana georgei	3	30	SG			3						
Maireana pentatropis	15	100	SG			15						
Maireana spp.	0.2	10	SG									
Maireana triptera	0.1	10	SG			0.1						
Marsdenia spp.	0.1	10	OG							0.1		
Ptilotus exaltatus	0.1	5	FG					0.1				
Roepera apiculata	0.2	10	FG					0.2				
Roepera eremaea	0.2	4	FG					0.2				
Sclerolaena diacantha	1	20	SG			1						
Sclerolaena obliquicuspis	0.3	30	SG			0.3						
Sclerolaena parviflora	0.2	10	SG			0.2						
Senna artemisioides subsp. x petiolaris	0.3	4	SG			0.3						
Thysanotus patersonii	0.1	5	OG							0.1		
Vittadinia cervicularis var. cervicularis	0.2	10	FG					0.2				

Easting	503678
Northing	6250288
Orientation	90
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	4
10-19	5
5-9	15
<5	No
Hollows	8
Length logs (m)	12
BAM Attributes 1x1 plot (%)	
Litter (%)	45

AC09P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 170 (moderate-good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 24/10/2024			17	17	1	8	3	4	0	1	0	0
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			46.4	46.4	20	21.9	2.1	2.3	0	0.1	0	0
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Atriplex stipitata subsp. miscella	0.2	10	SG			0.2						
Austrostipa nitida	1	25	GG				1					
Einadia nutans subsp. nutans	1	15	FG					1				
Eucalyptus leptophylla	20	12	TG		20							
Lepidium leptopetalum	0.1	5	SG			0.1						
Maireana georgei	5	40	SG			5						
Maireana pentatropis	5	50	SG			5						
Maireana turbinata	0.1	5	SG			0.1						
Roepera eremaea	1	10	FG					1				
Sclerolaena diacantha	1	20	SG			1						
Senna artemisioides subsp. x coriacea	0.5	2	SG			0.5						
Senna artemisioides subsp. x petiolaris	10	5	SG			10						
Solanum spp.	0.2	10	FG					0.2				
Thysanotus patersonii	0.1	5	OG							0.1		
Triodia scariosa subsp. scariosa	1	5	GG				1					
Vittadinia cervicularis var. cervicularis	0.1	5	FG					0.1				

Easting	509715
Northing	6250418
Orientation	90
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	12
10-19	4
5-9	no
<5	No
Hollows	9
Length logs (m)	12
BAM Attributes 1x1 plot (%)	
Litter (%)	41

AC09R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 170 (moderate-good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
Date: 24/10/2024			20	20	3	11	2	4	0	0	0	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			47.6	**47.6**	26	18.6	2.1	0.9	0	0	**0**	0
Acacia colletioides	0.2	4	SG			0.2						
Aristida sp. (no fertile material)	0.1	5	GG				0.1					
Austrostipa nitida	2	30	GG				2					
Eremophila sturtii	0.2	5	SG			0.2						
Eucalyptus gracilis	5	2	TG		5							
Eucalyptus leptophylla	20	12	TG		20							
Eucalyptus oleosa	1	1	TG		1							
Maireana georgei	1	20	SG			1						
Maireana pentatropis	10	80	SG			10						
Maireana radiata	0.2	2	SG			0.2						
Maireana sclerolaenoides	0.2	20	SG			0.2						
Olearia pimeleoides	0.2	1	SG			0.2						
Ptilotus exaltatus	0.1	5	FG					0.1				
Roepera apiculata	0.2	5	FG					0.2				
Roepera eremaea	0.5	20	FG					0.5				
Sclerolaena diacantha	0.5	20	SG			0.5						
Sclerolaena obliquicuspis	0.1	5	SG			0.1						
Senna artemisioides subsp. x coriacea	1	5	SG			1						
Senna artemisioides subsp. x petiolaris	5	9	SG			5						
Vittadinia cervicularis var. cervicularis	0.1	5	FG					0.1				

Easting	509715
Northing	6250418
Orientation	90
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	12
10-19	4
5-9	No
<5	No
Hollows	9
Length logs (m)	12
BAM Attributes 1x1 plot (%)	
Litter (%)	41

AC10P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 58			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
24/10/2024			14	10	1	7	1	1	0	0	3	1
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			29.5	22.3	5	17	0.2	0.1	0	0	5.2	5
Atriplex stipitata subsp. miscella	0.2	20	SG			0.2						
Austrostipa nitida	0.2	10	GG				0.2					
*Carrichtera annua**	5	50	HT									5
Casuarina pauper	5	3	TG		5							
Dissocarpus paradoxus	0.3	10	SG			0.3						
Dysphania cristata	0.1	2	FG					0.1				
Maireana georgei	1	10	SG			1						
Maireana pyramidata	10	30	SG			10						
Maireana sedifolia	0.3	5	SG			0.3						
*Medicago laciniata**	0.1	5	EX								0.1	
Rhagodia spinescens	0.2	1	SG			0.2						
Sclerolaena diacantha	2	50	SG									
Sclerolaena obliquicuspis	5	50	SG			5						
*Sisymbrium erysimoides**	0.1	5	EX								0.1	

Easting	518978
Northing	6249000
Orientation	85
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	0
20-29	3
10-19	1
5-9	2
<5	No
Hollows	1
Length logs (m)	36
BAM Attributes 1x1 plot (%)	
Litter (%)	30

AC10R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT 58			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
24/10/2024			12	8	1	5	1	1	0	0	4	1
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
			29.7	22.3	10	12	0.2	0.1	0	0	7.4	2
Schismus barbatus	5	100	EX								5	
Austrostipa nitida	0.2	10	GG				0.2					
*Carrichtera annua**	2	50	HT									2
Casuarina pauper	10	8	TG		10							
Dissocarpus paradoxus	0.3	20	SG			0.3						
Dysphania cristata	0.1	5	FG					0.1				
Maireana pyramidata	10	60	SG			10						
Maireana sedifolia	0.5	3	SG			0.5						
*Medicago laciniata**	0.2	10	EX								0.2	
Sclerolaena diacantha	0.2	10	SG			0.2						
Sclerolaena obliquicuspis	1	30	SG			1						
*Sisymbrium erysimoides**	0.2	30	EX								0.2	

Easting	519001
Northing	6249028
Orientation	90
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	2
10-19	1
5-9	0
<5	No
Hollows	2
Length logs (m)	38
BAM Attributes 1x1 plot (%)	
Litter (%)	45

AC11P			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT13			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			23	19	1	9	1	8	0	0	4	1
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			46.8	**46.2**	10	33.2	0.1	2.9	0	0	**0.6**	0.1
Alternanthera spp.	0.1	5	FG					0.1				
Atriplex semibaccata	0.2	5	SG			0.2						
Atriplex stipitata subsp. stipitata	0.2	10	SG			0.2						
Atriplex vesicaria	15	100	SG			15						
Austrostipa sp. (no fertile material)	0.1	5	GG				0.1					
Calotis hispidula	0.2	10	FG					0.2				
*Cotula bipinnata**	0.2	10	EX								0.2	
Crassula colorata	0.1	5	FG					0.1				
Duma florulenta	0.5	2	SG			0.5						
Eremophila sturtii	15	100	SG			15						
Eucalyptus largiflorens	10	7	TG		10							
Goodenia heteromera	0.2	20	FG					0.2				
Haloragis aspera	0.1	5	FG					0.1				
Rhagodia spinescens	0.3	20	SG			0.3						
Sclerolaena diacantha	1	25	SG			1						
Sclerolaena divaricata	0.5	10	SG			0.5						
Sclerolaena stelligera	0.5	5	SG			0.5						
Sonchus oleraceus	0.2	10	EX								0.2	
Swainsona spp.	2	20	FG					2				
Verbena officinalis	0.1	5	EX								0.1	
Vittadinia spp.	0.1	5	FG					0.1				
Wahlenbergia fluminalis	0.1	5	FG					0.1				
Xanthium spinosum	0.1	5	HT									0.1

Easting	615145
Northing	6206415
Orientation	30
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	2
10-19	3
5-9	1
<5	No
Hollows	1
Length logs (m)	67
BAM Attributes 1x1 plot (%)	
Litter (%)	48

AC11R			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
PCT13			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PECW			24	21	1	11	2	7	0	0	3	0
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum
			69	68.7	15	51.7	0.2	1.8	0	0	0.3	0
Asphodelus fistulosus	0.1	5	EX								0.1	
Atriplex semibaccata	0.2	20	SG			0.2						
Atriplex stipitata subsp. stipitata	0.2	10	SG			0.2						
Atriplex vesicaria	20	100	SG			20						
Austrostipa sp. (no fertile material)	0.1	5	GG				0.1					
Brachyscome spp.	0.1	5	FG					0.1				
Calotis hispidula	1	10	FG					1				
*Cotula bipinnata**	0.1	10	EX								0.1	
Duma florulenta	0.1	2	SG			0.1						
Eragrostis dielsii	0.1	5	GG				0.1					
Eremophila divaricata	15	100	SG			15						
Eremophila sturtii	15	100	SG			15						
Eucalyptus largiflorens	15	15	TG		15							
Goodenia heteromera	0.1	5	FG					0.1				
Maireana pentatropis	0.2	10	SG			0.2						
Myoporum parvifolium	0.1	5	SG			0.1						
Rhagodia spinescens	0.3	10	SG			0.3						
Sclerolaena diacantha	0.5	20	SG			0.5						
Sclerolaena muricata var. semiglabra	0.1	2	SG			0.1						
*Sisymbrium erysimoides**	0.1	5	EX								0.1	
Swainsona spp.	0.1	5	FG					0.1				
Tetragonia tetragonioides	0.2	10	FG					0.2				
Teucrium racemosum	0.2	20	FG					0.2				
Vittadinia spp.	0.1	5	FG					0.1				

Easting	615168
Northing	6206408
Orientation	30
Plot size	20 X 20 X 50
BAM Attributes 20x50m plot	
Stem classes	
80+	0
50-79	0
30-49	1
20-29	20
10-19	1
5-9	5
<5	No
Hollows	2
Length logs (m)	24
BAM Attributes 1x1 plot (%)	
Litter (%)	11

Our ref: PS130593-ECO-LTR-001 RevA

By email
ben.ellis@environment.nsw.gov.au

16 August 2023

Ben Ellis
A/Senior Team Leader Planning North West
Biodiversity, Conservation and Science Directorat

Dear Ben

Partial Impacts

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 Central-West Orana Renewable Energy Zone (CWO REZ) transmission infrastructure Project (the Project).

WSP Australia Pty Ltd has prepared a Biodiversity Development Assessment Report (BDAR) for the Project in accordance with NSW Biodiversity Assessment Method 2020 (BAM). A key component of the projects assessment is determining the approach and extent of the partial impacts for transmission line maintenance and how these are assessed under the BAM.

Following ongoing consultation with Biodiversity Conservation & Science (BCS) a range of assessment approach and key considerations have been identified, with a particular focus on providing a project specific and evidence-based approach.

This memo presents the finding of the adopted evidence-based approach to partial impacts developed for the Project. It summaries the information previously presented in consultative workshop with BCS on the 9th May 2023.

1.1 Project description

The Project would comprise the following key features:

- a new switching station at Wollar, to connect the project to Transgrid's existing Wollar Substation and onto the National Electricity Market (NEM)
- primary network infrastructure, comprising twin double circuit 500 kV transmission lines and associated infrastructure

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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.

- energy hubs at Merotherie and Elong Elong, to connect energy generation and storage projects within the Central-West Orana REZ to the new primary network infrastructure.
- secondary network infrastructure, comprising new single and double circuit 330 kV single lines to connect energy generation and storage projects within the Central-West Orana REZ to the energy hubs
- switching stations along the secondary network infrastructure, to transfer the energy generated from the energy generation projects onto the secondary network infrastructure
- establishment and upgrade of access tracks and public roads, and other ancillary works such as laydown and staging areas, earthwork material sites with crushing and screening plants, concrete batching plants, brake/winch sites, site offices and workforce accommodation camps
- utility adjustments required for construction of the new network infrastructure.

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 for the 330 kV and 500 kV transmission lines based on their vegetation clearing requirements and construction methodologies. **Error! Reference source not found.** identify the allocation of each area for each line type.

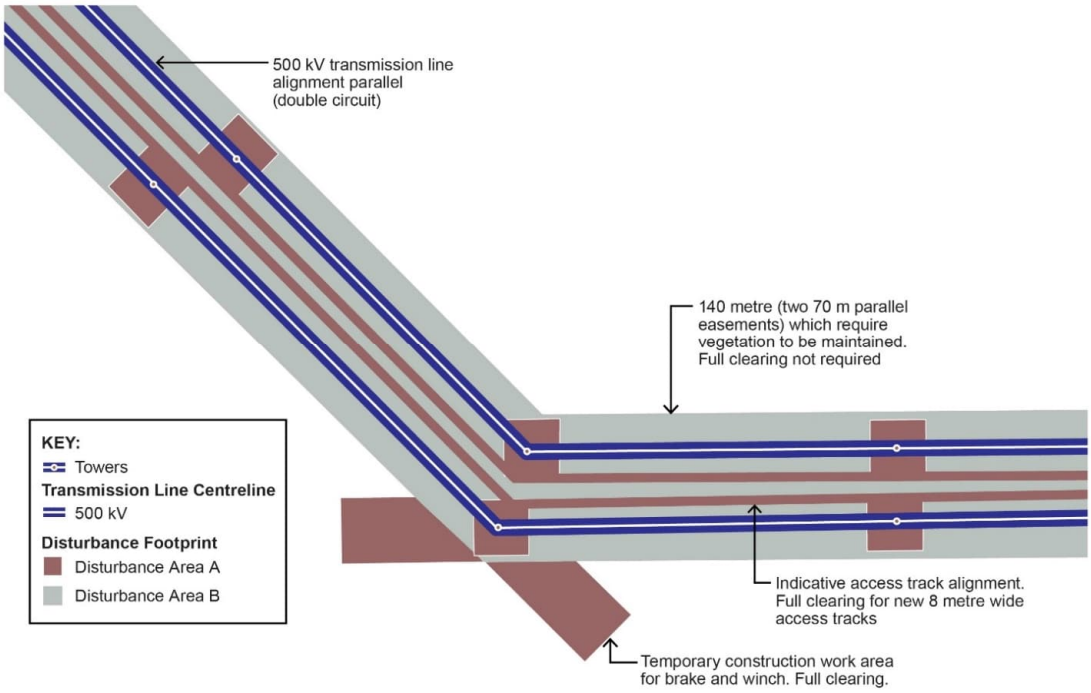


Figure 1-1 Indicative disturbance area definition for a typical twin 500 kV transmission line section

2. Background to partial impacts in ETL

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 Electrical transmission line (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 (**Error! Reference source not found.**1).

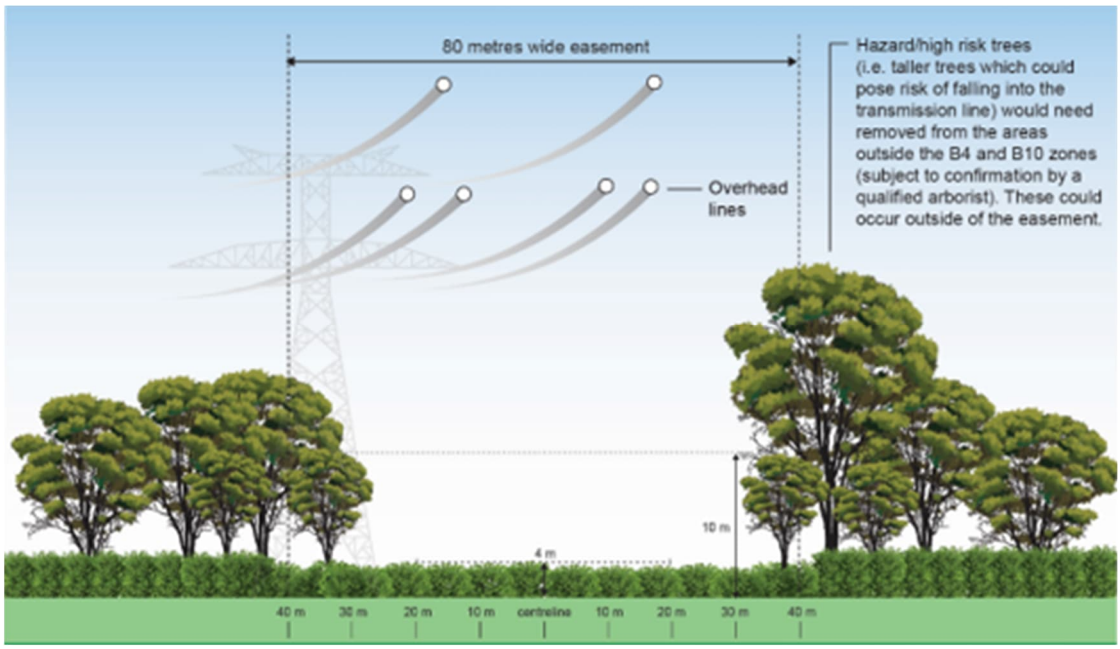


Figure 2-1 Conceptual layout of transmission line project

This partial clearing of the ETL easement forms part of the measures taken to minimise impacts to biodiversity values. Maintaining a shrub 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 BCS in 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 clearings develop 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 vegetation integrity score was calculated as zero (assuming total loss of native vegetation).
- For disturbance area B (partial clearing of the transmission line easement) future vegetation integrity 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 vegetation integrity 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 flexibility in the input functions to calculate future vegetation integrity scores, specifically in that attributes can only be decreased from the recorded mean average. Attribute scores cannot be increased when using the clearing module. This limitation means that any composition, structure or function attribute cannot be adequately adjusted to reflect likely changes in vegetation integrity where evidence from existing powerline easements suggests the attributes are likely to increase (e.g. increased shrub cover due to tree removal).

