

Tomingley Gold Extension Project Biodiversity Development Assessment Report

Part 9

Major Project Application No. PA 09_0155



Prepared by



AREA Environmental & Heritage Consultants Pty Ltd

December 2021

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Tomingley Gold Extension Project

Biodiversity Development Assessment Report

Narromine LGA NSW December 2021





- AREA Environmental & Heritage Consultants ABN:29 616 529 867
 Environmental impact assessment, approvals and auditing
 Preliminary environmental assessment (PEA)
 Review of environmental factors (REF)
 Peer review
 Community engagement
 Biobanking and biodiversity offsetting assessments
 Aboriginal heritage assessments and community walkovers
 Landscape design

 - Community engagement Biobanking and biodiversity offsetting assessments Aboriginal heritage assessments and community walkovers

AREA acknowledges Traditional Owners of the

country on which we work

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Executive summary

AREA Environmental & Heritage Consultants (AREA) was commissioned by R.W. Corkery & Co. (the Client) on behalf of Tomingley Gold Operations Pty Ltd (the Applicant) to complete this Biodiversity Development Assessment Report (BDAR).

This BDAR provides an assessment of the likely impact to biodiversity for the Tomingley Gold Extension Project (the Project). A full site-based assessment has been undertaken using the Biodiversity Assessment Methodology 2020 (BAM).

The Applicant is a wholly owned subsidiary of Alkane Resources Ltd (Alkane). Alkane is an Australian publicly listed mining and exploration company established in 1969. The Applicant currently owns and operates Tomingley Gold Operations (TGO), a gold mine located immediately south of the village of Tomingley, NSW, subject to MP 09_0155 (the TGO Mine Site).

The Project would involve an extension of the current mining operations to develop the recently discovered San Antonio and Roswell (SAR) deposits, located to the south of the TGO Mine Site, (the SAR Mine Site) through a combination of open cut and underground mining (Figure 1-1 and Figure 1-2). Key features of the Project relevant to this BDAR include:

- Construction of the SAR Open Cut and Underground Mine.
- Realigned Newell Highway and Kyalite Road and associated intersections with Back Tomingley West Road and McNivens Lane and Kyalite Road overpass.
- Construction of two waste rock emplacements, namely the Caloma and SAR Waste Rock Emplacement and backfilling of the associated open cuts.
- Construction of the SAR Amenity Bund, Haul Road and Services Road between the SAR Open Cut and the Caloma 2 Open Cut.
- Associated ancillary surface and underground activities and infrastructure.
- Erosion and sediment control structures, including clean and dirty water structures and the Flood Bund, would be established.
- Construction laydown and equipment parking areas, as well as office/amenity buildings would be established.
- Suitable fences, including warning signs, would be established to separate active mining areas from areas that would continue to be used for agricultural purposes.
- A proposed water supply bore and pipeline which would replace an existing and dilapidated bore, and connect the replacement bore to an existing water supply pipeline
- Relocation of the 22-kilovolt transmission line currently operated by Essential Energy to the east around the Development Footprint.

Components of the Project have been designed to avoid impact to native vegetation where possible.

The Development Footprint considered by this BDAR covers an area of approximately 494.28 hectares, of which approximately 76.03 hectares is native vegetation. Approximately 402.22 hectares of the Development Footprint is consistent with Category 1 Land (Exempt Land) under the *Local Land Services Act 2013* with scattered trees, and 16.03 hectares of the Development Footprint is not native vegetation and include roads, buildings, and other areas of bare earth.

This BDAR includes an assessment of landscape values in the Development Footprint and surrounding areas, the vegetation communities present in the Development Footprint and their condition, the known or potential presence of threatened flora or fauna species and populations, as well as potential matters of Serious and Irreversible Impact (SAII) listed in NSW under the *Biodiversity Conservation Act 2016* (BC Act) and/or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Native vegetation within the Development Footprint consists of remnant vegetation along road corridors, including 'paper' roads, and across a few paddocks. Four Plant Community Types (PCT) were recorded in the Development Footprint in several condition states:

- PCT55 Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions three conditions states;
- PCT82 Western Grey Box Poplar Box White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion – three condition states;
- PCT201 Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion – three condition states; and
- PCT27 Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion one condition state.

Two Threatened Ecological Communities (TEC) are present in the Development Footprint:

- Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions (Endangered BC Act); and
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (Endangered EPBC Act and BC Act).

Impact to this native vegetation (including the TECs) would generate an offsetting requirement of 1724 ecosystem credits under the NSW Biodiversity Offset Scheme.

The TEC *Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions* is a candidate for a Serious and Irreversible Impact (SAII). Additional information regarding the local population and impact to this candidate SAII has been provided in this report. Changes in Project design have resulted in overall avoidance of 10.80 hectares of this TEC.

In addition to areas of native vegetation, the Development Footprint covers areas of land consistent with Category 1 Land and this BDAR includes evidence to support this determination. It also documents the application of the Biodiversity Assessment Method (BAM) 'Streamlined assessment module - Scattered trees assessment' in areas where scattered trees are surrounded by Category 1 Land. Impact to scattered trees would generate an offsetting requirement of 43 ecosystem credits under the NSW Biodiversity Offset Scheme.

The predicted impact to threatened flora and fauna species was informed by targeted surveys for threatened species undertaken in accordance with relevant guidance documents.

Threatened species relevant to this assessment are those listed species identified by the NSW Department of Planning Industry & Environment (DPIE) which are predicted to occur in the BAM Credit Calculator (BAMC) as ecosystem credit species or species credit species, based on their known presence in habitat surrogates indicated by the Interim Biogeographic Regionalisation for Australia (IBRA) subregion, the presence of associated PCTs, the size and condition of the

vegetation patches on the site. In addition, the EPBC Act Protected Matters Report provided a list of threatened species predicted under this Commonwealth legislation which are also considered by this assessment.

Ecosystem credit species are those that can be reliably predicted based on the habitat surrogates. No survey is required for these as they are assumed to occur. The BAMC identified 20 ecosystem credit species for the Project, and two additional species were added to the BAMC to address a protected matter identified in the EPBC Act Protected Matters Report. Two of these 22 species were excluded as habitat constraints or geographic constraints are not present in the Development Footprint.

Seventeen species credit species (candidate species) were identified by the BAMC and an another one was added to address a protected matter identified in the EPBC Act Protected Matters Report which could not be excluded based on targeted survey. Candidate species cannot be reliably predicted from the habitat surrogates and their presence is considered through habitat assessment and targeted surveys. These are assumed to occur unless survey effort has been undertaken in accordance with the guidance material proving otherwise. Six candidate species were excluded based on habitat or geographic constraints.

The Applicant accepted the burden of proof and survey by appropriately experienced and qualified ecologists for candidate species credit species occurred in 2020 and 2021 following requisite guidelines. This survey was sufficient to exclude the remaining candidate species requiring targeted survey.

PCT name		From standard BAM		From scattered trees	
		No HBT	HBT	No HBT	Total
PCT55 - Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions	145	395	7	5	552
PCY82 - Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion	608	95	8	22	733
PCT201 - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	398	27	0	1	426
PCT27 - Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion	0	13	0	0	13
Total	1151	530	15	28	1724

No species credits would be required under the NSW Biodiversity Offset Scheme. The Applicant would be required to retire ecosystem credits, summarised in the table below.

The Applicant has applied the avoid, minimise, offset hierarchy. Changes in Project design have resulted in proposed impact to fewer hectares of native vegetation, notwithstanding the limitations associated with accessing a geological deposit. Where possible, proposed Project operational areas and waste rock emplacements are in cleared, Category 1 Land.

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Introduction 1

1.1 **Description of the Project**

AREA Environmental & Heritage Consultants (AREA) was commissioned by R.W. Corkery & Co. (the Client) on behalf of Tomingley Gold Operations Pty Ltd (the Applicant) to complete this Biodiversity Development Assessment Report (BDAR).

This BDAR provides an assessment of the likely impact to the biodiversity from the Tomingley Gold Extension Project (the Project). A full site-based assessment has been undertaken using the Biodiversity Assessment Methodology 2020 (BAM).

The Applicant is a wholly owned subsidiary of Alkane Resources Ltd (Alkane). Alkane is an Australian publicly listed mining and exploration company established in 1969. The Applicant currently owns and operates Tomingley Gold Operations (TGO), a gold mine located immediately south of the village of Tomingley, NSW, subject to MP 09_0155 (the TGO Mine Site).

The Project is located immediately south of the village of Tomingley in central western NSW (Figure 1-1), approximately 7.5 kilometres north of Peak Hill and 38 kilometres south of Narromine (the Project Site). The Project Site is located within the Narromine Local Government Area on land zoned RU1 – Primary Production and SP2 – Infrastructure, under the Narromine Local Environmental Plan 2011 (LEP).

The Project would involve an extension of the current mining operations to develop the recently discovered San Antonio and Roswell (SAR) deposits, located to the south of the TGO Mine Site, (the SAR Mine Site) through a combination of open cut and underground mining (Figures 1-2 and 1-3). Key features of the Project relevant to this BDAR include:

- Construction of the SAR Open Cut and Underground Mine.
- Realignment of a section of the Newell Highway (approximately 7.5 kilometres), Kyalite Road, Back Tomingley West Road intersection and McNiven's Lane intersection, as well as the Kyalite Road overpass.
- Construction of two waste rock emplacements, namely the Caloma Waste Rock Emplacement, within the existing and approved Caloma 1 and Caloma 2 Open Cuts (within the TGO Mine Site), and the SAR Waste Rock Emplacement, within the southern and central sections of the SAR Open Cut.
- Construction of the SAR Amenity Bund, Haul Road and Services Road between the SAR Open Cut and the Caloma 2 Open Cut.
- Associated ancillary surface and underground activities and infrastructure.
- Erosion and sediment control structures, including clean and dirty water structures and the Flood Bund, would be established.
- Construction laydown and equipment parking areas, as well as office/amenity buildings • would be established.
- Vegetation clearing followed by stripping and stockpiling of soil.
- Borrow pits would be established within the footprint of the Waste Rock Emplacement and / or SAR Open Cut for the supply of construction materials.



- Suitable fences, including warning signs, would be established to separate active mining areas from areas that would continue to be used for agricultural purposes.
- A proposed water supply bore and pipeline which would replace an existing and dilapidated bore, and connect the replacement bore to an existing water supply pipeline
- Relocation of the 22-kilovolt transmission line currently operated by Essential Energy to the east around the Development Footprint.

This BDAR assesses the potential biodiversity impacts from construction of the Project and addresses requirements of the following legislative frameworks:

- NSW Environmental Planning and Assessment Act 1979 (EP&A Act)
- NSW Biodiversity Conservation Act 2016 (BC Act)
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This BDAR uses the following terms:

- **Development Footprint:** The anticipated outer limit of disturbance from the construction and operation of the Project, at the time of the assessment for and the writing of this BDAR. The Development Footprint includes the proposed powerline and pipeline easements.
- **Project:** Tomingley Gold Extension Project (the Project) the activities for which development consent is sought comprising all proposed activities associated with the Tomingley Gold Extension Project.
- SAR Mine Site: The land subject to the application (excluding the TGO Mine Site)





Figure 1-1: The project location



Figure 1-2: Project detail





1.2 Requirement of assessment under the BAM

This BDAR documents the assessment of potential impacts to biodiversity associated with the Project and informs the determination of the proposal as a State Significant Development under Division 4.7 of the Environmental Planning and Assessment Act 1979.

As the Project is a State Significant Development, it requires assessment in accordance with the NSW Biodiversity Offsets Scheme.

This BDAR was also prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the Environmental Impact Statement prepared for the Project. Requirements for biodiversity described in the SEARs are:

- an assessment of the biodiversity values and the likely biodiversity impacts of the development throughout its life, and impacts on biodiversity values in the region, in accordance with Section 7.9 of the Biodiversity Conservation Act 2016 (NSW), the Biodiversity Assessment Method (BAM 2020) and documented in a Biodiversity Development Assessment Report (BDAR); and
- the BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the BAM

In addition, relevant agency advice requires consideration of the following matters relevant to this assessment of biodiversity:

- The BDAR must include offset obligation as follows:
 - The total number and classes of biodiversity credits required to be retired for the development/project;
 - The number and classes of like-for-like biodiversity credits proposed to be retired;
 - The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules;
 - Any proposal to fund a biodiversity conservation action;
 - Any proposal to conduct ecological rehabilitation;

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- Any proposal to make a payment to the Biodiversity Conservation Fund.
- The BDAR must be submitted with all spatial data associated with the survey and assessment as per Appendix 11 of the BAM.
- The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the Biodiversity Conservation Act 2016.
- Part of the land has been identified as containing mapped Terrestrial Biodiversity land and as such, is a sensitive area as set out in Clause 6.4 of the Narromine Local Environmental Plan 2011. Appropriate survey and design for determining Plant Community Types and threatened species are required to ensure that the potential impacts of the development are appropriately considered in the Biodiversity Development Assessment Report.





In addition to areas of native vegetation, the Project also includes the potential for impact to land consistent with the definition of Category 1 Land and this BDAR includes evidence to support this determination and mapping. It also documents the application of the Biodiversity Assessment Method (BAM) 'Streamlined assessment module - Scattered trees assessment' in areas where scattered trees are surrounded by Category 1 Land. The standard BAM is applied in remaining areas where native vegetation would be impacted.

The scattered tree definition applied for this BDAR is:

... have a percent foliage cover that is less than 25% of the benchmark for tree cover for the most likely plant community type and are on category 2-regulated land and surrounded by category 1-Exempt Land on the Native Vegetation Regulatory Map under the LLS Act (BAM, Appendix B, section B.1 (a)).

A full site-based assessment has been undertaken in accordance with the BAM (2020).

1.3 The subject land

The Development Footprint for the Project is located to the south of the existing TGO Mine Site and the village of Tomingley, NSW. The village of Tomingley was established as result of gold mining operations in the late 19th and early 20th centuries. Clearing of native vegetation for mining and agriculture has occurred historically in the Development Footprint and the local area.

Areas of remnant vegetation exist as tree corridors along roads, paddock edges, and across a few paddocks. Agricultural operations in the Development Footprint include cropping, grazing, a fodder plantation and associated houses, sheds and yards.

Local and regional landscape context is provided in Section 2 of this report.

The Development Footprint falls across numerous Lots and DPs (Table 1-1 and Figure 1-3) as well as existing and 'paper' road corridors. In Table 1-1, grey shading indicates Lots impacted by the proposed bore and pipeline only.

Lot number	Plan (DP) number	Freehold or Crown land
175	755093	FREEHOLD
1	820746	FREEHOLD
162	755110	FREEHOLD
163	755110	FREEHOLD
43	755093	FREEHOLD
3	1213503	FREEHOLD
1	1273565	FREEHOLD
101	1271511	FREEHOLD
1622	1178801	FREEHOLD
1621	1178801	FREEHOLD
169	755093	FREEHOLD
4	1213503	FREEHOLD
105	755110	FREEHOLD
1	1181773	FREEHOLD
235	755131	FREEHOLD

Table 1-1: Lot and DPs in the Development Footprint





Figure 1-3: Development Footprint Map – Lot and DPs



1.4 Personnel contributing to this document

This assessment was carried out by appropriately qualified and experienced AREA ecologists (Table 1-2).

Name	Position	CV Details	Role in this project
Addy Watson	Manager Biodiversity	 Grad. Dip. Captive Vertebrate Management, Charles Sturt University Grad. Cert. Social Impact, University of NSW B. Env. Sc. University of New England. NSW DPIE Biodiversity Assessment Method Assessor: accreditation number BAAS19066 Diploma Project Management 	Project management Fieldwork Report writing
Phillip Cameron	Managing Director	 B.Sc. Major in Biology. Macquarie University Ass Dip App Sci. University of Queensland Dip Landscape Design (In prep) Cert III Captive Animal Management Certified Environmental Practitioner (EIANZ) and practicing member NSW OEH BioBanking and Bio-certification Assessor: accreditation number 0117 NSW DPIE Biodiversity Assessment Method Assessor: accreditation number BAAS17082 NSW OEH Scientific License: 101087 NSW DPI Ethics Approval 17/459 (3) Practicing member of the NSW Ecological Consulting Association 	Project management Fieldwork Report editing and quality assurance Certification
Dave Sturman	Environmental Consultant	 B. Env. Sc. Charles Sturt University Cert III (Horticulture) WHS White Card and Blue Card White card – general construction induction card. RMS-worker on foot training. Senior First Aid Chainsaw operator ticket Confined Space worker and atmospheric monitoring. Risk assessment training. AHCPCM201- Recognising grasses 	Fieldwork
Genevieve Peel	Environmental Consultant	 B. Env. Sc. (Hons) UNSW Cert III Captive Animal Management Cert IV Veterinary Nursing 	Fieldwork Report editing and quality assurance
Greg Bible	Environmental Consultant	 B. Env. Sc (Hons) University of New England BSc Honours University of New England WHS White Card 	Fieldwork
Gabbi Green	Environmental Cadet	 B. Env. Sc. New England University (in prep) AHCPCM201- Recognising grasses 	Fieldwork

Table 1-2: Summary of AREA project team qualifications





1.4.1 **Conflict of interest**

In certifying this assessment, I declare that I have acted in accordance with the Accredited BAM Assessor Code of Conduct.

I wish to openly declare the following actual, perceived or potential conflict of interest and the management strategies employed.

This declaration has been made in the interests of full disclosure to the decision-maker.

Addy Watson, also an Accredited Assessor (BAAS190066) has contributed to this assessment as indicated in Table 1-2. Addy has declared she is a shareholder of the Applicant's company, however, does not hold a controlling interest. Addy and AREA have taken the following action to ensure this potential conflict is managed effectively:

- Addy has declared this potential conflict of interest to her workplace, the Biodiversity, Conservation and Science Directorate of DPIE, the Client and the Applicant.
- Addy has not delt in Alkane shares since December 2019 and this transaction was a minimum purchase offered to all shareholders. She has committed not to deal in Alkane shares until after the application has been determined
- Addy is not the certifying Accredited Assessor for the Project
- Other AREA staff members have contributed to the collection of data for the Project and review of this BDAR (Table 1-2).

Certifying Accredited Assessor: Phil Cameron:

Date: 16 December 2021

BAM Assessor Accreditation no: BAAS17082

1.5 Limitations

Mapping

- The State Vegetation Map is only a guide; therefore, to address inherent limitations in this mapping, field assessment was undertaken to ground truth the available data.
- State Vegetation Maps were used to estimate the abundance of the Fuzzy Box Woodland TEC across relevant IBRA subregions. This estimate assumes all areas mapped as associated PCTs are consistent with the TEC description.

Field assessment

No limitations were encountered in field assessments and AREA was able to access all areas needing assessment.

BAM data processing

No limitations in BAM data processing.



Weather / seasons

No limitations regarding weather. As the Development Footprint is close to AREA's
office, field assessment could be scheduled or re-scheduled to be effective and in line
with seasonal requirements.

Qualifications, experience or skills of personnel

- There were no staffing, experience or qualification limitations. AREA used appropriately skilled, qualified, and experienced staff for all elements of this assessment. Each component of the assessment was undertaken by staff who were adequately skilled to complete their component of the assessment.
- Where AREA's environmental cadet was used, she was always in the company of, and assisting, a BAM Accredited Assessor.
- AREA required expert advice from a DPIE expert for Sloane's Froglet survey effort planning. With this input, the survey was targeted to habitat more likely to provide habitat for the species, in a suitable season.
- AREA required expert advice from the Royal Botanic Gardens (Sydney) for identification of Bluegrass (*Dichanthium setosum*). While our staff have successfully identified this species on several occasions it is notoriously easy to mis-identify as Queensland Blue Grass (*Dichanthium sericeum*) therefore a second, independent opinion was sought.

Environmental settings

- The Development Footprint includes and is surrounded by current agricultural operations. These environments provide limitations for the presence of flora and fauna. For example, AREA's camera trapping frequently recorded Ship Rat (*Rattus rattus*), and the presence and abundance of this species severely impacts hollow dependant species breeding viability.
- The Newell Highway corridor is noisy. Implementing call playback survey needed to occur in the Development Footprint during brief moments of lull is traffic.

Scattered tree module

• If any tree was known to be used by a threatened species it was managed in accordance with Chapter 5 of BAM (2020).



2 Landscape context – Landscape maps

2.1 Topography

The topography of the Development Footprint is relatively flat, rising generally from west to east. The average elevation is approximately 266 metres Australian Height Datum (AHD), rising to 278 metres AHD towards the east (Figure 2-1).



Figure 2-1: Elevation of the Development Footprint



2.2 Vegetation cover

The area in the vicinity of the Development Footprint has been subject to extensive vegetation clearing from historical agricultural and other anthropogenic activity. In particular, the mid and upper stratum has been largely cleared, and numerous exotic pastoral and other species have been introduced which now dominate the landscape. Land and vegetation clearance also occurred directly from historic mining activity, such as McPhail Gold Mine which operated throughout the late 1800's and early 1900's, as well as the for the existing TGO. Current estimates show approximately 15 percent of native vegetation cover within 1500 metres of the Development Footprint (Figure 2-2).



Figure 2-2: Native vegetation within 1500 metres of the Development Footprint



2.3 **IBRA** bioregions and subregions

The Development Footprint occurs mostly within the Darling Riverine Plains Bioregion and Bogan-Macquarie subregion. The minority is within the NSW South Western Slopes Bioregion and Lower Slopes subregion (Figure 2-3).

Darling Riverine Plans Bioregion

The Darling Riverine Plains Bioregion (the Bioregion) occupies a total area of 10,651,748 hectares in northern NSW and Qld. The majority of the Bioregion, 88.19 per cent (9.394,263 hectares), is in NSW and it occupies 11.74 per cent of the state.

The Bioregion is surrounded by six others in both NSW and Qld, including the Brigalow Belt South Bioregion to the east, the Mulga Lands Bioregion to the northwest, and the NSW Southwestern Slopes, Cobar Peneplain, Murray Darling Depression and Broken Hill Complex bioregions in the south and southwest.

The Bioregion forms a bulky shape that extends into Qld, with a long, narrow riverine corridor that runs southwest along the Darling River. The main body of the Bioregion extends from east of Boggabilla to Weilmoringle on the Qld border, south almost to Peak Hill and west to Nyngan and Bourke. The Bioregion is traversed by the Western Division boundary.

In central north NSW, the Bioregion includes the lower reaches and alluvial fans of the Bogan, Macquarie, Castlereagh, Namoi, Barwon, Culgoa, Bokhara, Narran, Gwydir and Macintyre Rivers (Morgan and Terrey 1992).

The Darling River corridor extends from Bourke almost to the southern edge of the Menindee Lakes, and south through the Murray Darling Depression Bioregion to the Victorian border where the Darling joins the Murray River.

The Bioregion falls entirely in the Murray-Darling Basin and includes the Macintyre-Dumaresq, Culgoa, Narran, Warrego, Paroo, Moonie, Barwon, Gwydir, Namoi, Macquarie, Yanda, Castlereagh and Darling catchments.

In the Bogan-Macquarie subregion, the Bogan and Macquarie River alluvial fans of Quaternary age occur. The western margin is bedrock of the Cobar bioregion and alluvial sediments from mixed Palaeozoic bedrock bury basement rock occur to 100 metres. Underlying sediments of Cretaceous and Jurassic age form part of the Great Artesian Basin.

Waterways are predominantly channels, floodplains, and through flow swamps of past and present river systems. Grey and brown clays exist on the plains and depressions with texture contrast soils on the low rises of former levees and channels.

Vegetation consists of river red gum and river cooba on the channels. White cypress pine and poplar box occur on coarser levees. Black Box (Eucalyptus largiflorens), Belah (Casuarina crisata), Myall (Acacia pendula) and Lignum (Duma florulenta) occur on floodplains. Complex patterns of common reed, Cumbungi (Typha sp.), and water couch (Paspalum distichum) occur, depending on water levels, in marshes. Poplar Box woodland with Wilga (Geijera parviflora), Budda (Eremophila mitchellii), White Pine (Callitris



glaucophylla), Grey Box (*Eucalyptus microcarpa*), Yellow Box (*Eucalyptus melliodora*) and Blakely's Red Gum (*Eucalyptus blakelyi*) occur on red soils on fan margins.



Figure 2-3: IBRA regions



2.4 NSW (Mitchell's) Landscapes

The Development Footprint is mostly within the Bogan Alluvial Plains NSW Landscape the southern-most end being within the Goonumbla Hills NSW Landscape and the replacement bore and pipeline being in the Boggy Cowal Alluvial Plains NSW Landscape (Table 2-1 and Figure 2-4). Descriptions in Table 2-1 taken from *Descriptions for NSW (Mitchell) Landscapes Version 2* (DECC 2002) and the NSW (Mitchell) Landscapes V3.1 spatial layer.

Landscape	Landscape characteristics (geomorphic, pedologic and vegetation)	Per cent of landscape cleared
Bogan Alluvial Plains	Partly scalded, higher level plains along the Bogan River of Holocene alluvium represented by the meander plain and backplain facies of the Marra Creek Formation. Narrow, defined drainage lines and swamps, extensive gilgai in grey and brown clays, occasional lagoons, swamps and remnant lakes, some with low lunettes, relief to 3m. Red brown texture- contrast soils on plains with brown and grey cracking clays in sinuous patterns on backplains and light orange-brown fine to medium sands in channels and occasional source bordering dunes. Scattered to moderate coolibah (<i>Eucalyptus microtheca</i>), black box (<i>Eucalyptus largiflorens</i>), whitewood (<i>Atalaya hemiglauca</i>), leopardwood (<i>Flindersia maculosa</i>), myall (<i>Acacia pendula</i>), bimble box (<i>Eucalyptus populnea</i>), belah (<i>Casuarina cristata</i>), wilga (<i>Geijera parviflora</i>), budda (<i>Eremophila mitchellii</i>), nepine (<i>Capparis lasiantha</i>), warrior bush (<i>Apophyllum anomalum</i>) with grasses and some saltbushes (<i>Atriplex</i> sp.) on plains. Belah (<i>Casuarina cristata</i>), bimble box, river cooba (<i>Acacia stenophylla</i>), eurah (<i>Eremophila bignoniflora</i>), lignum (<i>Muehlenbeckia cunninghamii</i>), neverfail (<i>Eragrostis setifolia</i>), Warrego summer-grass (<i>Paspalidium jubiflorum</i>), windmill grasses (<i>Chloris</i> sp.), copperburr (<i>Sclerolaena</i> sp.) and forbs on brown and grey clays. Black box, eurah and lignum in depressions. White cypress pine (<i>Callitris glaucophylla</i>) on sandy soils	63
Goonumbla Hills	Rounded low hills on Ordovician and Silurian sandstone, andesite, siltstone and phyllite with a partial blanket of Tertiary(?) quartz gravels and sands. General elevation 290 to 390m, local relief 70m. Stony yellow earths on the sands, thin brown structured loams on the hills merging with red-brown and red texture-contrast soils on the flats. Open forest of grey box (<i>Eucalyptus</i> <i>microcarpa</i>), white cypress pine (<i>Callitris glaucophylla</i>), with bimble box (<i>Eucalyptus populnea</i>) in the creeks and red ironbark (<i>Eucalyptus</i> <i>sideroxylon</i>) with shrubs on the gravels. Extensively cleared, grazed and cultivated	92
Boggy Cowal Alluvial Plains	Pleistocene fluvial sediments of backplain facies of the Carrabear Formation associated with the Boggy Cowal distributary stream system. Medium to heavy grey cracking clays with extensive gilgai. Carbonate nodules common in the subsoil and worked to gilgai crests, local relief to 2m. Extensive grasslands with scattered stands of myall (<i>Acacia pendula</i>), bimble box (<i>Eucalyptus populnea</i>), black box (<i>Eucalyptus largiflorens</i>) and belah (<i>Casuarina cristata</i>).	82

Table 2-1: NSW Landscape description





Figure 2-4: NSW Landscapes





2.5 Rivers, streams, and wetlands

2.5.1 Waterways and Wetlands

The Development Footprint intersects three mapped ephemeral waterways, one of which is a named fourth Strahler Order waterway, Bulldog Creek (Figure 2-5). Other unnamed waterways occur within 1500 metres of the Development Footprint. Other ephemeral drainage lines are known to occur within the vicinity of the Development Footprint that are not mapped on available waterway spatial layers.

The Development Footprint is intersected twice by Bulldog Creek, at the proposed new alignments of the Newell Highway and Back Tomingley West Road. These sections of Bulldog Creek are entirely cropped agricultural land (Plate 2-1 and Plate 2-2).

Of the two unnamed waterways which intersect the Development Footprint, one is also associated with the proposed new alignment of the Newell Highway only, and the other intersects the proposed Newell Highway alignment as well as proposed operational areas of the SAR Mine Site.

The BAM (2020) defines wetlands as:

an area of land that is wet by surface water or groundwater, or both, for long enough periods that the plants and animals in it are adapted to, and depend on, moist conditions for at least part of their life cycle. Wetlands may exhibit wet and dry phases, and may be wet permanently, cyclically or intermittently with fresh, brackish or saline water.

Wetlands exist within the Development Footprint as gilgais which provide ephemeral wet areas which can seasonally support aquatic vegetation and wildlife. Farm dams are also present in the Development Footprint however these dams lack aquatic habitat including vegetation which would attract insects and amphibian species

No wetlands of international importance occur with 10 kilometres of the Development Footprint (Figure 2-5).

All waterways within 1500 metres of the Development Footprint are ephemeral, and only flow at times of very high rainfall. These waterways do not support macro aquatic biota except in such times of high flow when aquatic biota is able to access surface water for movement, breeding and feeding purposes. The passage of such aquatic biota will not be significantly disrupted by this Project, as surface water will be allowed to flow across the landscape with aquatic connectivity being maintained or enhanced where the Project will allow waterways to reform in areas of currently ploughed and cropped land.



2.5.2 Key Fish Habitat

As outlined above, where Bulldog Creek intersects the Development Footprint, it is nonchannelised overland flow across areas of active agricultural activity.

Maps of Key Fish Habitat prepared by NSW Government Department of Primary Industries (DPI) show those habitats which are most important for the survival of native fish stocks. Key Fish Habitat identifies aquatic habitats that are important to the sustainability of the recreational and commercial fishing industries, the maintenance of fish populations generally and the survival and recovery of threatened aquatic species. Key Fish Habitat mapping from the DPI website¹ show Key Fish Habitat as generally any Strahler third order or greater stream. Small headwater creeks and gullies (known as first and second order streams), that only flow for a short period after rain are generally excluded, as are farm dams constructed on such systems however in this example the waterway is included. Approval from DPI is required where regarding dredging and reclamation work on water land is proposed as per the *Fisheries Management Act 1994*.

An assessment of aquatic habitat values of Bulldog Creek where it intersects with the Development Footprint is provided in Table 2-2.

The Project would not affect aquatic habitat values or block the passage of surface water along the current Bulldog Creek alignment.



Plate 2-1: Bulldog Creek upstream – looking south



¹ <u>https://www.dpi.nsw.gov.au/fishing/habitat/publications/pubs/key-fish-habitat-maps</u>



Plate 2-2: Bulldog Creek downstream – looking north

Table 2-2: Aquatic habitat assessment Bulldog Creek within the Development Footprint

Attribute	Comment
Strahler stream order	4 th
Flow characteristics (direction, speed)	Flow direction: generally, east to west, with this section flowing south to north. Speed: Slow to none (evidence of recent rain)
Habitat classification (Fairfull and Witheridge (2003)	Class 4 Unlikely key fish habitat – intermittent flow following rain events only, little or no defined drainage channel, little or no flow or free-standing water or pools post rain events.
Pool Size	Across paddock: Approx. 10m wide continuous
Bank Slope	Flat
Depth (Max Av)	Max 5cm.
Substrate type (mud, sand, rock etc)	Pasture species, mud
Downstream connectivity	Poor: flows across pasture or cleared paddocks, between farm dams and occasionally through narrow tree corridors.
Waterway Condition (erosion, undercut collapsed, heavily grazed?)	Nil
Contributions to cover	Pasture species
Oily film visible?	No
Filamentous algae present (indicating high nutrient loading)	No
Submerged physical habitat features (large rocks)	No
Smell?	No
Submerged biological (tree trunks, branched etc?)	No
Emergent reeds / plants	No
Canopy % over water (50m)	0%
General terrestrial veg cover	Pasture species dominate
Temperature (10cm)	N/A
Weeds on banks	Highly weedy – pasture species
Stock refusing to drink	N/A

Figure 2-5: Waterways mapped in and around the Development Footprint







2.5.3 Groundwater dependent ecosystems

The Australian Government Bureau of Meteorology administers a national data set of Groundwater Dependent Ecosystems (GDEs). Maps of (GDE) covering the Development Footprint are included in Appendix A.

Three types of GDEs are identified on this database²:

- Subterranean ecosystems this includes cave and aquifer ecosystems.
- Aquatic ecosystems that rely on the surface expression of groundwater-this includes surface water ecosystems which may have a groundwater component, such as rivers, wetlands and springs. Marine and estuarine ecosystems can also be groundwater dependent, but these are not mapped in the Atlas.
- **Terrestrial ecosystems** that rely on the subsurface presence of groundwater-this includes all vegetation ecosystems.

The Bureau of Meteorology (BoM) Subterranean GDE map layer has no data for the Development Footprint.

The BoM Aquatic GDE maps no potential interactions within the Development Footprint, however Low Moderate and High Potential Aquatic GDE are mapped along ephemeral and non-ephemeral waterways within 10 kilometres of the Development Footprint. None of these waterways are mapped on the BoM database as potential GDE within 1500 metres of the Development Footprint.

The BoM GDE maps a Low Potential Terrestrial GDE (Regional Study) within the Development Footprint, associated with the proposed realignment of Kyalite Road and the pipeline component (Figure 2-6 and Figure 2-7). The vegetation occurring along Kyalite Road is a Grey Box (*Eucalyptus microcarpa*) based community, and species in this community to have relatively shallow root systems, unlikely to enter groundwater systems. This community, in Kyalite Road and elsewhere within 10 kilometres of the Development Footprint is unlikely to be a terrestrial GDE.

Within 10 kilometres of the Development Footprint High Potential Terrestrial GDEs (from regional studies) are mapped in associated with the Bogan River (west of Development Footprint), the Macquarie River (north of the bore and pipeline component), Tomingley Creek (north of the development Footprint) and small areas along Bulldog Creek, Gundong Creek and Barrabadeen Creek.

The terrestrial GDE layer expresses the potential for groundwater and mapped vegetation communities across Australia to interact. It shows the vegetation communities that interact with groundwater from the water table or in the capillary zone. It does not imply an entire mapped ecosystem is using groundwater, but rather groundwater interaction may be occurring somewhere within the mapped ecosystem. It is likely sections of the surrounding waterways do support some GDE vegetation including plant community of River Red Gums



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² <u>http://www.bom.gov.au/water/groundwater/gde/</u>

(*Eucalyptus camaldulensis*) or Blakely's Red Gums (*Eucalyptus blakelyi*) which are generally constrained to riparian corridors. These riparian ecosystems would also be fed by surface water percolating to natural low points in the landform. Therefore, it is not certain the extent to which these ecosystems depend on the groundwater. River Red Gums (*Eucalyptus camaldulensis*) or Blakely's Red Gums (*Eucalyptus blakelyi*) along the local ephemeral waterways are more likely to be terrestrial GDEs that those ecosystems along permanent waterways including the Bogan River and the Macquarie River.

Other ecosystems occur on alluvial landscapes are likely to be entirely reliant on soil moisture above the water table and are therefore less likely to be impacted by minor changes to the groundwater.

In conclusion, there is no evidence of substantial reliance on groundwater resources in the area surrounding the Project Site and significant Groundwater Dependent Ecosystems are unlikely to be present.





Figure 2-6: Groundwater Dependent Ecosystems




Figure 2-7: Groundwater Dependent Ecosystems – bore and pipeline



The groundwater assessment report for this Project (Jacobs 2021) describes the 200-year post-mining period, modelled two metres draw down contour as extending "*up to about 2.7 km from the SAR mine site boundary and up to about 1.7 km from the TGO mine site boundary*". Further, the report states "*GDEs and baseflows to watercourses are not anticipated to be impacted by TGO/SAR. The fractured rock groundwater system, which hosts the regional water table, that mining is predicted to depressurise is conceptualised to be hydraulically disconnected from overlying alluvial groundwater systems. The alluvial groundwater systems are those most likely to act as a recharge source for the potential GDEs or baseflows to watercourses*".

The State Vegetation Map, filtered by Plant Community Types which generally include deep rooted species, within 10 kilometres of the Development Footprint is provided as Figure 2-8. These communities are closer to the proposed replacement bore and pipeline, and this component of the Project involves a replacement bore, not increasing the allocated burden on the groundwater resource. Clearing of trees would not be required for this component of the Project.





Figure 2-8: Possible groundwater dependent PCTs within 10km





Figure 2-9: Possible groundwater dependent PCTs within 10km – bore and pipeline



2.6 Habitat connectivity

The Development Footprint is situated in a largely cleared agricultural landscape. Despite the large amount of clearing, remnant woody vegetation particularly within existing and 'paper' road corridors provides valuable connectivity. These corridors provide connectivity values in all directions from the Development Footprint. Most importantly along the Newel Highway, extending many kilometres to the north and south, and to other areas of substantial habitat including the Hervey Ranges and Goobang National Park to the east, the Bogan River to the west and remnant vegetation and Biodiversity Offset Areas of the Peak Hill Gold Mine and the Tomingley Gold Mine to the south and north respectively.

Importance of the remnant corridors is also recognised by the Narromine Shire Council's Local Environmental Plan on the Terrestrial Biodiversity Land map (Section 2.11).

The base layer shown in Figure 2-7 is based on an indicator of *condition and connectivity of habitat, including its capacity to support the needs of native plants, animals and ecosystems in NSW, as a proportion relative to that in the pre-industrial era*³. This layer was created in 2013 and shows the web of corridors (faint white lines) linking vegetation in the Development Footprint to higher levels of connectivity quality associated with the Goobang National Park and the Bogan River particularly.

Figure 2-11 shows the web of remnant corridors providing connectivity across the Development Footprint and within 1500 metres. Tree corridors will persist within 1500 metres of the Development Footprint and the Applicant as commenced planting of native vegetation to increase the presence of woody vegetation adjacent to the proposed realigned Newell Highway (section 6.1.1).



³ https://datasets.seed.nsw.gov.au/dataset/ecological-connectivity-of-terrestrial-habitat



Figure 2-10: Habitat connectivity within 1500 metres of Development Footprint



Replacement bore and pipeline 0 750 1,500 m **Tomingley Gold Extension** 0 1,000 2,000 3,000 m Project AREA Base layer: ESRI Satelite Legend Development Footprint 1500m buffer Vegetation cover within 1500m





2.7 Soils and geology

Soils in the vicinity of the Project Site are predominantly alluvial in origin, consisting of six primary soil mapping units:

- Andesite Chromosol;
- Chromosol;
- Sodosol;
- Gilgai;
- Lithosol; and
- Disturbed soils from historic mining activity.

Regionally, the Project Site is located in the eastern zone of the Lachlan Fold Belt. Locally, the Project Site is covered by Cainozoic alluvial and colluvial deposits with occasional outcrops of Ordovician Mingelo volcanics and Silurian siltstones of the Cotton and Mumbidgle Formations. The Cainozoic deposits typically comprise alluvial clays to sandy clays with thicknesses ranging from 20 metres to 60 metres⁴.

2.8 Karst, caves and other rock features

No significant karst, caves, crevices, cliffs, rocks or other geological features of significance have been identified within 1500 metres of the Development Footprint.

2.9 Human-made structures and non-native vegetation

Human-made structures in the Development Footprint include dwellings and farm sheds. Minimal habitat is provided by these structures, and species likely to use this habitat such as insectivorous bats, will find similar roosting habitat in human-made structures remaining within 1500 metres of the Development Footprint and the human-made structures associated with the Project.

Non-native vegetation in the Development Footprint with habitat values is most importantly Pepper Trees (*Schinus mole*). These trees are primarily growing around existing dwellings and farm infrastructure. While this species may provide some habitat values particularly as shelter, these are not a species frequently used by threatened species know to occur in the Development Footprint such as Grey-crowned Babblers (*Pomatostomus temporalis temporalis*).

2.10 Vehicle strike

Vehicle strike within 1500 metres of the Development Footprint is a substantial existing risk due to the high traffic flow along the Newell Highway and local traffic around Tomingley.

This Project may result in some increase in risk of vehicle strike due to an increase of operational traffic within the SAR Mine Site and a minor increase in local traffic around



⁴ https://minview.geoscience.nsw.gov.au/#/?lon=146.4836&lat=-32.31888&z=14&bm=bm2&l=

Tomingley. Traffic control and low speed limits are likely to be in place around the SAR Mine Site during construction and operation.

2.11 Areas of outstanding biodiversity value

There are no areas of outstanding biodiversity value mapped within 1500 metres of the Development Footprint.

2.12 Terrestrial Biodiversity Land – Narromine LEP

Terrestrial Biodiversity Land described by the Narromine Local Environmental Plan 2011 (the Narromine LEP) is mapped within the Development Footprint (Figure 2-12).

Land mapped on the LEP Terrestrial Biodiversity Land layer shown on Figure 2-12 is considered as a "Sensitive Area" by the Narromine LEP which states:

"Before determining a development application for development on land to which this clause applies, the consent authority must consider whether or not the development—

(a) is likely to have any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and

(b) is likely to have any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and

(c) has any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and

(d) is likely to have any adverse impact on the habitat elements providing connectivity on the land."

Where the Project would potentially impact terrestrial biodiversity as descried in the Narromine LEP, it would be offset under the NSW Biodiversity Offset Scheme, except where the land has been demonstrated to be consistent with Category 1 Land and no scattered trees would be impacted.





Figure 2-12: Terrestrial Biodiversity Land – Narromine LEP



3 Category 1 Land determination evidence

The area surrounding the village of Tomingley, including the Development Footprint is an agricultural area supporting cropping and grazing practices.

Where Category 1 Land (Exempt Land) exists, native vegetation clearing is allowable in accordance with the *Land Management (Native Vegetation) Code 2018*, under the *Local Land Services Act 2013* (LLS Act), and with approval from the Local Land Services if required. For the purposes of this assessment, land consistent with Category 1 Land (Exempt Land) as described in Section 60H of the LLS Act, does not require further assessment.