These deficiencies in the BAM-C generates overlapping conservatism to final changes in VI and the assessed area of partial impact.

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 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.

- Partial impact zone (Disturbance area B) being assessed does not representative of final clearing footprint- (for the purpose of the BAM-C a partial impact zone is applied to all areas within the operational corridor, however ground disturbance will be limited to only woody tree and tall shrub removal)- for Grassy Woodland this is generally isolated to widely spaced canopy.

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.

3. Methodology to evidence-based approach

3.1 Overview

EnergyCo have built on the previous approach of these approved methods to develop a Project specific and evidence-based 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.

This field survey provides an evidence-based approach that 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) (refer to Table 3.1 and Figure 3.1 below).

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
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	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

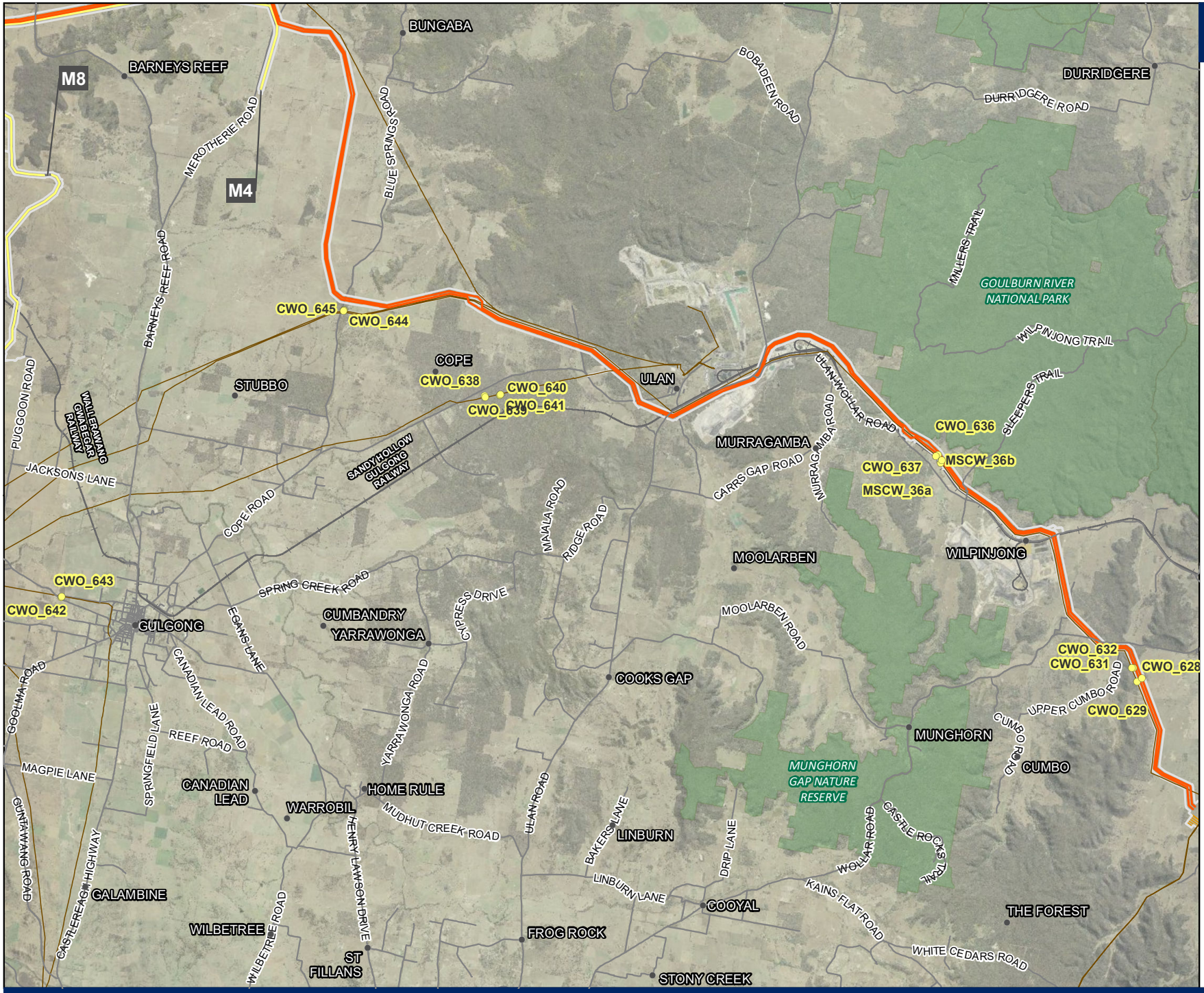
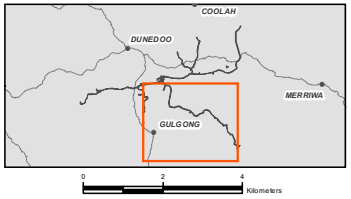


Figure 3-1
Partial Impact Survey Locations Overview

Legend

- Biodiversity Study Area
- 330kv transmission line
- 500kv transmission line
- Construction compound
- Switching Station
- Existing transmission line
- Road
- Railway
- State Forests
- BAM Quadrant



Coordinate system: GDA 1994 MGA Zone 55
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Data sources: WSP 2023, EnergyCo, NSWSS

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Figure 3 -1
Partial Impact Survey Locations
Plots 642 & 643

OLD MILL ROAD

CWO_643

CWO_642

CASTLEREAGH HIGHWAY

Legend

- Existing transmission line
- Road
- BAM Quadrant

State Vegetation Mapping

- PCT : 0, Not classified
- PCT : 81, Grassy Woodlands

Coordinate system: GDA 1994 MGA Zone 55
Scale ratio correct when printed at A4

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Data sources: WSP 2023, NSWSS

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Figure 3 -1
Partial Impact Survey Locations
Plots 644 & 645

Legend

- 500 kV transmission line
- Biodiversity Study Area
- Existing transmission line
- Road
- Watercourse
- BAM Quadrant

State Vegetation Mapping

- PCT : 0, Not classified
- PCT : 1103, Grassy Woodlands
- PCT : 1610, Dry Sclerophyll Forests (Shrubby sub-formation)
- PCT : 1675, Dry Sclerophyll Forests (Shrubby sub-formation)
- PCT : 1881, Forested Wetlands
- PCT : 277, Grassy Woodlands
- PCT : 281, Grassy Woodlands
- PCT : 326, Grassy Woodlands
- PCT : 461, Grassy Woodlands
- PCT : 478, Dry Sclerophyll Forests (Shrubby sub-formation)
- PCT : 479, Dry Sclerophyll Forests (Shrubby sub-formation)

Coordinate system: GDA 1994 MGA Zone 55
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Data sources: WSP 2023, EnergyCo, NSWSS

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Figure 3 -1
Partial Impact Survey Locations
CWO 636-637 & MSCW_36a - 36b

Legend

- 500 kV transmission line
- Biodiversity Study Area
- Existing transmission line

Plant Community Types

PCT, Condition

- 281, Derived Native Grassland
- 281, Mod_good
- 281, Thinned
- 0, Miscellaneous ecosystem
- Road
- Railway
- State Forests
- BAM Quadrant

Coordinate system: GDA 1994 MGA Zone 55
Scale ratio correct when printed at A4

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Data sources: WSP 2023, EnergyCo, NSWSS

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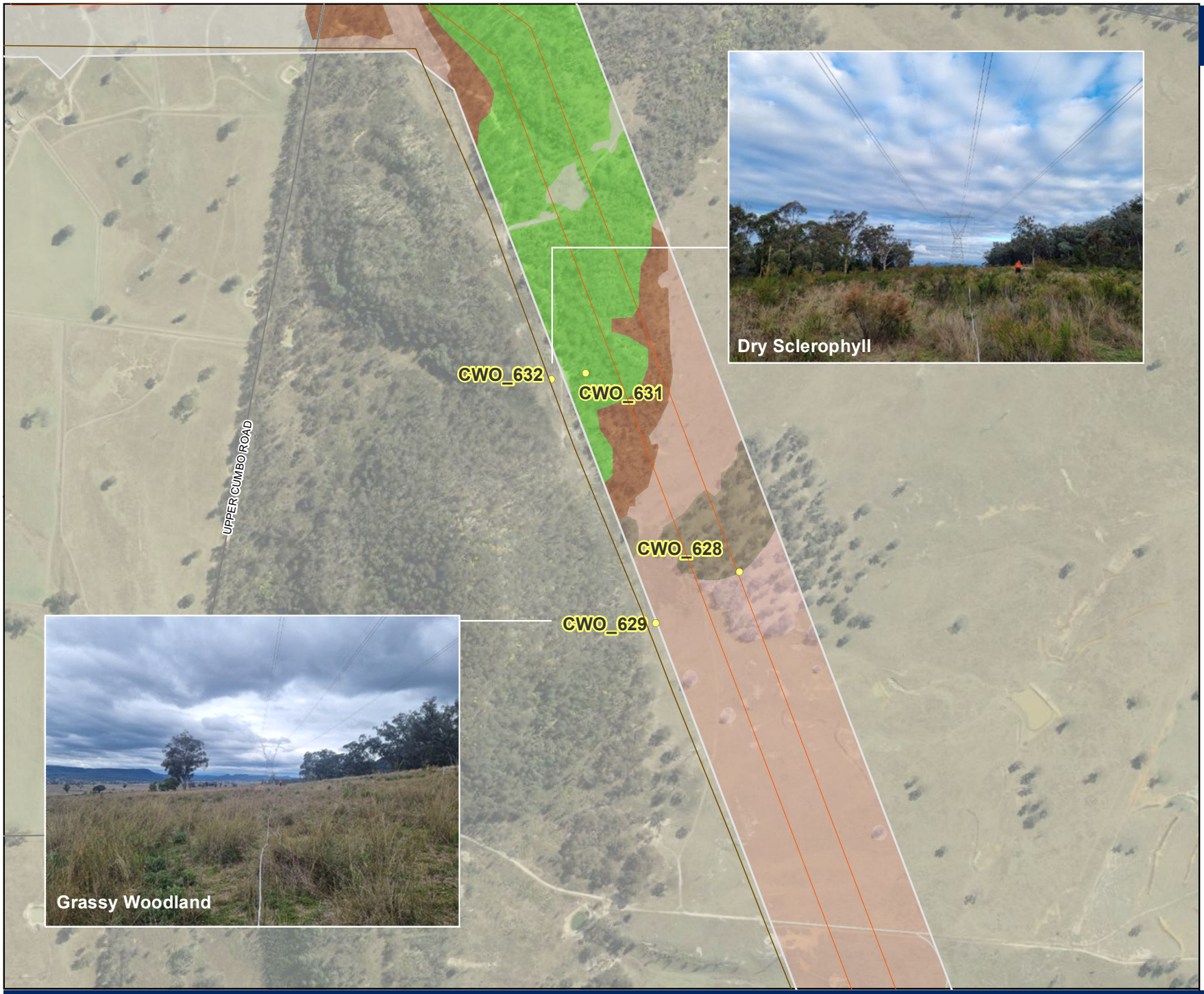

Figure 3 -1
Partial Impact Survey Locations
CWO 629-628 & CWO 631-632

Legend

- 500 kV transmission line
- Biodiversity Study Area
- Existing transmission line
- Road
- BAM Quadrant

Plant Community Types

PCT, Condition

- 1610, Derived Native Grassland
- 1610, Mod_good
- 1176, Thinned
- 618, Mod_good
- 618, Derived Native Grassland
- 618, Thinned
- 0, Miscellaneous ecosystem

Coordinate system: GDA 1994 MGA Zone 55
Scale ratio correct when printed at A4

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Data sources: WSP 2023, EnergyCo, NSWSS

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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;

- publicly accessible or with landowner consent
- 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 Vegetation integrity plot – method

Vegetation integrity plots were completed in accordance with section 4.3.3 of the BAM. A schematic diagram illustrating the layout of each vegetation integrity plot is provided in Figure 3-2.

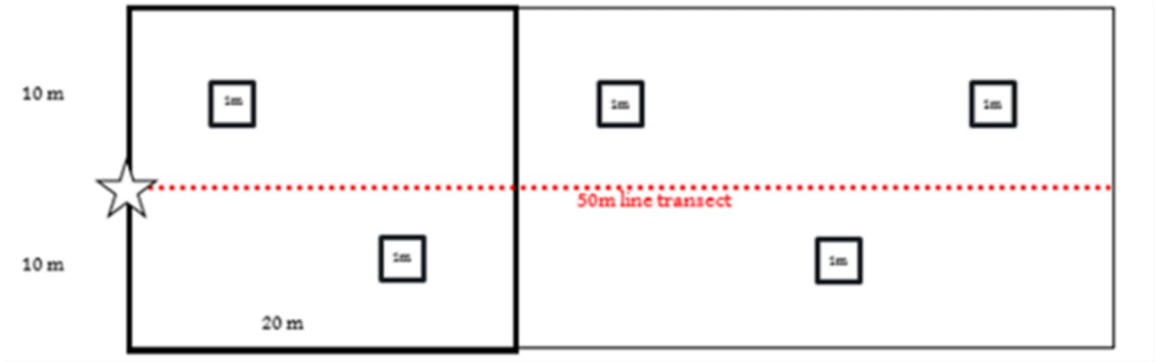


Figure 3-2 Vegetation integrity plot layout

The following site attributes were recorded at each vegetation integrity 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 vegetation integrity 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 Vegetation integrity score calculations

As outlined in BAM Section 4.3.3, vegetation integrity 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 benchmark data used in the BDAR were the Version 1.2 benchmarks as of 31 January 2023. The default benchmarks for PCTs held within the BAM-C were not modified.

The plot survey data was used to determine the vegetation integrity 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 vegetation integrity score for each vegetation zone.

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 Transgrid projects (PEC).

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 easement management.

4. Field results

4.1 Grassy Woodlands

The summary data of the seven 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. A summary of the quantum of the actual change in average vegetation integrity values is provided in Figure 4.2.

Table 4-1 Summary data of the sampled PCTs within the Grassy Woodlands formation within the ETL, adjoining remnant vegetation and corresponding literature based 30% reduction approved in previous ETL BAM assessments.

			Project-IBRA	Cover									Richness								
				Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
76	Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	**Benchmark**	PEC -IS	61	31	2	23	5	0	0			28	3	5	7	11	1	1		
		Remnant		85.5	15	5.8	57.6	7	0.1	0	2.2	0.3	19	1	2	9	6	1	0	10	1
		ETL		75.5	0	11	60.1	4.4	0	0	5.7	3	16	0	2	11	3	0	0	11	1
		30% Reduction			0	4.4	43.2	5.3	0.1	0.0	1.7	0.2	14.3	0.0	1.5	6.8	4.5	0.8	0.0	7.5	0.8
80	Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	**Benchmark**	PEC-LS	61	31	2	23	5	0	0			28	3	5	7	11	1	1		
		Remnant		60.3	8	6	31.8	14.5	0	0	10.9	2	21	2	2	10	7	0	0	11	2
		ETL		38.3	2	0	27.1	9.1	0	0.1	22.6	15.1	17	1	0	8	7	0	1	15	3
		30% Reduction			0	4.5	23.9	10.9	0.0	0.0	8.2	1.5	15.8	0.0	1.5	7.5	5.3	0.0	0.0	8.3	1.5
266	White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	**Benchmark**	PEC-IS	69	18	2	42	6	0	1			31	3	4	9	12	1	2		
		Remnant		97	55	0	28.3	12.5	1	0.2	16.1	15	23	3	0	9	8	1	2	10	1
		ETL		95.7	4.3	3	47	39.4	2	0	16.3	15	24	3	2	8	10	1	0	8	1
		30% Reduction			0	0	21.2	9.4	0.8	0.2	12.1	11.3	17.3	0.0	0.0	6.8	6.0	0.8	1.5	7.5	0.8
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	Benchmark	CWO- Kerrabee	80	21	5	45	8	0	1			37	4	6	10	13	1	3		
		Remnant		92.1	10.3	4	77.2	0.5	0.1	0	2.4	0.2	25	4	1	14	5	1	0	7	2
		ETL		65.4	1	6	57.7	0.5	0.2	0	6.2	0.2	25	1	3	15	5	1	0	4	1
		Remnant		83.8	17	15.9	46.9	2.7	1	0.3	1.2	0	43	2	6	21	11	1	2	2	0
		ETL		48.7	0.2	0.2	47.6	0.2	0.5	0	28.8	0.3	21	1	2	15	2	1	0	10	3
		30% Reduction			0	3	57.9	0.4	0.1	0	1.8	0.15	18.8	0.0	0.8	10.5	3.8	0.8	0.0	5.3	1.5
461	461-Tumbledown Gum woodland on hills in the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion	**Benchmark**	CWO - Inland Slopes	80	21	5	45	8	0	1			37	4	6	10	13	1	3		
		Remnant		68	18	15.9	15.6	17.8	0.5	0.2	0.3	0	38	5	9	9	13	1	1	3	0
		ETL		66.3	2.6	27.4	24	11.8	0.1	0.4	1.2	0	41	4	11	12	11	1	2	5	0
		30% Reduction		51.0	0.0	11.9	11.7	13.4	0.4	0.2	0.2	0.0	28.5	0.0	6.8	6.8	9.8	0.8	0.8	2.3	0.0
618	White Box x Grey Box - red gum - Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley	Benchmark	CWO-Kerrabee	141	53	16	58	9	1	4	#	#	46	5	8	12	14	2	5	#	#
		Remnant		70.1	10	1.1	55.2	3.7	0	0.1	1.4	0.4	21	1	2	9	8	0	1	8	1
		ETL		43.8	0.1	0	38.3	5.4	0	0	3.8	5	19	1	0	9	9	0	0	6	1
		30% Reduction		52.575	0	0.825	41.4	2.775	0	0.075	1.05	0.3	15.75	0	1.5	6.75	6	0	0.75	6	0.75
Total Average		**Average Remnant**		79.5	19.0	7.0	44.7	8.4	0.4	0.1	4.9	2.6	27.1	2.6	3.1	11.6	8.3	0.7	0.9	7.3	1.0
		Average ETL		62.0	1.5	6.8	43.1	10.1	0.4	0.1	12.1	5.5	23.3	1.6	2.9	11.1	6.7	0.6	0.4	8.4	1.4
		30% Reduction		51.8	0.0	4.1	33.2	7.0	0.2	0.1	4.2	2.2	18.4	0.0	2.0	7.5	5.9	0.5	0.5	6.1	0.9
		Average change		17.6	17.6	0.2	1.5	-1.7	0.0	0.0	-7.2	-3.0	3.9	1.0	0.3	0.4	1.6	0.1	0.4	-1.1	-0.4
		Average Change (%)		22.1	92.3	2.3	3.5	-20.6	-3.7	37.5	-145.2	-115.6	14.2	38.9	9.1	3.7	19.0	20.0	50.0	-15.7	-42.9

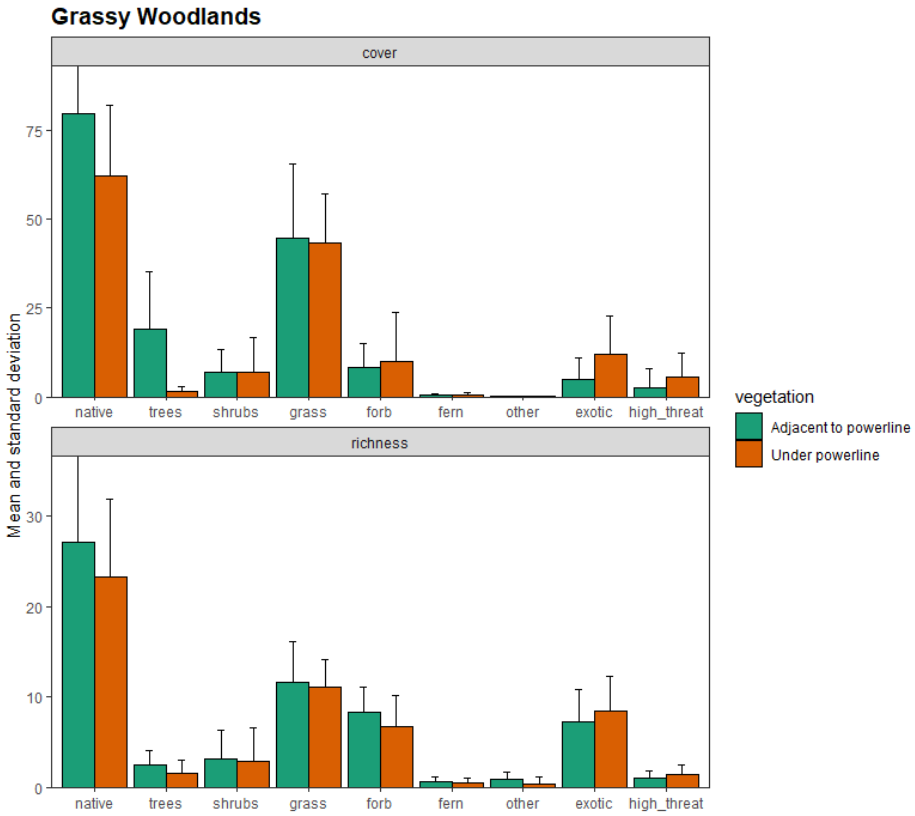


Figure 4-2 Grassy woodlands comparative change in vegetation integrity attributes values for Partial impact (Under powerline) and Remnant (adjacent to powerline)

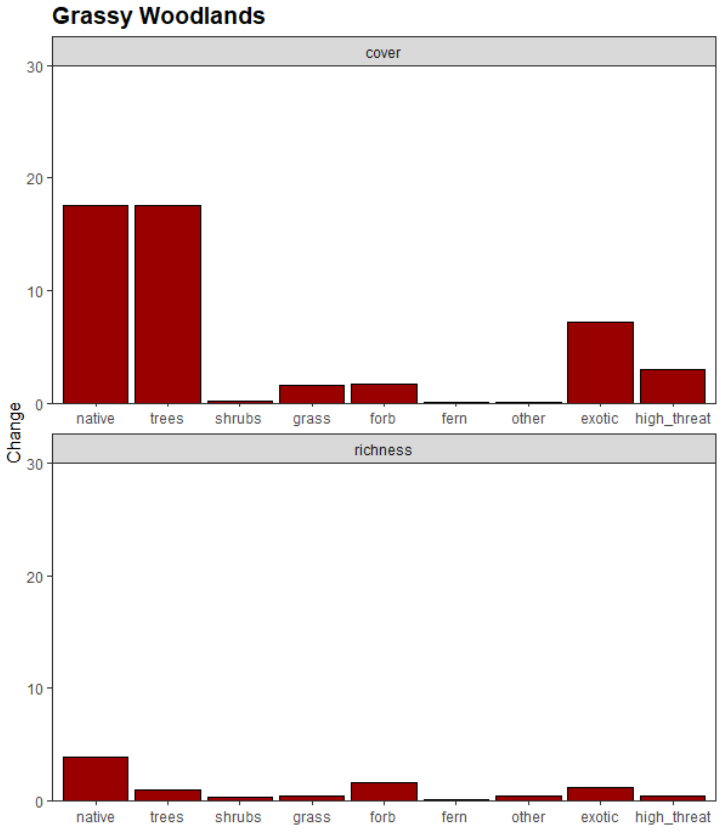


Figure 4-3 Grassy woodlands average change in vegetation integrity attributes values

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 vegetation integrity for Grassy Woodland

The summary vegetation integrity 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 sampled cover and composition attributes between the sampled remnant and adjoining ETL managed for a partial impact is provided in Figure 4.3.

Table 4-2 Summary vegetation integrity data of the sampled PCTs within the Grassy Woodlands formation within the ETL, adjoining remnant vegetation and corresponding literature based 30% reduction approved in previous ETL BAM assessments.

PCT	Grassy Woodlands		Composition condition VI score	Structure condition VI score	Function condition VI score	VI score	Change (%)
76	**Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions**						
		Remnant	71.1	77.7	58.8	68.7	
		ETL	42.3	49	12.3	29.4	39.3
		30% Reduction	53.3	49.2	13.5	32.9	
80	**Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion**						
		Remnant	78.7	57.1	28.2	50.6	
		ETL	66.4	46.2	32	46.1	4.5
		30% Reduction	55.4	49.2	10.6	30.7	
266	**White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion**						
		Remnant	86.5	97.2	100	94.4	
		ETL	94.3	71	32.7	60.3	34.1
		30% Reduction	66.5	56.6	34.9	50.8	
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**						
		Remnant	72.1	78.8	73.5	74.4	34.2
		ETL	72.1	57.1	15.8	40.2	
		Remnant					
		ETL					
		30% Reduction	50.3	57	7.9	28.2	
461	**Tumbledown Gum woodland on hills in the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion**						
		Remnant	100	76	61.1	77.4	
		ETL	100	63.9	42.6	64.8	12.6
		30% Reduction	87.1	30.5	18.6	36.7	
618	**White Box x Grey Box - red gum - Rough-barked Apple grassy woodland on rich soils on hills in the upper Hunter Valley**						
		Remnant	84	85.9	81.7	83.9	
		ETL	71.8	65.4	16	42.2	41.7
		30% Reduction	69.5	62.3	24.2	47.1	
Total Average		**Average Remnant**	82.1	78.8	67.2	74.9	
		Average ETL	74.5	58.8	25.2	47.2	27.7
		30% Reduction	63.7	50.8	18.3	37.7	49.6
		Average change	7.6	20.0	42.0	27.7	37.0
		Change (%)	9.2	25.4	62.5	37.0	

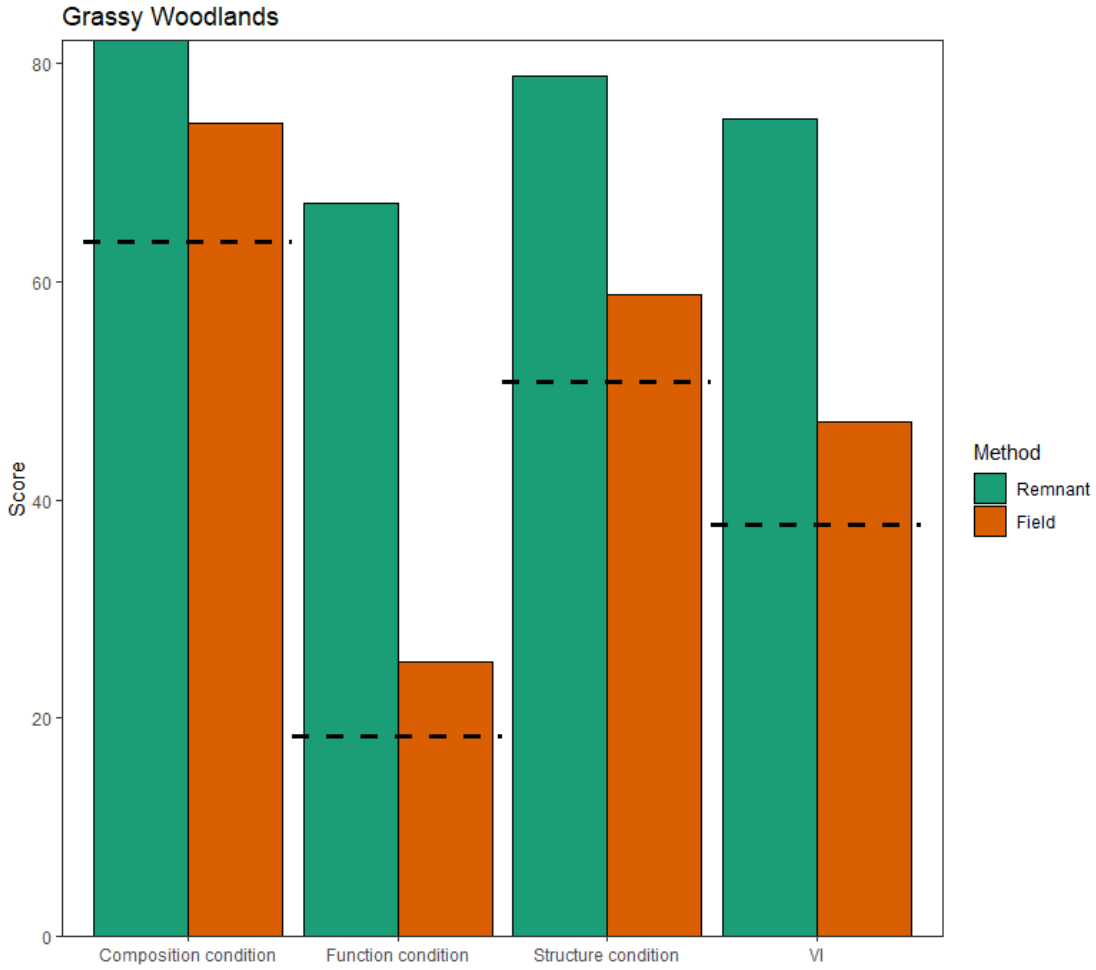


Figure 4-3 Grassy woodlands average change in vegetation integrity values within the ETL (Field), adjoining (remnant) vegetation and corresponding literature based 30% reduction (black hatch line) approved in previous ETL BAM assessments.

4.4 Key trends and findings for Grassy woodlands vegetation integrity (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 (25%) and function (60%) scores
- VI changes vary for PCTs based on benchmarks with range of decreases from -4.5 to -41 (Average of -27.7 GW)
- the total average VI reduction for Grassy Woodland was 27.7 or 37% decrease in VI score
- all field data attribute scores and VI components substantially less impacted than previously assumed in the literature based 30% reduction in values (black hatch line).

4.5 Dry Sclerophyll Forest

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 vegetation integrity 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 and corresponding literature based 30% reduction approved in previous ETL BAM assessments.