This section seeks to demonstrate the areas of land treated as Category 1 land (Exempt Land) in this assessment are consistent with the definitions of Category 1 land (Exempt Land) and are not consistent with the definitions of Category 2 land (regulated land).

The Applicant has consulted with Local Land Services (Department of Regional NSW) and the Biodiversity, Conservation & Science Directorate (Department of Planning Industry and Environment) to confirm mapped categories of the land based on extensive database mapping.

AREA has collected field data to confirm the land is currently consistent with the definition of Category 1 Land.

3.1 NSW Government department consultation

The Applicant consulted with the Local Land Services (LLS) to confirm presence of Category 1 – Exempt Land in the Development Footprint as well as TGO owned agricultural land (operated by Toongi Pastoral Company).

The publicly available draft Native vegetation Regulatory Map (Figure 3-1) identifies Bulldog Creek and Gundong Creek as Category 2 – Vulnerable Land and the existing TGO Biodiversity Offset Area as Category 2 – Sensitive Regulated Land. Bulldog Creek is consistent with a ploughed and continuously cropped paddock where it intersects with the Development Footprint (section 2.5.1). The bore and pipeline does not intersect with any Category 2 regulated land mapped on the draft Native vegetation Regulatory Map.

The Applicant also engaged the Biodiversity Conservation & Science Directorate (BCSD) to confirm the current government position on the likely presence of Category 1 and Category 2 Land. The landholder (the Applicant) followed the formal Landholder Initiated Map Review process⁵ to recognise additional areas as Category 1 Land under the *Local Land Services Act 2013*. This resulted in a reduction in areas assessed as native vegetation. Figure 3-2 and Figure 3-3 show Category 1 exempt land mapping before and after the map review respectively.



⁵ https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/native-vegetation-regulatory-map/review

Where trees occur within a paddock otherwise mapped as Category 1 Land, AREA has assessed the trees using the BAM 'Streamlined assessment module - Scattered trees assessment' where the trees meet the definition of scattered trees (Section 1.2) or as part of the standard BAM assessment where these areas do not meet the definition of scattered trees.









Figure 3-2: Native Vegetation Regulatory Map (NSW Government) - prior to NVR map review









3.2 Field assessment

During AREA's 2020 and 2021 assessment of the Development Footprint, agricultural activities have been occurring / continuing.

Most of the paddocks identified as Category 1 Land in the documents provided by the relevant Government departments have been the subject of cropping and or ploughing. Others have more recently be used for grazing. AREA collected photographic evidence of the status of some of these paddocks (Table 3-1). See Figure 3-1 for paddock names.

At the time of the assessment (April 2020 - December 2021) the areas indicated in Figure 3-4 were consistent with Category 1 Land. Figure 3-6 shows Category 1 Land currently managed for cropping or ploughed pasture and Category 1 Land left fallow or used for grazing.



Table 3-1: Examples of Category 1 Land



Paddock name	Date taken	Photo			
Cornish	30 July 2021	Templer del Tatalan Plega Portici nandela Sense instalada Sense instalada Sense instalada Sense instalada			
Gully	30 July 2021	Tommagley Gold Latension Fragett Soury 2012 TSP291 Soury 2012 TSP291 Soury 2012 TSP291 Newell Frage Tammagley RISP			
Hando's	30 July 2021	una el de la fil a concentra de la concentra de la concentra de la concentra de la concentra de la concentra de la concentra de la concentra de			
Highway West side of highway	30 July 2021	The main of the second efforts at the sec			



Paddock name	Date taken	Photo			
House	30 July 2021				
Sheepyard (north)	30 July 2021	Ammende of verdelt andered of Equipation Ammende of verdelt andered of Equipation Ammende of verdelt andered the equipation and the equipation of Equipation of Equipation and the equipation of Equipation and the equipation of Equipation and the equipation of Equipation and the equipation of Equipat			
NE Corner	July 2020				



Paddock name	Date taken	Photo			
	30 July 2021	Annaldis assid. Mit page r Mogel www.www.publics. Mit and a state an			
Northside Highway	30 July 2021				
Shed	30 July 2021	Doministry Sold Latensis PErioped Sold 2000 10 10 2000 10 10 2000 10 10 10 10 10 10 10 10 10 10 10 10			





Paddock name	Date tak <u>en</u>	Photo				
Highway East side of highway	July 2020					
Highway East side of highway	30 July 2021					
Foaling	30 July 2021	An of the set of the first set of the set of				



Paddock name	Date taken	Photo			
Barley	30 July 2021	Introductive Avelander Provent Introductive Introductive International Intern			
Back 1	19 August 2021	Tomingley Cold Larengist Ploguat Back 1 Paddock 196.08/JU21 14:10 Ex 613:331 1 Nr. 63894059 Zonio 65 Ex 613:331 1 Nr. 63894059 Zonio 65 Ex 613:331 1 Nr. 63894059 Zonio 65 Ex 613:331 Nr. 63894059 Zonio 65 Ex 6131 Nr. 63894059 Zonio			
Back 2	19 August 2021	Uningelie sond attention to the spectrum of th			
Road	30 July 2021	Pupulation and the second of t			



Paddock name	Date taken	Photo			
60 Acre	30 July 2021	United to the second point of a contract of the second point of th			
Dam	30 July 2021	A contract of the second of th			
KN Highway	1 December 2021				
Bore and pipeline		Whate the difference is a second			





Figure 3-4: Category 1 Land photos - Location of paddocks





Figure 3-5: Land treated as Category 1 in this assessment (PCTs)





Figure 3-6: Land treated as Category 1 in this assessment



Native vegetation 4

4.1 Survey timing

Survey of native vegetation using BAM plots was completed during 2020 and 2021 (Table 4-1). The dispersed dates of plot data collection reflect the changes made to the Development Footprint as the Project design was adjusted to avoid impact to native vegetation and consolidate the operational areas of the Project.

Year	Month	Number of days	Survey effort (days x number of staff)
2019	September	1	2 days
	June	5	20 days
2020	July	2	6 days
	July	2	3 days
2021	August	1	1 day
	November	1	2 days
	December	1	2 days
		Total	36

Table 4-1: Years and months of survey (BAM plots and streamlined assessment only)

4.2 Survey methods

Field assessment for strategic vegetation survey was completed in accordance with the Biodiversity Assessment Method (2020).

Twenty-three 20 by 20 metre in 20 by 50 metre plots following BAM (2020) collectively known as a 'nested plots' were used to assess the native vegetation in the Development Footprint. Where the vegetation zone to be assessed was restricted by a road on one side and a fence (edge of the zone) on the other, the shape of the plot was modified to fit within the zone while sill covering 400 square metres and 1000 square metres to be consistent with the standard BAM plot requirements.

The 20 by 20 metre area of a BAM vegetation plot measures biodiversity (plant composition or floral biodiversity to identify the PCT and its quality) and the 20 by 50 metre structure plot, including the one-by-one metre leaf litter plots measure the function of the same area. Function includes an assessment of size classes of trees and tree hollows, which are both indicative of the age of trees assessed, ground logs and the amount of leaf litter. These attributes indicate the quality of habitat present and influences what species of listed fauna or flora can use the vegetation.

The initial study area for this Project was notably larger than the final Development Footprint, and as such approximately 50 BAM plots were too far outside the Development Footprint to be included in this assessment, and additional plots were completed to be within the Development Footprint, and to ensure enough plots per vegetation zone. Plots which ended up being outside the Development Footprint and too far from the Development Footprint to be relevant were not used in this assessment.



Effort was made to have all vegetation plots used in this assessment located within the Development Footprint however, due to design changes, two are partially in the Development Footprint however these plots are representative of the associated vegetation type and condition within the Development Footprint.

The number of plots used in each vegetation zone was in accordance with the BAM (2020) (Table 4-2).

Vegetation zone area (ha)	Minimum number of plots
<2	1 plot
>2–5	2 plots
>5–20	3 plots
>20–50	4 plots
>50–100	5 plots
>100-250	6 plots
>250-1000	7 plots; more plots may be needed if the condition of the vegetation is variable across the zone
>1000	8 plots; more plots may be needed if the condition of the vegetation is variable across the zone

Table 4-2: Plots required per zone (Table 3 from the BAM 2020)

Figure 4-1 shows the plot locations. Field data sheets for the plots used in this assessment are provided in Appendix B. Plot photos are collated in a table which, due to its size is presented in Appendix C.





Figure 4-1: BAM (2020) vegetation survey effort



4.3 Plant Community Types

Native vegetation occurring in the Development Footprint was identified by formation, class, type and was classified according to the Plant Community Types (PCTs) in the DPIE BioNet Vegetation Information System (VIS) Classification Database⁶. PCTs are the master community-level typology used in NSW's planning and assessment tools and vegetation mapping programs. The Central West Lachlan State Vegetation Map (SVM) v1_PCT_E_4468 was referenced, and Figure 4-3 shows the PCTs mapped within 1500 metres of the Development Footprint.

A selection of flora species recorded on the BAM (2020) data sheets were entered into the BioNet VIS Classification Database⁶ to provide statically valid options on what PCT best matched the native vegetation in the Development Footprint. After consideration of the upper, mid and ground-stratum species recorded in the study area and the regional context, four PCTs were confirmed to exist in the Development Footprint (Table 4-3):

- PCT55 Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
- PCT82 Western Grey Box Poplar Box White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion.
- PCT201 Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion.
- PCT27 Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion.

The following subsections outline the justification for the presence of these PCTs within the Development Footprint.

PCT55 justification:

- PCT55 is one of the top two results using the BioNet Vegetation Classification Tool, and filtering by IBRA sub-region, and the main upper stratum species present (*Casuarina cristata, Eucalyptus microcarpa, Alectryon oleifolius* and *Atalaya hemiglauca*). The plant species recorded on site were consistent with the species assemblage for this PCT
- The remaining PCT from the above point is PCT56 (Poplar Box Belah woodland on clay-loam soils on alluvial plains of north-central NSW). Poplar Box and Belah are present however they do not dominate the woodland.

PCT82 justification:

- PCT82 is one of the top 20 results using the BioNet Vegetation Classification Tool, and filtering by IBRA sub-region, and the main upper stratum species present (*Eucalyptus microcarpa, Callitris glaucophylla, Acacia homalophylla*, and *Alectryon oleifolius*) as well as *Geijera parviflora*
- The resulting list was further filtered by Keith Vegetation Class Floodplain transition woodland, which resulted in a list of five PCTs. Four of these are inconsistent with the vegetation recorded on site:



⁶ <u>https://www.environment.nsw.gov.au/NSWVCA20PRapp/LoginPR.aspx</u>

- o PCT56: Poplar Box Belah woodland on clay-loam soils on alluvial plains of northcentral NSW - This PCT is dominated by Poplar Box. While this species is present, Inland Grey Box dominates the canopy.
- o PCT70: White Cypress Pine woodland on sandy loams in central NSW wheatbelt. This PCT is dominated by White Cypress Pine. While this species is present, Inland Grey Box dominates the canopy.
- PCT81: Western Grev Box cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion. This PCT, while similar to PCT82 is located to the north of Dubbo, mainly confined to the Brigalow Belt South IBRA region. The development site is not within the Brigalow Belt South IBRA region
- PCT244: Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt). This PCT is dominated by Poplar Box. While this species is present, Inland Grey Box dominates the canopy.

PCT201 justification:

PCT201 is the top result using the BioNet Vegetation Classification Tool, and filtering by IBRA sub-region, and the main upper stratum species present (*Eucalyptus conica* and Callitris glaucophylla) as well as Geijera parviflora. The plants recorded on site were consistent with the species assemblage for this PCT.

PCT27 justification:

- PCT27 is one of the top three results when using the BioNet Vegetation Classification Tool, and filtering by IBRA sub-region, and the two upper stratum species present (Acacia pendula and Acacia salicina).
- The remining two PCTs from the above point are PCT37 (Black Box woodland wetland • on NSW central and northern floodplains including the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion) and PCT29 (Coolabah - River Coobah - Lignum woodland wetland of frequently flooded floodplains mainly in the Darling Riverine Plains Bioregion). The dominant species for each of these PCTs were not detected in and around the Development Footprint

This PCT was likely planted, however PCT27 is consistent with the species assemblage and is mapped on the Central West Lachlan SVM within 1500 metres of the Development Footprint.

Planted trees

Areas of planted trees can be reasonably assigned to a PCT which occurs within the Development Footprint or the local area. As such, areas of planted trees have been assessed according to the full BAM (Figure 4-2). Specifically, this applies to Vegetation Zone 10 (PCT27), Vegetation Zone 6 (PCT82) and part of Vegetation Zone 4 (PCT82) (Section 4.5).

Vegetation Zone 6 includes planted Kurrajong (*Brachychiton populnea*), which were planted as fodder trees by previous landowners, and which are now established trees suitable for harvest. Alkane has invited Taronga Western Plains Zoo to harvest these trees, in addition to the regrowth Wilga (Geijera parviflora) in the same vegetation zone, over the coming months in a staged and strategic way to best make use of these trees as high-quality animal fodder in accordance with their intended purpose. Removal of these trees had commenced at the time of this assessment (Plate 4-1 and Plate 4-2).



This two-hectare area has been assessed as PCT82, and as a separate zone. Two BAM plots were completed in this vegetation zone; however, to recognise the pending harvest for fodder of all the planted Kurrajong and the regrowth mid-stratum shrub Wilga (*Geijera parviflora*), the plot data entered in the BAMC for this zone have been done so excluding these mid and upper stratum species values. The other mid and lower stratum values, including small shrub species, have been included as they were recorded in the two plots in this zone.



Plate 4-1: Kurrajong harvesting as of 19 August 2021

Plate 4-2: Kurrajong harvesting as of 19 August 2021













Figure 4-3: PCT's mapped on SVM 4468 within 1500 metres of the Development Footprint



	Theaten			Estimate	Extent in	
РСТ	PCT Name	Vegetation formation	Vegetation class	percent cleared in NSW	Development Footprint (hectares)	Associated with TEC
55	Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.	Semi-arid Woodlands (Grassy sub- formation)	North-west Floodplain Woodlands	83	43.78	No
82	Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion	Grassy Woodlands	Floodplain Transition Woodlands	75	20.77	No
201	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Grassy Woodlands	Western Slopes Grassy Woodland	94	10.80	Yes
27	Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion	Semi-arid Woodlands (Grassy sub- formation)	Riverine Plain Woodlands	86	0.68	Yes
0	Category 1 Land	N/A	N/A	N/A	402.22	No
N/A	Other – no vegetation	N/A	N/A	N/A	16.03	No
				Total	494.28	

Threatened ecological communities highlight in light blue







4.4 Threatened Ecological Communities

Threatened Ecological Communities (TEC) are associated with the PCTs in the Development Footprint and field assessment is required to confirm whether the PCT is or is not consisted with the definition of the TEC. Presence of these TECs in the Development Footprint is considered in Table 4-4.

РСТ	TEC	Present	Justification
PCT55	Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregions –	No	Coolibah and Black Box are absent from the local landscape
PCT55	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	No	Myall is not a dominant or co-dominant species
PCT55	Native Vegetation on Cracking Clay Soils of the Liverpool Plains	No	Development Footprint is not in the Liverpool Plains
PCT55	Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	No	Does not occur in the Darling Riverine Plains.
PCT82	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	No	Does not occur in the Darling Riverine Plains Bioregion.
PCT201	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Yes	This woodland is dominated by Fuzzy Box, the community occurs in consistent landscape position and the species assemblage is consistent
PCT27	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (BC Act and EPBC Act)	Yes	Weeping Myall is dominant or co- dominant species
PCT27	Artesian Springs Ecological Community in the Great Artesian Basin (BC Act)	No	No indicative springs or mounds of sediment and salts deposits.

Table 4-4: Threatened Ecological Communities

Table 4-5 shows status and hectares of the two TECs in the Development Footprint. Figure 4-5 shows the location of the two TECs.

Table 4-5: TECs in Development Footprint

TEC name	NSW status	Commonwealth status	Hectares
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	Endangered	Endangered	0.68
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	Endangered	Not listed	10.80






4.5 Vegetation zones

Vegetation zones are defined as a 'relatively homogeneous unit defined by a unique NSW PCT and broad condition state' (Section 3.3, BAM 2020 Stage Operational Manual).

The Development Footprint has been stratified into ten vegetation zones. The number of plots used in each vegetation zone was in accordance with the BAM (2020) (Table 4-6).

Vegetation zones were determined by considering the amount of disturbance, weediness, and extent of clearing of the upper stratum. These differences in quality of the vegetation in these zones is reflected in the Vegetation Integrity Scores (VI). Areas with 'poor' condition showed a Vegetation Integrity score of less than 20, 'moderate' condition showed a Vegetation Integrity score of 20 to 60, and 'good' condition showed a Vegetation Integrity score of more than 60 (Section 7.1).

Zone	PCTID	PCT name	Condition	Number of hectares	Number of plots	Plot IDs
1		Belah woodland on alluvial plains and low rises in the	Poor	25.60	4	1, 2, 3, 4
2	55	central NSW wheatbelt to	Moderate	14.87	3	5, 7, 8
3		Pilliga and Liverpool Plains regions.	Good	3.31	2	6, 11
4		Western Grey Box - Poplar Box - White Cypress Pine tall	Moderate	4.03	2	12, 13
5	82	woodland on red loams mainly of the eastern Cobar Peneplain Bioregion	Good	14.82	3	14, 15, 16
6			Kurrajong	1.91	2	17, 18
7		Fuzzy Box Woodland on	Moderate:_trees	0.03	1	19
8	201	alluvial brown loam soils mainly in the NSW South	Moderate:_cleared	2.38	2	9, 20
9		Western Slopes Bioregion	Good	8.39	3	21, 22, 23
10	27	Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion	Moderate	0.68	1	10

Table 4-6: Vegetation zones

The extent of each zone is mapped on Figure 4-6.

The patch size for all vegetation zones extends a minimum of 1300 hectares through connected tree corridors along fences and creeks. The actual patch size would be significantly larger than 1300 hectares as connected native woody vegetation extends along tree corridors for many kilometres in all directions and likely connecting to the Goobang National Park, however the nominated patch size of 1300 hectares provides certainty the patch size is greater than 100 hectares and therefore in the larges patch size category used in the BAMC.

No local or other benchmarks were used in the analysis of the vegetation zones.









4.5.1 **PCT** benchmarks

Narromine LGA NSW

To compare plot sheet data collected in each PCT to its respective benchmark, AREA use the following rationale:

- The benchmark values for each PCT were obtained from the DPIE BioNet VIS Classification • database.
- The species composition, structure and function scores recorded for each BAM plot were used to compare to the benchmark for the PCT
- If more than one BAM plot was recorded per vegetation zone, the scores were averaged
- Thresholds of 25 per cent and 75 per cent of the benchmark value were used to assess each zone against the benchmark for the PCT. These measures are reminiscent of the measures used for quality in the previous NSW biodiversity assessment method (BioBanking Assessment Method).

Vegetation plot data from each zone is presented in Table 4-7 to Table 4-16.

These data show elements within each PCT which are below or within benchmark, the Vegetation Integrity Scores provided in Section 4.6 show the benchmark value as a whole.

PCT55 - Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions – Poor condition					
Vegetation Class	North-west Flo	odplain Woodland	1		
IBRA	Darling Riverin	e Plains			
Bonchmark Calculation Loval	Benchmark	25% of	75% of	Average	
Benchmark Calculation Level	value	benchmark	benchmark	Average	
Tree Richness	3	0.75	2.25	0.00	
Shrub Richness	6	1.5	4.5	3.75	
Grass and Grass Like Richness	4	1	3	5.00	
Forb Richness	7	1.75	5.25	6.25	
Fern Richness	0	0	0	0.50	
Other Richness	1	0.25	0.75	0.00	
Tree Cover	14	3.5	10.5	0.00	
Shrub Cover	12	3	9	1.93	
Grass and Grass Like Cover	8	2	6	12.50	
Forb Cover	4	1	3	5.40	
Fern Cover	0	0	0	0.05	
Other Cover	0	0	0	0.00	
Total length of fallen logs	29	7.25	21.75	0.00	
Litter Cover	32	8	24	7.23	
Number of Large Trees	5	1.25	3.75	0.00	
Large Tree Threshold Size 30 Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchm			benchmark		

Table 4-7: BAM plots measured against PCT benchmarks - Zone 1





PCT55 - Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions – Moderate condition						
Vegetation Class	North-west Flo	odplain Woodland	1			
IBRA	Darling Riverin	e Plains				
Benchmark Calculation Level	Benchmark value	Benchmark 25% of 75% of Avera value benchmark benchmark benchmark Avera				
Tree Richness	3	0.75	2.25	1.00		
Shrub Richness	6	1.5	4.5	4.33		
Grass and Grass Like Richness	4	1	3	8.00		
Forb Richness	7	1.75	5.25	18.00		
Fern Richness	0	0	0	1.00		
Other Richness	1	0.25	0.75	0.33		
Tree Cover	14	3.5	10.5	1.37		
Shrub Cover	12	3	9	10.17		
Grass and Grass Like Cover	8	2	6	9.47		
Forb Cover	4	1	3	5.57		
Fern Cover	0	0	0	0.17		
Other Cover	0	0	0	0.03		
Total length of fallen logs	29	7.25	21.75	0.00		
Litter Cover	32	8	24	6.73		
Number of Large Trees	5	1.25	3.75	0.67		
Large Tree Threshold Size (cm DBH)	30	30 Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchmark				

Table 4-8: BAM plots measured against PCT benchmarks – Zone 2

Table 4-9: BAM plots measured against PCT benchmarks – Zone 3

PCT55 - Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions – Good condition					
Vegetation Class	North-west Floor	North-west Floodplain Woodland			
IBRA	Darling Riverine	Plains			
Bonchmark Calculation Loval	Benchmark	25% of	75% of	Average	
Benchinark Calculation Level	value	benchmark	benchmark		
Tree Richness	3	0.75	2.25	2.50	
Shrub Richness	6	1.5	4.5	6.00	
Grass and Grass Like Richness	4	1	3	8.50	
Forb Richness	7	1.75	5.25	18.50	
Fern Richness	0	0	0	1.00	
Other Richness	1	0.25	0.75	0.50	
Tree Cover	14	3.5	10.5	15.35	
Shrub Cover	12	3	9	16.95	
Grass and Grass Like Cover	8	2	6	16.85	
Forb Cover	4	1	3	5.55	
Fern Cover	0	0	0	0.10	
Other Cover	0	0	0	0.10	
Total length of fallen logs	29	7.25	21.75	8.50	
Litter Cover	32	8	24	26.70	
Number of Large Trees	5	1.25	3.75	2.50	
Large Tree Threshold Size (cm DBH)	30	Note: Red fill = less tha Yellow fill = 25 to Green fill = more	an 25% benchmark 575% benchmark than or equal to 75	% benchmark	



PC182 Western Grey Box - Poplar Box - White Cypress Plne tall woodland on red loams mainly of the					
Vogetation Class	Eloodolain Tran	on Sition Woodlands			
	Darling Rivering	a Plains			
	Benchmark	25% of	75% of		
Benchmark Calculation Level	value	benchmark	benchmark	Average	
Tree Richness	3	0.75	2.25	1	
Shrub Richness	6	1.5	4.5	3	
Grass and Grass Like Richness	5	1.25	3.75	3	
Forb Richness	7	1.75	5.25	8	
Fern Richness	0	0	0	0	
Other Richness	1	0.25	0.75	0	
Tree Cover	22	5.5	16.5	15	
Shrub Cover	5	1.25	3.75	3	
Grass and Grass Like Cover	18	4.5	13.5	0.5	
Forb Cover	5	1.25	3.75	5.8	
Fern Cover	0	0	0	0	
Other Cover	0	0	0	0	
Total length of fallen logs	55	13.75	41.25	6.5	
Litter Cover	36	9	27	10	
Number of Large Trees	3	0.75	2.25	1.5	
Large Tree Threshold Size (cm DBH)	50	Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchmark			

Table 4-10: BAM plots measured against PCT benchmarks – Zone 4

Table 4-11: BAM plots measured against PCT benchmarks – Zone 5

PCT82 Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion – Good condition						
Vegetation Class	Floodplain Tran	Floodplain Transition Woodlands				
IBRA	Darling Riverine	e Plains				
Benchmark Calculation Level	Benchmark	25% of	75% of	Average		
Benchmark Calculation Level	value	benchmark	benchmark	Average		
Tree Richness	3	0.75	2.25	2.33		
Shrub Richness	6	1.5	4.5	6.33		
Grass and Grass Like Richness	5	1.25	3.75	5.33		
Forb Richness	7	1.75	5.25	8.33		
Fern Richness	0	0	0	0.33		
Other Richness	1	0.25	0.75	0.00		
Tree Cover	22	5.5	16.5	18.70		
Shrub Cover	5	1.25	3.75	14.94		
Grass and Grass Like Cover	18	4.5	13.5	22.60		
Forb Cover	5	1.25	3.75	1.25		
Fern Cover	0	0	0	0.03		
Other Cover	0	0	0	0.00		
Total length of fallen logs	55	13.75	41.25	8.33		
Litter Cover	36	9	27	43.63		
Number of Large Trees	3	0.75	2.25	2.33		
Large Tree Threshold Size (cm DBH)	30	Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchmark				



PCT82 Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion - Kurrajong					
Vegetation Class	Floodplain Tran	sition Woodlands			
IBRA	Darling Riverine	e Plains			
Benchmark Calculation Level	Benchmark	25% of	75% of	Average	
Denchmark Calculation Level	value	benchmark	benchmark	Average	
Tree Richness	3	0.75	2.25	0	
Shrub Richness	6	1.5	4.5	2	
Grass and Grass Like Richness	5	1.25	3.75	6	
Forb Richness	7	1.75	5.25	14.5	
Fern Richness	0	0	0	1	
Other Richness	1	0.25	0.75	0	
Tree Cover	22	5.5	16.5	0	
Shrub Cover	5	1.25	3.75	0.4	
Grass and Grass Like Cover	18	4.5	13.5	1.7	
Forb Cover	5	1.25	3.75	1.7	
Fern Cover	0	0	0	0.2	
Other Cover	0	0	0	0	
Total length of fallen logs	55	13.75	41.25	0	
Litter Cover	36	9	27	36.7	
Number of Large Trees	3	0.75	2.25	0	
Large Tree Threshold Size (cm DBH)	30	Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchmark			

Table 4-12: BAM plots measured against PCT benchmarks – Zone 6

Table 4-13: BAM	l plots measured	against PCT	benchmarks – Z	Zone 7
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PCT201 Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion – Moderate_trees condition					
Vegetation Class	Western Slopes Grassy Woodlands				
IBRA	Darling Riverine Plains				
Bonchmark Calculation Lovel	Benchmark	25% of	75% of	Average	
Benchmark Calculation Level	value	benchmark	benchmark	Average	
Tree Richness	3	0.75	2.25	1	
Shrub Richness	4	1	3	1	
Grass and Grass Like Richness	7	1.75	5.25	4	
Forb Richness	9	2.25	6.75	5	
Fern Richness	0	0	0	0	
Other Richness	0	0	0	0	
Tree Cover	11	2.75	8.25	15	
Shrub Cover	2	0.5	1.5	0.1	
Grass and Grass Like Cover	20	5	15	0.6	
Forb Cover	5	1.25	3.75	1.1	
Fern Cover	0	0	0	0	
Other Cover	0	0	0	0	
Total length of fallen logs	34	8.5	25.5	0	
Litter Cover	35	8.75	26.25	1.2	
Number of Large Trees	2	0.5	1.5	0	
Large Tree Threshold Size (cm DBH)	50	Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchmark			



PCT201 Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion – Moderate_cleared condition					
Vegetation Class	Western Slopes	s Grassy Woodlan	ds		
IBRA	Darling Riverine	e Plains			
Benchmark Calculation Level	Benchmark	25% of	75% of	Average	
Dencimark Calculation Level	value	benchmark	benchmark	Average	
Tree Richness	3	0.75	2.25	0.00	
Shrub Richness	4	1	3	2.00	
Grass and Grass Like Richness	7	1.75	5.25	4.00	
Forb Richness	9	2.25	6.75	12.50	
Fern Richness	0	0	0	1.00	
Other Richness	0	0	0	0.00	
Tree Cover	11	2.75	8.25	0.00	
Shrub Cover	2	0.5	1.5	0.40	
Grass and Grass Like Cover	20	5	15	55.60	
Forb Cover	5	1.25	3.75	4.10	
Fern Cover	0	0	0	7.50	
Other Cover	0	0	0	0.00	
Total length of fallen logs	34	8.5	25.5	0.00	
Litter Cover	35	8.75	26.25	11.00	
Number of Large Trees	2	0.5	1.5	0.00	
Large Tree Threshold Size (cm DBH)	50	Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchmark			

Table 4-14: BAM plots measured against PCT benchmarks – Zone 8

Table 4-15: BAM plots measured against PCT benchmarks – Zone 9

PCT201 Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion – Good condition					
Vegetation Class	Western Slopes	Grassy Woodland	ls		
IBRA	Darling Riverine	Plains			
Bonchmark Calculation Loval	Benchmark	25% of	75% of	Average	
Benchmark Calculation Level	value	benchmark	benchmark	Average	
Tree Richness	3	0.75	2.25	3.33	
Shrub Richness	4	1	3	4.67	
Grass and Grass Like Richness	7	1.75	5.25	6.00	
Forb Richness	9	2.25	6.75	10.67	
Fern Richness	0	0	0	0.33	
Other Richness	0	0	0	0.00	
Tree Cover	11	2.75	8.25	24.97	
Shrub Cover	2	0.5	1.5	22.37	
Grass and Grass Like Cover	20	5	15	14.23	
Forb Cover	5	1.25	3.75	3.30	
Fern Cover	0	0	0	0.00	
Other Cover	0	0	0	0.00	
Total length of fallen logs	34	8.5	25.5	33.67	
Litter Cover	35	8.75	26.25	48.33	
Number of Large Trees	2	0.5	1.5	3.00	
Large Tree Threshold Size (cm DBH)	50	Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchmark			





PCT27 Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion – Moderate condition					
Vegetation Class	Riverine Plain V	Voodlands			
IBRA	Darling Riverine	e Plains			
Benchmark Calculation Level	Benchmark	25% of	75% of	Average	
Benchmark Calculation Level	value	benchmark	benchmark	Average	
Tree Richness	2	0.5	1.5	2	
Shrub Richness	7	1.75	5.25	2	
Grass and Grass Like Richness	4	1	3	0	
Forb Richness	9	2.25	6.75	8	
Fern Richness	0	0	0	0	
Other Richness	1	0.25	0.75	0	
Tree Cover	5	1.25	3.75	35	
Shrub Cover	22	5.5	16.5	0.3	
Grass and Grass Like Cover	8	2	6	0	
Forb Cover	5	1.25	3.75	1.8	
Fern Cover	0	0	0	0	
Other Cover	0	0	0	0	
Total length of fallen logs	10	2.5	7.5	0	
Litter Cover	45	11.25	33.75	46	
Number of Large Trees	5	1.25	3.75	2	
Large Tree Threshold Size (cm DBH)	30	Note: Red fill = less than 25% benchmark Yellow fill = 25 to 75% benchmark Green fill = more than or equal to 75% benchmark			

Table 4-16: BAM plots measured against PCT benchmarks – Zone 10



4.6 Vegetation scores

The BAMC has been used to determine the potential offsetting requirements for the Project. The biodiversity credit summary report generated by the BAMC is provided in Appendix E. Biodiversity Offsetting for the potential impact to all PCTs (Table 4-17) and scattered trees (Table 4-18) within the Development Footprint is described in the following sections. Location of scattered trees is shown in Figure 4-7.

Zone	PCT	Area (ha)	Condition	Composition condition score	Structure condition score	Function condition score	Vegetation integrity (VI) score
1	55	25.60	Poor	73.8	33	1.5	15.4
2	55	14.87	Moderate	84	64.3	27.7	53.1
3	55	3.31	Good	97.7	100	68.4	87.4
4	82	4.03	Moderate	71.7	60.2	24.3	47.2
5	82	14.83	Good	94.3	91.6	63.9	82
6	82	1.91	Kurrajong	56.5	5.1	15	16.3
7	201	0.03	Moderate_trees	46.6	42	8.9	25.9
8	201	2.38	Moderate_cleared	60.5	54.2	3.7	22.9
9	201	8.39	Good	87.9	99.4	97.1	94.7
10	27	0.68	Moderate	50.9	20	59	39.1

Table 4-17: Current vegetation integrity scores

Table 4-18: Summary of	Scattered Trees
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PCT	Species	Large tree threshold (cm DBH)	DBHOB category (cm)	Contains hollows	Number of trees	Negligible biodiversity value	Class
	Eucalyptus populnea subsp. bimbil	30	>=30	Yes	2	No	3
	Alectryon oleifolius	30	<20	No	2	Yes	1
	Acacia pendula	30	>=20 and <30	Yes	1	No	2
	Eucalyptus microcarpa	30	>=20 and <30	No	2	No	2
55	Casuarina cristata	30	<20	No	1	Yes	1
	Alectryon oleifolius	30	>=20 and <30	No	1	No	2
	Casuarina cristata	30	>=20 and <30	No	1	No	2
	Casuarina cristata	30	>=30	No	1	No	3
	Eucalyptus microcarpa	30	>=30	Yes	4	No	3
	Eucalyptus microcarpa	30	>=30	No	1	No	3
	Eucalyptus microcarpa	50	>=50	Yes	3	No	3
	Eucalyptus microcarpa	50	>=50	No	1	No	3
	Eucalyptus microcarpa	50	>=20 and <50	No	5	No	2
	Eucalyptus microcarpa	50	<20	No	1	Yes	1
	Eucalyptus populnea subsp. bimbil	50	<20	No	1	Yes	1
82	Eucalyptus populnea subsp. bimbil	50	>=20 and <50	No	1	No	2
	Eucalyptus populnea subsp. bimbil	50	>=50	Yes	2	No	3
	Brachychiton populneus subsp. populneus	50	>=20 and <50	No	5	No	2
	Brachychiton populneus subsp. populneus	50	>=50	No	3	No	3
	Callitris glaucophylla	50	>=50	No	2	No	3
	Alectryon oleifolius	50	<20	No	1	Yes	1



РСТ	Species	Large tree threshold (cm DBH)	DBHOB category (cm)	Contains hollows	Number of trees	Negligible biodiversity value	Class
	Alectryon oleifolius	50	>=20 and <50	No	4	No	2
	Alectryon oleifolius	50	>=20 and <50	Yes	2	No	2
	Alectryon oleifolius	50	>=50	No	1	No	3
	Acacia homalophylla	50	>=20 and <50	No	1	No	2
	Callitris glaucophylla	50	>=50	Yes	1	No	3
	Callitris glaucophylla	50	>=20 and <50	No	5	No	2
	Eucalyptus conica	50	>=20 and <50	No	1	No	2
	Eucalyptus blakelyi	50	>=20 and <50	No	1	No	2
	Eucalyptus dwyeri	50	>=20 and <50	No	1	No	2
201	Eucalyptus conica	50	>=50	No	1	No	3







4.7 Credits required

The BAMC has been used to determine the potential offsetting requirements for the Project (Table 4-19 for PCTs and Table 4-20 for scattered trees).

Zone	РСТ	Condition	Vegetation integrity loss	Vegetation Sensitivity to integrity loss gain class		Number of credits
1	55	Poor	15.4	High Sensitivity to Potential Gain	2	0
2	55	Moderate	53.1	High Sensitivity to Potential Gain	2	395
3	55	Good	87.4	High Sensitivity to Potential Gain	2	145
4	82	Moderate	47.3	High Sensitivity to Potential Gain	2	95
5	82	Good	82.0	High Sensitivity to Potential Gain	2	608
6	82	Kurrajong	16.3	High Sensitivity to Potential Gain	2	0
7	201	Moderate_Trees	25.9	High Sensitivity to Potential Gain	2	1
8	201	Moderate_Cleared	22.9	High Sensitivity to Potential Gain	2	27
9	201	Good	94.7	High Sensitivity to Potential Gain	2	397
10	27	Good	39.1	High Sensitivity to Potential Gain	2	13
					Total	1724

Table 4-19: Ecosystem credit summary from BAMC – standard BAM

Table 4-20: Ecosystem credit summary from BAMC – Scattered Trees

Class	Number of trees	Hollows present	Ecosystem credits per tree	Credits required
PCT55				
3	2	Yes	1.00	2
2	1	Yes	0.75	1
2	2	No	0.50	1
2	1	No	0.50	1
2	1	No	0.50	1
3	1	No	0.75	1
3	4	Yes	1.00	4
3	1	No	0.75	1
			Sub-total	12
PCT82				
3	3	Yes	1.00	3
3	1	No	0.75	1
2	5	No	0.50	3
2	1	No	0.50	1
3	2	Yes	1.00	2
2	5	No	0.50	3
3	3	No	0.75	2
3	2	No	0.75	2
2	4	No	0.50	2
2	2	Yes	0.75	2
3	1	No	0.75	1
2	1	No	0.50	1
3	1	Yes	1.00	1
2	5	No	0.50	3
2	1	No	0.50	1
2	1	No	0.50	1
2	1	No	0.50	1
			Sub-total	30
PCT201				
3	1	Yes	0.75	1
			Sub-total	1
			Total	43



4.8 Credit classes

Credit classes allocated to the proposal are outlined on Table 4-21 and Table 4-22.

Ecosystem credit classes – Standard BAM

Table 4-21: Ecosystem credit summary from BAMC

РСТ	TEC	Area (ha)	HBT Credits	No HBT Credits	Credits
55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.	Not a TEC	43.78	145	395	540
82-Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion	Not a TEC	20.77	608	95	703
201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	10.80	398	27	425
27-Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	0.68	0	13	13
	Total	1151	530	1681	1151

HBT = Hollow Bearing Trees

Table 4-22: Credit classes - Like-for-like options

Vegetation Class	Trading group	Zone	НВТ	Credits	IBRA region
North-west Floodplain	North-west Floodplain Woodlands $_{-} \ge 70\%$ -	1	No	0	
Woodlands This	<90% cleared group	2	No	395	Bogan-Macquarie
includes PCT's: 55	(including Tier 2 or higher threat status).	3	Yes	145	Boorindal Plains,
Floodplain Transition	Floodplain Transition Woodlands $_{2} \ge 70\%$ -	4	No	95	Canbelego Downs, Castlereagh-
includes PCT's: 56, 74,	<90% cleared group (including Tier 2 or higher threat status).	5	Yes	608	Barwon, Inland Slopes, Lower
76, 80, 81, 82, 237, 244, 248, 251, 628		6	No	0	Slopes, Nymagee
Fuzzy Box Woodland on a	alluvial Soils of the South	7	Yes	1	or
Western Slopes, Darling F Brigalow Belt South Biore	Riverine Plains and gions This includes	8	No	27	Any IBRA subregion that is
PCT's: 201, 202, 1384			Yes	397	within 100
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray- Darling Depression, Riverina and NSW South Western Slopes bioregions This includes PCT's: 26, 27, 37, 43, 49, 55, 145, 159, 1766			No	13	inpacted site.

HBT = Hollow Bearing Trees

Credit classes allocated to the proposal for Scattered Trees are outlined on Table 4-23 and Table 4-24.



Ecosystem credit classes – Scattered Tree Module

Table 4-23: Ecosystem credit summary from BAMC

РСТ	TEC	HBT Credits	No HBT Credits	Credits
55-Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.	Not a TEC	7	5	12
82-Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion	Not a TEC	8	22	30
201-Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	0	1	1
	Total	15	28	43

HBT = Hollow Bearing Trees

Table 4-24: Credit classes - Like-for-like options

Vegetation Class	Trading group	Class	HBT	Credits	IBRA region
		3	Yes	2	
		2	Yes	1	
	North-west Floodplain	2	No	1	
North-west Floodplain	Woodlands - $\geq 70\%$ -	2	No	1	
includes PCT's: 55	(including Tier 2 or	2	No	1	
	higher threat status).	3	No	1	
	3	3	Yes	4	
		3	No	1	
		3	Yes	3	Bogan-Macquarie,
		3	No	1	Canbelego Downs
	Floodplain Transition Woodlands - ≥ 70% -	2	No	3	Castlereagh-
		2	No	1	Barwon, Inland
		3	Yes	2	Slopes, Lower
		2	No	3	Slopes, Nymagee
Floodplain Transition		3	No	2	and Pilliga.
Woodlands This		3	No	2	
includes PCT's: 56, 74,	<90% cleared group	2	No	2	Ally IBRA
76, 80, 81, 82, 237,	(including Tier 2 or	2	Yes	2	within 100
244, 248, 251, 628	higher threat status).	3	No	1	kilometres of the
		2	No	1	outer edge of the
		3	Yes	1	impacted site.
		2	No	3	
		2	No	1	
		2	No	1	
		2	No	1	1
Fuzzy Box Woodland on a Western Slopes, Darling Brigalow Belt South Biore PCT's: 201, 202, 1384	3	No	1		

HBT = Hollow Bearing Trees



5 Threatened species

The following section addresses the potential presence of threatened flora and fauna species considered in the assessment of impacts and targeted surveys.

AREA staff have extensive experience within 1500 metres of the Development Footprint, having been engaged by TGO to complete annual monitoring at the existing TGO Mine Site and biodiversity surveys to inform exploration consent processes. In addition, AREA staff, in previous roles, completed the pre-approval assessments for the existing TGO Mine Site and operational monitoring. While some of this experience is not directly relevant to this BDAR, it does demonstrate a high degree of experience and general familiarity with the area.

5.1 Database searches

A default list of threatened species with potential to occur in the Development Footprint was firstly identified using the assessment filtering tool in the BAMC and was used to inform the field assessment and threatened species assessment. A background review was also conducted to confirm these and possible additional threatened species using the resources shown in Table 5-1.

Database / resource	Search area	Date accessed
BAM credit calculator (BAMC)	Darling Riverine Plain IBRA > Subregion Bogan – Macquarie>	July/ Dec 2021
DPIE NSW Atlas of Wildlife (BioNet)	Approximately 10 x 10 kilometres centred on the Development Footprint	July/ Dec 2021
Protected Matters Search Tool (DAWE)	1.5-kilometre radius around the Development Footprint	July 2021
NSW BioNet Threatened Biodiversity Profile Data Collection (TBDC)	IBRA sub region	July 2021

Table 5-1: Wildlife databases used to identify potentially occurring threatened species

Threatened species predicted to occur by the DPIE TBDC search filtered by IBRA subregion was used to inform candidate Serious and Irreversible Impact (SAII) species associated with paddock trees as required for application of the Streamlined assessment module – scattered tress, and is included in Appendix A.