			Project-IBRA	Cover									Richness								
Dry Sclerophyll Forests (Shrubby sub-formation)				Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
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	Benchmark	CWO-IS	169	69	70	22	6	1	1	0	0	45	5	17	9	9	2	3	0	0
		Remnant		66.1	14.0	27.8	23.0	1.1	0.1	0.1	0.1	0.0	34.0	3.0	10.0	15.0	4.0	1.0	1.0	1.0	0.0
		ETL		53.1	2.5	42.3	5.9	2.1	0.1	0.2	0.0	0.0	28.0	2.0	11.0	9.0	3.0	1.0	2.0	0.0	0.0
		30% Reduction		49.6	0.0	20.9	17.3	0.8	0.1	0.1	0.1	0.0	25.5	2.3	7.5	11.3	3.0	0.8	0.8	0.8	0.0
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	Benchmark	CWO-IS	169.0	69.0	70.0	22.0	6.0	1.0	1.0	0.0	0.0	45.0	5.0	17.0	9.0	9.0	2.0	3.0	0.0	0.0
		Remnant		132.3	80.0	23.4	26.5	2.0	0.1	0.3	0.1	0.0	47.0	5.0	14.0	16.0	9.0	1.0	2.0	1.0	0.0
		ETL		137.0	2.0	9.5	98.3	22.1	5.0	0.1	5.5	0.0	43.0	2.0	11.0	19.0	9.0	1.0	1.0	6.0	0.0
		30% Reduction		99.2	0.0	17.6	19.9	1.5	0.1	0.2	0.1	0.0	35.3	3.8	10.5	12.0	6.8	0.8	1.5	0.8	0.0
1606	White Box - Narrow-leaved Ironbark - Blakely's Red Gum shrubby open forest of the central and upper Hunter	Benchmark	CWO-Kerrabe	159.0	68.0	49.0	30.0	8.0	1.0	3.0			49.0	6.0	13.0	10.0	13.0	2.0	5.0		
		Remnant		65.1	15.1	46.3	2.6	1.0	0.1	0.0	0.1	0.0	24.0	3.0	9.0	6.0	5.0	1.0	0.0	1.0	0.0
		ETL		69.1	0.0	13.0	55.5	0.4	0.2	0.0	6.6	2.0	23.0	0.0	5.0	13.0	4.0	1.0	0.0	4.0	1.0
		30% Reduction		34.0	0.0	34.7	2.0	0.8	0.1	0.0	0.1	0.0	18.0	2.3	6.8	4.5	3.8	0.8	0.0	0.8	0.0
1674	Red Ironbark - Brown Bloodwood - Black Pine heathy open forest on sandstone ranges of the Sydney Basin	Benchmark	CWO-IS	169.0	69.0	70.0	22.0	6.0	1.0	1.0	0.0	0.0	45.0	5.0	17.0	9.0	9.0	2.0	3.0	0.0	0.0
		Remnant		57.4	25.0	21.0	8.1	0.3	0.0	3.0	0.2	0.0	19.0	1.0	6.0	9.0	2.0	0.0	1.0	2.0	0.0
		ETL		45.1	2.0	30.2	12.3	0.4	0.1	0.1	0.0	0.0	20.0	1.0	9.0	6.0	2.0	1.0	1.0	0.0	0.0
		30% Reduction		43.1	0.0	15.8	6.1	0.2	0.0	2.3	0.2	0.0	14.3	0.8	4.5	6.8	1.5	0.0	0.8	1.5	0.0
Total Average		Average Remnant		80.2	33.5	29.6	15.1	1.1	0.1	0.9	0.1	0.0	31.0	3.0	9.8	11.5	5.0	0.8	1.0	1.3	0.0
		Average ETL		76.1	1.6	23.8	43.0	6.3	1.4	0.1	3.0	0.5	28.5	1.3	9.0	11.8	4.5	1.0	1.0	2.5	0.3
		Average change		4.1	31.9	5.9	-28.0	-5.2	-1.3	0.8	-2.9	-0.5	2.5	1.8	0.8	-0.3	0.5	-0.3	0.0	-1.3	-0.3
		Change (%)		5.2	95.2	19.8	-185.7	-468.2	-1700.0	88.2	-2320.0	#DIV/0!	8.1	58.3	7.7	-2.2	10.0	-33.3	0.0	-100.0	#DIV/0!
		30% Reduction		60.2	0.0	22.2	11.3	0.8	0.1	0.6	0.1	0.0	23.3	2.3	7.3	8.6	3.8	0.6	0.8	0.9	0.0

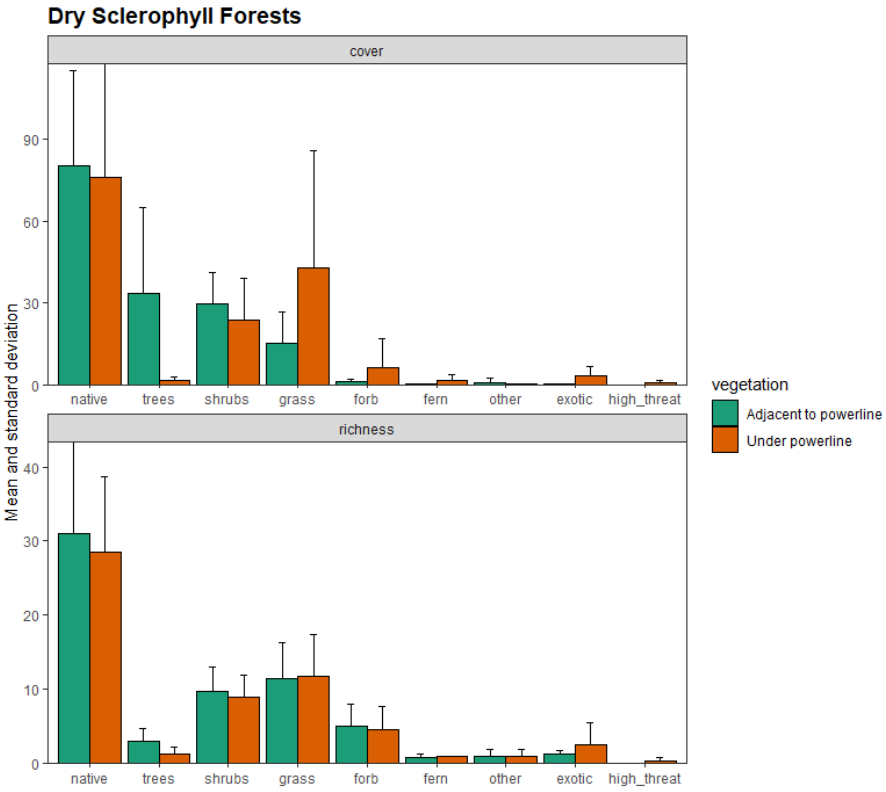


Figure 4-4 Dry Sclerophyll Forest comparative change in vegetation integrity attributes values for Partial impact (Under powerline) and Remnant (adjacent to powerline)

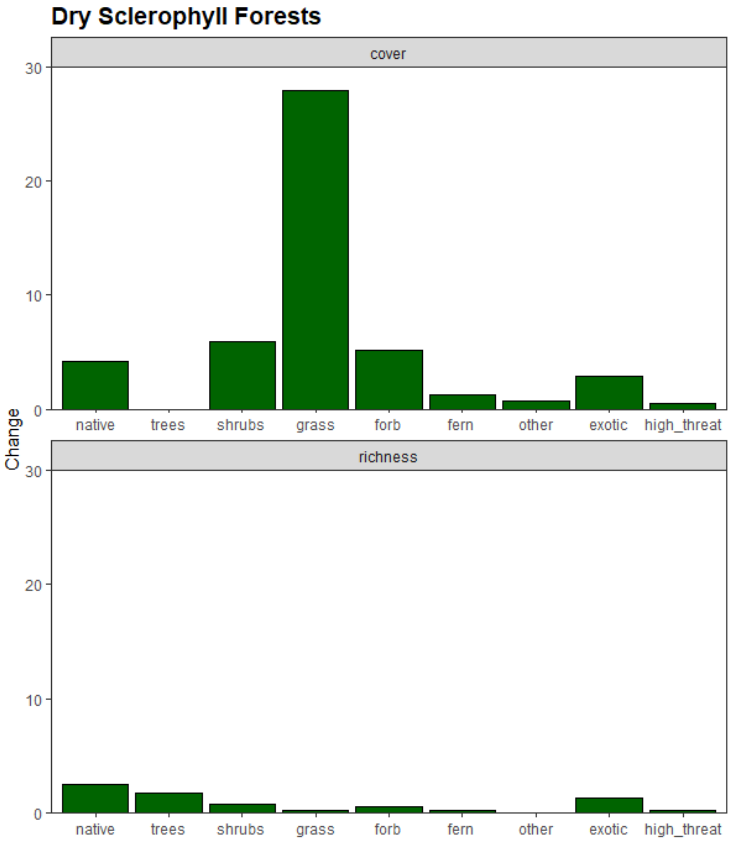


Figure 4-5 Dry Sclerophyll Forest average change in vegetation integrity attributes values

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 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 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 vegetation integrity for Dry Sclerophyll Forest

The summary vegetation integrity 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 vegetation integrity values within the ETL (Field), adjoining remnant vegetation and corresponding literature based 30% reduction is provided in Figure 4.6.

Table 4-4 Summary vegetation integrity data of the sampled PCTs within the Dry Sclerophyll Forest formation within the ETL, adjoining remnant vegetation and corresponding literature based 30% reduction approved in previous ETL BAM assessments.

PCT			Composition condition VI score	Structure condition VI score	Function condition VI score	VI score	Change (%)
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						
		Remnant	85	37.3	93	66.5	
		ETL	72.7	20.7	17.8	29.9	36.6
		30% Reduction	64.7	28.5	21.2	33.9	
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						
		Remnant	100	98.2	100	99.4	
		ETL	90	32.6	18.4	37.8	61.6
		30% Reduction	79.1	29.7	34.1	43.1	
1606	White Box - Narrow-leaved Ironbark - Blakely's Red Gum shrubby open forest of the central and upper Hunter						
		Remnant	97.1	22.9	77	53.5	
		ETL	59.7	28.2	15.7	29.8	23.7
		30% Reduction	72.3	12.2	7.2	18.5	
1674	Red Ironbark - Brown Bloodwood - Black Pine heathy open forest on sandstone ranges of the Sydney Basin						
		Remnant	53.9	51.5	79.8	60.5	
		ETL	62	27.5	17.8	31.2	29.3
		30% Reduction	42.9	18.2	12.2	21.2	
Total Average		Average Remnant	80.9	48.3	68.7	60.8	
		Average ETL	71.1	27.3	17.4	32.2	28.7
		Average change	9.8	21.1	51.2	28.7	47.1
		Change (%)					52.0
		30% Reduction	64.8	22.2	18.7	29.2	

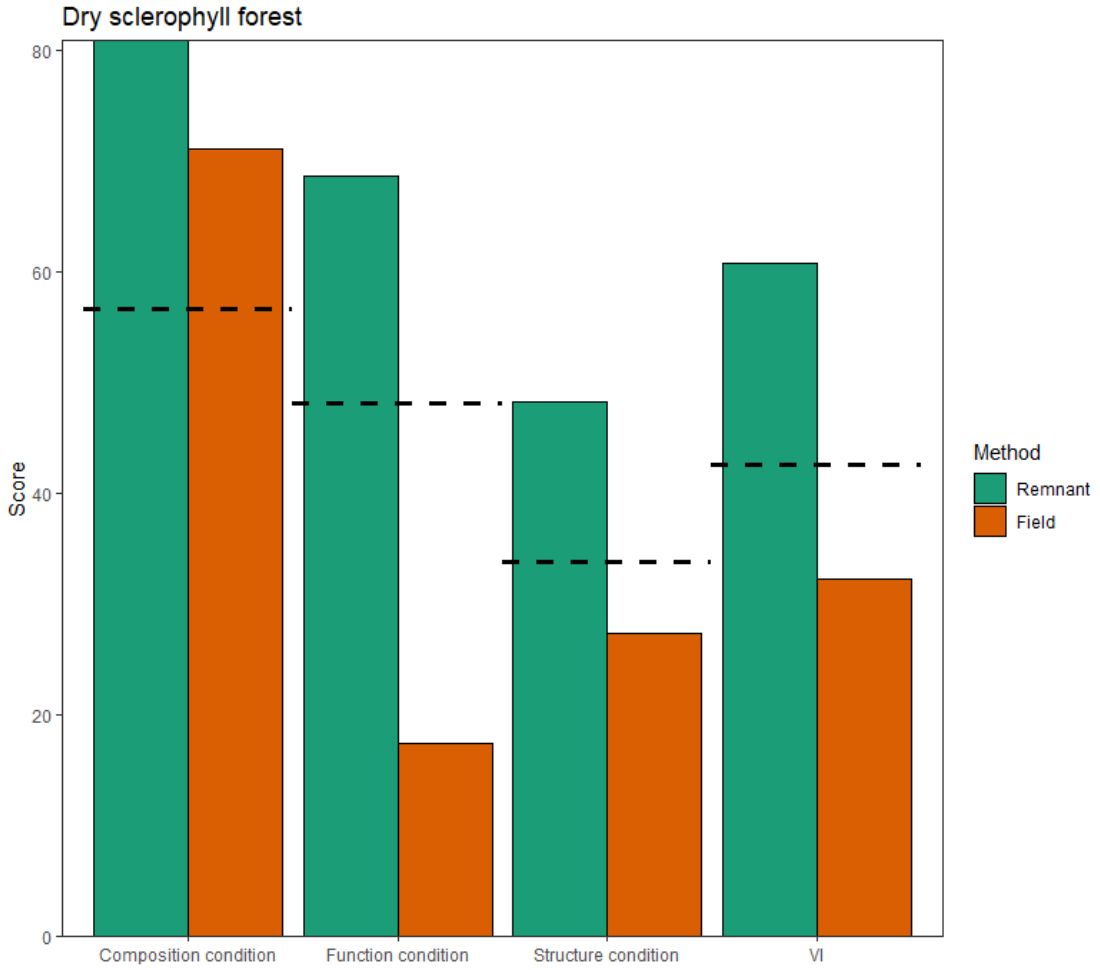


Figure 4-6 Dry Sclerophyll Forest average change in vegetation integrity values within the ETL (Field), adjoining remnant vegetation and corresponding literature based 30% reduction (black hatch line) approved in previous ETL BAM assessments.

4.8 Key trends and findings for Dry Sclerophyll Forest vegetation integrity (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 -28.65)
- the total average VI change was 47.1 % decrease
- field data attribute scores and VI components substantially less impacted than previously assumed in the literature based 30% reduction in values (black hatch line) for all but composition.

5. Conclusion

EnergyCo have undertaken an evidence-based approach to informing the potential partial impacts associated with ongoing maintenance of ETLs.

This approach builds on and compares the results of field-based sampling with previously approved literature-based assumptions of a 30% reduction in understorey values used for assessment of ETL partial impacts.

A summary of the vegetation integrity values determined from the field survey and assessed within the BAM-C for both Grassy Woodlands and Dry Sclerophyll vegetation formations is provided in Table 5.1.

Table 5-1 Summary vegetation integrity data of the sampled PCTs within the Dry Sclerophyll Forest formation within the ETL, adjoining remnant vegetation and corresponding literature based 30% reduction approved in previous ETL BAM assessments.

Vegetation Formation	Method	Composition condition score	Structure condition score	Function condition score	VI	Change (%)
Grassy Woodlands	Remnant	82.1	78.8	67.2	74.9	
	ETL	74.5	58.8	25.2	47.2	37.0
	30% reduction	63.7	50.8	18.3	37.7	49.6
Dry Sclerophyll Forests (Shrubby sub-formation)	Remnant	80.9	48.3	68.7	60.8	
	ETL	71.1	27.3	17.4	32.2	47.1
	30% reduction	64.8	22.2	18.7	29.2	52.0

The assessment of the field results has confirmed:

- field data supported higher VI scores than previously predicted through application of a 30% reduction in the understorey values
- the greatest change was a decrease in Function and Structure scores with only minimal (<10%) change in Composition
- at a vegetation formation level Grassy Woodlands and Dry Sclerophyll Forest are impacted differently, particularly for vegetation integrity Structure values
- the Dry Sclerophyll Forest PCTs are likely to result in reductions in Shrub cover attributes of up to 20% with inverse increases in grass and forbs
- the Grassy Woodlands PCTs will have minimal impacts to structure and only minor 10% reduction in understory composition.

Based on the above key findings, the Projects partial impact within ETL management zone (Disturbance Area B) adopted the following manual adjustment to VI values within the BAM-C (refer to Table 5.2).

Table 5-2 Proposed adjustment to BAMC vegetation integrity 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		

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 Data sheets for Partial Impact

Attachment A

Data sheets for Partial Impact

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
PCT 461	Veg Zone ID: remnant		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
Date: 29/03/23			41	38	5	9	9	13	1	1	3	0	
Species	Cover	Abundance	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
			68.3	68	18	15.9	15.6	17.8	0.5	0.2	0.3	0	
Angophora floribunda	10	5	TG		10								
Callitris endlicheri	5	20	TG		5								
Allocasuarina verticillata	2	10	TG		2								
Exocarpos strictus	0.5	5	SG			0.5							
Cassinia sifton	10	20	SG			10							
Gonocarpus elatus	15	200	FG					15					
Cheilanthes sieberi	0.5	100	EG						0.5				
Austrostipa scabra	5	200	GG				5						
Hypericum gramineum	0.5	20	FG					0.5					
Hibbertia obtusifolia	0.1	5	SG			0.1							
Dichondra repens	0.1	20	FG					0.1					
Persoonia linearis	2	10	SG			2							
Dichelachne crinita	3	50	GG				3						
Melichrus urceolatus	1	10	SG			1							
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					

Easting	756385
Northing	6425691
Orientation	315
Plot size	20 X 20 X 50
Attributes 20x50m plot	
Stem classes	
80+	1
50-79	0
30-49	Yes
20-29	Yes
10-19	Yes
5-9	No
<5	Yes
Hollows	0
Length logs (m)	23
	17.25
Attributes 1x1 plo	\
Litter (%)	39
	29.25

CWO			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	756446
PCT 461	Veg Zone ID: DNG		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6425717
Date: 29/03/23			46	41	4	11	12	11	1	2	5	0		Orientation	305
Species	Cover	Abundance	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			67.5	66.3	2.6	27.4	24	11.8	0.1	0.4	1.2	0		Attributes 20x50m plot	
Persoonia linearis	2	10	SG			2								Stem classes	
Angophora floribunda	1	5	TG		1									80+	0
Callitris endlicheri	1	5	TG		1									50-79	0
Cassinia sifton	20	100	SG			20								30-49	No
Xerochrysum viscosum	10	100	FG					10						20-29	No
Gonocarpus elatus	0.8	50	FG					0.8						10-19	No
Cymbopogon refractus	5	50	GG				5							5-9	No
Cheilanthes sieberi	0.1	20	EG						0.1					<5	Yes
Goodenia hederacea	0.1	20	FG					0.1						Hollows	0
Centaurium tenuiflorum	0.1	5	EX								0.1			Length logs (m)	125
Austrostipa scabra	5	50	GG				5								
Digitaria ramularis	0.8	20	GG				0.8							Attributes 1x1 plot (%)	
Astroloma humifusum	1	10	SG			1								Litter (%)	25
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									

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. fi	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. sie	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

Date	5/3/2023		Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat
Plot Name	CWO_639		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count
PCT	477_DNG		28	28	2	11	9	3	1	2	0	0
			Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum
Species	Cover	Abundance	53.1	53.1	2.5	42.3	5.9	2.1	0.1	0.2	0	0
Acacia spectabilis	1	5	SG			1						
Acacia hakeoides	1	5	SG			1						
Grevillea sericea	5	30	SG			5						
Lissanthe strigosa	5	30	SG			5						
Sannantha cunninghamii	10	500	SG			10						
Rytidosperma spp.	0.2	20	GG				0.2					
Gonocarpus elatus	1	50	FG					1				
Pimelea spp.	2	100	SG			2						
Wahlenbergia spp.	0.1	5	FG					0.1				
Aristida ramosa	2	100	GG				2					
Melaleuca erubescens	2	10	SG			2						
Cheilanthes sieberi	0.1	10	EG						0.1			
Laxmannia gracilis	1	50	FG					1				
Cassinia sifton	1	20	SG			1						
Eragrostis elongata	0.1	10	GG				0.1					
Eucalyptus spp.	2	20	TG		2							
Eucalyptus blakelyi	0.5	5	TG		0.5							
Cassytha spp.	0.1	5	OG							0.1		
Lomandra multiflora sub	0.2	5	GG				0.2					
Lomandra filiformis subs	0.1	10	GG				0.1					
Poa sieberiana	0.1	5	GG				0.1					
Lepidosperma laterale	2	20	GG				2					
Arundinella nepalensis	1	10	GG				1					
Acacia spp.	0.2	1	SG			0.2						
Isopogon anemonifolius	0.1	5	SG			0.1						
Macrozamia spp.	0.1	2	OG							0.1		
Pultenaea spp.	15	500	SG			15						
Gahnia aspera	0.2	1	GG				0.2					

Easting	751213
Northing	6424910
Orientation	255
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	yes
<5	yes
Hollows	0
Length logs (m)	4
Attributes 1x1 plc	9
Litter (%)	2
	10
	5
	25
	3

CWO			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
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						

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

CWO			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55
PCT 479	Veg Zone ID: DNG		# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count	
Date: 28/02/2023			49	43	2	11	19	9	1	1	6	0	
Species	Cover	Abundance	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	
			142.5	137	2	9.5	98.3	22.1	5	0.1	5.5	0	
Angophora floribunda	1	5	TG		1								
Eucalyptus blakelyi	1	6	TG		1								
Acacia decora	2	10	SG			2							
Acacia ulicifolia	1	10	SG			1							
Lissanthe strigosa	2	25	SG			2							
Cassinia sifton	0.5	10	SG			0.5							
Acacia ausfeldii	2	20	SG			2							
Kunzea sp.	1	20	SG			1							
Themeda triandra	5	25	GG				5						
Aristida personata	20	1000	GG				20						
Laxmannia gracilis	0.5	500	FG					0.5					
Fimbristylis dichotoma	0.1	10	GG				0.1						
Eragrostis alveiformis	5	500	GG				5						
Wahlenbergia gracilis	0.1	10	FG					0.1					
Echinopogon ovatus	5	100	GG				5						
Microtis sp.	0.1	1	FG					0.1					
Cheilanthes sieberi	5	500	EG						5				
Hypochaeris radicata	5	500	EX								5		
Eragrostis elongata	0.2	20	GG				0.2						
Lomandra multiflora	0.1	1	GG				0.1						
Austrostipa densiflora	25	2000	GG				25						
Haloragis heterophylla	20	2000	FG					20					
Aristida vagans	10	2000	GG				10						
Microlaena stipoides	5	500	GG				5						
Sporobolus creber	20	2000	GG				20						
Tricoryne elatior	0.1	1	FG					0.1					
Aristida sp.	0.2	20	GG				0.2						
Eulalia aurea	0.1	1	GG				0.1						
Goodenia heterophylla	0.1	10	FG					0.1					
Juncus usitatus	0.1	2	GG				0.1						
Eragrostis cilianensis	0.1	2	EX								0.1		
Rytidosperma caespitosum	0.1	10	GG				0.1						
Panicum effusum	0.2	10	GG				0.2						
Cymbopogon refractus	0.1	10	GG				0.1						
Styphelia triflora	0.2	2	SG			0.2							
Setaria parviflora	0.1	10	EX								0.1		
Calotis lappulacea	0.1	10	FG					0.1					
Podolepis omissa	1	500	FG					1					
Lomandra filiformis	0.1	1	GG				0.1						
Melichrus urceolatus	0.5	10	SG			0.5							
Brachyloma daphnoides	0.1	1	SG			0.1							
Bothriochloa macra	2	50	GG				2						
Conyza sp.	0.1	3	EX								0.1		
Glycine sp.	0.1	5	OG							0.1			
Schkuhria pinnata	0.1	5	EX								0.1		
Petrorhagia nanteuilii	0.1	10	EX								0.1		
Bossiaea prostrata	0.1	1	FG					0.1					
Sannantha cunninghamii	0.1	1	SG			0.1							
Acacia spectabilis	0.1	1	SG			0.1							

Easting	754702
Northing	6426912
Orientation	98
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)	0
Attributes 1x1 plot (%)	
Litter (%)	20

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							
n	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 X 20 X 50
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 plo	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 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 plc	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. r	0.1	5	GG				0.1					
Lomandra filiformis subsp. fil	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. sieberian	1	2	GG				1					
Lomandra confertifolia subsp	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. n	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. fil	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 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	yes
<5	yes
Hollows	0
Length logs (m)	3
Attributes 1x1 plo	9.6
Litter (%)	5
	3
	10
	20
	10

Appendix O

Cumulative impact assessment

O1 Determination of excluded impacts

O1.1 Approach to cumulative impact assessment

The cumulative impact assessment considers other nearby developments along with the project and assesses the scale and nature of the cumulative impacts on key issues.

The assessment is consistent with the requirements of the *Cumulative Impact Assessment Guidelines for State Significant Projects* (NSW Department of Planning, Industry and Environment (DPIE), 2022). These guidelines define cumulative impacts as those arising as a result of incremental, sustained and combined effects of human action and natural variations over time that can be both positive and negative. These impacts can be caused by the compounding effects of a single project or multiple projects in an area, and by the accumulation of effects from past, current and future activities as they arise.

Further detail on cumulative impact assessment approach and the other projects considered in the cumulative impact assessment is provided in Chapter 24 (Cumulative impacts) of the EIS.

The cumulative biodiversity impact assessment involved:

- review of the nature and scale of potential biodiversity impacts, as described in publicly available planning and biodiversity documents for relevant future projects
- combined quantitative assessment of potential regional cumulative impacts to native vegetation, threatened species and Threatened Ecological Communities (TECs) of relevant future projects, in combination with the project
- qualitative assessment of potential regional cumulative impacts on Groundwater Dependent Ecosystems (GDEs), wildlife connectivity and habitat corridors, and protected and sensitive lands with a review of regional habitat impacts for areas directly impacted by the project and relevant future projects
- recommendation of mitigation measures, as required.

O1.2 Projects considered

The relevant future projects that were considered as having the potential to result in cumulative noise impacts with the project are listed in Table O.1. The location of the major relevant future projects are provided in Figure O.1.

Table O.1 Projects considered for cumulative assessment

Related developments		
1. VNI West (Victoria)	2. EnergyConnect (NSW – Eastern section) (SSI-9172452)	3. HumeLink (SSI-36656827)
Projects currently subject to environmental assessment		
4. Junction Rivers Wind Farm (SSD-30448824)	11. Pottinger Wind Farm (SSD-59235464)	18. Dinawan Solar Farm (SSD-50725959)
5. Keri Keri Wind Farm (SSD-38358962)	12. Pottinger Solar Farm (SSD-59254709)	19. Dinawan Wind Farm (SSD-50725708)
6. Wilan Wind Farm (SSD-51306206)	13. Billabong Creek Environmental Water Regulators (SSI-50831979)	20. Argoon Wind Farm (SSD-64935522)
7. Baldon Wind Farm (SSD-40138508)	14. Bullawah Wind Farm (SSD-50505215)	21. Belhaven Battery Energy Storage System (SSD-57575973)
8. Tchelery Wind Farm (SSD-59701722)	15. Romani Solar Farm (SSD-67105475)	22. Livingstone Solar Farm (SSD-80114208)
9. Abercrombie Wind Farm (SSD-77340978)	16. West Nyangay Solar Farm (SSD-74990235)	23. Mangoplah Battery Energy Storage System (SSD-77527735)
10. Wanganella Wind Farm (SSD-78102208)	17. Conargo Wind Farm (SSD-70611708)	
Approved or changed projects		
24. Yanco Delta Wind Farm (SSD-41743746)	25. Gregadoo Solar Farm (SSD-8825)	26. Inland Rail (Albury to Illabo) (SSI-10055)

O1.2.1 South West Renewable Energy Zone access right agreements

In April 2025, EnergyCo granted access rights to six wind, solar and large-scale battery projects with a combined generation capacity of 3.56 gigawatts[1]. The projects are:

- Yanco Delta Wind Farm
- Dinawan Energy Hub – consisting of the Dinawan Solar Farm and Dinawan Wind Farm
- Pottinger Energy Park – consisting of the Pottinger Solar Farm and Pottinger Wind Farm
- Bullawah Wind Farm.

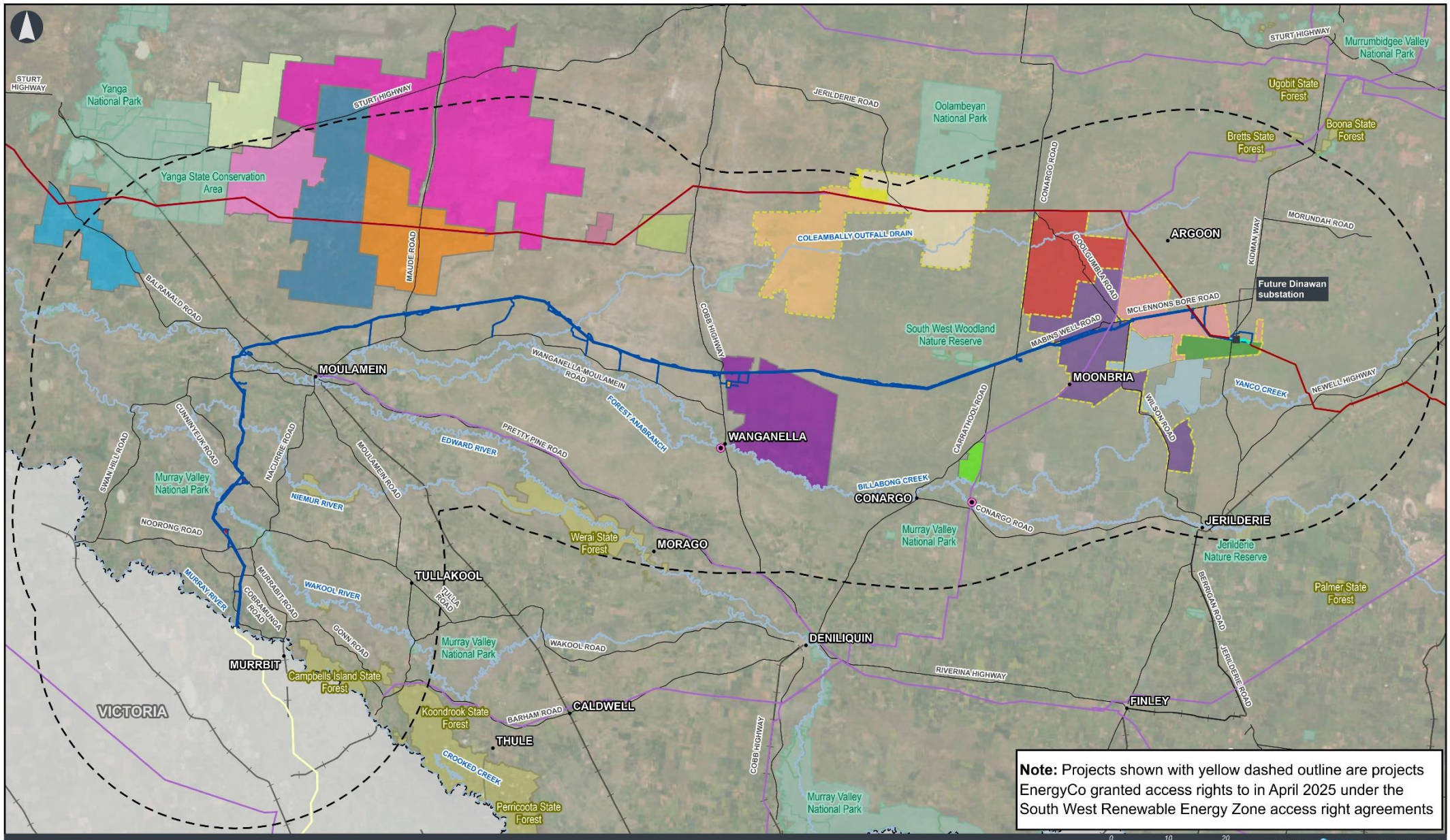
The combined generation capacity of these proposed or approved projects represents the initial allocation of access rights under the South West Renewable Energy Zone access scheme. In making this decision, the maximum capacity for access rights assigned to each proposed renewable energy project is lower than what has been identified in planning assessment documentation for those projects, and it would alter the likelihood of some of the remaining projects in the South West Renewable Energy Zone proceeding in the short-term. However, for the purposes of this cumulative assessment it is assumed that all identified projects would proceed as described in the relevant planning assessment documentation available at the time of the assessment (in line with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (NSW DPIE, 2022)).

O1.3 Limitations and assumptions

The following limitations and assumptions are considered relevant to the assessment:

- This cumulative impact assessment is limited by the availability of biodiversity assessments for future relevant projects and assumes the other assessments have provided accurate and reliable information.
- Many of the future relevant projects are in the planning phase, or with respective EIS still in preparation, and therefore the level of direct impacts to native vegetation, threatened ecological communities, and threatened and migratory species is currently being determined.
- It is unlikely that all projects currently being assessed would be approved. For the purpose of this assessment, it is assumed that all future relevant projects detailed would be approved, however it is considered likely that the eventual actual impacts would be lower.