Threatened species known to occur within 10 kilometres of the Development Footprint based on recorded sightings recorded on the DPIE BioNet Atlas of Wildlife are shown in Table 5-2. Figure 5-1 to Figure 5-4 illustrate BioNet sightings with 10 kilometres of the Development Footprint, Figure 5-5 and Figure 5-6 show records within 1.5 kilometres.

Table 5-2: BioNet Atlas of Wildlife threatened species recorded within 10km of the Development Footprint

Scientific	Common Name	NSW Status	Commonwealth Status
Ardeotis australis	Australian Bustard	Endangered	Not listed
Ninox connivens	Barking Owl	Vulnerable	Not listed
Falco subniger	Black Falcon	Vulnerable	Not listed
Dichanthium setosum	Bluegrass	Vulnerable	Not listed
Grus rubicunda	Brolga	Vulnerable	Not listed
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not listed



Scientific	Common Name	NSW Status	Commonwealth Status
Nyctophilus corbeni	Corben's Long-eared Bat Vulnerab		Vulnerable
Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not listed
Stagonopleura guttata	Diamond Firetail	Vulnerable	Not listed
Petroica phoenicea	Flame Robin	Vulnerable	Not listed
Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Not listed
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Not listed
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable
Phascolarctos cinereus	Koala	Vulnerable	Vulnerable
Gallinago hardwickii	Latham's Snipe	Not listed	JAMBA, ROKAMBA
Chalinolobus dwyeri	blobus dwyeri Large-eared Pied Bat Vulnerable		Vulnerable
Hieraaetus morphnoides	Little Eagle	Not listed	Not listed
Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not listed
Chalinolobus picatus	Little Pied Bat	Vulnerable	Not listed
Anseranas semipalmata	Magpie Goose	Vulnerable	Not listed
Grantiella picta	Painted Honeyeater	Not listed	Not listed
Chthonicola sagittata	Speckled Warbler	Vulnerable	Not listed
Circus assimilis	Spotted Harrier	Vulnerable	Not listed
Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Endangered
Lophoictinia isura	Square-tailed Kite	Vulnerable	Not listed
Petaurus norfolcensis	Squirrel Glider	Not listed	Not listed
Polytelis swainsonii	Superb Parrot	Vulnerable	Vulnerable
Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not listed
Hirundapus caudacutus	White-throated Needletail	Not listed	Vulnerable CAMBA, JAMBA, ROKAMBA
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not listed
Tylophora linearis	Tylophora linearis	Vulnerable	Endangered

CAMBA = China – Australia Migratory Bird Agreement

JAMBA = Japan – Australia Migratory Bird Agreement

ROKAMBA = Republic of Korea – Australia Migratory Bird Agreement



Figure 5-1: BioNet threatened species records within 10 kilometres (fauna)





Figure 5-2: BioNet threatened species records within 10 kilometres (fauna) - bore and pipeline









Figure 5-4: BioNet threatened species records within 10 kilometres (flora) - Bore and pipeline











Figure 5-6: BioNet records within 1500m of Development Footprint - bore and pipeline





5.2 Matters of National Environmental Significance (MNES)

The Commonwealth Protected Matters Search Tool was used to generate a report on Matters of National Environmental Significance (MNES) (EPBC Act Protected Matters Report) predicted to occur within 1.5 kilometres around the Development Footprint. This report is included in Appendix A and is summarised in Table 5-3. Significant impact to Commonwealth listed matters is unlikely, and where some impact may occur, the listed matter has been addressed under NSW legislation including under the Biodiversity Offset Scheme. Referral is not recommended.

MNES	Result	Comment
World Heritage Properties	None	-
National Heritage Places	None	-
Wetlands of International Importance	3	Three are located more than 600km from the Development Footprint.
Great Barrier Marine Park	None	-
Commonwealth Marine Area	None	-
Listed Threatened Ecological Communities	5	Field assessment confirmed two of these communities occur in the Development Footprint
Listed Threatened Species	23	Likelihood of occurrence considered (see table below)
Listed Migratory Species	11	Birds that would not be affected by the proposal, likelihood of occurrence considered (see below)
Commonwealth Land	None	-
Commonwealth Heritage Places	None	-
Listed Marine Species	16	The proposal would not impact these species
Whales and other Cetaceans	None	-
Critical Habitats	None	-
Australian Marine Parks	None	-
Commonwealth Reserves Terrestrial	None	-
State and Territory Reserves	None	-
Regional Forest Agreements	None	-
Invasive Species	19	6 birds 10 mammals 3 plants
Nationally Important Wetlands	None	-
Key Ecological Features (Marine)	None	-

Table 5-3: MNES summary

Likelihood of impact to threatened species predicted in the EPBC Act Protected Matters Report is considered in Table 5-4.

Table 5-4: Commonwealth Protected Matters report – predicted threatened species

Common name	Common name Scientific name		Likelihood of presence in the Development Footprint
Birds			
Regent Honeyeater	egent Honeyeater Anthochaera phrygia Critically Endangered		Unlikely – The Development Footprint is not mapped important habitat for this species. Species prefers Box – Ironbark woodland or riparian forest of River Sheoak which are not present in the Development Footprint.
Australasian Bittern	Botaurus poiciloptilus	Endangered	Unlikely – no suitable wetland habitat
Curlew Sandpiper	Calidris ferruginea	Critically Endangered	Unlikely – no suitable wetland habitat
Grey Falcon	Grey Falcon Falco hypoleucos		Addressed under NSW legislation
Painted Honeyeater	Grantiella picta	Vulnerable	Not recorded during field assessment however mistletoe and Weeping Myall are habitat values relevant to this species. Management areas



Common name	Scientific name	Commonwealth	Likelihood of presence in the Development
		Status	exist for this species with 10km of the development site. Therefore, this species added to the BAMC and assessed under NSW legislation.
White-throated Needletail	Hirundapus caudacutus	Vulnerable	Unlikely – rarely come to ground and do not breed in Development Footprint. Included in NSW assessment process
Malleefowl	Leipoa ocellata	Vulnerable	Unlikely – no mounds in Development Footprint which has been previously disturbed. Mallee habitat is not present within 1500m
Eastern Curlew	Numenius madagascariensis	Critically Endangered	Unlikely – no suitable wetland habitat
Superb Parrot	Polytelis swainsonii	Critically Endangered	Addressed under NSW legislation
Australian Painted Snipe	Rostratula australis	Endangered	Unlikely – no suitable wetland habitat
Mammals			
Large-eared Pied Bat	Chalinolobus dwyeri	Vulnerable	Addressed under NSW legislation – Added to BAMC
Spotted-tail Quoll	Dasyurus maculatus maculatus (SE mainland population)	Endangered	Addressed under NSW legislation
Corben's Long-eared Bat, South-eastern Long-eared Bat		Vulnerable	Addressed under NSW legislation – Added to BAMC
Koala (<i>Phascolarctos cinereus</i>) Combined populations of Queensland, New South Wales and the Australian Capital Territory		Vulnerable	Addressed under NSW legislation
Grey-headed Flying- fox poliocephalus		Vulnerable	Addressed under NSW legislation
Plants			
-	Androcalva procumbens	Vulnerable	Not recorded in the Development Footprint during field assessment
-	Austrostipa wakoolica	Endangered	Not recorded in the Development Footprint during field assessment
Winged Pepper-cress	Lepidium monoplocoides	Endangered	Not recorded in the Development Footprint during field assessment
Tarengo Leek Orchid	Prasophyllum petilum	Endangered	Not recorded in the Development Footprint during field assessment
A leek-orchid	Prasophyllum sp. Wybong	Critically Endangered	Not recorded in the Development Footprint during field assessment
Slender Darling-pea	Swainsona murrayana	Vulnerable	Addressed under NSW legislation
-	Tylophora linearis	Endangered	Not recorded in the Development Footprint during field assessment
Threatened Ecologica	I Communities		
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions		Endangered	Community is not present in the Development Footprint.
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		Endangered	This community does not occur in the Darling Riverine Plains bioregion.
Poplar Box Grassy Woodland on Alluvial Plains		Endangered	Where patches of Poplar Box occur in the Development Footprint without the current or dominant presence of another canopy species, the community is not consistent with the definition of the TEC, due to small patches <1ha or degraded condition of the groundcover.
Weeping Mya	all Woodlands	Endangered	Addressed under NSW legislation
White Box-Yellow Bo Grassy Woodland Gras	ox-Blakely's Red Gum and Derived Native sland	Critically Endangered	Community is not present in the Development Footprint.



Ten species of Commonwealth listed, or protected under international bilateral agreement, fauna or flora have been recorded on BioNet within 10 kilometres however none of these are within 1500 metres of the Development Footprint (Figure 5-7 and Figure 5-8).



Figure 5-7: Commonwealth listed threatened species records within 10km



Figure 5-8: Commonwealth listed threatened species records within 10km - bore and pipeline





5.3 Migratory species

Eleven migratory species (all birds) listed under the EPBC Act were predicted to occur in the EPBC Act Protected Matters Report. These migratory species are not expected to occur or be impacted by the Project. None were recorded during survey. Impact to species is considered using the assessment of significance for migratory birds (Table 5-5).

Criteria			
An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:	Migratory bird assessment		
	There is little evidence to suggest that the Development Footprint supports 'important habitat' for migratory species.		
substantially modify (including by fragmenting, altering fire	It is possible that habitat in the Development Footprint has small areas suitable for seasonal foraging or breeding habitat for these species		
regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	No species will be isolated or prevented from accessing suitable habitat adjacent to the Development Footprint.		
	Migratory birds are extremely mobile in nature and have a large feeding area that would not be solely reliant on the habitat provided in the development site. Several river systems including Gilgia areas are within several kilometres of the development site. This reduces the likelihood that habitat in the development site is 'important habitat'.		
result in an invasive species that is harmful to the migratory	The local area has a history of habitat modification for agricultural and mining activity.		
species becoming established in an area of important habitat for the migratory species, or	This benefited a number of feral and invasive flora and fauna species. With mitigation actions, the proposal is unlikely to increase the spread of weeds and feral fauna.		
seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	As noted above, the Development Footprint is not considered to be an area of 'important habitat' for migratory birds, whether they are wetland or terrestrial species. It is unlikely that an ecological significant proportion of migratory birds would rely on habitat in the Development Footprint.		

Table 5-5: Assessment of significance for migratory birds

5.4 Field survey

5.4.1 Survey timing and method

The field assessment consisted of 35 days between September 2019 and December 2021. The dates of specific field assessments are provided in Table 5-6.

The following guidance materials were followed during field assessments:

- Biodiversity Assessment Methodology (DPIE, 2020).
- Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method (DPIE 2020).
- NSW Survey Guide for Threatened Frogs 'A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method' (DPIE 2020).
- 'Species credit' threatened bats and their habitats NSW survey guide for the Biodiversity Assessment Method (OEH, 2018).
- Guide to Surveying Threatened Plants (OEH, 2015).



- Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities Working Draft (DEC, 2004).
- Survey requirements (birds, bats, reptiles, frogs, fish and mammals) for species listed under the EPBC Act.

Year	Month	Number of days	No of staff (No of person days)	Activity	Survey Method
2019	September	1	2 (2) 1 (1)	BAM plots Threatened species searches	 BAM (2020) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004)
	April	1	2 (2)	Camera traps Threatened species searches	 Per: TBDC (Brush tailed phascogale and Squirrel Glider) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) Surveying threatened plants and their habitats (2020)
	Мау	2	1 (1) 1 (1)	Camera traps Threatened species searches	 Per: TBDC (Brush tailed phascogale and Squirrel Glider) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) Surveying threatened plants and their habitats (2020)
	June	7	5 (4) 1 (1) 1 (1)	BAM plots Camera traps Threatened species searches	 BAM (2020) Per: TBDC (Brush tailed phascogale and Squirrel Glider) TSDP (Brush tailed phascogale and Squirrel Glider) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) Surveying threatened plants and their habitats (2020)
2020	July	2	1 (1) 1 (1)	BAM plots Camera traps Threatened species searches	 BAM (2020) Per: TBDC (Brush tailed phascogale and Squirrel Glider) TSDP (Brush tailed phascogale and Squirrel Glider) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) Surveying threatened plants and their habitats (2020)
	August	1	3 (3)	Frog survey, spotlighting Call playback	 BAM (2020) Per: TBDC (Brush tailed phascogale and Squirrel Glider) TSDP (Brush tailed phascogale and Squirrel Glider) Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (2020). DPIE expert advice sought to inform survey effort. Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004)
	October	3	2 (6)	Threatened species searches	 Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) Surveying threatened plants and their habitats (2020)

Table 5-6: Field survey effort and timing



Year	Month	Number of	No of staff (No of	Activity	Survey Method
rear		days	person days)	,	
	February	1	1 (1)	Threatened species searches	 Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004)
	July	4	1 (1) 1 (1) 2 (2) 1 (1)	BAM plots Camera traps Call playback / spotlighting Threatened species searches	 BAM (2020) Per: TBDC (Brush tailed phascogale and Squirrel Glider) TSDP (Brush tailed phascogale and Squirrel Glider) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) Surveying threatened plants and their habitats (2020)
2021	August	1	1 (1)	BAM plots Threatened species searches Frog survey	 BAM (2020) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (2020) Surveying threatened plants and their habitats (2020)
	November	1	1 (2)	BAM plots Threatened species searches	 BAM (2020) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (2020) Surveying threatened plants and their habitats (2020)
	December	1	1 (2)	BAM plots Threatened species searches	 BAM (2020) Surveying threatened plants and their habitats (2020)
Total e	quivalent asse	ssment days	35		

5.4.2 Survey for habitat constraints and microhabitat

The vegetation in the Development Footprint can provide habitat for a wide range of terrestrial fauna. Trees were inspected for hollows, fallen logs and shrubby habitat were observed, and the area was checked for infrastructure which may provide artificial habitat for microbats and other fauna species. The BAMC identifies specific habitat constraints and geographic limitations relevant to each threatened species if they apply. Survey can confirm presence/ absence of habitat constraints or geographic limitations.

<u>Hollow bearing trees – living or dead with suitable hollows:</u> Survey confirmed presence of suitable hollows for various hollow dependent species. Species survey would be required to confirm whether target species were using the Development Footprint for breeding.

<u>Cliffs - rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within</u> <u>two kilometres of old mines or tunnels:</u> Survey confirmed no rock features as described above are present in the Development Footprint or within the specified proximity for the species.

Living or dead mature trees within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines: Survey confirmed no suitable waterway or wetland



features were present in the Development Footprint or within the specified proximity for the species.

Proximity to riparian woodland on inland watercourses /waterholes containing dead or dying eucalypts: Survey confirmed no suitable waterway or wetland features were present in the Development Footprint or within the specified proximity for the species.

<u>Important habitat</u>: Determined with reference to mapped important habitat if available, with additional information from survey and relevant databases.

<u>Breeding camps</u>: Survey did not detect presence or evidence of any breeding camps for relevant species.

5.4.3 Targeted threatened species survey

Field assessments followed guidance materials listed in Appendix F of this BDAR.

The targeted threatened species survey focused on listed species predicted to occur in the BAMC; however, if other listed species were recorded in the Development Footprint, these were added to the BAMC.

The following targeted assessment methods were used as part of the assessment for the Project:

- search transects throughout the Development Footprint;
- diurnal observation of hollows in and around the Development Footprint;
- baited wildlife cameras;
- diurnal observation of bird species;
- call-playback; and
- opportunistic observation.

Search tracks and transects were recorded using mobile GPS (Figure 5-9). All search tracks and transects recorded during assessment for this Project are included in this figure, despite some being outside the Development Footprint. Search effort outside the Development Footprint occurred prior to the determination of the final Development Footprint.

Baited wildlife cameras were positioned in three patches of PCT201 during May and June 2020 and July 2021 (Figure 5-10). PCT201 was targeted for this assessment as it is the only PCT with a known association with the Brush-tailed Phascogale.

Where a flora species could not confidently be identified, a sample was collected and posted to the Royal Botanic Gardens – National Herbarium of NSW in Sydney to confirm the identification. This process was undertaken twice, which confirmed *Dichanthium* species recorded was not the listed *Dichanthium* setosum.







Tomingley Gold Extension Project Legend Development Footprint Survey Effort Baited wildlife cameras Plant Community TYpes PCT201	OVERVIEW	Ease layer: ESRI Satelite



5.4.4 Threatened species detected

A lone male Glossy Black-cockatoo was recorded within the Development Footprint during surveys in June 2020. AREA staff were aware of several sightings of Glossy Black-cockatoos in NSW where they did not usually occur. This was suspected to be the result of the 2020 fires which impacted Glossy Black-cockatoo habitat, forcing the animals to seek new food sources in the months following the fires - such as Tomingley. This species was not detected again during the 2020 surveys or 2021 surveys. As such, the sighting in June 2020 is considered an anomaly.

Grey-crowned Babblers and Superb Parrots were also recorded during this assessment within the Development Footprint and have been included in this assessment as predicted ecosystem credit species.

5.5 Ecosystem credit species

Ecosystem credit species (predicted species) are predicted to occur based on their known presence or predicted presence in the IBRA subregion, the known association with PCTs and the size and condition of the vegetation patches on the site, as determined by the BAMC. Ecosystem credit species may be excluded from this list where they require particular habitat or geographic features (as prescribed by the BAMC) which are not present.

5.5.1 List of ecosystem credit species derived

The BAMC assessment tool identified 20 threatened species (Table 5-7) reliably predicted to use habitat present in the Development Footprint. One species of insectivorous bat (Corben's Longeared Bat – *Nyctophilus corbeni*) was predicted in the EPBC Act protected matters search and was added to the BAMC. Painted Honeyeater (*Grantiella picta*) is also predicted in the EPBC Act protected matters search, and while this species was not recorded during the assessment for this Project, elements of suitable habitat including Weeping Myall (*Acacia pendulla*) containing mistletoe, were present in the Development Footprint. Further, management areas for this species occur within 10 kilometres of the Development Footprint. This species was added to the BAMC calculator as an ecosystem species to recognise the potential impact to habitat for this species. Two of the species (Table 5-8) can be excluded because they are outside the geographical limitations or the required habitat constraints are not present. Ecosystem credits apply to the remaining 20 species. No surveys are required to confirm presence of these species.

Scientific Name	Common Name	Habitat constraints	Geographic constraints	Sensitivity to gain class	BC status	EPBC status
Falco subniger	Black Falcon	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Hamirostra melanosternon	Black-breasted Buzzard (Foraging)	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Grus rubicunda	Brolga	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	-	East of the Newell Highway	High Sensitivity to Potential Gain	Vulnerable	Not listed

Table 5-7: Ecosystem credit species list



Scientific Name	Common Name	Habitat constraints	Geographic constraints	Sensitivity to gain class	BC status	EPBC status
Nyctophilus corbeni	Corben's Long-eared Bat	-	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Stagonopleura guttata	Diamond Firetail	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Artamus cyanopterus cyanopterus	Dusky Woodswallow	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Petroica phoenicea	Flame Robin	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Calyptorhynchus lathami	Glossy Black- Cockatoo (Foraging)	Presence of Allocasuarina and casuarina species	-	High Sensitivity to Potential Gain	Vulnerable	Not listed
Falco hypoleucos	Grey Falcon	-	-	Moderate Sensitivity to Potential Gain	Endangered	Vulnerable
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Pteropus poliocephalus	Grey-headed Flying-fox	-	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Phascolarctos cinereus	Koala (Foraging)	-	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Lophochroa leadbeateri	Major Mitchell's Cockatoo (Foraging)	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Grantiella picta	Painted Honeyeater	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Vulnerable
Calyptorhynchus banksii samueli	Red-tailed Black Cockatoo (inland subspecies)	-	North of Nyngan	High Sensitivity to Potential Gain	Vulnerable	Not listed
Chthonicola sagittata	Speckled Warbler	-	-	High Sensitivity to Potential Gain	Vulnerable	Not listed
Dasyurus maculatus	Spotted-tailed Quoll	-	-	High Sensitivity to Potential Gain	Vulnerable	Endangered
Polytelis swainsonii	Superb Parrot (Foraging)	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Vulnerable
Haliaeetus leucogaster	White-bellied Sea Eagle	Within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines	-	High Sensitivity to Potential Gain	Vulnerable	Not listed
Hirundapus caudacutus	White-throated Needletail	-	-	High Sensitivity to Potential Gain	Not listed	Vulnerable



5.5.2 Justification for exclusion of ecosystem credit species

The following two species (Table 5-8) can be excluded because the required habitat or geographic constraints are not present.

Scientific Name	Common Name	Habitat constraints	Geographic limitations	Justification for exclusion
Calyptorhynchus banksii samueli	Red-tailed Black Cockatoo (inland subspecies)	-	North of Nyngan	Development Footprint is not north of Nyngan
Haliaeetus leucogaster	White-bellied Sea Eagle	Within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines	-	No large waterways or wetlands occur within 1km of the Development Footprint.

 Table 5-8: Excluded Ecosystem credit species (predicted species)

5.6 Candidate species credit species

Species credit species (candidate species) are those that cannot be reliably predicted from the habitat surrogates and their presence is to be assessed through habitat assessment and targeted surveys. When candidate species have habitat constraints within the Development Footprint, they require further consideration. When a candidate species is known to occur or assumed to occur, they require offsetting.

One candidate species credit species of insectivorous bat (Large-eared Pied Bat - *Chalinolobus dwyeri*) was predicted in the EPBC Act protected matters search. This species was added to the BAMC. The full list of 18 candidate species generated by the BAMC is provided in Table 5-9.

Species	Common Name	Habitat constraints	Geographic limitations	Sensitivit y to gain class	BC status	EPBC status
Ardeotis australis	Australian Bustard	-	-	High Sensitivity to Potential Gain	Endangered	Not listed
Calyptorhynchus banksii samueli	Red-tailed Black- Cockatoo (inland subspecies) (Breeding)	Hollow bearing trees Living or dead tree with hollows greater than 15cm diameter and greater than 5m above ground	North of Nyngan	High Sensitivity to Potential Gain	Vulnerable	Not listed

Table 5-9: Candidate species list (full list)



Species	Common Name	Habitat constraints	Geographic limitations	Sensitivit y to gain class	BC status	EPBC status
Calyptorhynchus lathami	Glossy Black- Cockatoo (Breeding)	Hollow bearing trees; Living or dead tree with hollows greater than 15cm diameter and greater than 5m above ground	-	High Sensitivity to Potential Gain	Vulnerable	Not listed
Chalinolobus dwyeri	Large-eared Pied Bat	Cliffs Within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels	-	Very High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Crinia sloanei	Sloane's Froglet	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Endangered
Dichanthium setosum	Bluegrass	-	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Diuris tricolor	Pine Donkey Orchid	-	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Haliaeetus Ieucogaster	White- bellied Sea- Eagle (Breeding)	Living or dead mature trees within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines	-	High Sensitivity to Potential Gain	Vulnerable	Not listed
Hamirostra melanosternon	Black- breasted Buzzard (Breeding)	Waterbodies; Land within 40 m of riparian woodland on inland watercourses/ waterholes containing dead or dying eucalypts	-	Moderate Sensitivity to Potential Gain	Vulnerable	Not listed
Lophochroa leadbeateri	Major Mitchell's Cockatoo (Breeding)	Hollow bearing trees. Living or dead tree with	-	High Sensitivity to Potential	Vulnerable	Not listed


Species	Common Name	Habitat constraints	Geographic limitations	Sensitivit y to gain class	BC status	EPBC status
		hollows greater than 10cm diameter		Gain		
Phascogale tapoatafa	Brush-tailed Phascogale	-	-	High Sensitivity to Potential Gain	Vulnerable	Not listed
Phascolarctos cinereus	Koala (Breeding)	Areas identified via survey as important habitat	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Polytelis swainsonii Superb Parrot (Breeding)	Polytelis swainsonii Superb Parrot (Breeding)	Hollow bearing trees; Living or dead <i>E. blakelyi, E.</i> <i>melliodora, E.</i> <i>albens, E.</i> <i>camaldulensis</i> <i>, E.</i> <i>microcarpa, E.</i> <i>polyanthemos,</i> <i>E. mannifera,</i> <i>E. intertexta</i> with hollows greater than 5cm diameter greater than 4m above ground or trees with a DBH of greater than 30cm	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Pteropus poliocephalus	Grey- headed Flying-fox (Breeding)	Breeding camps	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Swainsona murrayana	Slender Darling Pea	-	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Swainsona plagiotropis	Red Darling Pea	-	-	High Sensitivity to Potential Gain	Vulnerable	Vulnerable
Swainsona recta	Small Purple-pea	-	-	Moderate Sensitivity to Potential Gain	Endangered	Endangered
Turnix maculosus	Red-backed Button-quail	-	-	High Sensitivity to Potential Gain	Vulnerable	Not listed



5.6.1 Justification for exclusion and inclusion of species credit species

Where habitat or geographic constraints are not present the species can be excluded from further survey. Six of the 18 identified species credit species were excluded from further assessment (Table 5-10). Twelve candidate species require further assessment.

Species	Common Name	Habitat constraints	Geographic limitations	Justification for exclusion
Calyptorhynchus banksii samueli	Red-tailed Black- Cockatoo (inland subspecies) (Breeding)	Hollow bearing trees Living or dead tree with hollows greater than15cm diameter and greater than 5m above ground	North of Nyngan	Development Footprint is not north of Nyngan
Chalinolobus dwyeri	Large-eared Pied Bat	Cliffs Within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels	-	No cliffs or other suitable rock areas occur in the Development Footprint or within 2km.
Haliaeetus leucogaster	White-bellied Sea-Eagle (Breeding)	Living or dead mature trees within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines	-	No large waterways or wetlands occur within 1km of the Development Footprint.
Hamirostra melanosternon	Black- breasted Buzzard (Breeding)	Waterbodies; Land within 40 m of riparian woodland on inland watercourses/waterho les containing dead or dying eucalypts	-	Excluded based on habitat constraints: Development Footprint is not within 40 m of riparian woodland on inland watercourses/waterholes containing dead or dying eucalypts.
Phascolarctos cinereus	Koala (Breeding)	Areas identified via survey as important habitat.	-	Excluded based on habitat constraint: Development Footprint is unlikely to be identified as important habitat. One Koala record exists on BioNet within 10km of the Development Footprint and it was recorded in 1986. There is no evidence of an existing local population of Koala.
Pteropus poliocephalus	Grey-headed Flying-fox (Breeding)	Breeding camps	-	No breeding camps recorded during field assessment

Table 5-10: Justification of exclusion of candidate species credit species



5.6.2 Description of targeted threatened species surveys

The remaining 12 species credit species were excluded based on results of targeted survey (Table 5-11).

Species	Survey effort and justification
Australian Bustard Ardeotis australis	Paddocks and treed areas were traversed by car and on foot, during several months in 2020 and 2021. This species is conspicuous and was not detected. Further, this species was not recorded during AREAs work on other proposals within 10km of the Development Footprint.
Glossy Black- Cockatoo (Breeding) Calyptorhynch us lathami	During assessment in June 2020 a lone male Glossy Black-Cockatoo was recorded feeding in Casuarina cristata trees. No other signs of breeding were recorded during the 2020 breeding season. During this time, AREA staff were made aware of several Glossy Black-Cockatoo sightings in areas they did not normally frequent. Assessment in July, June, and August in 2021 did not detect any signs of breeding.
Sloane's Froglet Crinia sloanei	Survey was conducted in accordance with the NSW Survey Guide for Threatened Frogs (2020). Survey advice was received from DPIE expert David Hunter. Through this advice it was confirmed suitable habitat as gilgais and dams with shallow areas (30cm or less) with thin stem diameter vegetation that are inundated during winter was present in the Development Footprint. David confirmed one assessment in August would be suitable survey effort. AREA completed aural survey for this species during August 2020 and August 2021 at a selection of suitable waterbodies. No frog calls consistent with that of the Slone's froglet were detected. The Melbourne Museum Frog ID app was also used to record and analyse the calls herd during the assessment and did not identify Slone's Froglet.
	Search transects across the Development Footprint were completed in accordance with <i>Surveying threatened plants and their habitats</i> (2020). During survey, several <i>Dichanthium</i> specimens, with flower/ seed heads, which looked
Bluegrass Dichanthium setosum	similar to <i>Dichanthium setosum</i> were recorded in the Development Footprint. Batches of samples were sent to the Royal Botanic Gardens – National Herbarium of NSW in June and August 2020. AREA was aware of flowering populations of <i>D. setosum</i> (Collected by AREA and confirmed by the herbarium) near Coonabarabran, also in August 2020. The herbarium confirmed that all plants sent from Tomingley were <i>D.</i> <i>sericeum subsp. sericeum</i> , and not <i>D. setosum</i> .
Pine Donkey Orchid Diuris tricolor	Search transects across the Development Footprint were completed in accordance with <i>Surveying threatened plants and their habitats</i> (2020). Survey was conducted in October 2020. No <i>Diuris sp.</i> were recorded during this assessment.
Major Mitchell's Cockatoo (Breeding) Lophochroa leadbeateri	This conspicuous species was not recorded breeding or foraging in or around the Development Footprint during 2020 or 2021 surveys. Further, this species was not recorded during AREAs work on other proposals within 10km of the Development Footprint.
Brush-tailed Phascogale Phascogale tapoatafa	Survey using baited cameras was conducted in May – June 2020 and July 2021. Cameras were installed for the duration, at the density, and with bait replenishing and checking as required by the TBDC. Brush-tailed Phascogale was not detected.
Superb Parrot (Breeding) <i>Polytelis</i> swainsonii	Superb Parrots are known to forage in the Tomingley area. However, during survey in August (2020 and 2021) and October (2020), this species was not recorded, and no nests were observed. Further, this species has not recorded breeding within 10km of the Development Footprint during AREAs work on other proposals.
Slender Darling Pea Swainsona murrayana	Search transects across the Development Footprint were completed in accordance with <i>Surveying threatened plants and their habitats</i> (2020). Survey for this species was conducted in August (2020 and 2021) and October (2020) during a time when this species would be visible and likely to be flowering. The species was not detected. Further, this species was not recorded during AREAs work on other proposals within 10km of the Development Footprint.
Red Darling Pea Swainsona plagiotropis	Search transects across the Development Footprint were completed in accordance with <i>Surveying threatened plants and their habitats</i> (2020). Survey for this species was conducted in October 2020 during a time when this species would be visible and flowering. The species was not detected. Further, this species was not recorded during AREAs work on other proposals within 10km of the Development Footprint.

Table 5-11: Species excluded by additional survey



Species	Survey effort and justification
Small Purple- pea Swainsona recta	Search transects across the Development Footprint were completed in accordance with <i>Surveying threatened plants and their habitats</i> (2020). Survey for this species was conducted in October 2020 during a time when this species would be visible and flowering. The species was not detected. Further, this species was not recorded during AREAs work on other proposals and an NSW LLS two yearlong research project within 10km of the Development Footprint.
Red-backed Button-quail <i>Turnix</i> maculosus	Transects driven or walked across, or otherwise around travelled around the Development Footprint did not detect this species. Further, this species was not recorded during AREAs work on other proposals within 10km of the Development Footprint.

5.6.3 Species credit species

No species credit species are or are assumed to be present and therefore no species credits are required to offset the proposed impact in accordance with the BAM.

5.7 Koala Habitat Protection State Environmental Planning Policy

The State Environmental Planning Policy (Koala Habitat Protection) 2021 (the Koala SEPP) came into effect in March 2021. Narromine LGA is listed under Schedule 1 of the Koala SEPP; therefore, it is relevant to the Project.

Schedule 2 of the Koala SEPP provides a list of Koala use tree species by Koala Management Area (KMA). The Darling Riverine Plains KMA applies to the Project and based on the applicable list, suitable Koala trees exist in the Development Footprint. These species are:

- White Cypress Pine Callitris glaucophylla;
- Fuzzy Box Eucalyptus conica;
- Western Grey Box Eucalyptus microcarpa;
- Bimble Box Eucalyptus populnea.

Part 1, Clause 4 (1) of the Koala SEPP defines core koala habitat as:

"(a) an area of land which has been assessed by a suitably qualified and

experienced person as being highly suitable koala habitat and where koalas are

recorded as being present at the time of assessment of the land as highly

suitable koala habitat, or

(b) an area of land which has been assessed by a suitably qualified and

experienced person as being highly suitable koala habitat and where koalas

have been recorded as being present in the previous 18 years."

It is unlikely the development contains core Koala habitat because:

- No Koalas were recorded during the field assessment for the Project.
- No other evidence of Koalas was found during the field assessment for the Project.
- One Koala record exists within 10 kilometres of the Development Footprint (main component); however, the observation is more than 18 years old. It was recorded in 1986, making it 35 years old at the time of writing this report.
- Two Koala records exist within 10 kilometres of the Development Footprint (replacement bore and pipeline component). One of these is more than 18 years old, recorded in 1986. The other is more recent, recorded in 2006. No trees would be impacted in the bore and pipeline component of this Project.



6 Other impacts

6.1 Serious and irreversible impacts

Principles for determining a serious and irreversible impact are provided by clause 6.7(2) of the Biodiversity Conservation Regulation 2017 which states:

An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because--

(a) it will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or

(b) it will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size, or

(c) it is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution, or

(d) the impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

One matter at risk of a Serious and Irreversible Impact (SAII) was identified by the standard BAMC– Threatened Ecological Community: *Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion* (See Appendix D). Further information about this candidate SAII is provided in Section 6.1.1.

Threatened entities at risk of an SAII were considered for the scattered trees in accordance with Appendix B, section B.4 of the BAM (2020) (Appendix A):

- The predicted matters for the Bogan-Macquarie IBRA subregion were downloaded from the DPIE threatened species search tool on 20 July 2021
- The predicted list was filtered for species which are both a candidate species credit species (including dual credit species) and known to use paddock trees as indicated on the Threatened Biodiversity Data Collection
- The resulting list was the checked against the list of candidate SAII species
- No species were identified as candidate SAII species.

6.1.1 Candidate SAII - Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion

Current status of the TEC

AREA contacted DPIE regarding the current extent of clearing of this SAII. The response was:

Fuzzy Box Woodland

<u>Principle 1</u> SAII = Yes

Final Determination: "Less than 5% of Fuzzy Box Woodland on alluvial soils of the Western Slopes, Darling Riverine Plains and Brigalow Belt South bioregions is estimated to remain compared to pre-European times due to past clearing."

<u>Principle 2</u> SAII = Yes

Justification = Final Determination: "Less than 5% of Fuzzy Box Woodland on alluvial soils of the Western Slopes, Darling Riverine Plains and Brigalow Belt South bioregions is estimated to remain compared to pre-European times due to past clearing." "Other symptoms of



degradation prevail, including the senescence of relict plants, lack of regeneration due to grazing, lack of fire and weed invasion."

<u>Principle 3</u> SAII = Yes Number of locations = 1 Estimated $AOO = 4 \text{ km}^2$ Estimated $EOO = 4 \text{ km}^2$

Estimated total current extent = <400 ha

According to the DPIE TBDC profile for this TEC⁷, three PCTs are associated with the *Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions* TEC (Fuzzy Box Woodland TEC). These are:

- PCT201: Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion
- PCT202: Fuzzy Box woodland on colluvium and alluvial flats in the Brigalow Belt South Bioregion (including Pilliga) and Nandewar Bioregion
- PCT1384: White Cypress Pine Bulloak ironbark woodland of the Pilliga area of the Brigalow Belt South Bioregion.

The following state vegetation maps were used to estimate the distribution of Fuzzy Box Woodland TEC (as PCT201, PCT202 and PCT1384) across the three relevant IBRA Bioregions: NSW South Western Slopes, Darling Riverine Plains, Brigalow Belt South and Sydney Basin:

- Central Tablelands SVTM 4778;
- Border Rivers Gwydir Namoi 4467; and
- Central West Lachlan SVM 4468.

PCT1384 is the only one of these three PCTs which is not listed as occurring in the same IBRA bioregion as the Development Footprint - Darling Riverine Plains IBRA Bioregion.

The total area mapped on the above maps, as PCT201, PCT202 and PCT1384 is shown in Table 6-1 and Figure 6-2.

VIS map ID	Number of hectares
4467	4801.97
4468	14192.29
4778	1227.00
Total	20221.27

Table 6-1: Hectares of PCT201, PCT202 and PCT1384 in three relevant State Vegetation Maps

The proposed impact to 10.80 hectares of Fuzzy Box Woodland TEC is approximately 0.05 percent of the combined the area of PCT201, PCT202 and PCT1384 mapped in these three State Vegetation Maps.

The BioNet Vegetation Classification database provides a percent cleared status for each PCT. PCT201 has a percent cleared status of 94 percent, while both PCT202 and PCT1384 have a percent cleared status of 75 percent.



⁷ https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10335







Presence of Fuzzy Box Woodland TEC within 10 kilometres of the Development Footprint (excluding the bore and pipeline component) was ground truthed and mapped on 17 February 2021 and 19 August 2021 using rapid assessment while traversing the Newell Highway and other minor roads to provide additional information for this report (Figure 6-2).

Ground truthing undertaken by a suitably qualified and experienced BAM accredited assessor showed the presence of PCT201, and Fuzzy Box Woodland within 10 kilometres is greater than is mapped on the Central West Lachlan SVM for the same area.

It is likely the presence of Fuzzy Box Woodland TEC is greater still, as this assessment did not access private properties likely to possess suitable habitat including desirable proximity to drainage lines. The assessor was limited to confirming the plant communities identifiable from the public roads.

This ground truthing exercise recorded approximately 154 hectares of Fuzzy Box Woodland TEC occurs within 10 kilometres of the Development Footprint. The State Vegetation Map showed approximately 94 hectares in the same area however approximately 90 hectares of this is primarily in private land around Peak Hill is in addition to the 154 hectares mapped by AREA.

Combined (154 hectares mapped by AREA and 90 hectares mapped elsewhere on State Vegetation Map), this is approximately 244 hectares within 10 kilometres of the Development Footprint (Figure 6-2). Waterways are included on this figure to indicate the likelihood of suitable habitat associated with drainage lines stretching across the local landscape.

Based upon the State Vegetation Map and ground truthing data, the impact to 10.80 hectares of Fuzzy Box Woodland TEC would represent the removal of approximately 4.43 percent of Fuzzy Box Woodland TEC mapped within 10 kilometres of the Development Footprint.

Examples of the patches of Fuzzy Box Woodland TEC recorded during this rapid assessment and are provided in Plates 6-1 to 6-3.







Plate 6-1: Fuzzy Box Woodland TEC along Wards Road (February 2021)



Plate 6-2: Fuzzy Box Woodland TEC patch adjacent to Back Tomingley West Road (February 2021)





Plate 6-3: Fuzzy Box Woodland TEC – Thornycroft Road (Adjacent to Tomingley Gold Operations Biodiversity Offset Area – February 2021)



As part of biodiversity offset obligation for the mine's initial project approval (MP 09_0155) in 2013, two areas are in the process of being revegetated as Fuzzy Box Woodland TEC. These areas equate to approximately 26 hectares of replanted Fuzzy Box Woodland TEC in addition to approximately 15 hectares of remnant areas of Fuzzy Box Woodland TEC which were both conserved under a Property Vegetation Plan LLS File Ref: CW01825 (Plates 6-4 to 6-7).

Plate 6-4: Biodiversity Offset Area – Fuzzy Box Woodland TEC revegetation west of Newell Highway (February 2021)





Plate 6-5: Biodiversity Offset Area – Fuzzy Box Woodland EEC revegetation west of Newell Highway (February 2021)



Plate 6-6:Biodiversity Offset Area – Fuzzy Box Woodland TEC revegetation (mixed eucalypt species including *E. populnea*) east of Newell Highway (December 2019)





Plate 6-7:Biodiversity Offset Area – Fuzzy Box Woodland TEC revegetation (mixed eucalypt species including *E. populnea*) east of Newell Highway (December 2019)



Areas of Fuzzy Box Woodland TEC in the Development Footprint have been subject to varying types of disturbance. Primarily agricultural practices and associated impact or weed burden include cropping and grazing. In areas where PCT201 has been the subject of grazing, with the upper stratum remaining largely still present, the quality of the vegetation remains high, with high numbers of shrub, forb and grass species recorded in the vegetation plots.

The quality (vegetation integrity) of these grazed areas is commensurate with the quality of the remnant vegetation in the Newell Highway corridor.

In areas where the upper stratum has been removed with groundcover remaining relatively intact, or where the upper stratum remains with the ground cover in poor condition due to cropping and high weed burden, the quality of the vegetation integrity is moderate.

Patches of PCT201 within 10 kilometres are fragmented due to historic clearing for agricultural practices, and PCT201 may have occurred in larger patches associated with drainage lines across the local landscape. However, it is likely these patches of PCT201 were naturally patchy and separated by other PCTs.





The NSW Scientific Committee final determination for Fuzzy Box Woodland TEC⁸ provides the following insight to estimate the PCT reduction in ecological function:

"Less than 5% of Fuzzy Box Woodland on alluvial soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South bioregions is estimated to remain compared to pre-European times due to past clearing (Austin et al. 2000, Seddon et al. 2002). Fuzzy Box was considered a plentiful tree along the Lachlan River plains west of Forbes at the start of the 20th century (Cambage 1902). While broadscale clearing has now largely ceased in these areas, clearing of isolated paddock trees and further clearing of remnants, including regrowth, remain threats." Other symptoms of degradation prevail, including the senescence of relict plants, lack of regeneration due to grazing, lack of fire and weed invasion. Weeds may be very common at some sites. They include the forb species Plantago lanceolata, Verbena bonariensis and Marrubium vulgare and the grass species Bromus diandrus, Vulpia myuros, Lolium perenne, Paspalum dilatatum and Hyparrhenia hirta. Clearing of native vegetation and Invasion of native plant communities by exotic perennial grasses are listed as Key Threatening Processes under the Threatened Species Conservation Act 1995 (now repealed)".

The BioNet TBDC indicates this community will respond to management in the form of application of ecological fire management. This management type is unlikely to be implemented in tree corridors of agricultural land. There is no known occurrence of fire impacting the vegetation in the Development Footprint in recent time.

Tomingley is within a management area for this TEC (Figure 6-3). Clearing Fuzzy Box Woodland TEC is not consistent with the management strategy however offsetting impact by securing an area of Fuzzy Box Woodland TEC elsewhere and protecting and enhancing patches of Fuzzy Box Woodland TEC is consistent with the strategy.