[1] Media Release – South West Renewable Energy Zone powers up



VNI West – EIS

Figure O.1a
Cumulative impact projects

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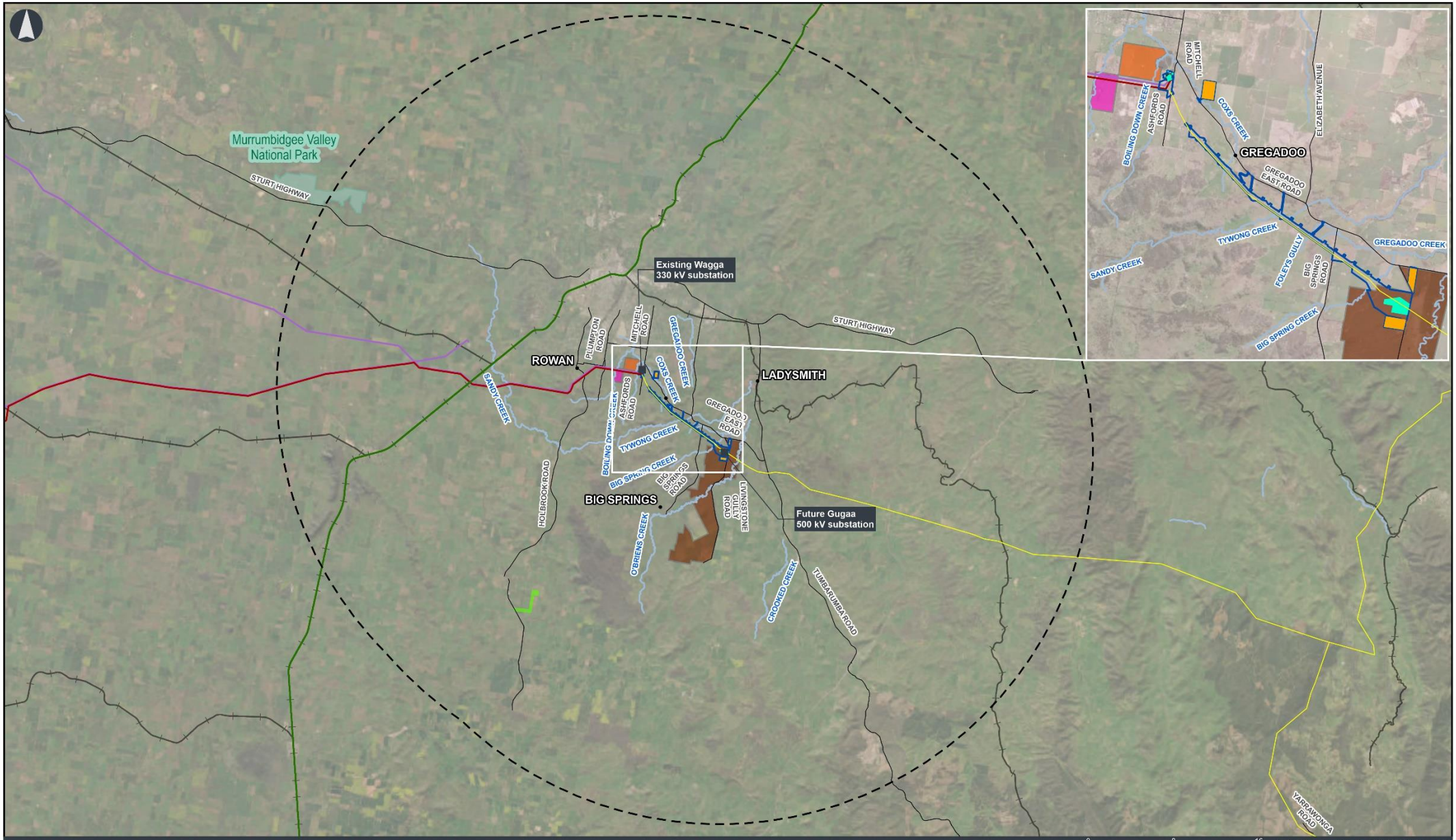
Data sources: NSW EPI, DELWP, WSP, EnergyConnect



WSP

VNI West – EIS

Figure O.1b
Cumulative impact projects

Legend

- Rail line
- Main road
- Named waterway
- EnergyConnect (NSW - Eastern section) project (under construction)
- Existing transmission line
- Substation
- National park
- Project footprint
- Cumulative Study area
- Combined temporary worker accommodation facility
- HumeLink
- Albury to Illabo

Relevant future projects

- Livingstone Solar Farm
- Belhaven Battery Energy Storage System
- Gregadoo Solar Farm
- Mangoplah Battery Energy Storage System

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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

O2 Impact assessment

This assessment considers the biodiversity impacts of this project together with the relevant future projects listed in Table O.2 and shown Figure O.1. Relevant future projects still in the scoping phase at the time of the EIS preparation have been listed and considered on a qualitative basis.

Table O.2 Relevant future projects considered in the cumulative biodiversity impact assessment

Project	SSD/SSI	Proponent	Scope	Project timeline
VNI West (Victoria)	n/a	TCV	Victorian component of the VNI West project. VNI West (Victoria) would consist of around 240 km of new 500 kV transmission line between the connection point with VNI West (Victoria) and Bulgana, Victoria.	— TCV released its 70 m preferred easement alignment for the Victorian component in October 2024 — the project is currently undergoing environmental assessment in accordance with Victorian and Commonwealth planning processes, and is subject to ongoing preparation of an Environment Effects Statement — project approval and commencement of construction is expected to occur in 2026.
Project EnergyConnect (NSW Eastern Section) (Approved)	SSI-9172452	Transgrid	Development of a new transmission line connecting the existing Buronga and Wagga substations via the future Dinawan substation (around 170 km west of Wagga Wagga).	— project approved in September 2022 — construction began in early 2023 and is expected to continue until around mid to-late 2026 — operation is expected to begin in 2026 with an operational life of around 50 years..
Humelink (Approved)	SSI-36656827	Transgrid	Construction and operation of new transmission lines between the existing substations at Wagga and Bannaby, the future Maragle substation, and a new substation at Gugaa.	— project approved in November 2024 — enabling works have commenced and main construction is proposed to commence in 2025 and is expected to take around 2.5 years to complete — operation is expected to begin in mid-2027 with an operational life of 50 to 70 years.
Junction River Wind Farm (formerly Burrawong Wind Farm)	SSD-30448824	Junction Rivers Pty Ltd	Development of a proposed 750 MW wind farm comprising around 96 turbines (maximum tip height of up to 300 m), battery energy storage system (BESS) and associated infrastructure across an area of around 16,367 ha.	— EIS exhibited July/August 2024; a response to submissions is currently being prepared — it is anticipated that works associated with the wind farm could commence within six months of project approval — pre-construction and construction expected to take up to 54 to 60 months.

Project	SSD/SSI	Proponent	Scope	Project timeline
Keri Keri Wind Farm	SSD-38358962	Acciona Energy Australia Global Pty Ltd	Development of a proposed 884 MW wind farm comprising around 155 wind turbines (maximum tip height of up to around 291 m), BESS and associated infrastructure across an area of around 18,055 ha.	— EIS exhibited between May and June 2024; a response to submissions is currently being prepared — construction is proposed to begin in late 2027 and is expected to take about 24 months — operation is expected to begin in 2030 with an operational life of around 30 years.
Wilan Wind Farm	SSD-51306206	Kilara Utilities Pty Ltd	Development of a proposed 800 MW wind farm comprising around 138 wind turbines (maximum tip height of up to 300 m), BESS and associated infrastructure across an area of around 16,000 ha.	— SEARs issued in December 2022 (with supplementary SEARs issued in April 2023); an EIS is being prepared — construction is proposed to begin in 2025 and is expected to take around 24 to 30 months — operation is expected to begin in late 2026 or 2027 with an operational life of 25 to 30 years.
Baldon Wind Farm	SSD-40138508	Goldwind Australia	Development of a proposed 1,400 MW wind farm comprising around 180 wind turbines (maximum tip height of up to 300 m), BESS and associated infrastructure across an area of around 42,500 ha.	— EIS exhibited between August and September 2024; a response to submissions is currently being prepared — construction is expected to begin in early 2026 and take around 36 months (if constructed in one stage) — operation is expected to begin in early 2029 with an operational life of 25 to 30 years.
Tchelery Wind Farm	SSD-59701722	Neoen	Development of a proposed 800 MW wind farm comprising around 120 wind turbines (with a maximum tip height of 285 m) and associated infrastructure across an area of around 27,400 ha.	— SEARs issued in July 2023 (with supplementary SEARs issued December 2023); an EIS is being prepared — construction is proposed to commence in early 2026 and is expected to take around 30 months — operation is expected to begin in 2028 with an operational life of around 30 years.
Abercrombie Wind Farm	SSD-77340978	Abercrombie Wind Farm Pty Ltd	Development of a proposed 2.5 GW wind farm comprising around 348 wind turbines (maximum tip height of up to 300 m), BESS and associated infrastructure across an area of around 91,365 ha.	— SEARs issued in December 2024; an EIS is being prepared — construction is proposed to commence in early 2028 and is expected to take around five years — operation is expected to begin in 2033 with an operational life of around 35 years.

Project	SSD/SSI	Proponent	Scope	Project timeline
Waganella Wind Farm	SSD-78102208	Equis Wind Australia Pty Ltd	Development of a proposed 840 MW wind farm comprising around 105 wind turbines (with a maximum tip height of 270 m), BESS and associated infrastructure across an area of around 30,737 ha.	— SEARs issued in November 2024; an EIS is being prepared — construction is proposed to commence in 2027 and is expected to take around two years — operation is expected to begin in 2030 with an operational life of around 30 years.
Pottinger Wind Farm	SSD-59235464	Someva Renewables	Development of a proposed 1,300 MW wind farm comprising around 247 wind turbines (with a maximum tip height of 280 m), BESS and associated infrastructure across an area of around 26,000 ha.	— EIS exhibited between June and July 2024 — submissions report submitted October 2024 and more information has been requested — construction is expected to begin in late 2026 and is expected to take around 55 months — operation is expected to begin in 2029 with an operational life of around 35 years.
Pottinger Solar Farm (Proposed)	SSD-59254709	Someva Renewables	Development of a proposed 300 MW solar farm comprising photovoltaic (PV) panels, BESS and associated infrastructure across an area of around 1,460 ha.	— SEARs issued July 2023; an EIS is currently being prepared — construction is proposed to commence in 2026 and is expected take around 24 months — operation is expected to begin in 2027 with an operational life of 50 years.
Billabong Creek Environmental Water Regulators	SSI-50831979	NSW Department of Climate Change, Energy, the Environment and Water	Replacing two existing weirs along Billabong Creek with two new environmental water regulators. The new regulators would allow for flow regulation and fish passage.	— EIS exhibited in November 2024; a response to submissions is being prepared — construction is anticipated to start in 2025, and be completed by 2026 — the construction period is anticipated to be around 18 months
Bullawah Wind Farm	SSD-50505215	BayWa r.e Projects Australia	Development of a proposed 1,000 MW wind farm comprising around 143 wind turbines (with a maximum tip height of 300 m), BESS and associated infrastructure across an area of around 33,000 ha.	— EIS exhibited between August and September 2024; a response to submissions is currently being prepared — construction is proposed to begin in late 2025 and is expected to take around 44 months — operation is expected to begin in 2029 with an operational life of 30 years.

Project	SSD/SSI	Proponent	Scope	Project timeline
Romani Solar Farm	SSD-67105475	Samsung C&T Renewable Energy Australia Pty Ltd	Development of a proposed 250 MW solar farm comprising PV panels, BESS and associated infrastructure across an area of around 1,810 ha.	— SEARs issued March 2024; an EIS is currently being prepared — construction is anticipated to start in 2025, and be completed by 2026 — the construction period is anticipated to be around 18 months.
West Nyangay Solar Farm	SSD-74990235	Australian Solar Farms	Development of a proposed 800 MW solar farm comprising of PV panels, BESS and associated infrastructure across an area of around 5,500 ha.	— SEARs issued in September 2024; an EIS is currently being prepared — the project would be constructed over a period of around 12 to 18 months — construction commencement timeframe currently unknown.
Conargo Wind Farm	SSD-70611708	Squadron Energy	Development of a proposed 300 MW wind farm comprising around 53 wind turbines (with a maximum tip height up to 270 m), BESS and associated infrastructure across an around of around 2,295 ha.	— SEARs issued in May 2024 (with amended SEARs issued in December 2024); an EIS is currently being prepared — the project would be constructed over a period of around 24 months from 2027 — planned to operate in 2028/2029 with an estimated operational life of 30 years.
Dinawan Solar Farm	SSD-50725959	Spark renewables	Development of a proposed 1,000 MW solar farm comprising around PV panels, BESS and associated infrastructure across an area of around 4,500 ha.	— EIS exhibited between November and December 2023 — submissions report submitted September 2024 and more information has been requested by DPHI — construction is proposed to begin in early 2025 and is expected to take around 18 to 36 months — operation is expected to commence in 2026 with an operational life of 25 to 35 years.
Dinawan Wind Farm	SSD-50725708	Spark renewables	Development of a proposed 1,500 MW wind farm comprising around 200 wind turbines (with a maximum tip height of up to 280 m) and associated infrastructure across an area of around 46,000 ha.	— EIS exhibited between July and August 2024; a response to submissions is currently being prepared — construction is proposed to begin in 2025 and is expected to take around 60 months — operation is expected to begin in 2027/2028 with an operational life of 25 to 35 years.

Project	SSD/SSI	Proponent	Scope	Project timeline
Argoon Wind Farm	SSD-64935522	Argoon Wind Farms	Development of a proposed 901 MW wind farm comprising around 106 wind turbines (with a maximum tip height of up to 249 m), BESS and associated infrastructure across an area of around 10,900 ha.	— SEARs issued in December 2023; an EIS is currently being prepared — the project would be constructed over a period of around 24 to 36 months — construction and operation commencement timeframe currently unknown.
Belhaven Battery Energy Storage System	SSD-57575973	Vena Energy	Development of a proposed 400 MW / 800 MWh BESS including transmission connection and associated infrastructure.	— SEARs issued in May 2023; an EIS is currently being prepared — construction is proposed to begin in 2025 and is expected to take 12 months — operation is expected to begin in 2026 with an operational life of around 20 years.
Livingstone Solar Farm	SSD-80114208	Brunsdon Pastoral Co	Development of a proposed 300 to 600 MW solar farm comprising PV panels. BESS and associated infrastructure across an area of around 2,700 ha.	— SEARs issued in March 2025; an EIS is currently being prepared — the project would be constructed over a period of around 12 to 24 months — construction and operation commencement timeframe currently unknown — an operational life of around 30 to 40 years is expected.
Mangoplah Battery Energy Storage System	SSD-77527735	Samsun C&T Renewable Energy Australia Pty Ltd	Development of a proposed 100 MW / 400 MWh BESS including transmission connection and associated infrastructure.	— SEARs issued in November 2024; an EIS is currently being prepared — the project would be constructed over a period of around 12 to 15 months within indicative commencement in 2027 — operational commencement is expected in 2028/2029 with an expected operational life of around 20 years.
Yanco Delta Wind Farm (approved)	SSD-41743746	ViRYA Energy	Development of a proposed 1,500 MW wind farm comprising around 208 wind turbines (with a maximum tip height of up to 270 m), BESS and associated infrastructure across an area of around 42,000 hectares.	— approved in December 2023 — project modified in June 2024 to correct turbine locations and development layout — construction is proposed to begin in 2026 and is expected to take around 36 months — operation is expected to begin in 2026 or 2027 with an operational life of around 30 years.

Project	SSD/SSI	Proponent	Scope	Project timeline
Gregadoo Solar Farm (approved)	SSD-8825	Gregadoo Solar Farm Pty Ltd	Development of a proposed 47 MW solar farm comprising PV panels and associated infrastructure across an area of around 150 ha. A current modification proposal includes incorporation of a BESS, an increase in development area and a new access road.	— approved in December 2018 — project modified in March 2021 and August 2023 to increase the operating capacity and number of PV panels — current modification proposal exhibited between November and December 2024 — construction is proposed to begin in 2025 and is expected to take around 12 to 18 months — operation is expected to begin in 2026 with an operational life of 30 years.
Inland Rail (Albury to Illabo) (approved)	SSI-10055	ARTC	Enhancement works to structures and sections of track along 185 km of existing operational standard gauge rail from the Victorian/NSW border to Illabo in regional NSW.	— approved in October 2024 — construction is expected to begin in January 2025 and is expected to take around 30 months to complete — operation is expected to begin in around mid-2027.

O2.1 Cumulative impacts on native vegetation, threatened species and threatened ecological communities

This section provides an assessment of the relevant future projects with potential cumulative native vegetation and threatened species impacts (see Table O.3).

Where available, the total impact to native vegetation from each relevant future project is provided along with a list of the TECs and threatened species that would be impacted. The total ecosystem credit and species credit requirement for each relevant 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 relevant future projects and the total native vegetation impact is considered the simplest way to represent impact to threatened species.

The results from the review of information (based on data extracted from EIS of future relevant projects, where available) indicate the following:

1 The known or estimated cumulative native vegetation impacts equate to 10,524.01 hectares

2 The cumulative ecosystem credit requirement equates to 255,234 credits

3 The cumulative species credit requirement equates to 544,406 credits.

These figures may be an underestimate, however, as not all future relevant projects under consideration had published EIS with impact data.

The following ecological entities have been identified from a review of the relevant future projects as being subject to cumulative impacts from current and relevant future projects:

Threatened flora species:

- Slender Darling Pea (*Swainsona murrayana*) – impacted by nine future relevant projects
- Chariot Wheels (*Maireana cheelii*)
- Mossgiel Daisy (*Brachyscome papillosa*) – impacted by six future relevant projects
- Austral Pillwort (*Pilularia novae-hollandiae*) – impacted by five future relevant projects.

Threatened fauna species:

- Plains-wanderer (*Pedionomus torquatus*); Southern Bell Frog (*Litoria raniformis*) – impacted by six future relevant projects
- Bush Stone-curlew (*Burhinus grallarius*) – impacted by three future relevant projects
- Pink Cockatoo (*Lophochroa leadbeateri*) – impacted by two future relevant projects.