Figure 6-3: Fuzzy Box Woodland TEC management areas and sites across NSW⁹

⁸ https://www.environment.nsw.gov.au/determinations/FuzzyBoxWoodlandEndSpListing.htm



⁹ https://www.environment.nsw.gov.au/savingourspeciesapp/project.aspx?ProfileID=10335

Likely impacts from the Project on the TEC

The total area of Fuzzy Box Woodland TEC to be impacted by this proposal is 10.80 hectares, in three vegetation zones.

Based on the mapped and identified areas of associated PCTs discussed earlier in this section, the Project would impact approximately 4.42 percent of the mapped area of PCT201 within 10 kilometres.

The PCT201 in the Development Footprint is in four patches. The impact to each is described in Table 6-2.

Patch ID (north to south)	Total patch size (approx. ha)	Hectares in Development Footprint	Percent of patch cleared	Current distance to nearest patch (km)	Future distance of remnant to nearest patch (km)
1	3.10	1.36	43.87	1.5	1.5
2	19.69	8.81	44.74	0.4	2.4
3	0.60	0.60	100	0.4	N/A
4	11.50	0.34	0.26	1.5	2.9

Table 6-2: Assessment of Fuzzy Box Woodland TEC fragmentation from the proposal

These patches of Fuzzy Box Woodland TEC are currently limited in their opportunity to increase area of occupancy. Patches are bounded by infrastructure such as the Newell Highway, or by agricultural paddocks where existing and ongoing farm operation will continue to prevent new trees from establishing.

All remaining areas of Fuzzy Box Woodland TEC adjacent to the Development Footprint and elsewhere would not be impacted.

PCT201 is present in the Development Footprint as four patches assessed as three zones (Table 6-3).

Vegetation Integrity scores for PCT201 are 25.9, 22.9 and 94.7.

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Zone	PCT ID	Condition	Area (ha)	Composition condition score	Structure condition score	Function condition score	Vegetation integrity (VI) score
7	201	Moderate_trees	0.03	46.6	42	8.9	25.9
8	201	Moderate_cleared	2.38	60.5	54.2	3.7	22.9
9	201	Good	8.39	87.9	99.4	97.1	94.7

Table 6-3: PCT201 scores

The structure score provided by the BAMC shows the higher scores across all parameters for the 'good' zone. This reflects the absence of stratum layers and greater weed burden in the moderate quality zones.



Disruption of ecological processes

Ecological processes include fluctuations and changes in the interactions between and within components of the environment. For biodiversity this can include interactions between species, movement between and within habitat, regeneration, natural disturbance regimes etc. For the purposes for this section, disruption to these processes ecological processes are interactions which enable or disable a plant community's ability to sustain, thrive and grow. Specifically, impact from exotic species and human activity disrupt the Fuzzy Box Woodland TEC around Tomingley.

Unassisted regeneration within areas that would be affected by the Project is currently limited by infrastructure such as the Newell Highway, or by agricultural paddocks where existing and ongoing farm operation will continue to prevent new trees from establishing.

Collection of seed from local Fuzzy Box trees has occurred previously by TGO staff, and these seeds were germinated and planted in the Fuzzy Box Woodland TEC revegetation areas within the existing TGO Biodiversity Offset Area (Figure 6-5). Similar, human assisted actions to establish or re-establish populations of Fuzzy Box is likely to positively influence ongoing opportunities for enhancing the local genetic diversity of the Fuzzy Box Woodland TEC.

Fuzzy Box Woodland TEC forms part of a remnant tree corridor along the Newell Highway. The ecological value of this corridor is discussed in Section 2.6.

Removal of Fuzzy Box Woodland TEC is unlikely to increase erosion which would be detrimental to the surrounding native vegetation as surface water management would be a requirement of the of development approvals for Project.

If implemented, this Project would not affect other patches of Fuzzy Box Woodland TEC meaning approximately 233 hectares are likely to persist within 10 kilometres of the Development Footprint.

Invasion and establishment of exotic species

Invasion and establishment of exotic species is a known threat to Fuzzy Box Woodland TEC. It can reduce the opportunity for native flora and fauna to implement ecological processes. Changes as a result of exotic species include reduction in available space for native flora species and change to the proportion of food resources provided by native ground cover.

Weeds recorded in BAM plots within the treed zones which may represent a degradation threat to PCT201 include:

- Wild Oats Acena fatua
- London Rocket Sisymbrium irio
- Cape Weed Arctotheca calendula
- Paterson's Curse Echium plantagineum
- Rye Grass Lolium sp
- Marshmallow Weed Malva parviflora.
- African Box Thorn Lycium ferocissimum
- Barley Grass Hordeum vulgare
- Mustard Sisymbrium spp.
- Prairie Grass Bromus catharticus
- Saffron Thistle Carthamus lanatus.



Zone 7 already shows a high level of exotic species, with 83.9 percent cover of exotic species and only 1.8 percent cover of native species.

Implementation of weed management practices and reduction in grazing by domestic stock on the TGO land surrounding the Development Footprint, as a result of this Project is likely to reduce the weed burden as seen in the existing TGO Biodiversity Offset Area.

Actions to avoid and mitigate impact to PCT201 from the Project

AREA was engaged to begin the assessment for the proposal in the early stages of design. As such AREA identified mapped areas of Fuzzy Box Woodland TEC (a SAII) early in the planning and design process. While design of the Development Footprint for mines is largely confined by location of the target mineral, positioning of stockpiles may be adjusted. Design changes for the Project included relocation of waste rock emplacements, the magazine, and the Newell Highway realignment.

These design changes resulted in avoidance of approximately 10.80 hectares of PCT201 (Figure 6-4).

Design	Total native vegetation	Total impact to PCT201
October 2020	138.56	24.55
October 2021	112.47	11.36
Development Footprint	76.03	10.80

Table 6-4: Change in impact to PCT201







Since 2013, the Applicant has increased the area of occupancy of Fuzzy Box Woodland TEC / SAII through direct seeding, planting and removing grazing from suitable habitat to allow natural regeneration within the established biodiversity offset area (Figure 6-5).

Approximately 800 seedlings grown from locally procured seeds were planted in August 2021 in four patches within 1500 metres of the Development Footprint. All four patches of planted seedings were within one kilometre from the nearest remnant area of Fuzzy Boz Woodland TEC which would not be removed by this Project (Figure 6-6).

Figure 6-5: Existing TGO Biodiversity Offset Area.

Two white arrows indicate the sections where direct seeding and planting of Fuzzy Box Woodland occurred.







Figure 6-6: Location of Fuzzy Box planting effort – August 2021



6.2 Indirect impact

The indirect impacts which may be associated with the Project are discussed in Table 6-5.

Indirect impact	Impacted entities	Extent	Duration	Consequence
Inadvertent impacts on adjacent habitat or vegetation	All entities adjacent to the operational Project site.	All area adjacent to the operational Project site.	Ongoing for life of mine	Loss of richness and cover in native species of impacted vegetation.
Reduced viability of adjacent habitat due to edge effects	All entities adjacent to the operational Project site.	All area adjacent to the operational Project site.	Ongoing for life of mine	Loss of usable habitat for predicted species
Reduced viability of adjacent habitat due to noise, dust or light spill	All entities adjacent to the operational Project site.	All area adjacent to the operational Project site.	Ongoing for life of mine	Loss of usable habitat for predicted species is likely to be minimal noting existing noise, dust and light spill from existing Newell Highway and TGO mine.
Transport of weeds and pathogens from the site to adjacent vegetation	All entities adjacent to the operational Project site. entities	All area adjacent to the operational Project site.	Ongoing for life of mine	Reduction in area of occupancy of native vegetation is likely to be minimal given exotic pasture grasses and weeds are already abundant.
Increased risk of starvation or exposure, and loss of shade or shelter	NIL No habitat will be impacted outside the Development Footprint.	NIL	During Project Construction	NIL
Loss of breeding habitat	NIL No habitat will be impacted outside the Development Footprint however tree hollows and remnant vegetation would be impacted by the Project. Habitat would be enhanced within 1500m of the Development Footprint due to changes to farming regime and planting activity.	NIL	During Project Construction and ongoing	NIL
Trampling of threatened flora species	NIL Access to areas of native vegetation will be limited. No threatened flora species known to occur.	NIL	Ongoing for life of mine	NIL
Inhibition of nitrogen fixation and increased soil salinity	NIL The Project in unlikely to cause a change	NIL	Ongoing for life of mine	NIL
Fertiliser drift	NIL No fertilise use is expected	NIL	Ongoing for life of mine	NIL
Rubbish dumping	NIL Access to areas of native vegetation will be limited and rubbish streams will be managed to avoid dumping	NIL	Ongoing for life of mine	NIL
Wood collection	NIL Access to areas of native vegetation will be limited and	NIL	Ongoing for life of mine	NIL



Indirect impact	Impacted entities	Extent	Duration	Consequence
	wood collection would not occur as part of this Project			
Removal and disturbance of rocks, including bush rock	NIL Access to areas of native vegetation will be limited and disturbance of bush rock would not occur as part of this Project	NIL	Ongoing for life of mine	NIL
Increase in predators	NIL The Project in unlikely to cause an increase	NIL	Ongoing for life of mine	NIL
Increase in pest animal populations	NIL The Project in unlikely to cause an increase.	NIL	Ongoing for life of mine	NIL
Changed fire regimes	NIL No fire regimes will be changed	NIL	Ongoing for life of mine	NIL
Disturbance to specialist breeding and foraging habitat (e.g. beach nesting for shorebirds)	NIL Aside from tree hollows mentioned above, not specialist breeding and foraging habitat would be impacted.	NIL	Ongoing for life of mine	NIL
Use of salt water at the bottom of mine pits before and after mine closure	Occasional use by some aquatic / migratory bird species which are tolerant of salty or brackish water.	Within in the proposed mine pits	Ongoing	NIL – species willing to use salt water may alight and linger for short periods, however this water is unlikely to support vegetation or other biota which would be a food source. Birds disinclined to use salt water would have only a short interaction with this water before moving to more suitable water in local farm dams, creeks, or rivers.



6.3 Prescribed impact

The prescribed impacts which may be associated with the Project are discussed on Table 6-6.

Table 6-6: Prescribed impacts relevant to the Development Footprint

Feature	Present	Description of feature characteristics and location	Potential impact	Threatened species or community using or dependent on feature	Section of the BDAR where prescribed impact is addressed
Karst, caves, crevices, cliffs or other geologically significant feature	🗆 Yes / 🛛 No	N/A	No karst, caves, crevices, cliffs or other geologically significant features are present in the Development Footprint.	N/A	N/A
Rocks	🗆 Yes / 🛛 No	N/A	No rocky habitat is present in the Development Footprint.	N/A	N/A
Human-made structure	🛛 Yes / 🗆 No	Residential dwellings and farm infrastructure	Several residential dwellings and farm sheds would be removed by the Project.	Insectivorous bat species may use human-made structures as roosting sites	Section 2.9
Non-native vegetation	🛛 Yes / 🗆 No	Notwithstanding presence of exotic pasture grasses and weeds, planted non-native vegetation includes Peppercorn (<i>Schinus</i> <i>molle</i>) which mostly occur close to existing dwelling, and at likely historical shed sites.	Removal of shelter habitat. exotic/ agricultural groundcover from ploughed/ historically farmed land.	Few species use Peppercorn as habitat, however, may be occasionally used as shelter. e.g., Grey-crowned Babblers.	Section 2.9
Habitat Connectivity	🛛 Yes / 🗆 No	Large trees and habitat values exist in remnant vegetation along the Newell Highway and other minor roads.	The Project would remove sections of the remnant vegetation along the Newell Highway and other minor roads. The vegetation in the Development Footprint has been historically highly disturbed.	Listed species include Grey- crowned Babbler, Speckled Warbler, Brown Treecreeper, Flame Robin and Diamond Firetail require trees in reasonably close proximity to move across their home range.	Section 2.6
Hydrological process sustaining/interacting with rivers, streams or wetlands	🛛 Yes / 🗆 No	One named and two unnamed ephemeral waterways would be disturbed, but not removed. All waterways are currently occupied by cropped or cleared land with no aquatic habitat.	The Project would result in minor changes to surface drainage however detailed design would not block the waterway passage.	N/A	N/A
Wind farm development	🗆 Yes / 🛛 No	N/A	No wind farm proposed on site	N/A	N/A
Vehicle Strike	🛛 Yes / 🗆 No	The expansion of TGO would result in increased vehicle movements in the area. There would be less vegetation beside the new alignment of the Newell highway which may reduce the vehicle strikes there.	Potential for vehicle strike to occur on major and minor roads.	Birds and Koalas are susceptible to vehicle strike.	Section 2.10



6.4 Avoid and minimise impacts

The Development Footprint has been designed to avoid impact to native vegetation wherever possible notwithstanding cost-effective access to the target mineral deposit and safe realignment of the various roads including the Newell Highway.

The design has changed multiple times and the option with least impact to native vegetation, while maintaining operational viability has been chosen. Figure 6-7 shows the differences between the current Development Footprint and the October 2021, October 2020, and the July 2020 draft designs. Other designs which were considered for logistical reasons and rejected to avoid impact to vegetation along Thornycroft Road, and other land owned by TGO.

An analysis of the difference between the impact to native vegetation from the October 2020 draft design and the Development Footprint is provided in Table 6-7. The Development Footprint reduced impact to native vegetation by 62.53 hectares (45.13 percent). Use of Category 1 – Exempt Land has increased in the Development Footprint by 226.95 hectares, which is 129.49 percent.

Design	Total native vegetation	Total Category 1 Land and not native vegetation	Percent native vegetation	Percent Category 1 Land and not native vegetation
October 2020 draft design	138.56	175.27	43	57
Development Footprint	76.03	402.22	15.38	84.62

Table 6-7: Design change analysis





Figure 6-7: Changes to the Development Footprint



6.5 Mitigation and management of impacts

A list of recommended mitigation measures is summarised in Table 6-8. These are designed to provide guidance on recommended measures to further avoid and mitigate the potential impact to biodiversity from the Project.

ltem	Timing	Recommended mitigation measures
		Ensure all construction staff working on the Project are inducted on:
Site personnel induction	Pre- construction	 Site environmental procedures (i.e. vegetation management, sediment and erosion control, protective fencing, noxious weeds, hygiene protocols, ethical procedures for handling fauna displaced on the site). What to do in case of environmental emergency (chemical spills, fire, injured fauna). Key contacts in case of environmental emergency. How to reduce the risk of vehicle strike to fauna.
Site planning	Pre- construction	• Locate temporary infrastructure (set down areas, access tracks etc.) in cleared areas (existing access tracks and hardstand) or areas assessed by this BDAR. These is to be no additional impact to vegetation.
Identification of clearing limits	Pre- construction	 Accurately and clearly mark out the limits of clearing (where appropriate) and the vegetation to be retained outside of the development site. Regular inspections should be undertaken to ensure all retained vegetation/fauna habitat is clearly marked and that fencing is in place, where appropriate.
Protection of fauna during clearing of vegetation, rock removal and crevice disturbance	Pre- construction and during clearing works	 Avoid clearing native vegetation in Spring. Engage a spotter catcher to be present when felling trees with hollows or potentially in use nests. Implement staged habitat removal to allow fauna to vacate if present. Respond to (e.g. rescue, relocate) fauna detected during the clearing process (refer to Fauna Handling and Rescue Procedure in Appendix F).
Weed management	Pre-and during construction	 Ensure that any machinery arriving on site be inspected for any foreign soil or plant matter/weed material and be washed down before entering the site. Weeds should be controlled within the work area according to the requirements of the <i>Biosecurity Act 2016</i> Any significant weeds which are identified in the Development Footprint must be disposed of appropriately.
Vehicle Strike	Operation	 Low speed limits in place Install warning signs of known wildlife crossings Reporting requirements for any incidents of vehicle strikes Ensure staff are inducted on how to reduce risk to fauna from vehicle strike

Table 6-8: Recommended mitigation measures



7 Biodiversity Credit Summary

7.1 Credit summary

The total credit requirement for this proposal is summarised in Table 7-1. More detail is provided in Sections 4.7 and 4.8 for ecosystem credits required and in Section 5.6.3 for species credits required. BAMC credit summary reports are provided in Appendix D which also provide more detail about credits required.

PCT	DCT nome	From stan	dard BAM	From scat	tered trees	
ID	PCT name	HBT	No HBT	HBT	No HBT	Total
55	Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions	145	395	7	5	552
82	Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion	608	95	8	22	733
201	Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion	398	27	0	1	426
27	Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion	0	13	0	0	13
	Total	1151	530	15	28	1724

Table 7-1: Credit summary



IBRA search results

IBRA Threatened Species Search: IBRA subregion Bogan – Macquarie

FAUNA

Scientific Name	Common Name	NSW Status	Paddock trees	Species credit	SAII candidate
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	No	Dual	N/A
Anseranas semipalmata	Magpie Goose	Vulnerable	No	No	N/A
Antechinomys laniger	Kultarr	Endangered	No	No	N/A
Ardeotis australis	Australian Bustard	Endangered	No	Yes	N/A
Artamus cyanopterus	Dusky Woodswallow	Vulnerable	Yes	No	N/A
Aspidites ramsavi	Woma	Vulnerable	No	No	N/A
Botaurus poiciloptilus	Australasian Bittern	Endangered	No	No	N/A
Burhinus grallarius	Bush Stone-curlew	Endangered	Yes	Yes	No
Calidris ferruginea	Curlew Sandpiper	Endangered	No	Dual	N/A
Calyptorhynchus banksii samueli	Red-tailed Black- Cockatoo (inland subspecies)	Vulnerable	Yes	Dual	No
Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Yes	Dual	No
Certhionyx variegatus	Pied Honeyeater	Vulnerable	No	No	N/A
Chalinolobus picatus	Little Pied Bat	Vulnerable	Yes	No	N/A
Chthonicola sagittata	Speckled Warbler	Vulnerable	Yes	No	N/A
Circus assimilis	Spotted Harrier	Vulnerable	Yes	No	N/A
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Yes	No	N/A
Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Yes	No	N/A
Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	No	No	N/A
Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Yes	No	N/A
Epthianura albifrons	White-fronted Chat	Vulnerable	No	No	N/A
Falco hypoleucos	Grey Falcon	Endangered	Yes	No	N/A
Falco subniger	Black Falcon	Vulnerable	Yes	No	N/A
Grantiella picta	Painted Honeyeater	Vulnerable	Yes	No	N/A
Grus rubicunda	Brolga	Vulnerable	No	No	N/A
Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Yes	Dual	No
Hamirostra melanosternon	Black-breasted Buzzard	Vulnerable	Yes	Dual	No
Hieraaetus morphnoides	Little Eagle	Vulnerable	Yes	Dual	No
Hoplocephalus bitorauatus	Pale-headed Snake	Vulnerable	Yes	Yes	No
Leipoa ocellata	Malleefowl	Endangered	No	No	N/A
Limosa limosa	Black-tailed Godwit	Vulnerable	No	Dual	N/A
Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Yes	Dual	No
Lophoictinia isura	Square-tailed Kite	Vulnerable	No	Dual	N/A
Melanodryas cucullata cucullata	Hooded Robin (south- eastern form)	Vulnerable	Yes	No	N/A
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Yes	No	N/A
Myotis macropus	Southern Myotis	Vulnerable	Yes	Yes	No
Neophema pulchella	Turquoise Parrot	Vulnerable	No	No	N/A



Scientific Name	Common Name	NSW Status	Paddock trees	Species credit	SAII candidate
Nettapus coromandelianus	Cotton Pygmy-Goose	Endangered	No	Yes	N/A
Ninox connivens	Barking Owl	Vulnerable	Yes	Dual	No
Nyctophilus corbeni	Corben's Long-eared Bat	Vulnerable	No	No	N/A
Oxyura australis	Blue-billed Duck	Vulnerable	No	No	N/A
Pachycephala inornata	Gilbert's Whistler	Vulnerable	No	No	N/A
Pandion cristatus	Eastern Osprey	Vulnerable	Yes	Dual	No
Petroica phoenicea	Flame Robin	Vulnerable	Yes	No	N/A
Phascogale tapoatafa	Brush-tailed Phascogale	Vulnerable	Yes	Yes	No
Phascolarctos cinereus	Koala	Vulnerable	Yes	Dual	No
Polytelis swainsonii	Superb Parrot	Vulnerable	Yes	Dual	No
Pomatostomus halli	Hall's Babbler	Vulnerable	No	No	N/A
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Yes	No	N/A
Rostratula australis	Australian Painted Snipe	Endangered	No	No	N/A
Saccolaimus flaviventris	Yellow-bellied Sheathtail- bat	Vulnerable	Yes	No	N/A
Sminthopsis macroura	Stripe-faced Dunnart	Vulnerable	No	No	N/A
Stagonopleura guttata	Diamond Firetail	Vulnerable	No	No	N/A
Stictonetta naevosa	Freckled Duck	Vulnerable	No	No	N/A
Turnix maculosus	Red-backed Button-quail	Vulnerable	No	Yes	N/A
Tyto novaehollandiae	Masked Owl	Vulnerable	Yes	Dual	No

FLORA

Scientific name	Common name	NSW status
Cheilanthes sieberi subsp. pseudovellea	Cheilanthes sieberi subsp. pseudovellea	Endangered
Atriplex infrequens	A saltbush	Vulnerable
Dichanthium setosum	Bluegrass	Vulnerable
Lepidium monoplocoides	Winged Peppercress	Endangered
Swainsona murrayana	Slender Darling Pea	Vulnerable
Swainsona plagiotropis	Red Darling Pea	Vulnerable
Swainsona recta	Small Purple-pea	Endangered
Diuris tricolor	Pine Donkey Orchid	Vulnerable
Pterostylis cobarensis	Greenhood Orchid	Vulnerable

THREATENED ECOLOGICAL COMMUNITIES

Common name	NSW status
Artesian Springs Ecological Community in the Great Artesian Basin	Critically Endangered Ecological
Antesian Opinings Ecological Community in the Oreat Antesian Dasin	Community
Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine	Endangered Ecological
Plains Bioregions	Community
Brigalow-Gidgee woodland/shrubland in the Mulga Lands and Darling	Endangered Ecological
Riverine Plains Bioregions	Community
Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt	Endangered Ecological
South, Cobar Peneplain and Mulga Lands Bioregions	Community
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling	Endangered Ecological
Riverine Plains and Brigalow Belt South Bioregions	Community
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western	Endangered Ecological
Slopes bioregions	Community



EPBC Act Protected Matters Report



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 26/07/21 15:24:32

Summary Details Matters of NES Other Matters Protected by the EPBC Act Extra Information Caveat Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates Buffer: 1.5Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	23
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A <u>permit</u> may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	16
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None	
Regional Forest Agreements:	None	
Invasive Species:	19	
Nationally Important Wetlands:	None	
Key Ecological Features (Marine)	None	

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	700 - 800km upstream
Riverland	600 - 700km upstream
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream

Listed Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur
Weeping Myall Woodlands	Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area
Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia		
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos		
Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta		
Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundaous caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Polytelis swainsonii		
Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area
<u>Rostratula australis</u> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Mammals		
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population	on)	
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
Nyctophilus corbeni		
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, N	NSW and the ACT)	
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Androcalva procumbens		
[87153]	Vulnerable	Species or species habitat likely to occur within area
Austrostipa wakoolica		
[66623]	Endangered	Species or species habitat may occur within area
Lepidium monoplocoides		
Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area
Prasophyllum petilum		
Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Prasophyllum sp. Wybong (C.Phelps ORG 5269)		
a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Swainsona murrayana		
Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area
Tylophora linearis		
[55231]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Aprasia parapulchella		
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the	he EPBC Act - Threatened	Species list.
Name	Threatened	Type of Presence
Naroton Morino Hirdo		

Name	Threatened	Type of Presence
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myjagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on th	he EPBC Act - Threatened S	Species list.
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within

Name	Threatened	Type of Presence
Calidris ferruginea		area
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans		
Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Mujagra ovanolouca		
Satin Flycatcher [612]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

Invasive Species [Resource Information] Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name Status Type of Presence

ame	
rds	
arduelis carduelis	
ropean Goldfinch [403]	
olumba livia	
ock Pigeon, Rock Dove, Domestic Pigeon [80	3]

Passer domesticus House Sparrow [405]

Streptopelia chinensis Spotted Turtle-Dove [780]

Sturnus vulgaris Common Starling [389]

Turdus merula Common Blackbird, Eurasian Blackbird [596]

Mammals Bos taurus

Domestic Cattle [16]

Canis lupus familiaris Domestic Dog [82654]

Capra hircus Goat [2]

Felis catus Cat, House Cat, Domestic Cat [19]

Lepus capensis Brown Hare [127]

Mus musculus House Mouse [120]

Oryctolagus cuniculus Rabbit, European Rabbit [128]

Rattus rattus Black Rat, Ship Rat [84]

Sus scrofa Pig [6]

Vulpes vulpes Red Fox, Fox [18]

Plants

Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]

Lycium ferocissimum African Boxthorn, Boxthorn [19235]

Status

Type of Presence

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

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Species or species habitat likely to occur within area

Species or species habitat likely to occur within area

Species or species
Name

Status

Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884] Type of Presence habitat likely to occur within area

Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and

- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-32.652831 148.199963, -32.645893 148.201336, -32.638666 148.199619, -32.63086 148.198933, -32.614378 148.205456, -32.604834 148.210606, -32.599917 148.218502, -32.585744 148.221592, -32.586611 148.229145, -32.599049 148.226399, -32.605412 148.226742, -32.61004 148.229489, -32.613221 148.233608, -32.613799 148.23612, -32.614956 148.239788, -32.616113 148.233265, -32.62074 148.20062, -32.62739 148.227772, -32.633462 148.225025, -32.636931 148.220905, -32.637799 148.217129, -32.638666 148.210262, -32.638377 148.207516, -32.652831 148.202709, -32.638666 148.210262, -32.638377 148.207516, -32.652831 148.202709, -32.638666 148.210262, -32.638377 148.207516, -32.652831 148.202709, -32.652831 148.20905, -32.652831 148.202709, -32.652831 -32.6528

Acknowledgements

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-Office of Environment and Heritage, New South Wales -Department of Environment and Primary Industries, Victoria -Department of Primary Industries, Parks, Water and Environment, Tasmania -Department of Environment, Water and Natural Resources, South Australia -Department of Land and Resource Management, Northern Territory -Department of Environmental and Heritage Protection, Queensland -Department of Parks and Wildlife, Western Australia -Environment and Planning Directorate, ACT -Birdlife Australia -Australian Bird and Bat Banding Scheme -Australian National Wildlife Collection -Natural history museums of Australia -Museum Victoria -Australian Museum -South Australian Museum -Queensland Museum -Online Zoological Collections of Australian Museums -Queensland Herbarium -National Herbarium of NSW -Royal Botanic Gardens and National Herbarium of Victoria -Tasmanian Herbarium -State Herbarium of South Australia -Northern Territory Herbarium -Western Australian Herbarium -Australian National Herbarium. Canberra -University of New England -Ocean Biogeographic Information System -Australian Government, Department of Defence Forestry Corporation, NSW -Geoscience Australia -CSIRO -Australian Tropical Herbarium, Cairns -eBird Australia -Australian Government - Australian Antarctic Data Centre -Museum and Art Gallery of the Northern Territory -Australian Government National Environmental Science Program -Australian Institute of Marine Science -Reef Life Survey Australia -American Museum of Natural History -Queen Victoria Museum and Art Gallery. Inveresk. Tasmania -Tasmanian Museum and Art Gallery, Hobart, Tasmania -Other groups and individuals

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Please feel free to provide feedback via the Contact Us page.

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Appendix B – BAM plot sheets

Zone 1:

		Sun	vev Name	Plot Identifie	r	Rec	orders , ,
Da	te 011061	20 510	Mr. 11	Q I	Quin	Susan	Ohd ama
Zone	Datum	DATIC	myalla.	Phot	8 Vare	oninn	Zone ID 1
55 Fasting	60A Northing	IBRA reg	limonolono	Phot	Orien	tation of midline	Lone ID 1
614 61	4 639258	PIOLD	.g. 20 x 20 in 20 x 50)	20 x 20 in 20 x 50	fro	m the 0 m point.	Confidence
Likely Veg	getation Class		1				H M L
Plant Con	nmunity Type	55 Der	Gru			EI	EC: H M L
Record east	ing and northing fro	m the plot marker. If a	applicable, orient picke	et so that perforated ril	b points along di	rection of midline.	
BAN	(Snape) of 0.04 ha	base plot inside 0.1 h	BAM Attribute	e (20 x 50 m plot)	Stem Class	es and Hollows	Record living augalynt
(400) m ² plot)	Sum values	dbh	Euc*	Non Euc	Hollows [†]	(Euc*) and living nativ
	Trees	0	80 + cm	ELC	him Buc	1	stems separately
	Shrubs	4	50 - 79 cm			P	Data needed is presen only (tick) unless a 'lar
Count of Native	Grasses etc.	+					tree' for that veg class.
Richness	Forbs	8	30 – 49 cm	-	-	Hollows 20cm+	Eucalyptus, Corymbia,
	Ferns		20 - 29 cm				and Syncarpia
	Other	0		1		0,	[†] For hollows count only presence of a stem
	Trees	0	10 – 19 cm	ticl	tick	7	containing hollows, not the count of hollows in that
Sum of Cover	Shrubs	5.5	5 – 9 cm	tiek	tick		per tree where tree is mu
of native	Grasses etc.	5.9	< Form			This size class	bearing stem may be a d
vascular			- 0 CIII	HCR	LICK	records tree	stem.
plants by growth	Forbs	3.9	Length of logs	11CR	tick	records tree regeneration	stem.
plants by growth form group	Forbs Ferns	3.9	Length of logs (≥10 cm diameter in length)	ticR (m) ; >50 cm	tick	records tree regeneration	total
vascular plants by growth form group	Forbs Ferns Other	3.9	Length of logs (≥10 cm diameter in length) Each size class is DBH values and c	(m) , >50 cm	tick	records tree regeneration	stem.
vascular plants by growth form group High Threat	Forbs Ferns Other Weed cover %	3.9 0.1 0.6 enng data into	Length of logs (≥10 cm diameter in length) Each size class is DBH values and o stem is included i Hollows at least 2	a noted as present by counts may be needed in the count/estimate if Occur across are record	the living tree s d for a size class it is required by ded for the purport	records tree regeneration tems only. Dependi . For a multi-stemm the large tree catego sees of habitst of catego	ng on the Vegetation Class, ned tree, only the largest liv pory for that vegetation class
vascular plants by growth form group High Threat	Forbs Ferns Other Weed cover % be completed after enter it is not required when	3-9 0-1 0-6 mrg data into n the field	Length of logs (210 cm diameter in length) Each size class is DBH values and stem is included i Hollows at least 2	tick (m) , >50 cm a noted as present by counts may be needer n the count/estimate if 00cm across are recon	the living tree s d for a size class i it is required by ded for the purpo	records tree regeneration tems only. Dependi . For a multi-stemm the large tree categoes of habitat of so	stem. total or on the Vegetation Class, need tree, only the largest liv pory for that vegetation class me threatened species.
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400 m² plot: Sheet of Survey Name Plot Identifier		Record	ers			
Date D1/06/20 SAR Much BI D.S.	1 CMA	n 1) (an	nero	2	
BAM GF Code Full species name mandatory, or a unique means of identifying separate taxa within a	N, E or	Cover	Abund	stratu m	vouc her	Heig
survey. Data from here will be used to assign growth form counts and covers.	HIE	10	2-		-	(m)
1 X2 5 Sclerolaena Municala	IN	2	30	m		6.3
2 5G S Sylerolaena Dirchil	E	1	100	Vh		6.5
3 Shivery grass base minon	A	1	100	1		6.6
4 to t Calphs Ganielon	N	1	200	-		0
5 FG + Calpus lappulaceae	-	1	10	L		0.1
6 SG 5 SGISDLA MAGUSS	N	0.5	10	M		0.
The firstleg drumpondil Nardob	N	0.9	200	L		6.7
8 25 2 6 ntropon acigularis	N	1	100	1		6.2
The Solanding coactivolium	TITE	0	100		-	0.2
The hermy spirosch Barnust Our	M	001	27	1		63
12 Mithadineg Cuneara + 2000	F	0.7	102	C .	14	0. 1
12 - lepid, um Donaleace Algentini felle Lanc	V	0.5	5	L		0.2
13 The iprogram curaidenter Durch Hellorop	N	0.0	200	,	1 Part	0.7
14 th r Vysphania pumilia Chumpweed	F	0.1	100	L		6.2
15 EVERINGER CITANESIS OFIN REGAD)	F	0	200		1. 12. 14	0.1
17 CC & Carne protice on processors curse	N	7	50	1	1.2.3	0.7
18 2 5 Mariana Microphyling Duppers	N	0.1	10.)	4	-	0-
10 H2 9 Fricios is lectione apple longings	N	0.15	200			6.2
20 13 13 19 1 ragues prisiana maning	LIFE	DA	1 C	L		1.2
21 F E Litter to best Million posterior	N	03	100	L	mort	a.1
22 56 C Hundred Edward and Call of Charles provincia	ASSE	0.1	200	1	100	6.1
23 Tradits Willing Side homework	E	0.1	50	1	telle t	Del
24 C/ F Decharge algebrach	N	(102	L		6.1
25 K F Alpland destruiting anneld	N	0.1	20	L	Mart	0.2
26 Montage Sp. (Polymorphs)	E	1	100	L		0.1
27 Salua Morpenara: Will Saal	E	0.5	601	L		6.1
28 GG G Austrostipe verticality	N	0,1	100	L		0
29 75 g- Autodan Monia Selecen	N	0.1	20	L		0
30 GG & Elipsharis Paless Pale Spikerush	N	5	4000	1 1	-	C.
31 FG F Hagena Novae - Zelandior Bidge Widge	N	6.1	to	L		0.
32						
33 n 0/-	- Section	1	2.36			
34 TG 0 0	-			-		
35 SA 4 5.5	1000	1014		-	-	
36 99 7 5.9	-			-	27	
37 FG \$ 3.4		-	1 2 1	1000		
38 Fein (O.	/	-				
39 OH O O.			1	1-12		
40	1		in the			

GF Code: see Growth Form definitions in BAM Appendix 1, identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. Form version designed 15 September 2017 Printed 24 May 2020

H

	B	AM Plot -	Field Survey	Form		S	te She	eet no:	016.00
a las		Sur	vey Name	Plot Identifie	r	1.0.	Rec	orders	ANT EL AL
Dat	te 30/07/2	O THE	P	42	47 A	ddyWa	tion	Gen	feel
Zone	Datum	IBRA re	gion DRP	Phot	0#			Zone ID	-
Easting	Northing	2 Plot	Dimensions	20 x 20 in 20 x 50		Orientation o	f midline	164	Magnetic °
Likely Ver	e 105106	1	.g. 20 x 20 in 20 x 50)		11	from the 0	m point.	200	Confidence:
Diant Car	etation class	04	m' ano	woodle	nds	-			H M L Confidence:
Plant Com	munity Type	55	<u></u>			land discultant of	E	EC:	HML
Record eastir Dimensions (ng and northing from Shape) of 0.04 ha ba	the plot marker, if ase plot inside 0.1 /	applicable, orient picke ha FA plot should be ide	t so that perforated n antified, magnetic bea	points a ring taker	along direction of along midline.	mialine.		
BAM	Attribute	Sum values	BAM Attribute	(20 x 50 m plot)	Stem	Classes and	Hollows	Record li	ving eucalypt*
(400	Trees	0	abn	Euc	NOT	Euc	10451	(Euc*) an non-euca	ypt (Non Euc)
	Shrubs	2	80 + cm		1	1	0	Data nee	led is presence
Count of	Grasses etc.	0	50 – 79 cm				0	only (tick) tree' for th	unless a 'large lat veg class.
Native Richness	Forbs	4	30 49			Hollo	vs 200m+	* includes	all species of
	Ferns	0	30 - 49 CM	1		FIUID		Angophol	a, Lophostemon
	Other	0	20 – 29 cm			-)	† For hollo	ws count only the
	Trees	6	10 - 19 cm	tick	lic	k		presence of containing	of a stem hollows, not the
Sum of	Shrubs	0.5	5-9cm	tinte			12.999 F.	stem, Only	count as 1 stem
Cover of native	Grasses etc.	0	0-9Cm	un n	1 440	This s	ize class	stemmed. bearing ste	The hollow- em may be a dead
vascular plants by	Forbs	0.9	< 5 cm	tick	tic	k reco rege	rds tree neration	stem.	I a strange
growth orm group	Ferns	0	Length of logs (≥10 cm diameter,	(m) >50 cm				0	total
	Other	0	in length)	anted as account by	the living	tma stoms on	u Dopond	ing on the Ver	station Class
ligh Threat	Weed cover %	0	DBH values and c stem is included in	ounts may be needed the count/estimate i	for a siz	e class. For a n	ulti-stem	ned tree, only norv for that ve	the largest living
This table may b available tools if	e completed after enten t is not required while in	ng data into the field.	Hollows at least 2	Ocm across are recor	ded for th	e purposes of h	abitat of so	me threatene	d species.
AM Attribut	te (1 x 1 m plots)	Litter o	over (%) Ba	re ground cover (%) (Cryptogam co	over (%)	Rock	cover (%)
Cubala	t score (% in eac	h) 50	1555	0250	50 -		e di		-
Subpio				12.4		leasted on othe	0		0
Aver	age of the 5 subplo	its 3.2		1.10 0 1	A second and	located on alte	rnate sides	10 cm in dian	neter). Within these
Aver Aver atter cover is a the locations 5 m x 1 m plot	age of the 5 subplo assessed as the aver , 15, 25, 35, and 45 is assessors may also	rage percentage gr m along the midline	round cover of litter rec build cover includes of rock bare ground an	orded from five 1 m x leaves, seeds, twigs, d cryptogam soil crus	1 m plots branchlet	s and branches	(less than ta is option	al - the data (to not currently
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Aver Aver the locations 5 m x 1 m plots contribute to an Morphologica	age of the 5 subplo assessed as the ave , 15, 25, 35, and 45 is a assessors may also assessment scores, th	tts 3 · 2 rage percentage g m along the midling o record the cover ney hold potential v Physiography + site Landform Element	ound cover of litter rec . Litter cover includes of rock, bare ground an alue for future vegetati e features that may hel	orded from five 1 m x leaves, seeds, twigs, id cryptogam soil crus on integrity assessme p in determining PCT Landform Pattern	1 m plots branchlet ats. Collect ant attribut and Man	s and branches tion of these da tes and benchm agement Zone	(less than ta is option arks, and (optional) Microre lef	nal - the data of or enhancing	PCT description
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40	00 m ² p	lot: Sh	eet _ of _ [Survey Name	Plot Identifier	10.	- 110	Record	ers			
	Date	30	107120	THEP	42	Add	y Wa	tron	Ae	n fe	el	
ID	BAM Code	GF Code	Full species name survey. Data from I	mandatory, or a unique meai here will be used to assign gr	ns of identifying separate taxa with rowth form counts and covers.	hin a	N, E or HTE	Cover	Abund	stratu m	vouc her	Heig ht
1	Sa	5	Acacia	analdii	and the second second	and the second	N	6.3	2			(10)
2	_		Malva	parviflora	A STREET AND A STREET	agen a	E	75	500		1	
3	-	-	Sisymbri	ium irio	Ridet		E	10	1000	2-11	ing the	te all
4	2		Lolium	perenne	Rye grass		E	2	1000			
5	-		Echium	plantagin eum	· Pattersons cu	vje	IEC	0.5	100			
6	-	-	Chenopod	ium album	Fat then	Jan .	E	0.5	200	1		
7	-		Lepidium	MSSOPifoliuN	1 Peppercress	Children 1	E	0.2	100	-	1000	
8	100-	1.0	Eragnostis	s cilianensis	Shak gra	SSO	E	0.1	20	alabel 3	0.02	
9	-	-	Thoba	Sp	U	and the second	E	2	2000	1 2 3 2 3	125-2	1
10		-	Avena fo	ativa	Wild Dats		E	0.5	500	and and		
11	FG	t	Elymus	Repens	Couch	et alla	N	0.5	500		1	25
12	100		Trifoliu	m'avvense	hare's too	of	N	0.1	20			Lavin
13	-	+-	Capsello	a bursa-pasto	ris Shephers pris	e	E	0.1	20			
14	Fa	f	Oxalis .	comiculata			N	0.1	10		-	
15	-	-	medicad	o sp.			E	0.5	100	21919		
16	-	-	Polygyn	un availa	re wire we	red	1.	0.1	10			
17	Sa	5	Schrola	era minica	ta		N	0.1	1	and the	1 miles	hard a
18	Sh	5	Amplex	Semilaca	Ac		N	0.1	2	and an	1 miles	
19	FG	F	Dictiona	this repens	2	GRADI	N	0.1	20		1.2.5.1	
20	FG	f	Enddia	mutans :		- martin	N	0.2	5			
21	1-50	-	flordeum	vulgar	Barley Cra	ass	E	0.5	100		-	
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23				count	2020	- Section	1	2.4	1 States	1 and	1340 20	-
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40	1000	4	Sector March 19				1		Same			

GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 53 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. Form version designed 15 September 2017 Printed 30 July 2020