BC Act listed TECs:

- Myall woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions; Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions – impacted by six future relevant projects
- *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions; White Box Yellow Box Blakely's Red Gum grassy woodland and derived native grassland – impacted by three future relevant projects
- *Allocasuarina luehmannii* Woodland in the Riverina and Murray-Darling Depression Bioregions; Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions – impacted by one future relevant project.

EPBC Act listed TECs:

- Weeping Myall Woodlands – impacted by six future relevant projects
- Natural Grassland of the Murray Valley Plains – impacted by five future relevant projects
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – impacted by four future relevant projects
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – impacted by two future relevant projects
- Buloke Woodlands; Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – impacted by one future relevant project.

Many of the projects summarized in this assessment are in the early stages of preparing an EIS. Each project must take further stapes to avoid and minimize impacts on biodiversity so the potential impacts in this assessment are likely to be reduced and further mitigation measures will be implemented during detailed design and construction. Where impacts are unavoidable, offsets would be generated project by project.

Table O.3 Quantitative 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			
EnergyConnect (NSW – Eastern Section)	1,550 ha impact on native vegetation	Six TECs: 5.18 hectares of *Acacia melvillei* shrubland (endangered) 2.93 hectares of *Allocasuarina luehmannii* woodland (endangered) 26.95 hectares of Inland Grey Box Woodland (endangered) 101.21 hectares of Myall woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (endangered) 31.99 hectares of Sandhill Pine Woodland (endangered) 41.44 hectares of White Box Yellow Box Blakely's Red Gum grassy woodland and derived native grassland (critically endangered).	Seven TECs: 2.93 hectares of Buloke Woodlands (endangered) 15.41 hectares of Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (endangered) 72.51 hectares of Natural Grasslands of the Murray Valley Plains (critically endangered) 5.98 hectares of Plains mallee box woodland (endangered) 3.01 hectares of Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (critically endangered) 101.21 hectares of Weeping Myall Woodlands (endangered) 35.45 hectares of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (critically endangered).	— Mossgiel Daisy (*Brachyscome papillosa*) — Winged Pepper-cress (*Lepidium monoplocoides*) — Lanky Buttons (*Leptorhynchos orientalis*) — Chariot Wheels (*Maireana cheelii*) — Austral Pillwort (*Pilularia novae-hollandiae*) — Thyme Rice-Flower (*Pimelea serpyllifolia*) — Slender Darling Pea (*Swainsona murrayana*) — Silky Swainson-pea (*Swainsona sericea*) — Southern Myotis (*Myotis macropus*) — Plains-wanderer (*Pedionomus torquatus*) — Squirrel Glider (*Petaurus norfolcensis*) — Regent Parrot (eastern subspecies) (*Polytelis anthopeplus monarchoides*) — Pink Cockatoo (*Lophochroa leadbeateri*) — Superb Parrot (*Polytelis swainsonii*).	42,426	33,503

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			
HumeLink	670.21 ha of native vegetation	Five TECs: 0.75 hectares of Montane Peatlands and Swamps (endangered) 1.7 hectares of Monaro Tableland Cool Temperate Grassy Woodland (critically endangered) 1.42 hectares of Coolac Tumut Serpentine Shrubby Woodland(endangered) 37.42 hectares of Tableland Basalt Forest(endangered) 311.78 hectares of White Box Yellow Box Blakely's Red Gum grassy woodland and derived native grassland(critically endangered)	Two TECs: 0.56 hectares of Alpine Sphagnum Bogs and Associated Fens (endangered) 111.47 hectares of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (critically endangered)	— Ausfeld's Wattle (Acacia ausfeldii) — Bynoe's Wattle (Acacia bynoeana) — Flockton Wattle (Acacia flocktoniae) — Phantom Wattle (*Acacia phasmoides*) — Yass Daisy (*Ammobium craspedioides*) — Dense Cord-rush (*Baloskion longipes*) — *Bossiaea fragrans* — Few-seeded Bossiaea (*Bossiaea oligosperma*) — Small Pale Grass-lily (Cae*sia parviflora var. minor*) — Crimson Spider Orchid (*Caladenia concolor*) — Thick Lip Spider Orchid (*Caladenia tessellata*) — Mauve Burr-daisy (*Calotis glandulosa*) — Max Mueller's Burr-daisy (*Calotis pubescens*) — Dwarf Kerrawang (*Commersonia prostrata*) — Small Scurf-pea (*Cullen parvum*) — Michelago Parrot-pea (*Dillwynia glaucula*) — Buttercup Doubletail (*Diuris aequalis*) — Pale Golden Moths (*Diuris ochroma*) — Pine Donkey Orchid (*Diuris tricolor*) — Black Gum (*Eucalyptus aggregata*) — *Eucalyptus alligatrix subsp. Alligatrix* — Capertee Stringybark *(Eucalyptus cannonii)*	10,997	134,578

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			
				— Paddy's River Box (*Eucalyptus macarthurii*) — Robertson's Peppermint (*Eucalyptus robersonii* subsp. *Hemisphaerica*) — Clover Glycine (*Euphrasia arguta*) — Rough Eyebright (*Euphrasia scabra*) — Superb Midge Orchid (*Genoplesium superbum*) — *Glycine latrobeana* — Wee Jasper Grevillea (*Grevillea iaspicula*) — Tumut Grevillea (*Grevillea wilkinsonii*) — Elusive Cress (*Irenepharsus magicus*) — Cambage Kunzea (*Kunzea cambagei*) — Aromatic Peppercress (*Lepidium hyssopifolium*) — Hoary Sunray (*Leucochrysum albicans var. tricolor*) — Clandulla Geebung (*Persoonia marginata*) — *Persoonia mollis subsp. Revoluta* — Dwarf Phyllota (*Phyllota humifusa*) — Cotoneaster Pomaderris (*Pomaderris cotoneaster*) — Delicate Pomaderris (*Pomaderris delicata*) — Pale Pomaderris (*Pomaderris pallida*) — Bago Leek-orchid (*Prasophyllum bagoense*) — Brandy Marys Leek-orchid (*Prasophyllum innubum*) — Kelton's Leek Orchid (*Prasophyllum keltonii*)		

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			
				— Tarengo Leek Orchid (*Prasophyllum petilum*) — *Prasophyllum sp. Wybong* — Alpine Greenhood (*Pterostylis alipina*) — Slender Greenhood (*Pterostylis foliata*) — Blue-tongued Greenhood (*Pterostylis oreophila*) — Dwarf Bush-pea (*Pultenaea humilis*) — Monaro Golden Daisy (*Rutidosis leiolepius*) — Woolly Ragwort (*Senecio garlandii*) — *Solanum armourense* — Small Purple-pea (*Swainsona recta*) — Silky Swainson-pea (*Swainsona sericea*) — Alpine Sun-orchid (*Thelymitra alpicola*) — Austral Toadflax (*Thesium australe*) — Swamp Everlasting (*Xerochrysum palustre*) — Granite Zieria (*Zieria obcordata*) — Pink-tailed Legless Lizard (*Aprasia parapulchella*) — Bush Stone-curlew (*Burhinus grallarius*) — Gang-gang Cockatoo (*Callocephalon fimbriatum*) — Glossy Black-cockatoo (*Calyptorhynchus lathami*) — Eastern Pygmy-possum (*Cercartetus nanus*) — Large-eared Pied Bat (*Chalinolobus dwyeri*) — Sloane's Froglet (*Crinia sloanei*)		

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			
				— Alpine She-oak Skink (*Cyclodomorphus praealtus*) — Striped Legless Lizard (*Delma impar*) — White-bellied Sea-eagle (*Haliaeetus leucogaster*) — Little Eagle (*Hieraaetus morphnoides*) — Key's Matchstick Grasshopper (*Keyacris scurra*) — Booroolong Frog (*Litoria booroolongensis*) — Yellow-spotted Tree Frog (*Litoria castanea*) — Square-tailed Kite (*Lophoictinia isura*) — Broad-toothed Rat (*Mastacomys fuscus*) — Large Bent-winged Bat (*Miniopterus orianae oceanensis*) — Stuttering Frog (*Mixophyes balbus*) — Southern Mytois (*Myotis Macropus*) — Barking Owl (*Ninox connivens*) — Powerful Owl (*Ninox strenua*) — Greater Glider (*Petauroides Volans*) — Squirrel Glider (Petaurus nofolcensis) — Brush-tailed Rock-wallaby (*Petrogale penicillate*) — Pink Robin (*Petroica rodinogaster*) — Brush-tailed phascogale (*Phascogale tapoatafa*) — Koala (*Phascolarctos cinereus*) — Superb Parrot (*Polytelis swainsonii*)		

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			
				— Smoky Mouse (*Pseudomys fumeus*) — Southern Corroboree Frog (*Pseudophryne corrboree*) — Yellow Bellied Glider (Petaurus australis) — Golden Sun Moth (*Synemon plana*) — Masked Owl (*Tyto novaehollandiae*) — Sooty Owl (*Tyto tenebricosa*).		
Junction River Wind Farm (formerly Burrawong Wind Farm)	69.2 ha	Two TECs: 1.17 hectares of Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (endangered) 2.03 hectares of *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions (endangered)	–	— Mossgiel Daisy (*Brachyscome papillosa*) — Winged Peppercress (*Lepidium monoplocoides*) — Menindee Nightshade (*Solanum karsense*) — Major Mitchell's Cockatoo (*Lophochroa leadbeateri*).	1,351	1,099
Keri Keri Wind Farm	1130.93	–	–	— Chariot Wheels (*Maireana cheelii*) — Slender Darling Pea (*Swainsona murrayana*) — Mossgiel Daisy (*Brachyscome papillosa*) — Little Eagle (*Hieraaetus morphnoides*).	40,751	125,814

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			
Baldon Wind Farm	805.62 ha	–	One TEC: 1.12 hectares of Natural Grasslands of the Murray Valley Plains (critically endangered)	— Mossgiel Daisy (*Brachyscome papillosa*) — Bindweed (*Convolvulus tedmoorei*) — Winged Peppercress (*Lepidium monoplocoides*) — Lanky Buttons (*Leptorhynchos orientalis*) — Chariot Wheels (*Maireana cheelii*) — Austral Pillwort (*Pilularia novaehollandiae*) — Turnip Copperburr (*Sclerolaena napiformis*) — Menindee Nightshade (*Solanum karsense*) — Slender Darling Pea (*Swainsona murrayana*) — Red Darling Pea (*Swainsona plagiotropis*) — Little Eagle (*Hieraaetus morphnoides*) — Southern Bell Frog (*Litoria raniformis*).	27,214	25,807

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			
Pottinger Wind Farm	993.08 ha	Four TECs: 12.76 ha of *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions (critically endangered) 12.54 ha of *Acacia loderi* Shrublands (endangered) 0.32 ha of Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (endangered) 11.58 ha of Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (endangered)	One TEC: 0.32 ha of Weeping Myall Woodlands (endangered)	— Purple-wood Wattle (*Acacia carneorum*) — Mallee Golden Wattle (*Acacia notabilis*) — Creek Wattle (*Acacia rivalis*) — Mossgiel Daisy (*Brachyscome papillosa*) — Showy Indigo (*Indigofera longibractea*) — Chariot Wheels (*Maireana cheelii*) — Yellow-Keeled Swainsona (*Swainsona flavicarinata*) — Silky Swainson-pea (*Swainsona sericea*) — Slender Darling Pea (*Swainsona murrayana*) — Creeping Darling Pea (*Swainsona viridis*) — Thick-billed Grasswren (northwest NSW subspecies) (*Amytornis modestus obscurior*) — Stimson's Python (*Antaresia stimsoni*) — Australian Bustard (*Ardeotis australis*) — Bush Stone-curlew (*Burhinus grallarius*) — Barrier Range Dragon (*Ctenophorus mirrityana*) — Eastern Fat-tailed Gecko (*Diplodactylus platyurus*) — Black-breasted Buzzard (*Hamirostra melanosternon*) — Little Eagle (*Hieraaetus morphnoides*) — Southern Bell Frog (*Litoria raniformis*) — Pink Cockatoo (*Lophochroa leadbeateri*) — Crowned Gecko (*Lucasium stenodactylum*) — Plains-wanderer (*Pedionomus torquatus*).	34,717	40,582

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			
Billabong Creek Environmental Water Regulators	16.23 ha	–	–	— Southern Bell Frog (*Litoria raniformis*) — Plains-wanderer (*Pediomomus torquatus*) — Southern Myotis (*Myotis Macropus*) — Slender Darling Pea (*Swainsona murrayana*) — Little Eagle (*Hieraeetus morphnoides*) — Bush Stone-curlew (*Burhinus grallarius*).	421	677
Bullawah Wind Farm	638.01 ha	Two TECs: 22.8 ha of Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (endangered) 59.70 ha of Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregion (endangered)	One TEC: 4.92 ha Weeping Myall Woodlands (endangered)	— A spear-grass (*Austrostipa wakoolica*) — Small Scurf-pea (*Cullen parvum*) — Winged Peppercress (*Lepidium monoplocoides*) — Chariot Wheels (*Maireana cheelii*) — Slender Darling Pea (*Swainsona murrayana*) — Silky Swainson-pea (*Swainsona sericea*) — Little Eagle (*Hieraaetus morphnoides*) — Barking Owl (*Ninox connivens*) — Southern Bell Frog (*Litoria raniformis*).	15,703	74,682

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			
Dinawan Solar Farm	2,479.9 ha	One TEC: 1,571 ha of Myall Woodland in the Darling Riverine Plains, Brigalow Blet South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes and Bioregions (endangered)	Two TECs: 137.30 ha of Weeping Myall Woodlands (endangered) 11.50 ha of Natural Grasslands of the Murray Valley Plains (critically endangered)	— Slender Darling Pea *Swainsona murrayana* — Silky Swainsona-pea *Swainsona sericea* — *Austrostipa wakoolica* — Austral Pillwort *Pilularia novae-hollandiae* — Southern Bell Frog *Litoria raniformis.* — Plains-wanderer (*Pediomomus torquatus*).	40,229	14,462
Dinawan Wind Farm	1,145.25 ha	Two TECs: Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (Weeping Myall Woodland) – (Endangered) Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (Sandhill Pine Woodland) – (Endangered)	Two TECs: Weeping Myall Woodland (Endangered) Natural Grasslands of the Murray Valley (Critically Endangered)	— *Austrostipa wakoolica* — Mossgiel Daisy (*Brachyscome papillosa*) — *Convolvulus tedmoorei* — Yellow Gum (*Eucalyptus leucoxylon subsp. Pruinosa*) — Winged Peppercress (*Lepidium monoplocoides*) — Lanky Buttons (*Leptorhynchos orientalis*) — Southern Bell Frog (*Litoria raniformis*) — Barking Owl (*Ninox connivens*) — Plains-wanderer (*Pedionomus torquatus*) — Austral Pillwort (*Pilularia novae-hollandiae*) — Superb Parrot (*Polytelis swainsonii*) — Slender Darling Pea (*Swainsona murraywana*) — Silky Swainson-pea (*Swainsona sericea*) — Masked Owl (*Tyto novaehollandiae*).	24,521	7,332

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			
Yanco Delta Wind Farm	173.39 ha	Two TECs: 31.09 ha of Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (endangered) 10.28 ha of Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (endangered)	Two TECs: 88.33 ha Natural Grasslands of the Murray Valley Plains (critically endangered) Weeping Myall Woodlands (29.69 ha)	— *Austrostipa wakoolica* — *Brachyscome muelleroides* — Brachyscome papillosa — *Caladenia arenaria* — *Convolvulus tedmoorei* — *Cullen parvum* — *Lepidium monoplocoides* — *Leptorhynchos orientalis* — *Maireana cheelii* — *Pilularia novae-hollandiae* — *Sclerolaena napiformis* — *Swainsona murrayana* — *Swainsona plagiotropis* — *Swainsona sericea* — Southern Myotis — Plains-wanderer.	5,854	13,675

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			
Gregadoo Solar Farm	2.1 ha	–	Two TECs: Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern (Endangered) (7.93 ha) White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived native grassland (Critically Endangered) (3.65 ha)	— Superb Parrot (*Polytelis swainsonii*) — Glossy Black Cockatoo (*Calyptorhynchus lathami*) — Masked Owl (*Tyto novaehollandiae*) — Sloane's Froglet (*Crinia sloanei*).	36	14
Inland Rail (Albury to Illabo)	4.44 ha	One TEC: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (2.84 ha)	One TEC: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (0.5 ha)	— Squirrel Glider (*Petaurus norfolecensis*) — Superb Parrot (*Polytelis swainsonii*) — Key's matchstick Grasshopper (*Keyacris scurra*) — Sloanes Froglet (*Crinia sloanei*).	137	195
Subtotals						
Related development, proposed and approved projects	9678 ha	N/A	N/A	N/A	244,357	472,420

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			
VNI West (NSW) (this project)						
This project	**1,432.61 ha**	Six TECs: *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions (9.86 ha) *Allocasuarina luehmannii* Woodland in the Riverina and Murray-Darling Depression Bioregions (1.15 ha) Inland Grey Box Woodlands in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (1.14 ha) Myall Woodlands in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (176.74 ha)	Six TECs: Buloke woodlands of the Riverina and Murray Darling Depression bioregions (1.92 ha) Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (0.84 ha) Natural Grasslands of the Murray Valley Plains (101.69 ha) Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (0.17 ha) Weeping Myall Woodlands (92.65 ha) White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (3.36 ha)	— Mossgiel Daisy (*Brachyscome papillosa*) — Spike Rush (*Eleocharis obicis*) — Chariot Wheels (*Maireana cheelii*) — Austral Pillwort (*Pilularia novae-hollandiae*) — Slender Darling-pea (*Swainsona murrayana*) — Bush-stone Curlew (*Burhinus grallarius*) — Pink Cockatoo (*Lophochroa leadbeateri*) — Plains-wanderer (*Pedionomus torquatus*) — Southern Bell Frog (*Litoria raniformis*).	25,710	82,817

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			
		Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (42.39 ha) 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 (44.24 ha)				
Grand total						
	11,110.97				**270,067**	**555,237**

O2.2 Cumulative impacts on groundwater dependent ecosystems

As outlined in the *Technical paper 10 – Groundwater impact assessment* (WSP 2025a) the majority of GDEs relevant to this project are located between the Murray River at the NSW/Victorian border and the town of Moulamein. There is a small risk to these GDEs from groundwater levels and quality changes that may occur as a result of construction activities such as excavations, piling of soils and spills which could lead to contamination. However, there is an overall low risk of groundwater level and water quality changes from the project as the majority of construction activities would be localised impacts with earthworks generally too shallow to intersect the water table. Controls would also be used to manage erosion and sediment controls and runoff impacts from the project. This assessment concluded that the project is generally considered to have a low risk of impact to GDEs and consequently is unlikely to significantly contribute to the cumulative impacts on GDEs.