Date 21/19/122 SM, Air, Virit S Photo # Zone ID Easing Data Data IBRA region W Mithing Photo # Zone ID I Easing 3 Notifying Phot Dimensions So to not so Orientation of midline 2.3< Max Easing 3 Notifying Phot Dimensions So to not so Orientation of midline 2.3< Max Plant Community Type SS EEC: M. Cont Cont Cont Record assamp and nothing from the plan maxe, If applicable, orent plontal along direction of midline For the Contact and the photo along about the photo al	aleria interior
One- set Data IBRA region Delt Zone ID Easing Likely Vegetation Class Plot Dimensions 8: 2 to 1: 20: 00 Orientation of midline from the 0 m point 2.3 Mag Plant Community Type Some and motion of midline from the 0 m point 2.3 Mag Plant Community Type Some and motion of midline from the 0 m point 2.3 Mag Plant Community Type Some and motion of midline from the 0 m point 2.3 Mag Plant Community Type Some and motion of midline from the 0 m point 2.4 Mag Some of the 000 m ² picit Som values For the scale data data data data data data Mag Control from the 0 m point A Sourd of source of native for native for native for native source of native for native for native for native source of native source of native for native f	
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Plant Community Type SS EEC: No Cmm H Record exasting and northing from the plot marker. If applicable, orient picket so that perforated inp points along direction of mallaw. Mathematic basing basing direction of mallaw. Mathematic basing direction of mallaw. Mathemat	fidence: M L
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BAM Attribute Sum values Image: Count of Native Grasses etc. G Sunvest Grasses etc. G Other Go - 79 cm G Sum of Cover Strube G G Strube G G G G Som of native grasses etc. 11.3 S S cm G G Ferms 0.1 Other G<	hite BC
Lead Notice Problems Trees 0 <td>eucalypt*</td>	eucalypt*
Shrubs 3 Count of Native Richness Grasses etc. 6 Forbs 3 Other 30 - 49 cm Jone and the second segence of a second segence second segence of a second segence second segment segment second segment second segment segment s	Ig native Non Euc)
Count of Native Richness Grasses etc. 6 Forbs 3 - 9 cm -	ly
Netive Richness Forbs 30 - 49 cm Hollows 20cm Includes all spe Eucalphys. Copy and Syncarpia Other 0 <td>s a 'large g class.</td>	s a 'large g class.
Ferms Image of the set of the s	ecies of
Other 20 - 28 cm 1	phostemon
Sum of Cover of native vascular plants by growth. Shrubs Image: Containing hollows in sem. Onlows in sem. Sectors (% in each) Containing hollows in sem. Onlows in sem. Onlows in sem. Onlows in set on in length) Containing hollows in sem. Onlows in sem. Onlows in set on in length. Part Set in may be cover % in begin in once set on set on the onlows of least 20cm across are recorded for the purposes of habital of some threatened speci- set on the onlows of least 20cm across are recorded for the purposes of habital of some threatened speci- set on the onlows of least 20cm across are recorded for the purposes of habital of some threatened speci- set on the onlows of least 20cm across are recorded for the purposes of habital of some threatened speci- set on the onlows of least 20cm across are recorded for the purposes of habital of some threatened speci- set on the onlows of least 20cm across are recorded for the purposes of habital of some threatened speci- contribute to acases the hole onlows in the pin determining PCT and Management Zone (optional) Physiography + site features that may help in determining PCT and Management Zone (optional) Physiography + site features	ount only the
Sum or Cover of native vascular vascular per vascular per vascula	vs, not the in that it as 1 stem
vascular plants by growth. Forbs Image: Second	ee is multi- ollow-
growth Ferns Image: Control of the second seco	ly be a dead
Other In length High Threat Weed cover % 0.1 The table may be completed after entening data into exalable may be completed after entening data into exalable may be completed after entening data into exalable tools it is not required while in the feld Each size class is noted as present by the living tree stems only. Depending on the Vegetation DBH values and count/estimate if it is required by the large tree category for that vegetation. BAM Attribute (1 x 1 m plots) Litter cover (%) Bare ground cover (%) Cryptogam cover (%) Rock cover Subplot score (% in each) Si 2015 80 15 9 70 75 60 75 S 0.00 5 6 Average of the 5 subplots 17 / 1. 177	
High Threat Weed cover % 0.1 DBH values and counts may be needed for a size class. For a multi-stemmed tree, only the lands term is included in the count/estimate if it is required by the lange tree category for that vegetation are marked to be the stem is included in the count/estimate if it is required by the lange tree category for that vegetation are marked to be the stem is included in the count/estimate if it is required by the lange tree category for that vegetation are marked to be the imposes of habitat of some threatened speceed and the interfed. BAM Attribute (1 x 1 m plots) Litter cover (%) Bare ground cover (%) Cryptogam cover (%) Rock cove Subplot score (% in each) 51 2.0 15 8.0 15 9 7.0 75 6.0 75 5 5 0 10 0 0 5 6 Average of the 5 subplots 17.7. Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots located on alternate sides and 5 m from the pl the locations 5, 15, 25, 35, and 45 m along the midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). 1 m x 1 m plots assessment scores, they hold potential value for future vegetation integrity assessment attributes and branches (less than 10 cm in diameter). 1 m x 1 m plots assessment scores, they hold potential value for future vegetation integrity assessment and branches (less than 10 cm in diameter). 1 m x 1 m plots assessment and for enhancing PCT of the cover of rock, bare ground and cryptogam soil crusts. Collection of these data is optional - the data do not contribute to assessment scores, they hold potential value for future vegetation integrity assessment and bare and branches (less than 10 cm in diameter). 1 m x 1 m plots assessment atributes and branchare	on Class
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Physiography + site features that may help in determining PCT and Management Zone (optional) Morphological Type Landform Element Landform Pattern Microrelief Lithology Soil Surface Texture Soil Soil Soil Lithology Soil Surface Texture Soil Distance to nearest Vater and type Plot Disturbance Severity code Age code Free Text Section for brief site description Leaf Litter and end point O Clearing (inc. logging) 1 6 Lit gai area and plot Selected to be in development site area and gilgai, explored area cit area and gilgai, explored area cit (replies-) End point 614200 6391	plot midline at Within these t currently description
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Soil erosion gilgai, explosed avea etc (replics-)	1374
Firewood/CWD gilshi, exposed avea et / replics-	and the second se
removal	
Grazing (identify 2 NR entitive of brueder area)	
Fire damage	
Storm damage	
everity: 0=no evidence, 1=light, 2=moderate, 3=severe Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)	

	400 m2 -	lot Sh	oot of	Survey Name	Plot Identifier		7.8A.0	Record	lers		1.10	
Г	Date	24	0(120	CAR Air Vent	B	PL	16	h erte				
L	Date	2_6		13112 1 00011			1	100				1
ID	BAM Code	GF Code	Full species nar survey. Data fro	me mandetory, or a unique n m here will be used to assig	neans of identifying separate taxa with in growth form counts and covers.	nin a	N, E or HTE	Cover	Abund	stratu m	vouc her	Heig ht (m)
_1	Sh	85	Acacia	decora			N	0.1	1	M	-	0.4
2	49	6	Bothiloc	hold macro	Redley G	raip	N	5	250	L	-	6.0
3	64	5	Dichan	thick scrie	-erm Old Blue Ci.	wo	N	5	250	L	5	03
4	Ch	5	Aristic	li ramosa	Puple hire Corges	0,1	N	1.	50	L	-	0.2
5	64	25	Entero	PUSAN acia	lavis Certy M.	nelin	N	Ool	10	L	-	0.2
6	FG	ſ	Ptilot	s exalatus	Lamps Tails	-	N	0.1	20	L	-	0.1
- 7	EG	1	Chilant	hes siche	, Posson Rodel	Ce.N	N	0.1	20	L	-	6.1
8	FG	(Soland	in esurai	e Queanna	anning	2	0.1	15	L	-1	0.1
9	11		Cullun	us landus	Salan thist	le H	TF.	6.1	15	L	-	6.2
10	16	6	Cide	1011ULIATA	Convented Sid	6	N	01	10	L	- 1	6.1
11	C.L.	5	Austrast	The Scalar	Rough Stee Cours		N	Out	10	L	-	6.1
12	Cil	5	Phyrici	- decompost	sun Natur Mille	A	N	0.1	10	L	N-1	6.1
-13	56	c	Mairen	a microphyll.	6 Factoria Coltas Rue	h	N	6.1	1	L	-	6.2
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GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. Form version designed 15 September 2017 Printed 22 September 2019

			10 0	× 1			1	- 0					Plot		7	Julyd	1	
Site sheet #	1 of	Date	1918	512	n	ame	10	ier					identifi	er			4	1
Recorders	A	ddy	W	at	50	n.		IBRA region	Ĺ	SR	P-				Ve ID	g zone		1
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Location descr	iption		lescript	tive r	notes	to locate si	te wit	hout grid re	ference									
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Datum: AGD66,	WGS84,	GDA94	, GDA	2020	or O	ther (specif	y). M	GA Zone (f	for Project	cted c	oordina	te. syste	m only): {	56 (Co	bastal	NSW), dinate,	55 (Ce system	ntral
4577 01 54 (7765	stern NSVV	v). Art (coordi	nate	. Long		ojeci	Vegetation	n integri	ty to int	o avails	able tools	It is not	roqui	red wt	nile in t	he field	,
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			Sum						Sum va	alues	³ Tree	stem siz	e class	If data	a are t	to be u	sed as	to
			values	-					(may s	um	(DBH)			gene	rate lo	cal ber	nchmar	ks, stem
	-	-			0	-1	т		to >100)%)				must	be co	unted		
native plant	Trees (T	G)	D		² folia	age cover	Tre	es (TG)	D		80 + c	m			-			
species	Shrubs ((SG)	r		of nat	tive plant	Shr	ubs (SG)	1 1	1	50 7	0.000		Coun	t (bes	Lpracti	ce)/tick	
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form group	Grasses	etc.	0		group)	Gra	isses etc.	2		20	0		Coun	t (bes	t practi	ce)/tick	ine > or
(not individual plants within	(GG)		+				(GC	i)	SZ	-8	30 – 4	9 CM		cm. c	ge tre	e benc	nmark	size 2 3(.
each growth	Forbs (F	G)					For	bs (FG)	1/	-				Coun	toes	t practi	ce)/tick	
form)			10						16.	2	20 - 2	9 cm		If [®] lar	ge tre	e benc	hmark	size ≥ 20
	Ferns (E	G)	0				Fer	ns (EG)	0		10 - 1	9 cm		Coun	t (bes	t practi	ce)/tick	
	01		0				0"	or (00)	0		10 - 1	3 Cm			t (has	Inroct		
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			0						0		⁴ Tree	regenera	ation	Tick	-			
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											⁶ Hollo	w bearin	ng trees	Tick	C	2		
Vegetation inte	grity - fur	nction	7 Litt	ter co	over (%)	B	are ground	d cover	(%)	Crypt	ogam c	over (%)	F	Rock o	over (%)	
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Vegetation clas	s						⁸ La	rge tree be	enchmai	k size	,	20/ 30/	50/ 80 D	вн	C	onnae	nce	FI/ IVI/ L
Plant communit	ty type (P	CT		5	5								EEC	Tick	C	onfide	nce	H/ M/ L
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Sibpe			As	speci				SIL	Gurana	90			water an	nd typ	e			
		Severi	ly Ag	e	В	rief site des	script	ion or other	notes									
Disturbance		code	COO	Je	-	0						THE LEVE						
Gultivotion (inc. log	ging)		-	-		Selec	teo	1 40	50	N	000	al.	hai		0	01		1
Soil erosion	pasture)	101		-	-	000		0	0		The	000	10-6		-	cle	area	×
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						74	0	1.
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100 m ²	floristics plot:	Survey name	Plot identifier	Recorder	s	FG	10	16
Date	19 8 21	THEP	4	AW		og	0	
								1
GF code	Species name Full species name, or mandatory. Data from	r a unique means of iden n here will be used to ass	tifying separate taxa within a sign growth form richness and	survey is d cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher
FG	V.Hadinic	- concata			N	3	10001	
FG	2 Rhodant	re pygmalea.			N	5	lont	
SC	3 Sclerala	ena birchii	Galbur.		N	01	5	
FC	4 Gradenia	puesi Litorra			N	0-1	50	
-	5 Erodium	cientarium	Surgeren solle agev		E	6.1	100	
FG	6 Plantare	SP.			N	0.1	100	
44	7 Entremo	n aci ukori.			N	10	1000	
-	8 Sonchus	oleraceus	Sn. th	istle	E	6.1	100	
-	9 Medicaus	2 SO.		and the second	F	5	1000+	
56	Scleralago	n nuciat	Black al.	alia	N	0.1	5	
FG	Sclepton	diacan the	CIRCU CORRECTIONS	styl.	N	5	200	
6.6	Hustrostio	c and control	any upper but		N	0.1	ter t	
	12 Hugadam	a scaling t	Toph speas	grass	E	01	100	
-	Echium	alauter indicase	Matweed		U E	D.1	100	
0	Econdina Econdina	pinningineum	•		61	0.5	20	
56	Atriala	sensil-acont	le.			1	100	
C.f.	Paninge	x dernisonce				10	100	
66	12 Could	ulue onla	6.25		N	0.1	20	
GG	Bullan	hands enubes			N	01	5	
-	10 Landi	- Outbosz			Ī	5	100et	
66	hab.h	allouis co			N	0.5	10	
GG	22 6	Energy sp.			N	2	loon+	
G	22 Pati	SP.			N	0.1	15	
in	24 Citaina	un lacre	Span hitle		F	0.1	10	
_	25 Acctata	e ca calendula	Care in card	The second second	Ē	6.1	10	
-	126 - Toifolin	no ED			Ē	0.1	50	
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SC.	Faired	ce A microph	Juz		N	0.0	5 100	
64	22 FOID				N	0.1	5	
hh	Junous	or			1		5	

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = $2.0 \times 2.0 m$, 5% = $4 \times 5 m$, 25% = $10 \times 10 m$. Note the top 3 dominant native species within each GF group.

Zone 2:

Date 231/21/29 Take P Addy Wadder (under each participation of the point o				Su	rvey	Name		Plot Id	entifier	T			Reco	rders		-	
Zone Count IBRA region Plots # Zone ID Amountain the provide of the provide the provide the provide of the provide of the provide the prov	Dat	e 29107	120	Tar	P			5	1	~ /	Addy	Nat	Sin	6	en	Pee	1.
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Average of the 5 subplots U + 0 Of + 2 Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots located on alternate sides and 5 m from the plot midline the locations 5.15, 25, 35, and 45 m along the midline. Litter cover includes leaves, seeds, thus, branchles and branches (leas than 10 cm in diameter). Within the control is assessment subplots assessment subplot also record the cover of rock, bare ground and cryptogan soil crusts. Collection of these data is optional - the data do not currently contribute to assessment scores, they hold potential value for future vegetation integrity assessment attributes and branches (leas than 10 cm in diameter). Within the control is assessment scores, they hold potential value for future vegetation integrity assessment attributes and branches (leas than 10 cm in diameter). Within the control is assessment scores, they hold potential value for future vegetation integrity assessment attributes and branches (leas than 10 cm in diameter). Within the control is a seessment scores, they hold potential value for future vegetation integrity assessment attributes and branches (leas than 10 cm in diameter). Within the control is the data is optional - the data do not currently contribute to assessment scores, they hold potential value for future vegetation integrity assessment attributes and branches (leas than 10 cm in diameter). Within the control is and for enhancing PCT description Morphological Landform Landform Microrelief Type Landform Patern Microrelief Soll surface Soll Soll Soll It be beat using (inclusion (inclusion) Q Gase of thea	Subplo	ot score (% in	each)	0 0	0	22	99	70 92	. 550	10	0	00	0	0	0	0	00
the locations 5, 15, 25, 35, and 45 m along the midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Within the 11 m x 1 m plots assessment scores, they hold potential value for future vegetation integrity assessment attributes and benchmarks, and for enhancing PCT description Physiography + site features that may help in determining PCT and Management Zone (optional) Morphological Landform Microrelief Type Element Soil Soil Soipe Aspect Soil Soil Slope Aspect Site Drainage Distance to nearest Plot Disturbance Code code Code Claring (inc. 2 0 Code Code Garaing (inc. 2 0 Code Code Soil erosion 0 T Free Text Section for brief site description Leaf Litter and end point GPS Firewood (CWD 0 T Distance 6 38 97.7 Soil erosion 0 T Grazing (identify native/stock) 2 Distance 6 38 97.7 Soil erosion 0 T Fire damage 0 Grazing (identify native	Litter cover is	assessed as the	averag	e percentage	grour	nd cover of lif	tter rec	orded from	L five 1 m x 1	1 m plo	ts located	on alternat	e sides	and 5 m	from	the plo	ot midline :
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ID	BAM Code	GF Code	Full species nam survey. Data from	e mandatory, or a unique means o n here will be used to assign growt	f identifying separate taxa wi h form counts and covers.	ithin a	N, E OI HTE	Cover	Abund	stratu m	vouc her	1
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2	Ta	E	Acacia	homalophylla	Yawar	1	N	3	60	1. A.		
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5	1.1.		Lygim	-Enocissinum	Africanbox	thorn	HTE	0 - 1	2			
6	-	-	Arctothec	a calendula	Cape we	ed.	E	1	30			
7	Fa	F	Einadia	mutans	TH OF STY STOREDAM	AN F F	N	0.5	90	1. 10	65.7	
8	FG	f	Sida c	omgata	and at - at the	112	N	0.1	10	10 12	1 State	
9	-	_	Medica	90 laciniata	cutleaf m	odic	E	0.1	10	2	1	
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12	GG	9	Entersa	xon adirillaris			N	2	[00]		avillan.	
13	SG	F	Geranic	n' Solanderi	and the second second	08	N	0.2	100			
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15	SG	5	Salsola	kali			N	0.1	15	19		
6	Fa	f	Calotis 1	aponta roa	Yellow burde	aisu	N	0.1	30	1		
7	CC.	ć	Goodenic	pusilliflara	1 CHOL CITIE		N	Dil	10	18	o naie	
8	C.C.	à	Trabasa	Lotii Fontis	Similarte al	MASS	N	0.1	100		1100	
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3	-m	T	Toilda	80	10001		F	0.5	100	SW Inst	57 560	4
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5	DC.	C	Bulbinov	osis bulloose	and a second	Section and	N	0.1	10			
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8	FG	ſ	Crassial	a colorata	Starte Part hard - 1	1	N	0.1	50			
9	EC	C	Brachus	scom se	Start A CI	aug rent	N	01	10			
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9	HU	+	Herichrysn	WI OTALIEUTVY ICTO	crowing			0.1	2			
GF Co a c Ab	Code:	see Gro 0.1, 0.2, out 71 c ce: 1, 2	wth Form definition 0.3,, 1, 2, 3, m across, 0.5% co , 3,, 10, 20, 30	ons in BAM Appendix 1. Identif , 10, 15, 20, 25,100% (foliag over represents an area of app , 100, 200,, 1000,	y top 3 dominants in the v ge cover); Note: 0.1% cov roximately 1.4 x 1.4 m, ar	reg zone. No ver represent ad 1% = 2.0	a plot ne	E: exoting a of app 5% = 4	c, HTE: hi proximatel x 5 m, 25	gh threa $y 63 \times 6$ $\% = 10 \times$ TG SG	t exotic 3 cm or 10 m Count 2 4	-

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Site sheet #	1 of 2	Date	301111	21 50	irvey	TO	GE	p			Plot	ier	7		
Recorders		GP	AW	-1		IBRA	A	DR	P				Veg zone	2	
¹ Datum		Coord system	inate	Proje Geo	ected	MGA		¹ X coor	dinate	614	083	¹ Y co	ordinate	639	081
Location desc	ription	d	escriptive	notes to	locate si	te without gri	d ref								
¹ Plot dimensio	ons	For con	nposition	& struct	ure (400m	n²): 20 m x 20) m	1 Or	rientatio	on of mi	dline from	Mag	qter	Photo #	
Datum: AGD66 NSW or 54 (We	, WGS84, stern NSV	GDA94	, GDA202	0 or Oth	er (specif	y). MGA Zor	ne (fo	or Projected	coordina Easting	ate. syste	em only):	56 (Coas	stal NSW),	55 (Centi system)	ral
Con Composition (nposition 400 m ² pl	and stru ot)	cture sum Sum values	values i Struct	nay be co ure (400 r	Vegeta ompleted afte m ² plot)	r en	integrity tering data in Sum values (%) (may sum to >100%)	nto avail Func ³ Tree (DBH	able tool tion (10 stem si)	s. It is not 00 m ² plot ze class	if data a appropr generate	d while in t are to be us iate local o e local ber	he field sed as mo lata i.e. to nchmarks,	ore stems
Total count of native plant species (richness) in	Trees (Shrubs	TG) (SG)	1	Sum of ² foliag of nativ	je cover re plant	Trees (TG) Shrubs (SG	G)	0.1	80 +	cm 79. cm		Count (I	best practi	ce)/tick.	
each growth form group (not individual plants within	Grasses (GG)	s etc.	6	growth group	form	Grasses et (GG)	c.	12:2	30 - 4	49 cm		cm, cou Count (I If ⁸ large	nt pest practi- tree benc	ce)/tick. hmark siz	e ≥ 30
each growth form)	Forbs (F	=G)	20			Forbs (FG)		5.1	20 – 2	29 cm		Couht (I If [®] lave cm, cou	pest praction tree benc nt	ce)/tick. hmark siz	e ≥ 20
	Other (C	_G)	1			Other (OG)		0-2	10 - 1	19 cm		Count (t	pest practio	ce)/tick	
			1	Total bi	ab these at			0-1	5 - 3 ⁴Tree <5 cm	regener	ation	Tick V	/		
				TOLATTI	gnuneau	weed cover		0.5 "	⁶ Hollo	ow bearin	ng trees	Tick 🖌		Total	3
Vegetation inte cont. (five 1 m ²)	egrity - fu plots)	nction	⁷ Litter o	cover (%)	Bare gro	und	cover (%)	Cryp	togam c	over (%)	Roc	k cover (%)	
Subplot score (% Average of the 5	% in each 5 subplots)	7 3	5 2	10 T	15575	8	0400	0	00		0	OK	00	De
These attributes	require co	onsidera	tion of site	observ	ations and	d may be con	nplet	ed after field	d work:	20/ 30	/ 50/ 80 D	вн	Confider	ice H	/ M/ L
Plant communi	ty type (P	PCT)				Large tree	e Dei	ICHIMARK SIZ	e		EEC	Tick	Confider	ice H	/ M/ L
Physiography an Morphological type	id site fea	tures that	t may hel	p in dete orm	ermining F	CT and man	Lan	ment zone (d	optional)	or for Bi	ioNet syst	ematic fl	ora survey	purposes	<u>s:</u>
Lithology			Soil s	urface e			Soil	colour			Soil dep	ith			
Slope			Aspec	st			Site	drainage			Distance water a	e to near	est		
Disturbance		Severit code	y Age code	Brie	of site des	cription or ot	her r	notes		1					
Cultivation (inc. log Cultivation (inc. Soil erosion Firewood / CWD Grazing (id. nati	agirig) pasture) removal ve/stock)														
Fire damage															
Storm damage Weediness				Top	Mid	Bottom	Upp	Mid P	eights lottom	Middle	stratum I	neights Bottom	Lowe	Mid I	height
Other	1000				m n	1 m		n m	m	m		Jonom	Top	IVIICI II	Jonom

Page () of @

400 m²	nonstics plot:	Survey name	Plot identifier	Recorde	rs			
Date	30/11/2021	TGEP	Plo7_le		202	1 (GP/K	th
GF code	Species name Full species name, o mandatory. Data from	r a unique means of identi n here will be used to assi	fying separate taxa within a gn growth form richness ar	a survey is nd cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Vouch
5	Apophyllu	n anomalum	Warner	bsh	N	2		
5	2 Acacia	oswaldii	na e na se a la construcción de la construcción de la construcción de la construcción (en la construcción de la La construcción de la construcción d		N	0.1	1	
EG	Marsilea	drummondii	Mardon		N	0-2	- 100	
_	Sochus al	eraceus	milk/sand	hitte	E	0.1	25	
-	Lycium !	Ferocissimum	boxthan	1	HTE	0-2	5	
G	Cynodan o	lactylan	Carch		N	1	100	
-	Eragrostis	curvula A	frican largara	11	HTE	0-1	10	
F	o valis chn	oodes	oxalis		N	6.7	200	
	Echium pl	antagineum	Patterson c	NY	E	0.2	20	
T	Brachychite	an populneas	Kurraian	wie applie)	N	1.0	1	
F	Xerochrysi	un bractaetum	tall goldener	vistry	N	0.1	10	
G	Avstrostipg	variabillis to	M/Vorable spe	arguard	N	4	50	
S	13 Sclerolaeno	1 dicantha	aver con	al	N	4	100	
5	Monary	M Montonin	heiten R	boldally	N	0.7	1	
F	15 Brachys	come sp.	11-10-1-10		N	0.5	50	
Gr	16 Rhdoppe	mg sp	hallaby 9	rass	N	0-1	5	
-	17 carthamu	1. Janatus	Soffren th	46	HITE	0.2	10	
F	18 Goodenia	Fascicularis	silky good	lenig	N.	0-1	-8	
G	Avstresty	na scabra	rach sper an	255	N	4	50	
G	20 Digitario	n divaricatissin	19 unbralla a	ina (1	N	1	20	
F	21 Einardi	a nutans de	de ragginas 119	1.0.3]	N	0.2	10	
G	22 Eleoca	O pusilla	Spikensh		N	0.1	20	
T	23 Timer	s flavidus	fus)	0	N	0-1	7	
F	24 Grass	SP.1 1	1 leak agind	in not	N	0-1	5	
6	25 Vaccona	hisparica	bladder soc	pwart	E	0:3	20	
F	28 Salsola	kali.	buck buch	•	N	0.2	20	
-	27 Amaranth	us hybridus	Amoranthis		E	0-1	5	
F	28 Solam	m esuriale	Quena m	de flors	N	6.1	5	
7	29 Eupharbia	1 drummondii	Carshic whee	0	N	0.2	30	
F	30 Enordia	potens liver	is creening a	althsh	N	1	20	
F	BA Forbsp	1 00 (0)0	1) tring daily	5p-	N	0.1	10	
G	32 Panicur	n effusum.	havi parte	grass	N	0.2	5	
G	paspali	idim constrict	um	0	N.	0.2	5	
G	31 Enterop	ogen activians	cry wind	millaroi	N	0.5	20	
CT	as chlars	marata		0 -	N	6.5	75	

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = $2.0 \times 2.0 m$, 5% = $4 \times 5 m$, 25% = $10 \times 10 m$. Note the top 3 dominant native species within each GF group.

Dra Dela

400 m ²	floristi	cs pl	ot:	Survey	name	Plo	t identifier		Recorde	rs			
Date	301	11	2021	TG	er	IP10	7		A	W/	GP		
	1	1								1			
GF code	Spec Full s mand	ies n pecie atory	a me s name, c . Data fror	r a unique m n here will be	eans of ident used to ass	ifying se ign grov	eparate taxa /th form richr	within a s ness and	urvey is cover.	N, HTV or non- HTW	V ² Foliage cover	Abund -ance	Vouche
F	Fr	ab	5p. 7	2 1				lant	adaran ana ang kana kana kana kana kana kana	N	0-2	25	
F	VI	Ha	dince	comea	fa		11 plant			N	1	100	
F	3 1	nc	hand	m rep	ens	Kic	ling in	read		N	0-1	50	
F	AP	ant	690 C	urningh	omii	13	agn s	eed		N	0-1	1	
J.G	5 Co	nva	orvul	is erub	es cens.	BI	notive	ed		N	0-1	10	
F	6.5	iid	a tri	chopog	9		1.000		ent in mile	N	0-1	5	
F		Sid	ta c	orruga	Fq					N	0.2	10	
F	8 -	Teu	icriu.	n race	mosum		and the f		ast G	N	0-)	15	
F		pt	ylohi	exalto	hus sen	ulan	ahund		12 Star	N	0-3	> 10	
G		Spa	probal	is care					AL TH	N	0-2	-10	
F		Po	1490n	im are	1dstrum	WI	rence	1	1	N	0.2	2	
2	12	Atv	opler	semi	placat	5	S	Alth	12	N	0.2	2	
S	13 (rel	jera	part	flord		W	199		N	0-1	1	
-	14	Con	4.2a	bonagy	nels		Fleo	bon	2	E,	0.2	50	
G	15	ac	magro	ishs h	litormis	6	angr	ass?	louk p	N	0.2	10	
t	16	LO	pidi	m b	ondrie	nse		Pepp	rcres's	E	0.1	20	
F	17	Did	iopoqu	n strie	NS	choo	idah hl	17 6	any be	N	0-1	1	
					Car	1-1	Parks	~					
					Low	K 1	cove						
				14	1		01						
				54	e		10.0						
				GG	14		12.2						
				FG	20		3.1						
				EG			0.1						
				OG	1		01						
				HIL	4		()-)						

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63×63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4×1.4 m, and $1\% = 2.0 \times 2.0$ m, $5\% = 4 \times 5$ m, $25\% = 10 \times 10$ m. Note the top 3 dominant native species within each GF group.

Date	<u>2010772</u> <u>A</u> <u>Datum</u> <u>631080</u> tation Class	2 TGE IBRA reg	ey Name	Plot Identifier	and a second second	Reco	orders	
Date	<u>3010110</u> <u>Datum</u> <u>631080</u> tation Class	2 TGE IBRA reg	P		N I I	161-0	Ca	Opel
Zone Easting 614241 Likely Vege Plant Comm Record easting Dimensions (Sf BAMA	C DA 63908 tation Class	IBRA reg		0	41 Had	y warson	94	peq
6 4 4 24 1 Likely Vege Plant Comm Record easting Dimensions (SP BAM	63908	STATUS DECEMBER OF STREET, STR	ion DRJ	Photo	#		Zone ID	2
Likely Vege Plant Comm Record easting Dimensions (SP BAM A	tation Class	5 Plot Di	imensions	20 x 20 in 20 x 50	Orient	ation of midline n the 0 m point.	50	Magnetic °
Plant Comm Record easting Dimensions (St BAM A		Sein	i and	Locallas	d	Stan - 3	3.15	Confidence:
Record easting Dimensions (St BAM A	unity Type	Serm	1- 9119	woodien		EE	C:	Confidence:
Dimensions (Si BAM A	and porthing from	the plot marker of a	oplicable orient picke	et so that perforated rib	points along dire	ection of midline.		
BAM A	nape) of 0.04 ha bi	ase plot inside 0.1 h	a FA plot should be id	lentified, magnetic bear	ing taken along	midline.		- State
	ttribute	Sum values	BAM Attribute	e (20 x 50 m plot) Euc*	Stem Class Non Euc	Hollowst	Record li	ving eucalypt* d living native
(400 11	Trees	0	00.1		Street Le		non-euca	lypt (Non Euc) parately
-	Shrubs	2	80 + cm			0	Data nee	ded is presence
Count of	Grasses etc.	6	50 – 79 cm				only (tick) tree' for th	unless a 'large nat veg class.
Native -	Forbs	16	20 10	-		Hollows 20cm+	* includes	all species of
-	Ferns	1	30 – 49 cm				Angopho	ra, Lophostemon
-	Other	0	20 – 29 cm		1		† For holl	ows count only the
	Trees	0	10 - 19 cm	tick	Vek	0	presence containing	of a stem hollows, not the
Sum of	Shrubs	21.5	E 0.00	Aliate	V		stem. Onl	y count as 1 stem
Cover -	Grasses etc.	12.9	5-9011	lich		This size class	stemmed. bearing st	The hollow- em may be a dead
vascular -	Forbs	8.9	< 5 cm	tick	Kick	records tree regeneration	stem.	
growth -	Ferns	0.1	Length of log	s (m) ar. >50 cm				total
	Other	0	in length)			terre enly Depend	ling on the Vie	restation Class
High Threat	Need cover %	0	Each size class DBH values and	is noted as present by counts may be needed	d for a size class	For a multi-stem	med tree, on dory for that	ly the largest living regetation class.
This table may be	completed after ente	ring data into	Hollows at least	20cm across are recor	ded for the purp	oses of habitat of s	ome threaten	ed species.
BAM Attribut	e (1 x 1 m plots	Litter o	over (%) B	are ground cover (%) Crypto	ogam cover (%)	Roci	k cover (%)
Subplot	score (% in ea	ch)	0001	75 85 4	0 -		a D	C d a
Aver	age of the 5 subpl	ots O.	4	33		0	0	- And State
Litter cover is a	issessed as the av	erage percentage g	round cover of litter re e. Litter cover include	ecorded from five 1 m x is leaves, seeds, twigs,	1 m plots locate branchlets and	ed on alternate side branches (less than	s and 5 m fro 10 cm in dia	m the plot midline meter). Within the
1 m x 1 m plots contribute to as	assessors may a sessment scores,	so record the cover they hold potential v	of rock, bare ground value for future vegeta	and cryptogam soil cru ation integrity assessm	sts. Collection of ent attributes an	f these data is optio d benchmarks, and	for enhancing	g PCT description
Mamhalaging		Physiography + sil	te features that may h	Landform	Fand Managem	ent Zone (optional)		
Type		Element Soil Surface	e	Pattern Soil		Soil		
Lithology		Texture		Colour	-	Depth Distance	to nearest	
Slope	1	Aspect		Site Drainage		water and	type	
Plot Disturban	ce Severity	Age code	Free Text Se	ction for brief site des	scription	Leaf L	itter and end	point GPS
Clearing (inc.	2	0 (elacted	to bo		ID	Easting	Northing
Cultivation (in	c. 1	0 0	electer	1 4 .		End		
Soil erosion	1	0 (epresen	rane		61	+254	
Firewood / CV	ND D		1				K	390897
Grazing (iden	tify 0							
native/stock)	0					AND NO.	ALL PROPERTY AND	
Fire damage	0							and the second
Severity: 0=00 c	idence 1=light 2=	moderate 3=seven	e Age: R=recent (<3vrs), NR=not recent	(3-10yrs), O=old	1 (>10yrs)		

ate 35	heet _ of _	Survey Name	,	Plot Identifie	· Ava Later	1 m. 10	Record	lers	-		
	DENEDY	THEP		18	Add	yWat	son	Uen	Peel		
BAM GF			1		the second black	1	1		stratu	Vouc	Hela
Code Code	Full species nar survey. Data fro	me mandatory, or a unique om here will be used to as	e means c sign growi	of identifying separate th form counts and co	laxa wilhin a vers.	N, E or HTE	Cover	Abund	m	her	ht (m)
-CI	Anguill	avia dioica	λ	Farly 1	Mainal	K	0.2	300			
Sala	Arophull	Une Analina	lum	Mama	Laush	N	0.5	1			
20 5	Acacia	Ognaldi	1 mm	0 00111100	00001	N	1	5	hatte	Sec. 32	1.81.5
2013	Calabis	hisoidula		Basan	G00	K	0.1	100			
C C	Icantons	hispannin !!	Falia	Cigan	iduna	1	The l	100		-	
G F	Toperope	sis gramin.	10114	Lorass C	ionions		0.1	20			
5.5	laga	on a promit	1010	Punda G	177 . Lood	N	n. 2	1.00			
TUL	Madia	10 annema		1 uppen	ice weer	E	20	5000	361.3	10054	
	And Le	ajo arabci	110	l a an	werd	E	1	8000			
	ALCTOTH	ica calendi	116	Rellace	as forte a	C	T	100			
	Echium	plantagine	um	ratter sc	ns chise	NC	0.0	5		6	
FG +	polanur	mesurale	11	avena	1	N	0.1	E			110
na g	Inyrido	piepis mitch	elliar	na Mul	n myaherell	N	10.1	0	-		
Fa f	torb	SP.	1	- vivi-	When Hove	N	0.2	500	121156	-	
Fart	lipaten	via prinatific	19	torest	119	N	10.1	50			
	weed			tall cape	weel we	t	0.1	2			
Fat	Philotus	exaltus	14	lame	s ran	N	0.1	2	1000		1
69 9	Enneap	glow sp		Bottle und	SMU	N	0.2	100	1011511		1.115 (S
Fat	marsiles	a drimmond	.00	Nado	2	N	0.1	50	-		1
FG +	Pratia	concolor		Poison x	iratia	N	d	200		1000	
FG 4	Eradiu	m crinitiur	n		and the other one	N	5	1000	1	1	
FGF	Lann	Innua en	ubesc	ens p		N	0.1	5			
-6-	Trifoliu	in arvense	1	lares toot	small	N	S	2000			
56	Cheilar	nthes austra	oten	milelia		N	0.1	50	2.2.2.2	1 28 - 19	1.10
-	Trilob	a sp	4	-	The second	E	3	500		-	
alr	Crass/	sedge in	,g)1	991	and the second s	N	2	5000	2		1000
16 9	Gateroo	con ago	Ma	ris.		N	10	1000			-
26 9	Chioris	hincata.			A	N	0.5	100			
	Lolium	perenne	1	Rye gr	255	E	1	100			
-	Malva	parviflora	3			E	0.1	5	-		13
	Sonchu	s oleraceur	0	South	istle	E	0.1	2			
FGF	Helich	usium bract	eatur	Hellow eve	rlasting	N	0.1	1			
CGF	Forb	SP	C	in finit	7	N	0.2	100			2
CACIC	Juncu	A SP.	Til or	al		N	0.1	11		1	
A	Plantas	So anningh	am	ii		E	0.1	10			
-	lusin	achig arver	2.12.5	Children 18	Cedlike	E	0.1	50			-
-	Enodi	no cicuta.	rive	1		E	6.1	20			
EG I	Chinise	rephala	00:	mata	1	N	6.7	50	1		
	. Schlar	lagra dicha	Inthe	araiconer	her	N	20	2000			
de la	1 2 1 2 2 2 2	ment with	d	Ling III	v	N	2.1				2.5
sh s	Appan	acton dicta	((MA))	- NO A HA	oat.		100	and the second se			
		G S Hadd G Calotis G F Isoetops G F Isoetops G F Good Actoby - Actoby - Actoby - Echium - G F Solann - G F Solann - G F Forb - Weed - Weed - Weed - Weed - Weed - Weed - Weed - Fritotus - G F Goon - Thilotus - Thilotus - Thilotus - Thilotus - Thilotus - Chaila - Chaila - Thilotus - Chaila - C	G & Hada Oswaldi G & Calotis hispidula G & Isoetopsis gramin! G & Gaodonia pisillif G & Vitidina cureata Medicago arabic - Acctobica calenda - Echium plantagine G & Solanum esurale G & Solanum esurale G & Solanum esurale G & Thyridolepis mitch G & Forb sp. G & Forb sp. G & Forb sp. G & Philotus exaltus G & Chalantes austral - Thiloba sp. G & Grass/Sedge in G & Grass/Sedge in G & Onloris tuncata. - Lolium perenne - Malva parvificia - Sonchus oleraceure G & Jencios sp. G & Jencios sp. - Plantago aunungt	G S Hacia Oswaldi G F Calotis hispidula G F Isoetopsis gramini folia G F Goodonia pisillificia Medicago arabica Medicago arabica Medicago arabica Acctotheca calendula - Echium plantagineum G F Solanum esuale G Solanum esuale G F Forb SP: G F Godenia pinatifida - Weed G F Prilotus exaltus G F Pratia concolor G F Eradium crimitum G F Consilea drummondus G F Pratia concolor G F Eradium crimitum G F Consilea drummondus G F Pratia concolor G F Eradium crimitum G G Gnumulus embesc - Triloba Sp G G Grass/Sedge in gl G G Gass/Sedge in gl G G Gass/Sedge in gl G G Gass/Sedge in gl G G Grass/Sedge in gl G G Grass/Sedge in gl G G Gass/Sedge in gl G G Grass/Sedge in gl G G G G G G G G G G G G G G G G G G G	G & Hacia Oswaldi G F (alotis hispidula Bagan G F Isoetopsis gramin'tolia Crass of G F Goodonia pusilifician A Coothe ca calendula Cape — Acctothe ca calendula Cape — Acctothe ca calendula Cape — Echium plantagineum Patterso G F Solanum esurale aven G F Solanum esurale aven G F Torb SP: G F Goodenia pinathida forest — Weed tall ape G F Prilotus exaltus lame G F Prilotus exaltus lame G F Pratia concolor loison y G F Eradium crimitum G F Consulta austrotenulelia — Tritolium arvense Hares fot G Chilantes austrotenulelia — Tritolium arvense Hares fot G Chilantes austrotenulelia — Tritolium perene hie gra G J Aloris tuncata — Lolium perene hie gra G F Helichysum practeatim Yellow ere G F Forb SP G G Torb Sp G G Crass/Sedge in glga G J Chiloris tuncata — Lolium perene hie gra — Malva parvifiora Sow th G F Helichysum practeatim Yellow ere G F Forb SP — Malva parvifiora Sow th G F Helichysum practeatim Yellow ere G F Forb SP — Malva parvifiora Sow th G F Helichysum practeatim Yellow ere G F Forb SP	G S Hadd Oswaldi G F Calotis hispidula Bagontlea G F Isoetopsis graminitolia Cross cushicoss G F Goodania pusilifiare T F Vitidinia anedia Purple Fizz weed Medicapo arabia - Actothece calendula Cape weed - Echium plantagineum Patersons curse G F Solanum eswale Quera G S Thyridolepis mitchelliana Mulamtlahell G F Forle Sp. Vitidia - Weed toll apo weed like - Weed toll apo weed like G F Andenia pinathida forest - Weed toll apo weed like G F Pridos exaltus Calendus G F Pratia concolor Poison pratia G F Converse Harles to small G F Converse Harles to small G F Converse Harles to small G Cheilantes austrotenuilolia - Thoba Sp G G Anterpoon accularis G S Cheilantes algonia G G Cheilantes austrotenuilolia - Thoba Sp G G Anterpoon accularis G S Cheilantes Sow thistle - Sonchus oleraceus Sow thistle - Mantas austrotenie Jellon erclasting - Mantas austrotenie function erclasting - Mantas austrotenie function erclasting - Mantas austrotene functions	G S Maria Oswaldi G F Calobis hispidula Bagantlea N G F Isoetopsis gramini tolia Crass cushoos N G F Goodania pusilificia G F Goodania pusilificia Medicapo arabaca — Acctotheca calendula Cape weed E — Acctotheca calendula Cape weed E — Echium plantagineum Patersons ause E G f Solanum esurale Quera N G f Solanum esurale Quera M g Thyridolepis mitchelliana Multamilabell N N G F Forb Sp. — Meda tall cape weed like E — Philotus exaltus Lames tail N G f Pratia concolor Poison pratia N G f Condition Sf L G f Condition Crinitium G f Condition Crinitium G f Consilea dummendi Nados N G f Cass/Seage in glga. G f Helions Pratia N G f Chelantes austrotenulolia N G f Chelantes austrotenulos N G f Chelantes austrotenulolia N G f Chelantes austrotenulos N G f Chelantes austrotenulos N G f Chelantes austrotenulos N G f Helichysum bracteatum Yellow electosting N M M M M M M M M M M M M M	G & Haca oswald G & Calots hispidula bagantlea N 0.1 G & Calots hispidula bagantlea N 0.1 G & Calots hispidula crass custions N 0.1 G & Goodonia pusilifición N 0.1 G & Goodonia pusilifición N 0.2 Medicago arabica E 20 Actoblica calendulla Cape weed E 4 - Echium plantagineum Patersons curse E 0.5 G & Solanum eswale awa N 0.1 G & Thyridolepis mitchelliana Mulamilabel N 0.2 G & Solanum eswale awa N 0.2 G & Forb Sp. N 0.2 G & Fordenia pinathida torest N 0.1 G & Forb Sp. N 0.2 G & Morsilea dammondi Nados N 6.1 G & Pratia concolor Poison pratia N 2 G & Conclarge in turne enbescens N 0.1 G & Chalantes austroternilelia N 0.5 G & Chalantes austroternilelia N 0	G & Hada Oswaldi G & Calohs hi spidula Bagantlea N 0:1 200 G & Calohs hi spidula Bagantlea N 0:1 200 G & Gaodonia pusilifiaira (moss cushians N 0:1 200 G & Gaodonia pusilifiaira (moss cushians N 0:1 200 A & Untidina cuneata Purple fuzz weed N 0:2 100 Medicapo arabica E 20 5000 A datothea calendula Cape weed E 4 500 - Echium plantagineum Patersons curse E 0:5 100 G & Solanum estrate (wera N 0:1 5 G & Thyridolepis mitchelliana Mulamilabel N 0:1 5 G & Actothes exaltus I ames tail N 0:1 5 - Weed tail cape weed like E 0:1 5 G & Philotus exaltus I ames tail N 0:1 5 G & Philotus exaltus I ames tail N 0:1 5 G & Pratia concolor Poison pratia N 2 200 G & Gaodium crimitis embescas N 0:1 50 G & Ganumescalis Nados N 0:1 50 G & Ganumescalis E 1000 G & Ganumescalis E 1000 G & Ganumescalis E 1000 G & Ganumescalis N 0:5 100 G & Ganumescalis E 0:1 50 - Tribba 50 - Tr	G & Haca osvala G & Calohs hispidula bagantleg N 0.1200 G & Calohs hispidula bagantleg N 0.1200 G & Gadama publicia Grass cusheas N 0.1200 G & Gadama publicia Grass cusheas N 0.1200 A & Vitalana analiticia Medicago arabia A & Chilania analiticia A & Chilania analiticia G & Solanun esural G & Solanun esural G & Solanun esural G & Thyridolopis mitchelliana Mulamilabel N 0.15 G & Thyridolopis mitchelliana Mulamilabel N 0.15 G & A & Disso G & Marsile dummandi Nados N 0.15 G & A & Disso G & Disso G & A & Disso G & A & Disso G & Disso G & A & Disso G &	G & Hacia Oswaldi Bagantica N 0.1200 G F Isoetopsis gramial tolia Crass cushians N 0.1200 G F Isoetopsis gramial tolia Crass cushians N 0.1200 G F Goodoma pusilificar N 0.1200 A f Vitalina anesta Purple Rizz weed N 0.2100 Medicago arabaa E 20 5000 Actobilica calendula Cape weed E 4 500 C f Solamun estimate and the sons area E 0.5100 G f Solamun estimate and the sons area E 0.5100 G f Solamun estimate and the sons area E 0.5100 G f Solamun estimate and the sons area E 0.5100 G f Solamun estimate and the sons area E 0.5100 G f Solamun estimate and the sons area E 0.5100 G f Solamun estimate and the sons area E 0.5100 G f Solamun estimate and the sons area E 0.5100 G f Solamun estimate and N 0.15 G f Forld SP Head tall approved till E 0.15 G f Philotis exaltus tames tait N 0.2500 G f Protos exaltus tames tait N 0.15 G f Condenia prinatifica forest N 6.1 50 G f Condenia prinatifica torest N 0.15 G f Conductor crimitum N 5 10000 G f Conductus entities and N 0.150 G f Conductus entities and N 0.150 G f Conductus entities of small N 5 10000 G f Conductus entities of small N 5 10000 G f Conductus entities N 0.150 G f Conductus entities N 0.1000 G f Conductus entities N 0.100