The ecological impact to GDEs is covered in section 9.3.5.2 of the BDAR, including potential direct impacts to the GDE.

The potential cumulative impacts to groundwater dependent ecosystems (GDEs) are outlined in Table O.4.

The results from the review of available information indicates the following:

- The Atlas of GDEs (Bureau of Meteorology 2025) and relevant water sharing plans identifies many potential GDEs in and around these future relevant projects.
- All relevant future 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.

Considering the above, it is concluded that the project is unlikely to contribute to cumulative impacts on GDEs.

Table O.4 Potential cumulative impacts on relevant future projects on GDEs

Relevant future project	Impacts on groundwater dependent ecosystems
VNI West (Victoria)	Impacts on GDEs not yet assessed.
EnergyConnect (NSW – Eastern Section)	EnergyConnect (NSW – Eastern Section) would not impact on groundwater and it is considered unlikely to lead to any adverse impact on the groundwater availability or status for GDEs.
HumeLink	Proposed construction and operational activities associated with HumeLink are unlikely to pose a significant risk to groundwater dependent ecosystems given impacts to groundwater quality and flow would be negligible.
Junction Rivers Wind Farm (formerly Burrawong Wind Farm)	The Forest Creek within the subject land of Junction Rivers Wind Farm has been subject to clearing for the purpose of grazing activities and occurs in a modified state, including the presence of a dam. It is unlikely that Junction Rivers Wind Farm would result in a major change to the surface drainage, groundwater recharge or discharge of the subject land or surrounding areas.
Keri Keri Wind Farm	Impacts to GDEs are not anticipated.
Wilan Wind Farm	Impacts on GDEs not yet assessed.
Baldon Wind Farm	Impacts on GDEs considered highly unlikely to occur.
Tchelery Wind Farm	Impacts on GDEs not yet assessed.
Pottinger Wind Farm	Impacts to GDEs are not anticipated.
Pottinger Solar Farm	Impacts on GDEs not yet assessed.

Relevant future project	Impacts on groundwater dependent ecosystems
Billabong Creek Environmental Water Regulators	No groundwater would be intercepted as a result of the Billabong Creek Environmental Water Regulators project. As such, impacts considered unlikely to occur.
Bullawah Wind Farm	Generally, impacts to groundwater resources, including GDEs, are very unlikely given the groundwater table is not at risk of being intercepted during construction or decommissioning of Bullawah Wind Farm.
Romani Solar Farm	Impacts on GDEs not yet assessed.
West Nyangay Solar Farm	Impacts on GDEs not yet assessed.
Conargo Wind Farm	Impacts on GDEs not yet assessed.
Dinawan Solar Farm	Overall, the Dinawan Solar Farm has been assessed to not have any material impact on groundwater flows, so impacts to GDEs are considered unlikely to occur.
Dinawan Wind Farm	No impacts to GDEs.
Argoon Wind Farm	Impacts on GDEs not yet assessed.
Yanco Delta Wind Farm	Based on the relatively deep and uniform regional water table depths, the potential GDEs and High Priority GDEs within the Project area of Yanco Delta Wind Farm are considered unlikely to be relying on the regional water table. Instead, if reliant on groundwater, these are interpreted to be associated with perched groundwater systems situated in marshy areas which are recharged by rainfall and floodwaters.
Gregadoo Solar Farm	No impacts to GDEs.
Belhaven Battery Energy Storage System	Impacts on GDEs not yet assessed.
Inland Rail (Albury to Illabo)	The assessment concluded that the Inland Rail (Albury to Illabo)complies with Level 1 criteria under the *NSW Aquifer Interference Policy*, under which impacts to GDEs are considered acceptable.
VNI West (NSW)	
VNI West (NSW) (this project)	Five high priority terrestrial GDEs occur within the study area and are situated between the Murray River at the NSW/Victorian border and Moulamein. These GDEs are comprised of Semi-arid Woodland and Forested Wetland vegetation formations. No high priority aquatic GDEs were identified.

O2.3 Cumulative impacts on wildlife connectivity and habitat corridors

The potential cumulative impacts to wildlife connectivity and habitat corridors are outlined in Table O.5. The results from the review of available information indicate that:

- many of the relevant future projects occur on land where the connectivity of native vegetation and habitat corridors has been previously compromised by clearing for agricultural land uses
- the relevant future 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 future 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 relevant future projects are likely to reduce the integrity of current corridors and connectivity.

VNI West (NSW) occurs in a landscape that has already been highly fragmented due to historical clearing and agricultural activities. However, some landscape connectivity remains, particularly as the project passes through some connectivity corridors including watercourses which are connected to state forests and conservation areas in the Murray Fans IBRA subregion. Connectivity impacts from this project largely relate predominantly to removal of canopy connectivity. These impacts are most likely to affect aerial species such as birds, bats and arboreal mammals. Bird and bat species are also most at risk of mortality impacts from towers and associated powerlines, though mortality impacts are likely to reduce over time as species adapt to the infrastructure.

Despite these impacts, the project would result in a highly permeable structure for biodiversity, and connectivity impacts are expected to be minimal for all species and reduce over time as biodiversity acclimatises to the presence of the towers and powerlines. The impacts to connectivity are expected to be permanent, though minor. It is expected that the long-term viability of existing habitat patches is likely to remain post-construction. The design and route planning process for the project would aim to minimise impacts to sensitive habitat areas, waterways and remnant tree stands. The consequence of the impacts would be minor and non-significant as a result of the design development process.

In conclusion, cumulative impacts to wildlife connectivity and habitat corridors from the project and relevant future projects have the potential to reduce the integrity of current corridors and connectivity. However, this impact is expected to be small in magnitude since the future relevant projects under consideration occur, like the project, on land where the connectivity of native vegetation and habitat corridors has been previously compromised by clearing for agricultural land uses.

Table O.5 Potential impacts of key relevant future projects on wildlife connectivity and habitat corridors

Project	Impacts on wildlife connectivity and habitat corridors
VNI West (Victoria)	Impacts on wildlife connectivity not assessed/publicly available.
EnergyConnect (NSW – Eastern Section)	EnergyConnect (NSW – Eastern Section) would result in a highly permeable structure for biodiversity and connectivity is expected to remain largely unaffected for all species. Connectivity, however, may be impacted to some degree, particularly for aerial species, however such impacts are not expected to be significant.
HumeLink	The consequence of the impacts of HumeLink to wildlife connectivity are minor: aerial species have the ability to fly around the structures. Impacts to terrestrial species that may be subject to open-space barrier are to be addressed within the Connectivity Strategy where they occur within proximity to the project.

Project	Impacts on wildlife connectivity and habitat corridors
Junction Rivers Wind Farm (formerly Burrawong Wind Farm)	Increased fragmentation within the finer scale of the subject land is expected as a result of the Junction Rivers Wind Farm through the removal of native vegetation. Connectivity as a result will be impacted but is considered minor at a large scale due to the presence of key connectivity corridors in the form of native vegetations and Travelling Stock Reserves.
Keri Keri Wind Farm	No impacts to wildlife connectivity.
Wilan Wind Farm	Impacts on wildlife connectivity not assessed/publicly available.
Baldon Wind Farm	Baldon Wind Farm has the potential to reduce connectivity through clearing. Existing movement opportunities for the majority of species within the Project Area will not be reduced by the linear and discrete nature of the wind farm project. The loss of vegetation associated with the development footprint is unlikely to have an impact that could cause a decline to threatened species.
Tchelery Wind Farm	Impacts on wildlife connectivity not assessed/publicly available.
Pottinger Wind Farm	Pottinger Wind Farm would result in minor or negligible impacts to habitat connectivity at a larger scale.
Pottinger Solar Farm	Impacts on wildlife connectivity not publicly available.
Billabong Creek Environmental Water Regulators	Vegetation clearing within the contractor activity zone and proposed clearing areas of the Billabong Creek Environmental Water Regulators project would reduce connectivity through the proposal footprint by decreasing shelter and creating physical barriers within these discrete areas. However, the project is unlikely to isolate any areas of habitat or sever any connecting links.
Bullawah Wind Farm	Removal of native vegetation may impede movement of species such as Southern Bell Frog and Plains-wanderers between areas of suitable habitat within the Project Area of Bullawah Wind Farm. Effective avoidance measures are to be employed to reduce the impacts of habitat fragmentation.
Romani Solar Farm	Impacts on wildlife connectivity not publicly available.
West Nyangay Solar Farm	Impacts on wildlife connectivity not publicly available.
Conargo Wind Farm	Impacts on wildlife connectivity not publicly available.
Dinawan Solar Farm	The extent of this impact is minor. While the Dinawan Solar Farm would diminish local scale connectivity, this is unlikely to prevent genetic exchange of the threatened entities known, or assumed to be, inhabiting the subject land and broader assessment area.
Dinawan Wind Farm	While the Dinawan Wind Farm would diminish local scale connectivity, this is unlikely to prevent genetic exchange of the threatened entities known, or assumed to be, inhabiting the subject land and broader assessment area. Overall, this effect is not likely to be substantially exacerbated beyond the existing rural impacts installed currently.
Argoon Wind Farm	Impacts on wildlife connectivity not publicly available.
Yanco Delta Wind Farm	The Yanco Delta Wind Farm would increase levels of fragmentation within the region, it would not, however, occur to the extent where species or communities are significantly impacted.

Project	Impacts on wildlife connectivity and habitat corridors
Gregadoo Solar Farm	No significant connectivity features in or adjacent to development site of Gregadoo Solar Farm. As such, impacts from development negligible.
Belhaven Battery Energy Storage System	Impacts on wildlife connectivity not publicly available.
Inland Rail (Albury to Illabo)	The operation of the Inland Rail (Albury to Illabo) is likely to result in minor increases in localised fragmentation of the regional wildlife patches along the creek lines and road reserves. Due to the importance of connectivity, dispersal opportunities and habitat quality for species at a local scale, this impact has the potential to be negative to the dispersal of relatively sedentary species such as mammals, frogs and reptiles. The operation of the Inland Rail (Albury to Illabo) is considered unlikely to result in a large increase to landscape scale fragmentation and to further limit connectivity and movement corridors than what already exists in the proposal site, as it occurs within an already highly fragmented landscape with limited large patches of remnant vegetation. Overall, the potential for habitat connectivity impacts during operation is low.

O2.4 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. The cumulative impacts to protected and sensitive lands are outlined in Table O.6. The results from the review of available information indicate:

- the current project is adjacent to two protected lands: Murray Valley National Park and South West Woodland Nature Reserve
- several of the relevant future projects occur within or adjacent to protected lands (EnergyConnect (NSW Eastern), HumeLink, Junction Rivers Wind Farm, Keri Keri Wind farm, Wilan Wind Farm, Bullawah Wind Farm
- project designs have been altered to avoid and minimise impacts on protected lands.

Table O.6 Potential impacts of relevant future projects on protected lands

Project	Impacts on protected lands
VNI West (Victoria)	Impacts on protected lands not yet assessed.
EnergyConnect (NSW – Eastern Section)	Direct impacts on Yanga State Conservation Area
HumeLink	No direct impacts on protected lands, however several national parks and reserves located within the vicinity of the project – Tarlo River National Park and Minjary National Park within 10 m of the project footprint.
Junction Rivers Wind Farm (formerly Burrawong Wind Farm)	Potential indirect impacts on Yanga National Park
Keri Keri Wind Farm	Potential impacts to Yanga State Conservation Area – mainly erosion and sedimentation from surface water run-off, bushfire risk and introduction of invasive/noxious species

Project	Impacts on protected lands
Wilan Wind Farm	Impacts on protected lands not yet assessed, however issued SEARS mention potential direct and indirect impacts to Yanga State Conservation Area and Yanga Nature Reserve
Baldon Wind Farm	No direct impacts on protected lands.
Tchelery Wind Farm	Impacts on protected lands not yet assessed.
Pottinger Wind Farm	No impacts on protected lands.
Pottinger Solar Farm	Impacts on protected lands not yet assessed.
Billabong Creek Environmental Water Regulators	No impacts on protected lands.
Bullawah Wind Farm	The project adjoins the Oolambeyan National Park, which was consequently considered in modifications to the design and reduced the Project Area and removed infrastructure that had potential to impact waterways which traversed both the National Park boundary. The closest turbines exceed the recommended buffer (300 m) from the National Park by 150 metres.
Romani Solar Farm	Impacts on protected lands not yet assessed.
West Nyangay Solar Farm	Impacts on protected lands not yet assessed.
Conargo Wind Farm	Impacts on protected lands not yet assessed.
Dinawan Solar Farm	No impacts on protected lands.
Dinawan Wind Farm	No impacts on protected lands.
Argoon Wind Farm	Impacts on protected lands not yet assessed.
Yanco Delta Wind Farm	No impacts on protected lands.
Gregadoo Solar Farm	No impacts on protected lands.
Belhaven Battery Energy Storage System	Impacts on protected lands not yet assessed.
Inland Rail (Albury to Illabo)	No impacts on protected lands.
VNI West (NSW)	
VNI West (NSW) (this project)	Potential impacts of fragmentation and degradation to Murray Valley National Park and South West Woodland Nature Reserve due to clearing of vegetation immediately adjacent to parcels of land within these protected areas.

O3 Conclusion

The assessment of cumulative impacts, the incremental effect of multiple sources of impact (past, present and future), provides an opportunity to consider this project within a strategic context. The accumulating impacts of multiple projects, continuing agricultural activities, and development and maintenance of infrastructure will likely result in continued loss of biodiversity.

The cumulative vegetation removal impacts of the future projects considered in this cumulative assessment amounted to an estimated 10,524.01 hectares of remnant vegetation removal. The cumulative species and ecosystem credit requirement equates to 544,406 and 255,234 credits respectively.

Relevant future 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. This project would be unlikely to contribute to the cumulative impacts on GDEs.

This project would have minor impacts to connectivity and would be unlikely to significantly contribute to the cumulative impacts to wildlife connectivity and habitat corridors.

The project is located adjacent to two protected lands (Murray Valley National Park and South West Woodland Nature Reserve) and is likely to have local prescribed impacts on these areas. These two protected areas are not impacted, however, by any of the future relevant projects under consideration and as such cumulative impacts on protected lands are not anticipated.

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