Zone 3:

one one or	1 of 7	Date 7	0111	71:	Survey	1 -	TOF	-0					F	Plot		Y		6		
	1012	Date		211	name		IGE			~	2		i	dentifie	ər		101	6	2	
Recorders	G	P / F	tw				re	egion	L	SRF						Ĭ)		5	
Datum	ida	Coordi system	nate		ojecteo eograp	d hic	MGA zone	5	5 "	(coor	dinate	614	+11-	7	1Υ	cool	rdinate	63	3911	20
Location desc	ription	d	Gridiy	enotes	40 lac	Jorat	without	biple	totoc	Rd	(
Plot dimensio	ons	For Que	Diseitier	18571 199113)	20 m	(400m²) x 50 m	: 20 m)	x 20 m		¹ Or 0 m	ientati point	on of n	nidlir	ne from	Me	35	8	Phot	o #	
Datum: AGD66 NSW or 54 (We	, WGS84, stern NSV	GDA94, V). X/Y c	GDA20	20 or (te: Lor	Other (ng/Lat	specify) (for Pro	. MGA	Zone (coordin	for Pro ate. sy	ected stem),	coordin Easting	ate. sy /Northi	stem	only): 5 or geog	56 (C raph	coast ic co	al NSW) ordinate), 55 (0 . syste	Central m)	
Cor	nposition a	and struc	ture sur	n value	es may	be con	Veg	after e	n integ ntering	rity data ir	nto avai	ilable to	ools. I	t is not	requ	ired	while in	the fie	ld	
Composition	400 m² pl	ot)	Sum values	Stri	icture	(400 m ⁻	- piot)		Sum (%) (may	values sum	³ Tre (DBł	e stem	size	m- plot, class) If da appr gene	ta an opria erate	e to be i ite local local be	used a data i. enchma	s more e. to arks, s	e tems
Total count of	Trees (TG)	0	Sun	n of		Trees (TG)	to >1	00%)	80 +	cm			mus Cou	t be o	counted			
native plant species (richness) in	Shrubs	(SG)	15	² fol of n	iage c ative p cies by	ant	Shrubs	(SG)	20	.7	50 -	79 cm			Cou	nt (be	est prac		k. k size	
each growth form group	Grasse	s etc.	12	grov	vth form	m	Grasse	s etc.	1)	30 -	49 cm			cm, Gou	coun nt (be	t est prac		k.	
plants within each growth	Forbs (I	FG)	20				Forbs (FG)	6	.2	20	20 om			cm, Gou	coun nt (b	t est prac		k.	
ionn)	Ferns (I	EG)	20				Ferns (EG)	0	.1	10 -	19 cm			cm, Gou	coun nt (be	t est prac		ck .	
	Other (DG)	1				Other (OG)	0	-	5 -	9 cm			Cou	nt (be	est prac		:k	
			1						0	.2	⁴ Tre	e reger	nerati	on		V				
				Tota	al high	threat v	weed co	over	0	.3	⁵ Ler	ngth of	faller	logs	Tally	y spa	ce	Т	otal	0
Vegetation int	egrity - fu	inction	⁷ Litte	r covei	- (%)		Bare	grour	nd cove	er (%)	Cry	ptogar	m co	trees		Roci	k cover	(%)		
Subplot score	% in each	1)	30	5	72	045	- 0	110	0	D	0 0	0	0	0	0	0	65 0	5 0)	0
Average of the	5 subplot	S		20	2.4	Construction														
These attribute	s require o	onsidera	ation of s	ite obs	ervatio	ons and	may be	e comp	leted a	fter fiel	d work:				DII		0.51	-	111	
Vegetation cla	SS						⁸ Large	tree b	enchn	ark si	ze	20/	30/ 5	0/ 80 L	BH		Confid	ence	H/	M/L
Plant commun	ity type (РСТ)											E	EC	Tic	k	Confid	ence	Η/	M/L
Physiography a	nd site fea	atures th	at may h	nelp in	determ	nining P	CT and	manag	gement	zone (optiona	al) or fo	or Biol	Net sys	tema	atic flo	ora surv	ey pur	poses	
Morphological type			Lar	ndform				Li	andforr attern	n				Microre	lief					
Lithology			Soi	l surfac ture	ce			S	oil colo	ur				Soil dep	oth					
Slope			As	pect				S	ite drai	nage				Distanc water a	e to nd ty	nean /pe	est			
Distriction		Severi	ty Age	9	Brief :	site des	cription	or othe	er notes											
Clearing (inc. 1	(pnippo				W.								15 2						14	
Cultivation (inc	pasture)																			
Soil erosion																				
Firewood / CW	D remova			2																
Grazing (id. na	tive/stock)		-	20,20															
Fire damage			-	-	Emer	gente h	eights		Ipper et	ratum	heights	Mic	ddle s	tratum	heid	hts	110	wer str	atum I	heigh
Storm damage		-		-	Top	Mid	Botto	om T	op I	Aid	Botton	To	p	Mid	Bott	tom	То	p Mic	B	otton
veediness		-		-	- all		-	122	122	170				00			m	m	m	

Page Dof 2

400 m ²	floristics plot:	Survey name	Plot identifier	Recorders			
Date	30 11 2021	TGEP	Plot 6 Dec 21	GP/	tu		
GF code	Species name Full species name, or mandatory. Data from	a unique means of identify here will be used to assig	ying separate taxa within a s n growth form richness and	N, HTV survey is or non- cover. HTW	² Foliage cover	Abund -ance	Voucher
T	Evcalyphis	merocarpa	Inland Grey B	ox N	20	9	
-	2 Lycium f	crocissimum	Box thorn Gt	dead) HTh	0.1	B	
5	Acadia o	swaldii	Midger	(fall and) N	0.3	1	
t	a canonis la	ppulacea	Yellow Brow 1	Daisy N	15	50	
F	5 ROSTUNOJAVIO	pogenanthera	Pink Jongv	ej N	0.2	30	
F	Frylotis ex	alfatus semilar	ratus Lambs f	aplices N	0.5	40	
G	Enteropogai	n acicularis	Civity wind	mill N	0.5	10	
TT	Acoria ha	1 variahillis	avorable spi	eaguars N	5	100	
-	Sanchus a	lerd'ceus	Jovran Sai Guett		0.1	4	
5	Geisera	porvitiara	July This of		0.1		
T	Finadia	nitans	, Miger	salthan N	0-1-	50	
G	Digitaria	divancatissim	a umbella arc	ISI N	6-7	10	
G	Panicom e	ffusum hair	M DANIL ADAS	(N	0.2	20	
G	Austrostipo	i scabrei	raugh sper a	Wall N	3	100	
F	10 Whalenbe	gra sp.	Blockelli	N	()-2	50	
5	Sclenobien	a dreantha	Greey capper	Em N	5	100	
F	Xerochrysyn	, bractaetum	tan Engastin	N	0.5	100	
-	Echiumplo	intag meum	pattersons ()	rée É	0.1	3	
F	20 Dichandra	repens	Kidney me	ed N.	0-1	50	
t	2 Forb SP	1, , , , , , , , , , , , , , , , , , ,	the grant	The N	0.1	1	
-	Carthamus	lanatus	Saffron thy	He HTI	= 0.2	25	
H	BUIDINE bu	Thosa	. Li colab	N	0.1	1	
F	Partulaca	deracea	native pigm	COpyrice N	0.2	10	
G	25 Ktidosper	ng spin pour	Wanaby an	as) N	0.3	20	
G	Trilaling	anauch annus	blam grass	N	0-2	-(0	
H	Dichangage	ungust.	Alancolate Lill	Ner E	01	-	
G	Dichanthi	Im Seviner	Chocolare Lui	Y IN	01	20	
U	Leniching	1 henacience	avensing biv	grass fr	0.2	20	
G	chlus t	rmata	Mubaball and	3(1)	0.2	50	
-	Vulpia h	amaides	Tos i No	TY IN	0.2	10	
0	Porang se	incra	Rind where a	linkny N	07	20	
-	Conyza b	onariensis	Fleabart	F	0.7	20	
F	Erchiton	japonicus no	creeping cua	lweed N	0.2	10	

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be recorded.

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

100 m ²	floristics plot:	Survey name	Plo	t identifier	Recorder	s		v	
Date	29/11/2021	TGEP	1 pk	1-16ec 2	GP	/AU	J		
GF code	Species name Full species name, or mandatory. Data from	a unique means of ider here will be used to as	ntifying se sign grow	parate taxa within a the form richness and	survey is d cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher
F	sida can	ugata .		Sila carry.	ata	N	0.2	50	
F	ViHadrnia	r cureata		FU22	inced	N	0:2	100	
5	salsola	kali	Fle	P. Brck	bush	N	0-7	10	
F	Brachysc	are sp. (My-c	da white d	aisy	N	6.)	5	
G	Juncus	flavidus	the	rush		N	0.1	5	
7	tarb sp	2 dampe	aa p	rely pupili f	aven	N	0.1	2	
F	torb sy	53		tall preity 1	orph fli	hr N	0.1	2	
E	chellanth	es tenuitolia		rock fer	n	N	0.1		
E	Goodenia	fascicularis	Small	silley god	olenia	1 IV	0.)	1	
F	avalia	19 Miricata	black	plack vol:	1 poly	14	0.1	1	
T	Oxans C	hnoodes		oxalls	NALL CONTRACT	N	0-1	20	
G	Tarlaha	inversa	11	m. L.	Lui	N	0-)	1	
0	Passall	narvense	H	alls flot a	laver	E,	0.1	1	
GT	Pasyall	aun const	veturv	CI DOX GV	203	N	1	10	
E	Gomponier	a celosidates	5	off hanks	weed	K	0.1	1	
F	16 leucriui	m racenoso	(V)	greg gen	nanow	N	0.1	2	
			ant	Conter					
		TG	2	20-1					
		SG	5	5-7					
		GG	12	11					
		FG	20	6-2					
	• 31	OG	1	0-2					
		EG	-	0.11					
		1- 1	0						
		Exchic	8	-					

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ... 100%; Note: 0.1% cover represents an area of approximately 63×63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

Site sheet # 1 of Recorders Add ¹ Datum ADA Location description ¹ Plot dimensions Datum: AGD66, WGS84, NSW or 54 (Western NSV Composition Composition (400 m ² pl Composition (400 m ² pl Total count of native plant species (richness) in each growth form group (not individual plants within each growth form) Ferns (I Other (I Vegetation integrity - fu cont. (five 1 m ²) plots) Subplot score (% in each Average of the 5 subplots These attributes require c Vegetation class Plant community type (I Physiography and site feat Morphological type	Number Date Date Coordii system de For com For fund GDA94, (). X/Y c and struc (ot) TG) (SG) s etc. FG) EG) DG)	22171 22171 22171 22171 22171 22171 22171 22171 2007 2007	A this pag 21 Surv Gab Project Gab Project Gab Project Gab Survey Structur Survey	ted aphic aphic aphic applie aphic applie aphic applie at (for Pro- ay be corre- plant by orm	ate with the TGEP IBRA region MGA Zone Dected coord Vegetation model after of Polotic after o	numbers and DR ST $'x coor Coordinate.system), on integrity antering data in Sum values (%) (may sum to >100%) (0 · b 28 · 2 22 · 7 4 9 0 · 1 0$	A explanator A explanator A contraction of a point coordinate.s Easting/Nort to available Function a Tree ster (DBH) 80 + cm 50 - 79 cr 30 - 49 cr 20 - 29 cr 10 - 19 cr 5 - 9 cm 4 Tree reget	Plot identifi 4 2 8 3 4 2 2 5 midline from system only): hing (for geog tools. It is not (1000 m ² plot m size class n n n n	er 'Y 'Y 'Y 'Y 'Y 'Y 'Y 'Y 'Y 'Y	e July 2 reg zone redinate 6 1 redinate 6 1 redinate 6 redinate sy while in the tocal bench counted est practice) tree benchm t est practice) tree benchm t t mage to the second the second th	3910 3910 3910 3910 3910 3910 6 6 (Central 7 stem) field d as more a i.e. to marks, stems field d as more a i.e. to field d as more a i.e. to field field d as more a i.e. to field f
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species Shrubs (richness) in each growth form group Grasse: (not individual plants within form) Forbs (I Other (I Vegetation integrity - fu cont. (five 1 m²) plots) Subplot score (% in each Average of the 5 subplots Freese attributes require c Vegetation class Plant community type (I Physiography and site feat Morphological type	(SG) s etc. FG) EG) DG)	7 5 17 1 0	Total hig	plant by orm	Shrubs (SG) Grasses etc. (GG) Forbs (FG) Ferns (EG) Other (OG) weed cover	28.2 22.7 4.9- 0.1 0	50 – 79 cr 30 – 49 cr 20 – 29 cr 10 – 19 cr 5 – 9 cm ⁴ Tree rege	n n n eneration	Count (be Iff large to con, count Count (be arge to count (be arge to count (be large to count (be) large to count (be)	est practice) tree benchm t est practice) tree benchm t est practice) tree benchm t tree benchm t)/tick. nark size ≥50)/tick. nark size ≥ 30)/tick. nark size ≥ 20)/tick
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each growth form) Forbs (f Ferns (f Other (f Other (f Vegetation integrity - fu cont. (five 1 m ²) plots) Subplot score (% in each Average of the 5 subplots These attributes require c Vegetation class Plant community type (f Physiography and site fea Morphological type	FG) EG) OG)	17 1 0	Total hig	jh threat v	Forbs (FG) Ferns (EG) Other (OG) weed cover	4.9- 0.1 0	20 – 29 cr 10 – 19 cr 5 – 9 cm ⁴ Tree rege	n n eneration	Count (br Interget cm, coun Children cm, coun Children Ch	est practice) tree benchm t hopactice) http://www.actice))/tick. hark size ≥ 20)/tick)/tick
Ferns (I Other (I Other (I Vegetation integrity - fu cont. (five 1 m²) plots) Subplot score (% in each Average of the 5 subplots These attributes require c Vegetation class Plant community type (I Physiography and site fea Morphological ype	EG) OG) Inction) O	Total hig	gh threat v	Ferns (EG) Other (OG) weed cover	0 · 0	10 – 19 cr 5 – 9 cm ⁴ Tree rege	n)/tick)/tick
Other (Vegetation integrity - fu cont. (five 1 m ²) plots) Subplot score (% in each Average of the 5 subplots These attributes require c Vegetation class Plant community type (I Physiography and site feat Morphological type	OG) Inction	0 ⁷ Litter	Total hig	gh threat v	Other (OG) weed cover	0	5 – 9 cm ⁴Tree rege	eneration	SHIT (b)	HTPractiff))/tick
Vegetation integrity - fu cont. (five 1 m ²) plots) Subplot score (% in each Average of the 5 subplots These attributes require c Vegetation class Plant community type (I Physiography and site fea Worphological ype	Inction	⁷ Litter	Total hig	gh threat v	weed cover						
Vegetation integrity - fu cont. (five 1 m ²) plots) Subplot score (% in each Average of the 5 subplots These attributes require c /egetation class Plant community type (I Physiography and site feat Vorphological ype	inction	⁷ Litter					<5 cm ⁵ Length o	f fallen logs	Tally spa	ce	Topal 7
Subplot score (% in each Average of the 5 subplots These attributes require c /egetation class Plant community type (I Physiography and site feat Morphological ype)		cover (%)		Bare grou	nd cover (%)	⁶ Hollow b Cryptoga	earing trees am cover (%)	Tip 2	k cover (%)	
Average of the 5 subplots These attributes require c /egetation class Plant community type (I Physiography and site fea Morphological type		10 2	10 30	95 10	0.50	0.1510	701	00	20 0	60	0 0
These attributes require c /egetation class Plant community type (I Physiography and site feat Morphological ype	6		33		. 2	5.12		4.2		0	
Plant community type (I Physiography and site fea Morphological type	onsiderat	ation of site	e observa	itions and	I may be com	oleted after fiel benchmark si	d work: ze 20)/ 30/ 50/ 80 E	DBH	Confidence	e H/ M/ L
Physiography and site fea Morphological type	РСТ)	5	55	C	icod.			EEC	Tick	Confidence	e H/ M/ L
type	itures that	at may he	lp in deter	mining P	CT and mana	gement zone (optional) or f	for BioNet sys	tematic flo	ora survey p	ourposes:
		elem	ent		P	attern		Microre	elief		
Lithology		Soil s textu	surface ire		S	Soil colour		Soil de	pth		
Slope		Aspe	ect		5	Site drainage		Distance water a	ce to near	est	
Disturbance	Severit	ty Age code	Briet	f site des	cription or oth	er notes					
Clearing (inc. logging)	0	-	Ro	odd s	ide vege	tertions					
Cultivation (inc. pasture)	0	-	P		hard	han	1		1		
Soil erosion	0			OF S	nape c	nanged	to ht	in vege	Vateo	area	
-irewood / CWD removal	D	-	PI	lot re	presentan	re of	road -	Ide in	el		
Stazing (Id. native/stock)	0	-	Contraction of the second					ou vi	P		
Storm damage	V	NR	Eme	ergents he	eights I	Jpper stratum	heights M	iddle stratum	heights	Lower	stratum heigh
Veediness	12	-	Top	T. all	Bottom 1	op Mid	Bottom To	op Mid	Bottom	Top	Mid Bottor
Other	2	R	Тор	Mid				m m		m m	m

400 m ²	floristics plot:	Survey name	Plot identifier R	Recorde	rs			
Date	22721	TAEP	13 Maly 1	Addy	Natio	n C	1abdoi	Ciree
GF code	Species name Full species name, or mandatory. Data from	r a unique means of identify n here will be used to assig	ying separate taxa within a sun In growth form richness and co	vey is ver.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher
sa	Genesa po	arviaora			N	10	20	
TG	2 Encalyptus	microcarpa	· · · · · · · · · · · · · · · · · · ·		N	10	3	
sa	3 Acadia	osvaldi			N	5	15	
56	4 Salesolae	na diachantu	na		N	10	Son	
66	5 Entero poss	an acigntaris			N	10	1000	
56	6 Sclorolaen	e micicata	Black only be	olu	N	0.1	20	
FG	Goodenia	pinnahfida	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1	N	0.1	100	
-	B 1400	ferossission			HTE	1	10	
FG	9 Dichonalro	n repens	and the second se		N	1	1000	
-	10 Contazo	Sumatrensis	tall fleat	2600	E	0 .1	10	
-	Sisumbric	M ino	Portetion	. che cd	E	D-1	30	
-	12 Lepidium	SP	Lan	notioned	N	0.1	10	
FG	13 Vitadin	of runeata	FUZZ WE	d	N	0.1	1.00	
66	14 Rubiclo Re	rma sp	1000		N	0.5	5000	
-	15 Spachus	Ole reaces	Sous thist	Le	E	0-1	10	
FG	Oxalis N	modeo -			N	8.2	30	
_	17 Bidence	aloss			E	0.)	10	
SG	18 Maine and	Sem'berrate			N	1	50	
FG	19 Wahlenste	arrive so			()	8-1	10	
_	20 Madiac	Ca sa			Ŧ	0.2	1000	
_	21 Ecacoast	is rugala	Africa love	Crr. S.S.	HIE	20	0001	
61	22 Chlaox	Ventricosa	windmill coss	,	N	1	200	
-	23 Medice on	arabit a	5105		F.	0.1	20	
-	24 Parnere	has mil			N	0.1	15	
Fh	25 Pratia	concolor	Paison pratie		N	0 - 1	10	
-1	28 NIA.		Pasture grass se		E	1,	100	
FG	27 Einadia y	nutens	0		N	4	25	
TG	28 Alectron	oleifolius	Western Rosewo	1000	N	0-1	1	
26	29 Carey 5	0			N	10	2000	
FG	30 Convilia	nus embercons	· · · · · · · · · · · · · · · · · · ·		N	0.1	10	
TG	a Brachur	hiton populnes			N	0.5	1	
SG	2 Muscenin	nmontanum			N	2	2	
FG	i Goodenie	SP			N	0-1	10	
SG	34 Salsola	Kali			N	0.1	15	
=6	Marcilos	dammondii	Nadas		N	0.1	15	

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...,100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

400 m ²	floristics plot:	Sur	vey name	Plot identifier	Recorde	ers			
Date	22,7,21	7	GEP	3 211 1 2	1 Ado	ty wat	son G	abbic	reen,
GF code	Species name Full species name, or mandatory. Data from	r a uniqu n here w	ue means of ident vill be used to ass	ifying separate taxa within a ign growth form richness ar	a survey is Id cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher
99	Austrostipo	2 10	dosa			N	0.2	100	
FG	2 Forb sp!					N	0.1	50	
FA	3 Erodim	Cri	nitum			N	1	30	
-	4 Echum	pla	ntainen	M		E	0-Z	25	
Fa	5 Brachus	com	e sp.			N	0.5	100	
FG	6 Euphorb	nia (drummon	di		N	0.1	(0)	
FG	Crassula	- C	oborata			N	0.1	(00	
FG	a Calandr	mia	erena	ea		N	0.1	10	
FG	o Sida (com	cata			N	0.1	10	
	10		0						
		1		1					
			Cover	Count					
	13 T	G	3	10.6					
	14 · S	G	7	28.2					
	15 G	G	5	22.7					
	16 F	G	17	4.9					
	17 E	G	١	0.1					
	18 .0	G	0	0					
	19					10			

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

Zone 4:

		Num	bers to a	on un	s page c	onei	are with th	enu	mbereda						-	77.	142	1		
Site sheet #	1 of	Date	3017	121	Survey name		THEF	0					Plot ident	ifier				12		
Recorders	A	Iddu	1 War	15.01	~		IBRA	N on	DR	P						Veg : ID	zone		4	
'Datum (j	DA	Coor	dinate		Projected Geographi	с	MGA zone	55	5 'X co	ordi	inate (614	687	-	¹ Y co	ordin	ate	630	919	57
Location desc	ription		descriptiv		es to locat	e site	without grid	d refe	erence			614	690	8				62	,41	5
¹ Plot dimensio	ons	For o	CONIC Delion (10	D sli	ructure (4): 20 m x): 20 m x 20) m	1	Orie m p	entation point	n of mi	dline fro	om	MeG	Sic °		Photo	#	
Datum: AGD66, NSW or 54 (Wes	WGS84, stem NSV	, GDA9 N). X/Y	4, GDA20 coordina	20 or ate: Lo	Other (sp ong/Lat (fo	ecify or Pro). MGA Zon bjected coord Vegeta	dinati tion	r Projecte e. system integrity	ed co n), Ei	oordinat asting/N	e. syste lorthing	em only) g (for ge): 56 ogra	(Coa phic o	stal Na coordii	SW), nate.	55 (Ce system	ntral 1)	
Con Composition (nposition 400 m² pl	and str lot)	Sum Sum values	n valu Str	ies may b ructure (4	e cor 00 m	npleted afte ² plot)	r ente	ening data Sum valu (%) (may sun	ies n	³ Tree (DBH)	on (10 stem si	00 m ² pl ze class	ot) If ap	data a opropi	are to riate lo e loca	be us ocal d al ben	sed as lata i.e.	more to ks, ste	em
Total count of	Trees (TG)		Su	m of		Trees (TG)	1	to >100%)	80 + 0	n		m Co	ust be junt	coun	nted			
native plant species	Shrubs	(SG)	-	² fc of r	hative plan	rer nt	Shrubs (SG	3)	50		50 - 7			Co	l ount (Narge	best p	practio	ce)/tick		250
(richness) in each growth form group (not individual	Grasses (GG)	s etc.	5	gro gro	wth form up		Grasses etc (GG)	c.	0.3		30 - 49	erme er		cn Cc If	n, cou punt (large	int best p tree	oractio bencl	ce)/tick hmark	size ≥	: 30
plants within each growth form)	Forbs (FG)	9				Forbs (FG)		6.0	>	20 – 29	ern		Cr Cr If	n, cou ount (oarge n. cou	best p tree int	bencl	ce)/tick hmark	size ≥	: 20
	Ferns (f	EG)	0				Ferns (EG)		0		10 - 19) cm		Co	ount (best p	ractio	ce)/tick		
	Other (0	DG)	12				Other (OG)		0		5 – 9	cm		Co	ount (best p	ractio	ce)/tick		
				Tot	al high thi	eat v	veed cover		15	%	⁴ Tree r <5 cm ⁵ Lengt	egener h of fal	ation en logs	Ta	cko ally sp	ace		Tot	al E	1
									10		⁶ Hollov	v beari	ng trees	Tio	ck i	0			>	-
Vegetation inte cont. (five 1 m ²)	grity - fu plots)	nction	⁷ Litter	cove	r (%)		Bare gro	und	cover (%)	Crypto	ogam o	over (%	5)	Ro	ck co	ver (%)		
Subplot score (9	% in each)	5	0	37	5	0 10	0	3:0 0	S	03	0 0	0	0	0	0	0	8	6	2
Average of the :	subplots				4			anlat	ad after fi	oldu	uorki									
These attributes	require ci	onsider	ation of si	te obs	servations	and	⁸ Large tree	ben	chmark	size	WOIK.	20/ 30	/ 50/ 80	DBH	4	Cor	nfiden	ice	H/ M	1/ L
	»	ICT)					g•		and the second				EEC	Т	ick	Cor	nfiden	ice	H/ M	V L
Plant communit	d site fea	tures th	nat may h	eln in i	determinii	na P(T and man	aden	nent zone	e (op	tional)	or for B	ioNet sy	sten	natic f	lora si	urvey	ригро	ses:	
Morphological type		10100 1	Land	dform nent		.9.		Land	lform ern				Micror	elief						
Lithology			Soil	surfac ire	xe			Soil	colour				Soil de	epth						
Slope			Asp	ect				Site	drainage				Distan water	ice to and	o nea type	rest				
Disturbance		Sever	ity Age code		Brief site	desc	ription or ot	her n	otes											
Clearing (inc. log	gging)				Sala	et.	1	1	0			1.1				-		0.0		
Cultivation (inc.)	pasture)			-	sere	re	10	6	e re	pri	eser	tat	e	3		sm	al	al		
Soil erosion			-	-	pato	h	st .	fCt	82											
Firewood / CWD	removal	-																		
Fire damage	(Gratoch)																			
Storm damage					Emergen	ts he	ights	Uppe	er stratum	hei	ghts	Middle	stratum	hei	ghts		Lowe	er stratu	im he	igh
and the second se				1			and the second se	-	THE OWNER WATER OF THE OWNER OWNER OF THE OWNER	-	and the second se			-	-	-	-	-	-	-

100 m ²	floristics plot:	Survey name	Plot id	lentifier	Recorde	rs			
Date	30/7/21	TGEP		12. dl	Add	y Wa	tsion		
3F code	Species name Full species name, o mandatory. Data fror	r a unique means of id n here will be used to a	entifying separ assign growth f	ate taxa within a form richness and	survey is cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Vouche
TG	Encaly	ohus popul	nea			N	20	1	
SG	2 Sclero	laena bive	hil			N	0.5	20	
_	3 lycium	ferossissimu	2			HTE	15	1800	
-	a Avena	fatua	and a second second second	wild a	ats	E	0.1	20	
-	5 Sisymb	nim so		00.00		E	0.1	25	
-	6 Echium	planterineur	m			N	0.1	20	
=4	Erodim	n criminion	1			N	0.2	20	
sa	8 Sclerola	ena semila	acata			N	5	1000	
-	9 Hipoch	aens radice	ata			N	0.1	50	
	10 USona	chus plera	Ceus	Sous 4	vistle	E	0.2	100	
FG	Callotis	langulacea	0	000		N	0.1	20	
94	12 Enteror	non alia	Jeris			N,	0.1	5	
-6	Brach	scone se.	-			N	1.0	5	
-6	Vittadia	ia cureate				N	0.1	10	
-6	15 Convulu	nhis entre	scens			N	0.1	5	
=G	16 Helich	usum bract	eatur	paer	daisy	N	1.0	50	
-6	Dichonde	a poloos		1-1		N	0.1	20	
66	Auchon	the sedere	2			N	0.1	10	
-a'	side (iomirata				N	0.1	5	
26	20 Ruhidos	perma sp.				N	0-1	5	
_	21 Lolium	So				Ŧ.	15	1000	
6	22 Sdural	aque mini	rate			N	0.1	5	
SCA	mainea	na micro al	nillo	5. Cotton	bish	N	0.1	5	
-	24 Simpler	um icit	Ju	Rocke	H	E	10	500	
	25 Splanur	n cinereum		P		F	0.1	5	
Ga	20 Emdia	nutans		and the second second		N	5	200	
Sh	27 Marcano	Sp.				N	0.1	5	
_	28 Leadin	SP				E	0.2	100+	
-6	29 Cotula	australis				N	n.Z	1000	
-	30 Malva	oarvillara		Mallow	weed	E	0.2	20	
	31	porteriore		anna an ann an Anna an Anna an Anna			0.7		
		count	cover						
	To To	1	20						
	50	a 5	5-9						

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, **HTW:** high threat weed. ² **Foliage cover:** 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ... 100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Note the top 3 dominant native species within each GF group.

					Survey							Plot	8	54/401		
Site sheet #	1 of	Date	191812	21	name	TO	LEP					identifi	er	115		Juiya
Recorders	1	today	Wa	tsu	on		IBRA region		DRP)				Veg zo ID	ne	4
¹ Datum	ADA	Coordi	nate	D Pr	ojected eographic	Mo zo	SA ne	55	¹ X coord	linate (6143	92	¹ Y c	oordinat	• 6	39157
Location descr	iption	de	Shield	neles	19.1900 R	e with	WERE	ofere	ence	6	143	80			6	39152
¹ Plot dimensio	ons	For AC	oper Ruc	a stru	cture (400m 20 m x 50 m	²): 20	m x 20 m		¹ Ori 0 m	entatior point	n of mid	line fron	M	76	Pho	to #
Datum: AGD66.	WGS84	, GDA94,	GDA202	0 or 0	Other (specify). MO	A Zone (for F	Projected o	oordinat	te. syste	m only): (for geor	56 (Coa	astal NSV coordinat	V), 55 (te. syste	Central em)
NSW or 54 (Wes	stern NS	VV). XIY C	oordinat	e: Loi	ng/Lat (for Pr	ojecte	/egetatio	n in	tegrity	astingri	toruning	this set	rapino	d while it	n the fic	ble
Composition (400 m ² p	and struct	ture sum	value Stru	es may be co cture (400 n	mplet n ² plo	ed after e t)	nteri	ing data int	Funct	ion (100	0 m ² plot)		in une ne	
Composition (Sum values					St (%) (n to	um values 6) hay sum	³ Tree (DBH)	stem siz	e class	If data approp genera must b	are to be riate loca te local b e counte	e used a al data i benchm d	as more i.e. to arks, stems
Total count of	Trees	(TG))	Sun	of	Tree	s (TG)		10	80 + ci	m		Coud			
native plant species (richness) in each growth	Shrubs	s (SG)	1	of na spec	ative plant cies by wth form	Shru	ibs (SG)		0.1	50 - 7	9 cm		Count If ^a larg cm, co	(best pra e tree be unt	ctice)/ti nchmai	ck. rk size ≥50
form group (not individual plants within	Grasse (GG)	es etc.	3	grou	p	Gras (GG	ses etc.)		0.7	30 - 4	9 cm		Count If ⁸ larg cm, co	(best pra e tree be unt	ctice)/ti nchmai	ck. rk size ≥ 30
each growth form)	Forbs	(FG)	7			Forb	s (FG)	Ž	5.6	20 – 29	9 cm		Count If ⁸ larg cm, co	(best pra- e tree be unt	ctice)/til nchmai	ck. rk size ≥ 20
	Fems	(EG)	0			Fern	s (EG)		0	10 - 19	9 cm		Count	(best pra		СК
	Other	(OG)	6			Othe	er (OG)		5	5 - 9	cm		Count	(best prac	ctice)/tid	ck
			0						U	⁴ Tree r <5 cm	regenera	ition	Tick .	_		
				Tota	I high threat	weed	cover		5 %	⁵ Lengt	th of falle	en logs	Tallyg	ace .		otal 8
					16					⁶ Hollo	w bearin	g trees	Tick	0		
Vegetation intro cont. (five 1 m ²)	egrity - f	unction	7 Litter	cover	(%) 80	Ba	are groun	id co	over (%)	Crypt	ogam c	over (%)	Ro	ock cove	r (%)	X
Subplot score (% in eac	h)	51	0 -	30 25 10	0	0	5	35 0	0	10 0	D	De 10	27	15 5	œ
Average of the	5 subplo	ts		16	0											
These attributes	require	considera	tion of sit	e obs	ervations and	d may	be comp	letec	d after field	work:	201 201	50/ 90 5	DU	Canfie	lanaa	11/ 14/1
Vegetation clas	55					⁸ Lar	ge tree b	enc	hmark size	Ð	20/ 30/	50/ 60 L		Conne	lence	
Plant communi	ity type	(PCT)	8.	2								EEC	Tick	Confic	lence	H/ M/ L
Physiography an	nd site fe	atures the	at may he	lp in d	letermining F	РСТ а	nd manag	jeme	ent zone (o	ptional)	or for Bi	oNet sys	tematic	flora surv	vey pur	poses:
type			elem	ent			La pa	andfo	n n			Microre	lief			
Lithology			Soil :	surfac	e		S	oil co	olour			Soil dep	oth			
Slope			Aspe	ect			Si	ite di	rainage			Distanc water a	e to nea nd type	arest		
Disturbances		Severi	ty Age		Brief site des	cripti	on or othe	r no	tes					Super Ser		
Clearing (inc. lo	ogging)				Colori	-	1-	1		and Billing		-	0			
Cultivation (inc.	pasture)			select	ed	40	5	e ref	reser	tot	ve	07	PC-	TS2	
Soil erosion				-	in m	od	erat	e	cond	ditio	on -	- tre	es	wi	ff	
Firewood / CWI	J remova				very		read									
Fire damage		1			0	C	red	y	unde	rstor	y					
Storm damage					Emergents h	eights		pper	stratum he	eights	Middle	stratum I	heights	Lo	wer stra	atum heights
Weediness				-	Top Mid	Bo	ttom To	qq	Mid B	ottom	Тор	Mid	Bottom	Тс	p Mid	Bottom
Other		and the	1000		* m 1	n	m		m	m	m	m		m	m	m

400 m ²	floristics plot:	Survey name	Plot identifier		Recorde	rs			
ate	19/8/21	TGEP	1013		Ac	Idy b	Vatso	n	
F ode	Species name Full species name, or mandatory. Data from	r a unique means of ion n here will be used to	dentifying separate taxa assign growth form rich	within a s ness and	urvey is cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher
G	Encaluptu	Microcer	pa			N	10	1	
-	Susinhal	in icio	P			E	5	1000	
	y					HITE	5	8	
_	1 alium 50	SIDCIOSITIMUM				E	25	1000+	
-	= Horden p	alaucian	Baile	1 9000	55	E	20	1000+	
-	Sanchus	alacan	San	thist	0	E	1	500	
-	Erecorder	ciliana cili	Shirke	TASE		E	0-1	5	
-	Sinchart	entrensis	dos	na	stard	E	10	+ 6001	
í.	Austrashia	Si ci gsirriori		100	SIDIO	N	0.5	25	
14	10 Lacture	corriola	Pairke	n let	tace	E	1	100	
<i>a</i> ₆	Ovalis C	Je des	1.1000			N	0.1	50	
-	12 Sali a	alant - mein				E	05	50	
_	Avena	5 transforcer	, L	hild a	ats	E	01	20	
FG	Frend 1	Constant				N	5	200	
	Madian					E	0.1	(00)	
-	Head 2	go of	+-			F	0.2	50	
- 1	The fight schart	mis radica				N	0.1	5	
10	The Children I	micour acient	e 0's			N	0.1	5	
14	locidi	jon so	2112			E	0.1	5	
56	Deplace	da poss				N	0.1	20	
PG.	20 Vittadia	a arteata				N	0.1	1	
-	Crace l	a colocate	sto	NO (50	D	N	0.1	20	
-u	Do Thill	a cousine.			1	F	0 . 1	5	
36	Acacia	sp de coldi				N	0.1	2	
C/a	Courtiers	Inc analossa	1			N	0,1	1	
EI	Manua	and loosen.	: 401			K	0.1	5	
Th	20 Trunipeana	Eorchyraenic	51005			E	0.5	100	
	an Malue	partition				E	2	10	
_	26 1100 00	provinces	1						
		1 10	int l	aver					
		TG U		10					
		Sal	7	- 1					
		66 3	3	1.7					
		EC	t l	5.6					
		Fal		0					
		00	2	0					

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Follage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63×63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

Zone 5:

Zone <u>5</u> 5 Easting <u>6 1 5 2 96</u> Likely Vege	Datum GDA 639080	OSA	Survey	Name	Dist 1 day 410	and the second second	D	ordore	
Zone <u>5</u> 5 <u>615296</u> Likely Vege	Datum GDA 639080	- DA	np (wanne	1 /L	0	Rec	01-1	a.a.a.
Easting 615296 Likely Vege	639080		tK CO	mdog	14	19 lave	Hulman	Phy L	amero
615296 Likely Vege	639080	IB	IRA region	n	Photo	#		Zone ID	5
Likely Vege		U I	Plot Dime	ensions	13 × 2 7 × 50	Crient fro	tation of midline m the 0 m point.	269	 Magne
	tation Class								Confidence H M
Plant Comn	nunity Type	1	CR	DITS	2		EI	EC: Y	Confidenc
Record easting	and northing from	the plot m	narker. If appli	icable, orient picke	at so that perforated rib	points along di	rection of midline.	-1-	
Dimensions (S	hape) of 0.04 ha b	ase plot ins	side 0.1 ha FA	A plot should be id	entified, magnetic bear	ing taken along	midline.	-	
BAM A (400 r	ttribute n² plot)	Sum v	values	dbh	Euc*	Non Euc	Hollows [†]	Record I (Euc*) a	iving eucaly nd living nat
	Trees	2		80 + cm	LEUCT	N-euc	The second	non-euc stems se	alypt (Non Eleparately
	Shrubs	7	2			The second	2	Data nee	eded is prese
Count of	Grasses etc.	2		50 – 79 cm	1	-		tree' for	that veg clas
Richness -	Forbs	7	-	30 – 49 cm	_	2	Hollows 20cm+	* include Eucalypt	s all species
	Ferns	0				2		Angopho and Syn	ora, Lophoste carpia
	Other	0		20 – 29 cm	-	8	1	[†] For holl	ows count on
	Trees	18		10 – 19 cm	ti uk	tiek	-	containing	of a stem g hollows, not
Sum of	Shrubs	11.1	6	5 – 9 cm	tick	lick		stem. On per tree v	ly count as 1 s
Cover - of native	Grasses atc	0.	3	U U UII		V	This size class	stemmed bearing s	. The hollow- tem may be a
vascular -	-140000 010.		the set of	and the second	the second s	tick	records tree	stem.	
plants by	Forbs	0	71	< 5 CM	LIGH	and the second second	regeneration	A TRANS	
plants by growth - form group	Forbs Ferns	0	71	< 5 cm Length of logs (≥10 cm diameter	s (m) r, >50 cm	Tally			total
plants by growth - form group - - High Threat V This table may be available tools it	Forbs Ferns Other Veed cover % completed after enter s not required while in	0 · -	7/ , , ,	< 5 cm Length of logs (≥10 cm diameter in length) Each size class is DBH values and stem is included i Hollows at least 2	s (m) r, >50 cm s noted as present by t counts may be needed in the count/estimate if 20cm across are record	Taily 7 he living tree s for a size class it is required by led for the purp	tems only. Depend For a multi-stem the large tree cate oses of habitat of so	ling on the Ve med tree, on gory for that oome threaten	total P egetation Class ly the largest vegetation cla ed species.
plants by growth form group High Threat V This table may be available tools it BAM Attribut Subplot	Forbs Ferns Other Veed cover % competed after enter is not required while in a (1 x 1 m plots) score (% in eac	0 · -	71 11 Litter cove 65 20	Length of logs (>10 cm diameter in length) Each size class is DBH values and stem is included i Hollows at least 2 er (%) Ba 2 b 3 0 2 5	s noted as present by t counts may be needed in the count/estimate if 20cm across are record are ground cover (* 5 25 50 60 7	Taily 7 he living tree s for a size class if a size class it is required by led for the purp (%) Crypto (%) Crypto	tems only. Depend tems only. Depend the large tree cate oses of habitat of so ogam cover (%)	ing on the Ve med tree, on gory for that to ome threaten	total 2 egetation Class by the largest vegetation cla ed species. k cover (%)
plants by growth form group High Threat V This table may be available tools it BAM Attribut Subplot	Forbs Ferns Other Veed cover % completed after enters is not required while in e (1 x 1 m plots) score (% in ead ge of the 5 subpl second as the away	0 · -	+1 1	< 5 cm Length of logs (>10 cm diameter in length) Each size class is DBH values and stem is included i Hollows at least 2 er (%) Ba 20 30 25 -	s (m) r, >50 cm s noted as present by t counts may be needed in the count/estimate if 20cm across are record are ground cover (' 2 2 5 60 60 = courted from five 1 m y	Taily 7 he living tree s for a size class it is required by led for the purp (%) Crypto (%) Crypto 1 m plots locate	tems only. Depend , For a multi-stem the large tree cate oses of habitat of so ogam cover (%)	ing on the Ve med tree, on gory for that ome threaten	total P agetation Cla ly the largest vegetation cla ed species. k cover (% o m the old mini-
plants by growth form group High Threat V This table may be available tools it BAM Attribute Subplot Avera Litter cover is a the locations 5, contribute to as	Forbs Forbs Ferns Other Veed cover % completed after enter is not required while in a (1 x 1 m plots) score (% in each rege of the 5 subpli- ssessed as the aver 15.25, 35, and 45 assessors may all sessment scores, 1	0 · -	Litter cover 5 65 20 361- centage groun- he midline. Lit- he cover of ro- potential value	Length of logs (>10 cm diameter in length) Each size class is DBH values and stem is included i Hollows at least 2 er (%) Ba 2 b 3 0 2 5 d cover of litter rec titter cover includes ck, bare ground a e for future vegetat	s (m) r, >50 cm s noted as present by t counts may be needed in the count/estimate if 20cm across are record are ground cover (* 2 2 2 20 20 20 20 corded from five 1 m x is leaves, seeds, twigs, ind cryptogam soil cruss tion integrity assessme	he living tree s for a size class led for the purp (6) Crypte (7)	tems only. Depend to a multi-stem the large tree cate oses of habitat of su ogam cover (%) don alternate side branches (less than these data is option d benchmarks, and	ing on the V. med tree, on gory for that: mee threaten Rocc s and 5 m fro 10 cm in dia al - the data for enhancin	total getation Claragest vegetation claragest vegetation claragest ed species. k cover (%) m the plot mi meter). Within do not curre g PCT descrit
plants by growth form group 	Forbs Ferns Other Veed cover % Competition after entered while in an required while in a (1 x 1 m plots) score (% in eac upe of the 5 subpl seesed as the av 15, 25, 35, and 45 assessors may als seesment scores, in	0 · -	Litter cove Litter cove b 65 20 36 7. tentage grounn he midline. Lit he cover of ro potential value aphy + site fear indform	C 5 Cm Length of logs (>10 cm diameter in length) Each size class is DBH values and stem is included i Hollows at least 2 er (%) Ba 2 0 3 0 2 5 . Ind cover of litter rectifier cover includes cock, bare ground a e for future vegetat atures that may he	s (m) r, >50 cm s noted as present by t counts may be needed in the count/estimate if 20cm across are record are ground cover (* 2 S & & & & = corded from five 1 m x i leaves, seeds, twigs, ind cryptogam soil crustion integrity assessme alp in determining PCT Landform	he living trees of for a size class (for a size class)))))))))))))))))))))))))))))))))))	regeneration tems only. Depend to For a multi-stem the large tree cate oses of habitat of so ogam cover (%) do natternate side oranches (ces than these data is optio d benchmarks, and ent Zone (optional) Microrelief	ing on the V med tree, or	total agetation Class vegetation class vegetation class ed species. k cover (%) m the plot minimeter). Within a do not currer g PCT descrip
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GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exolic, HTE: high threat exotic. **Cover:** 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); **Note:** 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m **Abundance:** 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. Form version designed 15 September 2017 Printed 1 June 2020

Pale porets wingless bluebush

		BAN	/ Plot – F	Field Surv	ey Fo	rm		helistoren.	Site S	She	et no:	Tof	
			Surve	ey Name	P	lot Identifie	r		F	Reco	rders		
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BAM (400	Attribute	S	Sum values	BAM Attri	bute (20	x 50 m plot) Euc*	Ste	on Euc	es and Hollo Hollows [†]	ows	Record	living euca	lypt* ative
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	Other		б	20 – 29 cm	n	2		1	3		[†] For hol	lows count	only the
	Trees		23	10 – 19 cm	n	tiek		tick	5		containir count of	ng hollows, n hollows in th	ot the nat
Sum of	Shrubs	1	26,72	5 – 9 cm		liet		tNK			stem. Or per tree	nly count as where tree is	1 stem s multi-
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	Other		0	Each size cla	ass is note	d as present by	the liv	/ing tree s	tems only. De	pendir	ig on the V	egetation CI	ass,
High Threat	Weed cove	r %	0.1	DBH values stem is inclu	and count ided in the	s may be neede count/estimate	ed for a if it is r	equired by	the large tree	categ	ory for that	vegetation o	class.
This table may t available tools. I	e completed after It is not required t	entering while in the	data into field.	Hollows at le	east 20cm	across are reco	rded fo	or the purpo	oses of habitat	of sor	ne threate	ned species.	
BAM Attribu	te (1 x 1 m p	olots)	Litter c	over (%)	Bare g	round cover	(%)	Crypto	gam cover	(%)	Roo	ck cover (%	%)
Subplo	ot score (% i	n each)	105 70 1	0 90 95	03	0 0 10	0	00	00	0	00	00	0
Ave	rage of the 5	subplots		cound cover of little	er recorde	d from five 1 m	x 1 m r	olots locate	d on alternate	sides	and 5 m fr	om the plot r	nidline
the locations to the location of the locat	5, 15, 25, 35, a ts assessors m	nd 45 m a nay also re	along the midline	e. Litter cover incl of rock, bare grou	ludes leave	es, seeds, twigs	, brancusts. Co	chlets and to ollection of	these data is o	than option	10 cm in di al - the dat	ameter). Wit	hin thes rently
contribute to a	assessment sc	ores, they Ph	hold potential v	alue for future ve e features that m	egetation in ay help in	tegrity assessm determining PC	T and	mbutes and Manageme	ent Zone (optio	and fo	or enhanci	ig PCT desc	anpuon
Morphologic	al		Landform			Landform Pattern			Micro	relief			
Lithology			Soil Surface Texture			Soil Colour			Soil Depth	r			
Slope			Aspect			Site Drainage			Dista water	nce to and t	nearest /pe		-
	Seve	erity A	ge	Free Text	Section 1	or brief site de	scripti	ion	Le	af Litt	er and en	d point GPS	
Clearing (inc	nce co	ue co							ID	E	asting	Northing	9
Cultivation (in pasture)	nc.								End				
Soil erosion													
Firewood / C	WD								The second				
Contractida	ntify	-	In mar						and the second				
Grazing (ide									and the second		- Cont		
Grazing (ider native/stock)		ALL DATE OF	and the second s						and the second	-	- install		
Grazing (iden native/stock) Fire damage Storm damage	Rection in the		CO. B. C. M. C. M.			The second second		and the state of the					
Grazing (ider native/stock) Fire damage Storm damage everity: 0=no e	vidence, 1=lig	ht, 2=moo	derate, 3=severe	Age: R=rece	ent (<3yrs)	NR=not recent	(3-10y	rs), O=old	(>10yrs)				

40	0 m ² pl	ot: She	eet of	5	Survey Name	Plot Identifier		30757	Recorde	ers			
	Date	14_1	09,19	TGC	-Highway	15	P. Cai	NORON	1	A.W	6tsoc	1	
ID	BAM Code	GF Code	Full species na survey. Data fr	ame mand om here v	latory, or a unique mea vill be used to assign g	ans of identifying separate ta rowth form counts and cove	xa within a rs.	N, E or HTE	Cover	Abund	stratu m	vouc her	Heig ht (m)
1	Th	t	Encolyo	this r	microcarpa	Inland	Crey Box	N	15	1	-		
2	TG	t	Alactry	on o	leifolius.	ROSENIZZO	×	N	18	34			
3	SG	6	blein	Darvi	folia	Wilga		N	20	9	13 5000		
4	CC	0	Apophy	lum	anomalun	1 Wallior 6	nsh	N	10.01	11			
5	50	9	Engogo	aar	loris	Curly WIR	idmill ar	N	25	1000			
6	Sa	1	Musson	Lino V	nontenum		0	N	0.1	2			
7	50	5	Adacia	OX h	abli			N	1 MAGE	5			
8	SA	5	Acacia	bur	nouli	Yarran	14	N	0.5	43'5	1.00		
q	SC	5	Schoolar	200	disable	(some by	111	N	5	100			
10	50 CC	G	Coloric II	Anglas	a reap	lella Buce dais	1	N	0.01	15			
11	FU	7	Salanum	a peri	oiala	Quera	~	N	0 01	1'			
10	Th.	2	Caro	1 204	ridde	aucha		N	0.5	50		politica	
12	hy	£	Carex	SP	21 - Clech	u walks	28-10-13	N	0.01	10			
10	ta	1	Simple	ena	p + fush	Black Palupo	1	N	6.1	20	1		1
14	50	5	Linili			nace home	y	E	0.1	Fo	F		
15	121		hpidu	im s	P. C	Coins Aprilla	1/10	LITE	0.1	1			
16	-		Lycium	40.01	SSIMMM +	AVICON BOX MI		N	10.01	10		1.1.1	
1/	lih	G	Hu sosipe	A SIGO	abin	Kouth spear of	<u>asi</u>	N	1	To		10.100	
18	FU	-t	Vittadin.	acu	icial	ruzzwelo		1	1015	20			1
19	44	9	Chiaris	Vest	narata			N	1	0	1	NT SOAT	
20	64	5	lania m	deci	ompospion	1.1. 00 1 011	1 /a	11	0.01	E		1 - 15	
21	24	5	Amplex	pær	aocampanu	iara realy salt	bush	N	0.01	10			
22	FA	+	Oxalis	Chr	oodes			IN	0.01	10			-
23		-						-					
24				and the second	1				-				
25		-	Count	-	100	<u>v</u>		-	10.0	1000			
26	T	19	2		23			-	112 200	1 2 2 4 4	122 - 11 - 1	-	
27	4	G	8		26.12			-			-		-
28	6	6	5		27.0)		-		1	-		-
29	F	FG	5		1.13	3	a Winner				-	-	-
30	F	+ G	0		0			-	-		-		-
31	C	DG	0		0				-	-	-		-
32							and the second s	-	-	-	-	-	-
33					,			-	-			-	-
34								1	-			-	-
35			The pale sales	and it		and the second sec	at set a low						-
36			-										-
37													-
38													
30													
29	-	-											

GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. Form version designed 15 September 2017 Printed 24 August 2019

				and pa	ge cone					14 0				2	Jul	421			
Site sheet #	1 of	Date 🤇	221712	1 Sur	vey /	IGE	P						Plot identit	fier	216	6)	uly		22
Recorders	Ad	dy W	atson	34	abbi	2	IBRA region								Ve	eg zon	0	5	
1Datum		Coordin system	nate	Project Geog	cted raphic	MG/ zone	55	5	1X coo	ordin	iate 6	121	098	1	r coor	dinate	639	890	11:
Location desc	ription		escriptive	notes to	locate sit	e witho	ut grid	refere	ence E	nc	16	12	146)			63	890	10
¹ Plot dimensi	ons	For con For fun	nposition & ction (100	& structu 0m²): 20	re (400m m x 50 n	²): 20 m	n x 20 n	n	1 (0	Orier m pe	ntation oint	of mid	line fro	m N	28	0	Photo	#	
Datum: AGD66 NSW or 54 (We	, WGS84 stern NS\	, GDA94, N). X/Y c	GDA2020	0 or Othe a: Long/l	er (specify .at (for Pr	/). MGA ojected	coordi	(for F nate.	Projecte system	d coo), Ea	ordinate sting/N	e. syste orthing	m only): (for geo	56 (grap	Coasta hic coo	I NSW), 55 (Co e. syster	entral n)	
Cor	nposition	and struc	cture sum	values n	hay be co	mplete	d after	enteri	ng data	into	availab	le tools	$rac{1}{2}$ It is no	ot req	uired v	vhile in	the field	1	
Composition	(400 m² p	10t)	Sum values	Structi	ire (400 f	n- piot)		Su (% (n	um valu 6) 1ay sum	es	³ Tree s (DBH)	item siz	e class	lf d app ger	ata are propriat nerate l	to be i e local ocal be	used as data i.e enchma	more to tks, ster	ns
Total count of	Trees (TG)	2	Sum of		Trees	(TG)	to	>100%)	80 + cm			Col	st be c unt	ounted			
native plant species (richness) in	Shrubs	(SG)	4	² foliag of nativ species	e cover e plant by	Shrub	s (SG)		6.5	-	50 - 79	cm		Col	unt (be arge tr	st prac	tice)/ticl chmark	size ≥5	
each growth form group (not individual	Grasse (GG)	es etc.	9	growth group	form	Grass (GG)	es etc.	L	40.5	-	30 – 49	cm		Con Con If ⁸	unt (be large tr	st prac ree ben	tice)/tick chmark	(. size ≥ (
plants within each growth form)	Forbs ((FG)	13			Forbs	(FG)		1.9		20 – 29) cm		Col If ⁸	unt (be large tr	st prac ee ben	tice)/tick chmark	(. size ≥ 2	
	Ferns ((EG)	1			Ferns	(EG)		0.1		10 – 19) cm		Opi	unt (be	st prac	tice)/ticl		
	Other (OG)	0			Other	(OG)		0		5-90	cm		Co	unt (be	st prac	tice)/ticl		
				Total hi	gh threat	weed o	over		0	%	S cm 5 Length	n of fall	en logs	Inc	r Henac	e	То	tab	
											⁶ Hollov	v bearii	ng trees	Th	k				
Cont. (five 1 m	egrity - fi) plots)	unction	⁷ Litter o	cover (%)	Bar	e grou	nd co	over (%)	Crypto	ogam c	over (%	5)	Rock	cover	(%)		
Subplot score Average of the	(% in each 5 subplot	h) ts	5 3	22.0	0.51	030	86	0.5	90	e	0 (9 0	0	5	0	00	0	0	
These attribute	s require o	considera	tion of site	e observ	ations an	d may t	pe com	plete	d after fi	ield v	vork:		150100	DDU		Caned		LIZAA	-
Vegetation cla	ISS					⁸ Larg	e tree	benc	hmark	size		20/ 30	1 50/ 80	рвн		Confide	ence		-
Plant commun	nity type (PCT)	·	PC	782								EEC	Ti	ck	Contia	ence	H/ M/	L
Physiography a Morphological type	ind site fe	atures the	at may hel Landi eleme	lp in dete form ent	ermining I	PCT and	d mana	agemo _andf patter	ent zone orm n	e (op	tional) (or for B	Microi	relief	atic flo	ra surv	ey purp	oses:	
Lithology			Soil s	surface			3	Soil c	olour				Soil de	epth					
Slope			Aspe	ct			ę	Site d	rainage				Distar water	nce to and t	neare ype	st			
Disturbance		Severi	ty Age code	Bri	ef site de	scriptio	n or oth	ner no	otes										
Clearing (inc. I	ogging)				Selas	hal	,	1	20	D.				51	0.	40-	2		
Cultivation (inc	. pasture)		-		Mal	real	40	2 6	R	1 cf	rese	NW	C	of	PC	18.	e In	2	
Firewood / CW	D remova	1			TVNS	> 1	nee	60	note	х.									
Grazing (id. na	tive/stock)																	
Fire damage											-	LAC CO	-		- la é	1.	-		
Storm damage	1		-	En	nergents I	Ret	om	Upper	Indid	n hei	ights	Top	Mid	Re	ants	Lo	wer stra	I Rott	ght
Weediness				10	m	m	m	m	IVIIC	100	m	qui	IVIIC	100	nom	m	p wild	m	UT
Other		-			au .		m	11		-	111	1 20 40			40				

400 m ²	floristics plot:	Survey name	Plot identifier F	Recorders				
Date	2217121	TGEP	16 Jugai	Addy	Wats	son a	abbi	Gree
GF code	Species name Full species name, or mandatory. Data from	a unique means of identify here will be used to assigr	ing separate taxa within a sur growth form richness and co	vey is over.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Vouche
TA	Callibris a	lancophy 1/a			N	5	1	
TG	Encalyph	5 misserilla			N	10		
Sa	3 acijent p	arviflora			N	2	1	
Sa	4 Scholaen	a municata	Black Roly	poly	11	1	150	
TG	5 Caparis N	vitchelli	wild brang	r o	N	0.1	1	
-	6 Lepidium	sp.			F	0.1	50	
-	5 Sisymbrin	m irio	Rocket mus	tard.	E	0.1	50	
FG	8 Einadia	Sp.	wide leaf		N	0,2	5	
_	9 Medicaso	arnlaica			E	0.1	100	
ag	10 Austrostipa	verticilata	Slenderba	mboo	N	0.1	10	
= 6	In Sida io	mata			N	0.2	50	
fh	12 Calotis 10	appulacea	Yellow burrd	aisy	N	0-1	50	
FG	13 Diandra r	ypens		- de-d	N	0.1	6001	
ñh	14 Rypodosper	ma sp			N	12	100	
Ga	15 Covey 50				N	3	1000	
24	18 Enteropo	pon acicular	is		N	5	1000	
-	17 Lowin	SP .			E	101-1	50	
FA	18 Solanum	esynale	Quer	a "	J	0.1	5	
Fa	19 Crassule	e colorata	Storecr	90	N	0.1	5000	
-	20 Hypochari	s radicata		`	N	D·l	5	
FL	21 Gooden	a pinnatifide	r fieshyl	eaf !	N	0.1	50	
26	22 Convilu	ins embescens	U		N	0.1	10	
-	23 Arctotheel	en ralendula	· Cope we	red	E	0.2	20	
SL	24 Mairean	a semibarcot	5.		N	0.5	25	
ah	25 Austrostrp	a nodosa			N	30	5000	
14	26 Arstuda	behiriana.			N	0.1	0	
FG	27 Erodium	Crinikin			N	0.5	50	
-	28 Plantag	o curryha	miana	C	E	0.1	20	
FG	29 Mairana	enchy laenoir	des wingless	houre	N	0-1	20	
-6	30 asodenia	pussiliflora	small f	Lower	N	0.1	20	
-	31 Trifolia	51	Clover		-	6 .)	0	
fh	32 Oxalis Sp	2.			N	0.1	10	
-	33 Medica jo	50	witha	t	-	0.1	10	
-4	34 luner	brownij			N	0.1	10	
Sa	Sleptar	a Municate			N	2	500	

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

400 m ²	floristics plot:	Survey name	Plot identifier	Recorde	rs			
Date	22 7 21	TGEP	21642	Addy	Wats	m G	abbi (ween
GF code	Species name Full species name, or mandatory. Data from	a unique means of iden here will be used to ass	tifying separate taxa within a sign growth form richness ar	a survey is id cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher
CIG	Anistida ro	mosa			N	0-1	10	
66	Lomandra	2 aloucophi	-1110		N	0.1	10	
F.G	3 Chaileath	es Siebori	Juice		N	0.1	25	
GG	a Bulbin	bulbosa			N	0.1	10	
01-1	5							
			1					
		Count	Cover	· .				
	13 TG	3	15	1				
	14 SG	4	6 5	-				
	15 GG	9	40.	5				
	16 FG	13	1.9					
	17 EG	1	0.	(
	18 04	0	0)				
		and the second second						
		1						
			1					

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63×63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

Survey Name Plot Identifier Recorders Date 20/05/20 TCC 1/4 yu Addy Wadton (Addy Orden) Stree CDAin IBRA region Photo # Zone ID 6 Construction CDAIN IBRA region Photo # Zone ID 6 Construction C		BA	AM Plot – F	ield Surve	y Form	A STATE	Site She	et no:	1.401
Date 2018 2018 TGET 14 yu Addy Watton (Jakka (Lyten Sin Count BRA region Proto # Zone ID 6 1 Sin Count First Sin Count of Sin Sin of Sin Count of Sin Sin Sin <sin< th=""> Sin</sin<>	- Joseful	SC1.1	Surve	ey Name	Plot Identifier		Reco	orders	0
Structure Data region Prioto # Zone ID G 6 3379.3 6,3700.35 PIot Dimensions 20.20 in 20.50 Orientation of midble SO Magnetic Likely Vegetation Class Piot Dimensions 20.20 in 20.50 Orientation of midble SO Magnetic Plant Community Type PCT 8.2 - Grazed Likely Vegetation Class Piot Dimensions 20.20 in 20.50 Piot Dimen	Date	2010812	2 TGET		17	44 Addi	Watson (iabbai	Green
6 Early 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 <th2< th=""> <th2< th=""> <th2< th=""> 2 2</th2<></th2<></th2<>	Zone	CaD A	IBRA regi	on	Photo	#		Zone ID	6
Likely Vegetation Class Curringenergy Plant Community Type ICT 8.2 - Grazed Likely Vegetation Class Internet Vegetation Class Plant Community Type ICT 8.2 - Grazed Likely Vegetation Class Internet Vegetation Class Plant Community Type ICT 8.2 - Grazed Likely Vegetation Class Internet Vegetation Class Plant Community Type ICT 8.2 - Grazed Likely Vegetation Class Internet Vegetation Class Decode deating and noting dot make the distribution of the should be been distributed (20 x 50 mpin) Stem Distribute (20 x 50 mpin) The bit Vegetation Class and the Vegetation Cla	613923	639056	5 Plot Di	20 x 20 in 20 x 50)	20 x 20 in 20 x 50	Orien	tation of midline m the 0 m point.	80	Magnetic
Plant Community Type PCT 8.2 - GW22d Windows EEC: Order Note Preced easing and norming from the deg more: 1 associate Order Josephane An other Section An other Section Samo of (based) of CO Me associate Samo of Section Samo of Section An other Section Preced easing and normination Preced easing and holdows Preced easing and holdow	Likely Veget	ation Class						1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	H M L
	Plant Comm	unity Type	PCT 8	2 - Graze	ed (Kurr	ayong	EE	C:	H M L
BAM Attribute (400 m ² plot) Sum values Trees I Record living acculy the bb Trees 1 0 0 attribute (300 m ² plot) Be models are set of the set of the set of the set of the set o	Record easting	and northing from I	he plot marker. If a	oplicable, orient pick	ket so that perforated rit identified, magnetic bea	points along di ring taken along	rection of midline.		
(400 m ² plot) Outcome Trees 1 Trees 1 0 + cm 0 1 0 <td>BAM A</td> <td>ttribute</td> <td>Sum values</td> <td>BAM Attribu</td> <td>te (20 x 50 m plot)</td> <td>Stem Class</td> <td>ses and Hollows</td> <td>Record</td> <td>living eucalypt*</td>	BAM A	ttribute	Sum values	BAM Attribu	te (20 x 50 m plot)	Stem Class	ses and Hollows	Record	living eucalypt*
Interest Image: Count of Native Grasses etc. Simular Count of Native Grasses etc. Simular Count of Native Grasses etc. Simular Count of Simular Count of Native Grasses etc. Simular Count of Simular Count of Native Grasses etc. Simular Count of Simular Count o	(400 m	1 ² plot)	J	dbh	Euc*	Non Euc	Hollowst	(Euc*) a non-euc	nd living native alypt (Non Euc)
Court of Natives Grasses etc. 5 Forbs 17 Image: Second Seco	-	Shrubs	3	80 + cm			0	Data ne	eded is presence
Native Richness Forbs 17 Richness Forbs 17 Other 0 Other 0 Trees 2.5 Sum of Cover Shrubs 0.7 Of native grasses etc. 0.5 Of native grasses etc. 0.5 Of native grasses etc. 0.5 Ofter 0 Other 0 Of native grasses etc. 0.5 Sum of Cover Shrubs 0.7 Of native grasses etc. 0.5 Ofter 0 Bint by growth Fern Solows 0 The point by growth Fern Solows 0 Other 0 0 Bight by growth Fern Solows 0 The point by growth Fern Solows 0 Bard Attribute (1 th counters, 50 cm) Colver for Solows 0 Each attribute (1 th counters, 50 cm) Colver for Solows 0 Bard Attribute (1 th counters, 50 cm) Colver for Solows 0 0 Subplot score (% in eachy be colver for 10 5 70	Count of	Grasses etc.	5	50 – 79 cm		1	No. Commence	only (tic tree' for	 k) unless a 'large that veg class.
Ferns Image: Control of the control	Native	Forbs	17	30 – 49 cm	and the second	12	Hollows 20cm+	* include Eucalyp	es all species of tus, Corymbia,
Other 0 Trees 2.5 Sum of Cover Grasses etc. 0.7 Of native growth form group Grasses etc. 0.5 Jents by growth form group Forbal sets etc. 10–19 cm High Threat Weed cover % 0 Dither 0 High Threat Weed cover % 0 Bach size class is noted as present by the ling tree stems only. Depending on the Vegataton Class, is ensisted states and counts may ensiste class is noted as present by the ling tree stems only. Depending on the Vegataton Class, is ensisted states and counts may ensiste class is noted as present by the ling tree stems only. Depending on the Vegataton Class, is ensisted states and counts may ensiste class is noted as present by the ling tree stems only. Depending on the Vegataton Class, is ensiste class is noted as present by the ling tree stems only. Depending on the Vegataton Class, ensiste class is noted as present by the ling tree stems only. Depending on the Vegataton Class, is included in the counted states for a stem. Difference 0 Difference 0 August and counts may ensiste class is noted as present by the ling tree stems only. Depending on the Vegataton Class, is insidued on the counted states. For a multi-stemmed tree count of the ingenetic as a state state and point on the outer state and point of the ingenetic as a state state state and point of the ingenetic as a s	Ī	Ferns	1			-		Angoph and Syn	ora, Lophostemo carpia
Sum of Cover of native sourced of native sourced for my source growth form group Trees 2.5 Shrubs 10 - 19 cm tick tick containing holow, not the stem. Only count as 1 at stem. Store and the holow. High Threat Weed cover % O High Threat Weed cover % O High Threat Weed cover % O High Threat Weed cover % D Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) Bank attribute (1 x 1 m plots) Littler cover (%) <t< td=""><td></td><td>Other</td><td>0</td><td>20 – 29 cm</td><td></td><td>S</td><td></td><td>[†]For hol presence</td><td>lows count only the of a stem</td></t<>		Other	0	20 – 29 cm		S		[†] For hol presence	lows count only the of a stem
Sum of Cover of native yearcular protection Shrubs 0 - 7 Grasses etc. 0 for group plants by growth form group Forbs 2 - 2 Forbs 1 S - 9 cm tick tick This size class regeneration Setting (1) fourthas and plants by growth High Threat Weed cover % 0 1 Length of logs (m) in length) 1 Length of logs (m) in length) 1 Log (m) in length) Log (m) in length) Log (m) in length) <td></td> <td>Trees</td> <td>25</td> <td>10 – 19 cm</td> <td>tick</td> <td>tick</td> <td>the stand</td> <td>containin count of</td> <td>ng hollows, not the hollows in that ally count as 1 stem</td>		Trees	25	10 – 19 cm	tick	tick	the stand	containin count of	ng hollows, not the hollows in that ally count as 1 stem
of native vascular vascular growth Grasses etc. 0 · 5 Porbs 1 Porbs 2 · 2 growth Porbs 2 · 2 Porbs 1	Sum of Sum of	Shrubs	0.7	5 – 9 cm	tick	tick	A STR	per tree stemmed	where tree is multi
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Average of the 5 subplots 9 Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m pots located on alternate sides and 5 m from the plot midin the locations 5 1, 52, 53, 53, and 55 m along the midine Litter cover includes leaves, seeds, twigs, conchiets and branches (less than 10 cm in diameter). Within 1 m x 1 m plots assessers may also record the cover of rock, bare ground and cryptogan soil crusts. Collection of these data is optional - the data do not currently controlute to assessment scores, they hold potential value for future vegetation integrity assessment attributes and benchmarks, and for enhancing PCT description Physiography + site features that may help in determining PCT and Management Zone (optional). Morphological Landform Microrelief Type Element Pattern Point Soil Soil Soil Surface Soil Soil Lithology Texture Soil Blope Aspect Site Drainage Plot Disturbance Severity Age code Clearing (inc. Q Texture Gloared O and Planteck Mather's Plot Disturbance Severity Age code Code Clearing (inc. Q Texture Colon of the site description Easting Plot Disturbance Severity Age code Code Age Clearing (inc. Q Texture Colon	plants by I growth form group I High Threat W This tacle may be even able tools this BAM Attribute	Forbs Ferns Other feed cover % completes effer entent in or required while in (1 x 1 m plots)	2 - 2 0 · 1 0 ng/data into the field.	Length of log (>10 cm damet in length) Each size class DBH values an stem is includer Hollows at leas	gs (m) ter, >50 cm s is noted as present by d counts may be needed d in the count/estimate t 20cm across are recoi Bare ground cover	the living tree d for a size clas f it is required b rded for the purp (%) Crypt	stems only. Dependid s. For a multi-stemr y the large tree categooses of habital of so ogam cover (%)	ing on the V ned tree, or jory for that me threater Roc	total egetation Class, nly the largest livin vegetation class. ned species. ck cover (%)
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			- Field Surve	ey Form		Site She	et no.
	1	Su	rvey Name	Plot Identifier		Reco	orders
Date	2010812	0 TG	EP	18	45 Addy	Watson	Galob Green
Zone 555	C Datum	IBRA r	egion	Photo	#		Zone ID 6
Easting 140,36	639054	5 Plot	Dimensions	20 x 20 in 20 x 50	Orienta	ation of midline	S7 Magnetic
Likely Veget	ation Class		(0,q, x0 ± 20 m 20 x 30)			Tine o in point.	Confidence:
Plant Comm	unity Type	PCT	82 - 40	170d- Ku	MILLONS	EE	C:
Record easting	and northing from	the plot marker.	If applicable, orient pic	ket so that perforated rit	points Bong dire	ction of midline.	<u></u>
Dimensions (Sh BAM A	ape) of 0.04 ha bi	ase plot inside 0.	1 ha FA plot should be BAM Attribu	identified, magnetic bea ite (20 x 50 m plot)	Stem Classe	midline. es and Hollows	
(400 m	² plot)	Sum values	dbh	Euc*	Non Euc	Hollowst	(Euc*) and living native
-	Trees	2	80 + cm	E. La EN	- its Bac	0	stems separately
Count of	Grasser etc.	1	50 – 79 cm		2	0	Data needed is presence only (lick) unless a 'large
Native -	Forbs	17	-		11		* includes all species of
-	Ferns	1	30 – 49 cm		N	Hollows 20cm+	Eucalyptus, Corymbia, Angophora, Lophostemor
-	Other	0	20 – 29 cm		5		[†] For hollows count only the
	Trees	20	10 – 19 cm	tick	tick	D	presence of a stem containing hollows, not the
Sum of	Shrubs	2.1	5-9cm	tick	tick		stem. Only count as 1 stem per tree where tree is multi-
of native	Grasses etc.	2.9				This size class	stemmed. The hollow- bearing stem may be a dea
plants by	Forbs	1-2	< 5 cm	ţick	TICK	records tree regeneration	stem.
form group	Ferns	0.3	(≥10 cm diame	gs (m) eter, >50 cm			D
	Other	0	Each size clas	s is noted as present by	the living tree st	ems only. Dependi	ng on the Vegetation Class,
High Threat W	leed cover %	O son data into	stem is include	ed in the count/estimate i	f it is required by	the large tree categ	lory for that vegetation class.
available tools it i	s not required while in	n the field	nonows arread				inte intercened species.
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Litter cover is a the locations 5,	ssessed as the ave 15, 25, 35, and 45	erage percentage i m along the mid	ground cover of litter lline. Litter cover includ	recorded from five 1 m x les leaves, seeds, twigs,	1 m plots located branchlets and b	d on alternate sides ranches (less than	and 5 m from the plot midline 10 cm in diameter). Within the
contribute to as	sessment scores,	they hold potenti Physiography +	al value for future vege	tation integrity assessme	ent attributes and	benchmarks, and f	or enhancing PCT description
Morphological Type		Landform	n	Landform Pattern	and managemen	Microreilef	
Lithology		Soil Surf Texture	ace	Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage	10.00	Distance to water and t	ype
Plot Disturband	e Severity code	Age code	Free Text S	ection for brief site des	cription	Leaf Lit	ter and end point GPS
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pasture) Soil erosion	0	- 1	epreses to	tice of a	their	point 610	1084
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Grazing (identi native/stock)	ry 1	R	in one				and the second of the second o
Fire damage	6	-					
everity: 0=no evi	dence, 1=light, 2=	moderate, 3=sev	ere Age: R=recent	(<3yrs), NR=not recent ((3-10yrs), O=old (>10yrs)	
Form version	n designed 15	September 2	2017			Printed 30	July 2020

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Avery tatva Dats E 0.1 10 GA Enterspace acialaris N 0.1 50 GA Austrostica macia N 0.1 50 FA Datura sp. N 0.1 20 FA Wahlenbergia 3r. N 0.1 20 FA Wahlenbergia 3r. N 0.1 20 Sanchus defaceus Sow Hnistle: E 01 5 GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: avoic, HTE: high threat exote. Cover: 0.1, 0.2, 0.3,, 1, 2, 3,, 10, 15, 20, 25, 100% (foliage cover); Note: 0.1% cover represents an area of approximately 53 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3,, 10, 20, 30, 100, 200,, 1000, (Outher species of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. TG 1 Form version designed 15 September 2017 Printed 30 July 2020 SG 3	6	É	5	School	aena brok	nii		-	N	0.1	5		-	1.5
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QASS Aushosting Aushosting Multiplication FG Dradis sp. Norther Sp. Norther Sp. FG F Dradis sp. Norther Sp. FG F Mahlenberging Sp. FG F Mahlenberging Sp. FG Hohlenberging Sp. Norther FG Sonchus deraceus Sow Hustle E 0.1 5 GF Sonchus deraceus Sow Hustle E 0.1 5 Grower: 0.1,02,03,, 1,2,3,, 10, 15, 20, 25,, 100% (foliage cover): Note: 0.1% cover represents an area of approximately 63 x 63 x 63 x more arcircle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3,, 10, 20, 30, 100, 200,, 1000, Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. TG I Form version designed 15 September 2017 Printed 30 July 2020 SG 2 GG 7 GG 7 GG 7	9	66	1	Austros	shipa macin	6			N	611	D			
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I Y I A	O G C a A F	F Code: cover: circle ab bundanc	see Gr 0.1, 0.2 out 71 (se: 1, Pr sion d	rowth Form defin 2, 0.3,, 1, 2, 3, <i>cm</i> across, 0, 5% 2, 3,, 10, 20, 1 int more copies esigned 15 Sep	itions in BAM Appendi , 10, 15, 20, 25,1 cover represents an a 30, 100, 200,, 10 of this sheet to allow fo ptember 2017	ix 1. Iden 00% (foli area of a) 000, or higher	tify top 3 dominants lage cover); Note: 0 oproximately 1.4 x 1 species counts at a	in the veg zone 1% cover repre 4 m, end 1% = plot. All species	N: nativ sents an 2.0 x 2.0 at a plot Prin	re, E: ex area of m, 5% =	otic, HTE approxima = 4 x 5 m, be record July 2020	: high th ately 63 25% = ded. T(0 S(x 63 cm 10 x 10 (C G G	Ditic. Dor m DUNH 1 1 2 7
												H H	G	12

Zone 7:

		Turin		T UIII	s page con	elate w	nun une	num	ibers ar	id expla	natory r	notes on	page	3		5:	ouly
Site sheet #	1 of	Date	30171	21	Survey name	To	LE!	>				Plot identi	fier	519	T	14.	21
Recorders	A	ddy	Wa	tse	n		IBRA region	1	DR	2P				Veg : ID	zone	11	F
¹ Datum (GDA	Coor	dinate m		Projected Geographic	MG	A	55	¹ X coo	ordinate	6124	83	¹ Y	coordin	ate	638	779
Location desc	ription		descriptive	200H	etto lacate s	icoilla	ut atid	refen	ensed	ock	-						
¹ Plot dimensio	ons	Ford	Alto Alto	& str	ucture (400r	n²): 20 r	n x 20	m	10)rientatio	on of mi	dline fro	n 13	80	Р	hoto #	
Datum: AGD66 NSW or 54 (We	WGS84, stern NSV	GDA9	4, GDA202 coordinat	20 or te: Lo	Other (speci ong/Lat (for F	fy). MG.	A Zone	(for Finate.	Projectec system)	l coordin , Easting	ate. syst /Northing	em only): g (for geo	56 (Co graphic	pastal Na c coordir	SW), 5 nate. s	5 (Cen ystem)	tral
Con	position	and str	ucture sum	valu	les may be c	omplete	d after	enteri	ing data	into avail	able too	ls. It is no	t requi	red while	e in the	field	
Composition (400 m² pl	ot)	Sum values	Str	ucture (400	m² plot)		Su (% (n	um value 6) nay sum	Func ³ Tree (DBH	tion (10 e stem si l)	00 m ² plo ze class	t) If data appro gener	a are to opriate lo rate loca	be use cal da I benc	d as m ta i.e. ti hmarks	ore o , stem:
Total count of	Trees (TG)	1	Sur	n of	Trees	(TG)	10	15	80 +	cm		Coun	t	ieu		
native plant species (richness) in	Shrubs	(SG)	1	of n spe	native plant ecies by	Shrut	os (SG)		01	50 -	79 cm		Coun	t (best p ge tree l	ractice)/tick. nark si	ze ≥50
form group (not individual plants within	Grasses (GG)	s etc.	4	gro	up	Grass (GG)	es etc.	(0.6	30 - 4	49 cm			t (best p ge tree l	ractice)/tick. nark siz	ze ≥ 30
each growth form)	Forbs (F	FG)	5			Forbs	(FG)	1	. 1	20 – 2	29 cm		Crun If lar	t (best p ge tree t	ractice)/tick. nark sia	ze ≥ 20
	Ferns (E	EG)	0			Ferns	(EG)		D	10 -	19 cm		Coun	t (best p	ractice)/tick	
	Other (C	DG)				Other	(OG)			5-0) cm		Count	t (best p	ractice)/tick	
			0						0	⁴Tree <5 cm	regener	ation	Tick	0			
				Tota	al high threat	weed c	over		0	% ⁵ Lenç	of fall	en logs	Tally	space		Total	0
Vegetation inte	grity - fu	nction	7 Litter o	over	(%)	Ban	e arou	nd co	over (%)	⁶ Hollo	ow bearin	ng trees	Tick	ock cov	ver (%)		
Subplot score (9	(in each)		+ 1		1 7 1	E	5	5	5 .	- 0	6	D d	0	5	6	6	-
Average of the 5	subplots		4	1.7	4 C F	D	2	0	9 9		0 0	0	0 (3 70			0
hese attributes	require co	onsidera	ation of site	obs	ervations and	d may b	e com	oleted	after fiel	d work:							
egetation class	5					⁸ Large	e tree l	bench	nmark si	ze	20/ 30	/ 50/ 80 [BH	Con	fidence	e F	1/ M/ L
lant communit	y type (P	СТ)	2	01								EEC	Tick	Con	fidence	e H	1/ M/ L
hysiography and	d site feat	ures th	at may help	o in d	letermining F	PCT and	mana	gemei	nt zone (optional)	or for B	ioNet sys	tematio	c flora su	irvey p	urpose	s:
Norphological ype			Landfeleme	orm nt			L p	andfo attern	rm			Microre	lief				
ithology			Soil su texture	urfaci e	e		S	oil col	lour			Soil de	oth				
Slope			Aspec	t			S	ite dra	ainage			Distanc water a	e to ne nd type	arest			
listurbance	-	Severi code	ty Age code	1	Brief site des	cription	or othe	er note	es			-					
learing (inc. log	ging)	-			selecte	d	to	be	Ne	Pre R	nta	thre	St	- pa	+UL		
ultivation (inc. p	asture)				in de	rela	oma	nt	-fa	itai	t						
oil erosion	amoual	-				- (1	1	- (-							
razing (id. nativ	e/stock)			-				4									
ire damage	or or or only																
				F	mergente h	Piabts	IU	oper s	stratum h	eights	Middle	stratum	neights		lower	stratun	1 heigh
torm damage				L	-mergerno m	igino	-	10 10 10 10 10 10 10 10 10 10 10 10 10 1	ALL CALCULUT	A CONTRACTOR OF THE OWNER	I VIICE CALLS		and the second se				
torm damage feediness		1 × 10		7	Top Mid	Botto	m To	op I qq	Mid	Bottom	Тор	Mid	Botton	n	Top	Mid	Botton

400 m ²	floristics plot:	Survey name	Plot identi	ifier	Recorder	s				
Date	30,7,21	TGEP	190		Ado	ly W.	atsor	7 ~		
GF code	Species name Full species name, of mandatory. Data fro	or a unique means of ide m here will be used to as	ntifying separate t sign growth form	taxa within a s richness and	survey is cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher	6
TG	Callins	alancophylla	and a state of the			N	15	3		
-	Avena fo	tra		wildo	ats	E	2	500		
-	3 Arctother	ca calendula	-	Cape W	reed	E	30	5000		
-	a Sisymbr	ium irio	1	Rocket		E	45	5000		
-	5 Echim	plantagine	m			E	5	1000		
-	6 Lolium	Sp.				E	0.1	100		
FG	7 Erodium	crimitum				N	0.2	50		
-	B Malva	parviflora		Mallor	J	E	0.5	100		
Fa	9 Ernadion	mitans		A AND		N	0.6	15		
-	10 Zalaya	alericula	ta H	gwee	d	E	0.1	5		
	Medic	ago sp		0		E	0.1	100		
FC	12 Dichon	dia repens				N	0.1	5		
FG	13 Sida	compata				N	0.1	10		
ah	Eragro	stis lacunar	14	purple	: love	N	0.1	20		
-	15 Lepidu	m sp		ί ,		Ē	0.1	20		
-	15 Eragia	ostis cilianer	nsis	Stinks	rass	E	1	206		
56	17 Schera	Laena mur	icata			N	0-1	5		
FG	18 Crass	ula sp.		stonecr	00	N	0.1	50		
44	10 Chlons	, truncata				N	0.2	50		
Gh	20 Austros	shipa nodos	~			N	0.2	50		
Ga	21 Enterop	pogon aur	uleris			N	0.1	15		
	22	0								
	23									
	24	1								
	25	count	Love							
	26 TG		15							
	27 56		0 · /							
	28 GG	4	0.6							
	29 44	5	1 - 1							
	30 EG	0	0							
	31 04	0	0							
	32	and the second second second								

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be recorded.

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ..., 100%; Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

Abundance: Count 1, 2, 3 ..., when ≤10, estimate when >10, 20, 30 ... 100, 200, 300 ..., 1000, 2000, 3000 ... (as integer values).

	B/	AM Plot - I	Field Survey	Form			Site S	heet no:	14010 2003	
		Surv	ey Name	Plot Id	lentifier		R	ecorders	0	
Date	3010712	O THEP		39	39	Add	y Watso.	r Clerr	reel	
Zone	Datum	IBRA reg	lion	-	Photo #			Zone ID	6	
Easting	Northing	C Plot D	imensions	20 x 20	in 20 x 50	Orien	tation of midli m the 0 m poi	ine nt. 209	Magnetic	
Likely Vege	tation Class	2	0, 20 X 20 11 20 X 001				N and		Confidence: H M L	
Plant Comm	unity Type	201	1					EEC:	Confidence: H M L	
Record easting	and northing from I	the plot marker. If a	applicable, orient pick	at so that per	forated rib po	nts along di	rection of midline	9.		
Dimensions (St	hape) of 0.04 ha ba	ise plot inside 0.1 h	a FA plot should be id BAM Attribut	e (20 x 50 r	n plot) S	tem Class	ses and Hollow	NS Record	iving eucalvot*	
(400 m	n ² plot)	Sum values	dbh	Eu	10*	Non Euc	Hollowst	(Euc*) a	nd living native alypt (Non Euc)	
_	Trees	0	80 + cm	1		1.	0	stems se	eparately	
_	Shrubs	3	50 – 79 cm					only (tick	 c) unless a 'large that veg class. 	
Count of Native -	Grasses etc.	5				1	11000000	* include	tree' for that veg class. * includes all species of Eucalyptus, Corymbia,	
Richness -	Ferns	12	30 – 49 cm				Hollows 20cm	Angopho and Syn	ora, Lophosterno carpia	
-	Other	0	20 – 29 cm	1				[†] For hol	Angophora, Lophostemon and Syncarpla † For hollows count only the presence of a stem containing hollows, not the count of hollows in that	
	Trees	0	10 - 19 cm	tic	rk	tick	0	containin count of		
Sum of	Shrubs	0.3	5 – 9 cm	tic	ik	tick	No. Con	stem. Or per tree v	ly count as 1 stem where tree is multi	
Cover -	Grasses etc.	41				stale.	This size clas	stemmed ss bearing s	tem may be a dea	
plants by	Forbs	6.7	< 5 cm	tic	K.	UCK	regeneration	n storn.	total	
form group	Ferns	10	(≥10 cm diamete	s (m) r, >50 cm					0	
	Other	0	Each size class i	s noted as pr	resent by the I	iving tree s	stems only. Depa	ending on the Vi emmed tree on	egetation Class, Iv the largest livin	
High Threat W	Other leed cover %	0	Each size class i DBH values and stem is included Hollows at least	s noted as pr counts may l in the count/ 20cm across	resent by the I be needed for estimate if it is are recorded	iving tree s a size class required by for the purp	stems only. Departures s. For a multi-story the large tree of loses of habitat of	ending on the Vi emmed tree, on ategory for that f some threaten	egetation Class, ly the largest livin vegetation class, ed species.	
High Threat W This table may be everable tools if it	Other Veed cover %	O O ng data into the field	Each size class i DBH values and stem is included Hollows at least	s noted as pr counts may l in the count/ 20cm across	resent by the I be needed for estimate if it is are recorded	iving trees a size class required by for the purp	stems only. Depa s. For a multi-sta y the large tree co loses of habitat o	ending on the Ve emmed tree, or ategory for that if some threaten	egetation Class, ly the largest livin vegetation class. ed species.	
High Threat W The table maybe eventable tools it is BAM Attribute Subplot	Veed cover %	0 0 ng data into the field Litter c h) 1 1 4	Each size class i DBH values and stem is included Hollows at least	s noted as pr counts may 1 in the count/ 20cm across are ground	resent by the I be needed for estimate if it is are recorded I cover (%)	iving trees a size class required by for the purp	stems only. Dept s. For a multi-ste y the large tree of loses of habitat o ogam cover (%	ending on the Vi emmed tree, or ategory for that if some threaten 6) Roc	egetation Class, ly the largest livin vegetation class. ed species. k cover (%)	
High Threat M The Lade may be BAM Attribute Subplot Avera	Veed cover % (1 x 1 m plots) score (% in each ge of the 5 subplot	0 C ng cate into the field. Litter c h) ((ts	Each size class i DBH values and stem is included Hollows at least over (%) B 5 5 3 5 7 3	s noted as pr counts may in the count/ 20cm across are ground (8 32 - 6	resent by the I be needed for estimate if it is are recorded cover (%) 40 65	iving tree s a size class required b for the purp	stems only. Depe s. For a multi-str y the large tree of loses of habitat o ogam cover (% 0	ending on the Vi emmed tree, or ategory for that if some threaten (6) Roc	egetation Class, Ily the largest livin vegetation class. ed species. k cover (%) 0	
High Threat W The sector of the emergence of the BAM Attribute Subplot Average Littler cover is as the locations 5, contribute to asso Morphological Type	An end of the subplot end the subplot end the subplot end the subplot sector (% in each ge of the 5 subplot seeses as the sub- the seeses of any a so seeses of any a so seeses of any a so	O O	Each size class i DBH values and stem is included Hollows at least over (%) B 5 5 3 57 3 000000 cover of litter re b. Litter cover includes b. Litter cover includes b. Litter cover includes cover of rock, tare ground a alue for future vegeta e features that may he	s noted as pro- counts may lin the count/ 20cm across are ground 32.4 C corded from 1 Gaves, see ind cryptoga thon integrity alp in determ Landf Patter Soil	resent by the I be needed for astimate if it is are recorded I cover (%) 40 65 five 1 m x 1 m ds, twigs, bran n soil crusts (assessment a ning PCT and orm	iving tree s a size class required by for the purp Crypte Crypte Crypte Diots locate chlets and Callection o ttributes an Managem	stems only. Dept s. For a multi-str the large tree c. coses of habitat o oggam cover (9) d d d d d d d d d d d d d d enternates is of d benchmarks, a ent Zone (optiona Soil	rending on the Vientmed tree, or ategory for that of some threater (a) Roc (b) Roc (c)	egetation Class, ly the largest livin vegetation class. ed species. k cover (%) m the plot midline meter). Within the do not currently g PCT description	
High Threat W The setter may be evented to tools it to BAM Attribute Subplot : Avera; Litter cover is as the locations 5, 5 m x 1 m plots; contribute to asso Morphological Type Lithology Stens;	Anter Alexandre enternante and anter enternante and anter enternante e	O O	Each size class i DBH values and stem is included Hollows at least over (%) B 5 5 3 5 3 3 5 3 5 5 3 3 5 5 3 3 5 5 5 3 5 5 5 3 5 5 5 3 5 5 5 3 5 5 5 5 5	s noted as pr counts may lin the count/ 20cm across are ground 32 - 6 32 - 6 corded from s leaves, see ind cryptogan tion integrity alp in determ Landf Patter Soil Colou	essent by the I be needed for estimate if it is are recorded toover (%) 40 65 five 1 m x 1 m ds, Migs, bran n soli crusts C assessment a ining PCT and orm n	iving tree a a size class required by for the purp for the purp plots locata chilets and Callection o ttributes an Managem	tems only. Depts . For a multi-str the large tree c looses of habitat o ogam cover (9 ad on alternates si branches (less th f these data is op d benchmarks, a ent Zone (optiona Soil Depth Destanc	A contract of the second	egetation Class, ily the largest livin vegetation class. ed species. k cover (%) 0 mm the plot midline imeter) Within the do not currently g PCT description	
High Threat W The selection of the evolution of the BAM Attribute Subplot Average Little cover is as the locations 5, don't flucture contribute to ass Morphological Type Litthology Slope	Anter Alexandre anter an	O O	Each size class i DBH values and stem is included Hollows at least over (%) B 5 5 3 57 3 ound cover of litter re b. Litter cover includes b. Litter cover includes b. Litter cover includes alue for future vegeta alue for future vegeta s features that may he	s noted as pr counts may l in the count/ 20cm across are ground 32 E corded from leaves, see ind eryptoga- tion integrity lep in determ Leaves, see ind eryptoga- Soli Colou Site D	resent by the I or needed for astimate if it is are recorded it cover (%) if 0 6 5 five 1 m x 1 m ds, twigs, bran m soil crusts (assessment a ining PCT and orm n rainage	ving tree a size class required by for the purpt for the purpt of the	tems only. Depts s. For a multi-stu- the large tree c. loges of habitat or logen cover (9 ed on alternates site branches (less the these data is op d benchmarks, a ent. Zone (optional Boilt Depth Distanal vatera	Algorithm of the view of	egetation Class, ly the largest livin vegetation class. ed species. k cover (%) 0 m the plot midline meter). Within th a do not currently g PCT description	
High Threat W The selection of the event to tool of the BAM Attribute Subplot Averag Littler cover is as the locations as the loca	e Severity code	O O	Each size class i DBH values and stem is included Hollows at least over (%) B 5 5 3 5 3 3 5 0 0 ound cover of litter re butter cover includer of rock, bare ground a late for future vegeta a features that may he Free Text Sec	s noted as pr counts may lin the count/ 20cm across are ground 32.7 fe corded from s leaves, see ind cryptogan d cryptogan d cryptogan d cryptogan s leaves, see ind cryptogan s leaves, see s leaves,	resent by the I be needed for estimate if it is are recorded recover (%) 40 65 5 Trive 1 m x 1 m ds, twigs, brar n soil crusts fire 1 m x 1 m ds, twigs, brar n soil crusts assessment a ining PCT and orm n rainage	Ving tree s a size class required b for the purp for the purp cryptic size size size plots locate ichlets and Callection o tributes an Management tion	tems only. Deperson only. Deperson of the large tree of cooses of habitat or	And ing on the V Annual tree, or ategory for that f some threater Annual tree Annual	egetation Class, ily the largest livin vegetation class. ed species. k cover (%) 0 m the plot midline immeter). Within the do not currently g. PCT description	
High Threat W The selection of the eministic code in a BAM Attribute Subplot Average Little cover is as the locations 5, contribute to asso (Morphological Type Litthology Silope Plot Disturbance Cleaning (inc logging) Cultivation (inc.	Alter Cover % Compared after enterna indirection of the set of the subplot of the	O O	Each size class i DBH values and stem is included Hollows at least over (%) B 5 5 3 57 3 0000 cover of litter re b. Litter cover includes b. Litter cover includes to rock, bare ground a alue for future vegeta alue for future vegeta alue for future vegeta the future sthat may he Free Text Sec Lacked	s noted as pr counts may in the count/ 20cm across are ground 21 8 32 - 6 corded from 18 leaves, sees tion integrity 21 determ 20 colou 20	resent by the I ope needed for astimate if it is are recorded it cover (%) 40 65 5 five 1 m x 1 m ds, Wigs, bran ds, Wigs, bran m soil crusts of assessment a ining PCT and orm n r rainage	iving tree a size class required by for the purpt for the purpt of the	tems only. Deps s. For a multi-stu- the large tree c. coses of habitat o ogam cover (9 d d a d	ending on the V emmed tree, on ategory for that if some threaten (6) Roc label{eq:some threat	egetation Class, iy the largest livin vegetation class. ed species. k cover (%) b c m the plot midline meter). Within the do nat currently g PCT description point GPS Northing	

2.

40	00 m² pl	lot: Sh	eet _ of _	Survey Name	e	Plot Identifier		1	Record	ers			
	Date	301	07120	TGEP		39	Add	y Wa	cton	Gen	Peel		
ID	BAM Code	GF Code	Full species nam survey. Data from	e mandatory, or a uniqu m here will be used to as	ue means of ssign growtl	identifying separate taxa with form counts and covers.	thin a	N, E or HTE	Cover	Abund	stratu m	vouc her	Heig ht
1	Fa	f	Geranic	m saland	Leri	a weather and a second and the		N	5	1000			
2	-	THE A	Echium	plantagine	im F	attersons c	nree.	E	2	1000			
3	ah	g	Grass	SP.				N	20	5000+		North V	1
4	GG	9	Enteror	paon an	sica la	XUS		N	20	6006			
5	FG	f	Sobnad	e esural	e	alvera	and the second	N	011	20			
6	66	9	Anshida	a behniane	a			N	T	100			
7	EG	e	Cheilan	thes another	-o ten	molia		N	10	1000			
8	-	-	Actother	ca cabend	ula	Capen	reed	E		500		- sale	-
9	FA	F	Villadir	na cunat	7			N	0.2	500			
10		-	medica	ers SD		La Carlo Carlo Carlo		E	25	5000	The state		
11	-	-	Thildo	a sp.		and the second	274-2-12	E	1	1000	See Ding	149	1000
12	-	f	Trifoliu	marvense		Haves foo!	F	E	0.5	500	~		1
13	-	-	medica	00		antleaf		E	6.1	20			
14	FG	F	Calobs	Sp.		- Aller and the second		N	0.5	200			
15	Fa	F	Contral	man POL	hosio	ns		N	0.1	10	1		
16	-	-	Sisymt	prium iri	0	handon Re	rket	E	0.1	5	1		
17	FG	f	Wahler	phonaia. 5	P.	Barris Mar		N	0.1	100	Lawrence.		
18	_	-	Lepidium	hussopifo	livm	Perpercres	55	E	0.1	2	Sector		
19	_	-	1 dium	porense		Rip grass	2811-1	E	0.5	100			120
20	FG	f	Crassul	a colora	ta	10	, not	N	D-1	200			
21	FG	f	Sida	Contes	15	A survey setting		N	0.1	20		URIT	10
22	SG	C	Sclerobar	a brandy	dera	Win Lisave	Freed	N	0-1	100	C.Bur		
23	FG	f	Bulbine	Semi-	abat	andabile	KE16?	N	6.1	10	1	1 57 - 1	
24	FG	f	lectors	's graminifol	ia G	rass aushion	.5	N	0.1	10			-
25	\$G	f	Myobor	non debi	10.	a service and an interferen		N	0.2	2			
26	FG	1	Calotis hi	soldula	Be	man flea		N	0.1	100	-		
27	60	C	Athble.	r se	bh	e publite un	kled	M	0.1	20			
28	50	C	Sclevola	ena birchi	(hal burr		N	0.1	5			
29	199	14	al " and an	a 5,2 .				1	0.1	0.0			
30			T	count]	(0)	rer		La telles	and the		No man		
31	-	-	TG	0	(0				-			
32			SQ	3	0	.3							
33		-	66	3	4	-1	4.3.						
34			FG	12	6	.7		15 1					
35	1	1995	EG	1	1 10	2	E and	- total	T				
36			09	0	0	,		1	- 639				2.3
37				Part Internet	1			-	T				
38													
39		1							-				
40	1000		1.1.1					12	1				

GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. Form version designed 15 September 2017 Printed 30 July 2020

		Numbe	ers ^{1- 8} c	on this	s page	corre	late wit	n the n	umbe	's and	explan	atory	notes	on pa	age	363	July	21		
Site sheet #	1 of	Date	30171	21	Survey name	1	TG	EP					Plo	ot entifie	•	6	20			
Recorders	1	Addu	Wa	tso	٨.		li r	BRA	1	DRF	2					Ve	eg zoi	ne	9	3
¹ Datum (ada	Coordi	nate	D P D G	rojecteo eograpi	d hic	MGA	5	5"	coord	linate	613	95	1	¹ Y (coor	dinate	Ð	63'	9004
Location desc	ription	d	escriptiv	e note	s to loc	ate site	e withou	t grid re	ferenc	B		61	395	2				ł	330	1000
		F2074	2 Otion	n & str	ucture (400m ²	²): 20 m	x 20 m		¹ Ori	entatio	n of m	nidline	from	Mâ	anan	6 0	PI	hoto	#
Datum: AGD66 NSW or 54 (We	, WGS84 stern NS	F2.544 , GDA94 W). X/Y G	GDA20	000m²) 20 or ite: Lo): 20 m : Other (s ong/Lat (x 50 m specify (for Pr	/). MGA ojected	Zone (1	or Proj ate. sys	0 m ected c stem), E	point coordina Easting/	ite. sys Northii	stem or ng (for	nly): 50 geogra	6 (Co aphie	basta c coc	al NSV ordinat	V), 55 te. sy	5 (Cei vstem	ntral)
Con	nposition	and struc	ture sur	n valu	es may	be co	mpleted	after er	n integ ntering	rity data in	to availa	able to	ols. It i	s not r	equi	red v	vhile ir	n the	field	
Composition (400 m² p	lot)	Sum values	Str	ucture	(400 n	n² plot)		Sum (%) (may to >1	values sum 00%)	³ Tree (DBH	stem	size cla	ass li ass li g	f dat ppro ene nust	a are opriat rate l be c	e to be te loca local b counte	e use al dat bench d	d as r a i.e. hmark	nore to s, sten
Total count of	Trees (TG)	Ø	Sur ² fo	n of liage c	over	Trees	TG)		0	80 + 0	m		(Coun	t o				
species (richness) in each growth	Shrubs	(SG)	١	of r spe gro	ative placies by wth form	ant n	Shrubs	(SG)	0	5	50 - 7	79 cm			Coun f ⁸ lai m; c	rgoti count	st pra ree be	ctice)/tick. nark s	ize ≥5I
form group (not individual plants within	Grasse (GG)	es etc.	5	gro	native plant Shn ecies by with form oup Grai (GG Fort	Grasse (GG)	s etc.	70) . Z	30 - 4	19 cm			Coun f [®] lai m, c	t (be trount	st pra ree be	ctice nchn)/tick. nark s	size ≥ 3	
each growth form)	Forbs (FG)	13				Forbs (FG)	1 ·	5	20 - 2	29 cm	<		Coun f [®] lai :m, c	it (be rg O ti	est pra ree be	ctice)/tick. nark s	size ≥ 2
	Ferns (EG)	1				Ferns (EG)		5	10 - 1	19 cm		(COUR		est pra)/IICK	
	Other (OG)	0				Other (OG)	T		5 - 9) cm		(Cour	ot Be	est pra)/tick	
				Tota	al high t	threat	weed co	ver	C	, %	⁴ Tree <5 cm ⁵ Leng	regen th th of f	eration allen lo	ogs T	ick ally	spac) ce		Tota	alo
											⁶ Hollo	ow bea	aring tre	ees 1	Tick			C)	
Vegetation inter cont. (five 1 m ²)	plots)	Inction	7 Litter	cove	r (%)		Bare	groun	d cove	r (%)	Cryp	togam	n cover	r (%)	F	Rock	cove	er (%))	
Subplot score (% in each	1)	20	25	10 20	5 15	55	5	22	- 10	6	bO	2	D	1	0	0	6	Ø	0
Average of the	5 subplot	S		19																
These attributes	require o	considera	tion of si	te obs	servation	ns and	d may be	compl	eted af	ter field	I work:	20/ 3	30/ 50/	80 DE	вн		Confi	denc	е	H/ M/
Vegetation clas	5						- Large	tree be	ancrim	ark Siz	e		EE	с			Confi	denc	e	H/ M/
Plant communi	ty type (PCT)	0	101		alas D	OT and				ntional	orfor	DieMe	tout	Tick	in flo				C.O.C.
Physiography an	id site tea	atures the	It may n	dform	determi	ning P	CT and	La	ndform	20110 (0	puonai	01 101	DIONE	t Syste	ina		na sui	vey	Juipo	303.
type			elen	nent				pa	ttern				MI	croreli	ef					
Lithology			Soil	surfac	e			So	il colou	ır			So	il dept	h					
Slope			Asp	ect				Sit	e drair	age			Dis	stance iter an	to r d typ	neare pe	est			
		Severit	y Age		Brief si	te des	cription	or othe	notes											
Clearing (inc. lo	gging)		0000	-	6.		. 1	the	-0	10.0	- 0.50-	1	h. no		0		010	24	d	
Cultivation (inc.	pasture)				sel	een	01	10 5	æ	rep	690	Ma	Ince	C	T		cille	re	4	
Soil erosion	The Constant			-	ar	par	0	0	pr	Ta	105									
Firewood / CWD	removal		-						00											
Fire damage	versioux)		-	-																
Storm damage	- North	1		-	Emerge	ents h	eights	Up	per str	atum h	eights	Mid	dle stra	atum h	eigh	its	L	ower	r strat	um hei
Weediness					Тор	Mid	Botto	m To	p M	id E	Bottom	Тор	Mi	d	Botto	om	T	op	Mid	Bott
Could be and the second	31/24 DI 19/2	600			m	17	1	m	122	122	-	1	100	m			m	m	T	n

400 m ²	floristics plot:	Survey name	Plot identifier	Recorde	ers			
Date	307 21	TGEP	6 2021	Ada	dy W	atsor	۱	
GF code	Species name Full species name, or mandatory. Data from	r a unique means of identi n here will be used to assi	fying separate taxa within a gn growth form richness and	survey is I cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher
44	Enterope	sion acicular	is		N	45	5000	
FG	2 Crassile	a ablorata	Store	crop	N	0.1	100	
SG	3 Scherolae	era dicantha	- Coper	burr	N	0.5	500	
-	+ Hypochas	is vadicata	14		E	0.1	(00	
GG	5 Eragos	shis lacunaria	. Phyple	love	N	5	1000	
66	6 Thyvido	lepsis mitchell	Liana mulca m	itchell	N	0.1	10	
FG	Maireano	a enchy larenoic	dos windo	n'ssure	N	0.1	10	
FG	· Goodenia	pinnatifida	8-3	source.	N	0.1	100	
FG	· Callotis	> lappulacea	e Yellow	burr	N	0.2	50	
Fa	10 Enodium	a crissi fur	1		N	6.2	100	
FG	Villadinic	n cureata			N	0.1	50	
GA	12 Austrost	ion scabra			N	20	1000	
CG	13 Isoeto	psis gramhitol	lin Crass ash	uon	N	0.1	50	
FG	14 Helichn	ysum bracteat	un laper dai	54	N	0.1	200	
_	15 Arctoth	ea calendula	Cape weed	z	E	0.1	20	
Fa	10 Sida cor	meeta	- period		N	01	15	
FG	17 Solancir	n esuiale	Quena		N	0.1	15	
Ea	18 Cheilanth	us seiberi			N	5	1000	
-	10 Echim	alantasine	m		E	0.1	50	
FG	20 Charge Ce	platum api	aulation		N	0.((5	
FG	21 Brichys	scome SP	•		N	0.1	20	
Gh	22 Bullin	e bulbosa			N	0.1	5	
FG	23 Gooder	ia pusillifu	ora soul fin	100	N	0.1	10	
5	24 Modika	100 50			T	0-1	20	
	25	als of						
		Count	core					
	27 10	1 0	D					
	28 50	1	0.5					
	29 (1)	5	70.2					
	30 F	G 13	1.5					
	31 E(a l	5					
	32 06	D	0					
	33							

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be recorded.

GF Code: see growth form definitions in BAM 2020 Appendix F. M: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63×63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately $1.4 \times 1.4 m$, and $1\% = 2.0 \times 2.0 m$, $5\% = 4 \times 5 m$, $25\% = 10 \times 10 m$. Note the top 3 dominant native species within each GF group.

Abundance: Count 1, 2, 3 ..., when ≤10, estimate when >10, 20, 30 ... 100, 200, 300 ..., 1000, 2000, 3000 ... (as integer values).

Zone 9:

And the second second second		Surv	vev Name	Plot Identifie	r	Rec	orders	
Data	102mbas	2 GAT	2	6A71	Add	1 hate	- Gen	Pal
Zone	Datum		lan		A2 100	y varso	Zono ID	9
55	GDA	IBRA reg	Imonolono	Phot	Oriou	atation of midling	Zone ib	
613906	639000	8 Plot D	g. 20 x 20 in 20 x 50)	20 x 20 in 20 x 50	fre	om the 0 m point	78	Magne
Likely Vege	tation Class							H M
Plant Comm	unity Type		201			E	EC:	Confidence
Record easting	and northing from	he plot marker. If a	applicable, orient picke	et so that perforated r	ib points along o	lirection of midline.		
Dimensions (St	hape) of 0.04 ha ba	se plot inside 0.1 h	ha FA plot should be id	lentified, magnetic be	aring taken alor	g midline.	-	-
BAM A	ttribute 1 ² plot)	Sum values	BAM Attribute	Euc*	Non Euc	Hollows	Record liv	ving eucaly
(400 11	Trees	3	abii				non-euca	lypt (Non E
-	Shrubs	5	80 + cm	the second	NOT 20C	2	Data need	ded is pres
Count of	Grasses atc	10	50 – 79 cm	4			only (tick) tree' for th	unless a 'l
Native -	Earbe	18					* includes	all species
-	Fords	10	30 – 49 cm	1		Hollows 20cm+	Eucalyptu Angophor	ra, Lophost
-	rerns	0	20 - 29 cm	11			and Sync	arpia
	Other	0		4	- Contractions	0	presence	of a stem
	Trees	25.3	10 – 19 cm	VINK	tick	1	containing count of he	ollows in the
-	and the second se	21.2	and the second second second	VIA	tick	and the second	per tree w	here tree is
Sum of	Shrubs	10.0	5 – 9 cm	a ven		Charles and the second s		1 5 5 5 5 5 1 5 1 5 1 5 1
Sum of Cover - of native	Shrubs Grasses etc.	9.5	5 – 9 cm	al	1/	This size class	bearing stem	em may be
Sum of Cover - of native vascular - plants by	Shrubs Grasses etc. Forbs	9.57	5 – 9 cm < 5 cm	V	Vck	This size class records tree regeneration	stemmed. bearing sto stem.	em may be
Sum of Cover – of native vascular – plants by growth – form group	Shrubs Grasses etc. Forbs Ferns	9.5	5 – 9 cm < 5 cm Length of logs (≥10 cm diameter	s (m) r, >50 cm	Tally s	This size class records tree regeneration	stemmed. bearing sto stem.	total
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th	F	Galiur	MSP.		0	<i></i>	N	0.1	5	4	-	0
44	9	mshd	a behviana	Part Server	Brushgro	155	N	01	5 2	9	-	0.0
TU	t	Dyspha	nia primilio	-	Small Crimk	weed.	N	0.1	5	a		0
lih	9	Clasioch	s eptostachya		lovege	155	N	0.0	20	a	-	5
14 CC	9	Pannel	in		Purpleish	-	N	0.2	20	4	-	0.7
sh	C	Loman	are grance				N	0.4	50	m	-	0.0
	1.3	HINDLO	× 50 - 2cm	bac	Cala	and a serie in	10	0.1	L	1.1	Charles .	0.
	AND ANTACASTACASTACASTACASTACASTACASTACASTAC	AMM GODE GODE GODE GODE GODE GODE GODE GODE	BAM GF Code Code Pull species nam survey. Data tho FG & Eucaly SG & Geijer SG & Geijer SG & Dodor G & Lucaly SG & Dodor G & Canex SG & Dodor G & Canex SG & Acacia G & Canex SG & Bothmax G & Dianoll G & Euchor G & Sida ch G & Calobis SG & Calobis SG & Calobis SG & Calobis SG & Calobis SG & Calobis Cale G & Calobis SG & Calobis Cale G & Calobis Cale G & Calobis Cale G & Calobis SG & Calobis Cale G & Calobis Cale G & Calobis SG & Cal	BAM GF Code Code Full species name mandatory, or a unique me survey. Data from here will be used to assign TG & Eucalyphis conica SG & Geijera pavillos. SG & Dodonea Cuntata G & Dodonea Cuntata G & Ryhidosperma Sp GG Carex bichenovia SG & Aracia Osnaldii G & Bohmochipa mac G & Bohmochipa mac G & Sida corregata G & Sida corregata G & Calobis Ispulace Sida rhombitolia. G & Calobis Ispulace G & Calobis Ispulace Sida rhombitolia. 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	B	AM Plot – F	ield Survey	Form	print print	Site She	et no:	of a light
		Surve	ey Name	Plot Identifie	er	Reco	orders	0
Da	te 2910712	O TOE	P	22	22 Add	ly Watson	n Gen	Peel
Zone	GDA CDA	IBRA reg	on	Pho	to #		Zone ID	9
LEasting	0 63 9 2 81	< Plot Di	mensions	20 x 20 in 20 x 50	Orier	ntation of midline	179	Magnetic °
	etation Class	<u>, (0,0</u>	20 x 20 in 20 x 50)			sin the o in point.		Confidence:
Plant Con	munity Type	Roz	2-1		17	EE	C:	H M L Confidence:
Record east	ng and northing from	the plot merker. If a	201	t so that perforated	ib points along o	lirection of midline.		HML
Dimensions	(Shape) of 0.04 ha bi	ase plot inside 0.1 ha	FA plot should be id	entified, magnetic be	aring taken alon	ig midline.	-	
BAM (400	Attribute m ² plot)	Sum values	BAM Attribute	Euc*	Non Euc	Hollowst	Record li (Euc*) an	ving eucalypt* d living native
	Trees	3	80 + cm	p.o.	the Bus		non-euca stems se	lypt (Non Euc) parately
	Shrubs	3		10		- 2	Data nee	ded is presence unless a 'large
Count of	Grasses etc.	4	50 – 79 cm	3		And the second second	tree' for th	nat veg class.
Richness	Forbs	9	30 – 49 cm	1		Hollows 20cm+	* includes Eucalypti	all species of is, Corymbia,
	Ferns	0	-	1			and Sync	arpia
	Other	0	20 – 29 cm	2	- Andrew	1	[†] For holle presence	ows count only the
	Trees	36.5	10 – 19 cm	Vek	~	100 million (1997)	containing count of h stem Only	plows in that count as 1 stem
Sum of Cover	Shrubs	35	5 – 9 cm	tick	V		per tree w stemmed.	here tree is multi- The hollow-
of native vascular	Grasses etc.	6-7	< 5 cm	tick	tick	This size class records tree	bearing st stem.	em may be a dea
plants by growth	Forbs	3.8	Length of logs	s (m)	1	regeneration		total
form group	Ferns	0	(≥10 cm diamete in length)	r, >50 cm	Tally 9	pdop	50	7~
12.16	Other	0	Each size class i	s noted as present b	y the living tree	stems only. Depend	ing on the Ve med tree, on	getation Class, y the largest living
High Threa	Weed cover %	1.2	stem is included Hollows at least	in the count/estimate 20cm across are rec	if it is required I orded for the pur	by the large tree cates poses of habitat of so	gory for that voice the threaten a	egetation class. ed species.
evalable tools	It is not required while in	the field.	(%) P	are ground cover	(%) Cryp	togam cover (%)	Roci	cover (%)
BAM Attrib	ot score (% in eac	ch) 40 12 3	7 0 0 0	0 0 95			1-1-1-	
Av	erage of the 5 subpl	ots 9.8		19		0	1000	0
Litter cover in	assessed as the ave 5, 15, 25, 35, and 45	erage percentage gr	Litter cover of litter re	corded from five 1 m s leaves, seeds, twig	x 1 m plots loca s, branchlets and	ted on alternate sides d branches (less than	and 5 m fro 10 cm in dia	n the plot midline meter). Within the
the locations	ots assessors may a	so record the cover of	of rock, bare ground a alue for future vegeta	ind cryptogam soil ci tion integrity assess	ment attributes a	nd benchmarks, and	for enhancing	PCT description
the locations 1 m x 1 m pli contribute to	babbabilitent abaraa,	they hold potential vi				ment Zone (optional)		
the locations 1 m x 1 m pli contribute to Morphologi	cal	they hold potential va Physiography + site Landform	e features that may h	elp in determining PO Landform	CT and Manager	Microrelief		
the locations 1 m x 1 m pli contribute to Morphologi Type	cal	they hold potential va Physiography + site Landform Element Soil Surface	e features that may h	Landform Pattern Soil	CT and Manager	Microrelief Soil Depth		
the locations 1 m x 1 m pli- contribute to Morphologi Type Lithology Slope	cal	they hold potential vi Physiography + site Landform Element Soil Surface Texture Aspect	e features that may h	elp in determining P(Landform Pattern Soil Colour Site Drainage	2T and Manager	Microrelief Soil Depth Distance to water and	o nearest type	
the locations 1 m x 1 m pl contribute to Morphology Type Lithology Slope	Severity	they hold potential vi Physiography + site Landform Element Soil Surface Texture Aspect	Free Text Sec	elp in determining PC Landform Pattern Soil Colour Site Drainage	escription	Microrelief Soil Depth Distance to water and	o nearest type	point GPS
the locations 1 m x 1 m pl contribute to Morphology Type Lithology Slope Plot Disturb Clearing (in	ince Severity code	hey hold potential v: Physiography + silt Lement Soil Surface Texture Aspect Age code	Free Text Sec	Landform Pattern Soil Colour Site Drainage	escription	Microrelief Soil Depth Distance to water and Leaf Life ID	o nearest type tter and end Easting	point GPS Northing
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the locations 1 m x 1 m pl contribute to Morphologi Type Lithology Slope Plot Disturbi Clearing (in logging) Cultivation (pasture) Soli erosion Firewood /C removal Cogene (clearing (in	scal	they hold potential vs Physiography + sitk Landform Element Soli Surface Texture Aspect Age Code Sol Code Cod	Free Text Sec Ule scha be tepre	elp in determining PC Landform Pattern Soil Colour Site Drainage ected Sconta the PCT QC	escription	Microrelief Soil Depth Distance to water and ID End pont 61	ter and end Easting	point GPS Northing
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	Code	Code	survey. Data fro	om here will be used to assign	growth t	form counts and covers.	ininin G	HTE	Cover	Abund	m	her	ht (m)
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	_	_	Sonchu	1) pleraceus		Saw	histle	E	2	50	-	N. SVA	17.5.5
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221	SG	S	Geijera	parvitora		and the second second		N	20	6	-	-	
V J	SG	5	Myspor	um moutani	IM			N	10	10	1		
	-	-	Lolium	perenne	-	Rye of	rass	E	50	1000	-	-	
F	Fa.	-	Oxalis	>. corniculata		1 0	The state	N	2	1000	13.19.24	1272	
-	FG	+	Dichon	dra repens		a ser la sufficiencia		N	0.5	1000	- 25-13		
	-	-	Medica	90 50.	- 4		-15-10	E	1	500	1000		
f	Th	+	Punex	brownii	*	2	3 (3 - K)	N	0.5	40	2 march	1000	1
	_	-	Lycium	ferocissimum	1		-	HTE	0.5	5			-
	-	-	Penniset	um clandestii	m	Kiku	40	E	0.1	5	100	-	
(ili	9	Enterop	ogon acicular	is	0 11		N	5	5000	1		-
	-	+	Echivm	plantagineum	1	Pattersans	Wise	E	5	500			
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	TG	E	Eucalyp	itus populnea				N	5	2			
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ł		-	Malia	manificia		INTONI A	ppa	E	0.1	2			
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F	-(1	1	Wahle	nberria sp.				N	0.1	5	0		
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1	aa	9	Cypese	15 SP			6	N	1	00			
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	-	-	Hupoch	peris bracheatu	M	tlat 2	reed	E	0.1	5	bish 1		tic
3F	FCode	e: see (Frowth Form de	finitions in BAM Appendix 1	. Identi % (folia	fy top 3 dominants in ge cover): Note: 0.19	the veg zon 6 cover ren	oresents an	area of a	approxima	ately 63	x 63 cm	or
10	circle a	bout 7	1 cm across, 0.5	5% cover represents an area	a of ap	proximately 1.4 x 1.4	m, and 1%	= 2.0 x 2.0	m, 5% =	4 x 5 m.	25% = 1	10 x 10	m
LŁ	ounda	nce: 1	, 2, 3,, 10, 20	0, 30, 100, 200,, 1000							-	-	aunt
		1	Print more copie	es of this sheet to allow for h	igher s	species counts at a pl	ot. All spec	ies at a plot	need to	be record	led.	14	3
EC	orm ve	ersion	designed 15 S	September 2017				Printed	14 Aug	ust 2020	0 0	ia	5 A
	-	-	Peta site	s tragrans				E	0.2	10	F	-a l	9
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			Surv	ev Name	Plot	dentifier	1 2 2 2		R	ecor	ders		
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Zone	Date	um .		ion I	1 1 -	Dhata	5 1 - (LANC	001		one ID	a	. F.I
SS.	G North	DA	Blat Di	imanaiana		Photo	# Ori	entatio	n of mid	line		14	
61354	2 6389	\$24		g. 20 x 20 in 20 x 60	0) 20 x 20	in 20 x 50		from the	e 0 m pc	oint.	PT	Confi	dence:
Likely Veg	etation Cla	SS				En Harris	-				1	H	M L
Plant Com	munity Typ	e -	PCT	201				F		EEC	:	Н	M L
Record eastin	ng and northing Shape) of 0.04	from the	plot marker. If a plot inside 0.1 h	applicable, orient	picket so that pe be identified, ma	rforated rib	points along ing taken al	g direction	n of midlin ne.	ne.			
BAM (400	Attribute m ² plot)	S	um values	BAM Attri dbh	bute (20 x 50 E	m plot) uc*	Stem Cla Non Euc	asses a	nd Hollo	ows	Record li	iving eu	icalypt*
(Trees		4	80 + cm		unt			4.5	R.	non-euca stems se	alypt (No	on Euc)
	Shrubs		6				-	-	2	-	Data nee	ded is p	oresence
Count of	Grasses et	tc.	Y	50 – 79 cm	n —			. 2			only (tick tree' for t) unless hat veg	class.
Richness	Forbs		5	30 – 49 cm	n		-	Н	bliows 200	cm+	* include Eucalypt	s all spe us, Cory	ecies of /mbia,
	Ferns		1			_	6			1.1.1	Angopho and Synd	ora, Lopi carpia	hostemon
	Other	-	0	20 – 29 cm	n		0		1		[†] For holl presence	ows cou	int only the
	Trees		13.1	10 – 19 cm	n ti	ck-	tiek	The second	, v		containing count of h	g hollows iollows in	s, not the n that
Sum of Cover	Shrubs		5.81	5 – 9 cm	-1	ck	tick				per tree w	here tre	e is multi-
of native	Grasses et	ю. Д	26.5	< 5 cm	15	×	Lick	TI	nis size cl ecords tre	ass ee	bearing s stem.	tem may	be a dead
plants by growth	Forbs	(5.41	Length of	logs (m)			r	egenerati	on		total	A STAN
form group	Ferns	0	.01	(≥10 cm diar in length)	meter, >50 cm							0	
	Other		0	Each size cl	ass is noted as	present by t	he living tr	ee stems	only. De	pending	on the Ve	egetation	n Class,
ligh Threat	Weed cove	r% (stem is inclu	ided in the count	l/estimate if	it is require	d by the l	arge tree	catego	ry for that	vegetatio	on class.
available tools.	It is not required v	while in the	field.										
BAM Attribu	Ite (1 x 1 m p	olots)	Litter	cover (%)	Bare groun	d cover (%) Cŋ	ptogan	n cover	(%)	Roc	k cove	r (%)
Subple	rage of the 5 s	ubplots	80)	0 15 7	30 4		0 0	0	0	00	101	010
Litter cover is the locations 1 m x 1 m plo	assessed as th 5, 15, 25, 35, a ts assessors m	ne averag nd 45 m a ay also re	e percentage gr along the midline cord the cover	round cover of little. Litter cover incl of rock, bare grou	er recorded from ludes leaves, se und and cryptog	n five 1 m x eds, twigs, l am soil crus	1 m plots lo branchlets a ts. Collection nt attributes	and brand on of thes and ben	alternate hes (less e data is chmarks.	sides a than 1 optiona and fo	nd 5 m fro 0 cm in dia 1 - the data r enhancin	m the pl ameter). a do not a PCT d	ot midline Within thes currently escription
0011110010.10		Ph	ysiography + sit	e features that m	ay help in deter	mining PCT	and Manag	ement Zo	one (optio	inal)			
Morphologic Type	a		Element Soil Surface	2	Patte	em			Micro	orelief			
Lithology			Texture		Colo	Drainage		_	Depti Dista	nce to r	nearest	-	
Slope			Aspect			Dramage			water	r and ty	pe	I noint (De
Plot Disturba	nce coo	ie co	ge ide	Free Text	t Section for bri	ef site des	cription				and end	Nort	hing
Clearing (Inc logging) Cultivation (inc pasture)	nc.								End	Le	isung		
Soil erosion										1.	-		
Firewood / C removal Grazing (ide	ntify									63	527	6389	489
native/stock)			1 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										1
Fire damage									and the second second	and the second second	And in case of the local division of the loc		

400	0 m² pl	lot: She	et_of_	Su	vey Name	F	lot Identifier	Tala	1. 1. 1. 1. 1.	Record	ers	191925		
	Date	141	09/19	Tao-	lishway		23	P. Can	neron	A.	Wats	jon		
ID	BAM Code	GF Code	Full species na survey. Data fr	me mandato om here will i	ry, or a unique mean be used to assign gro	s of ident owth form	ifying separate taxa w counts and covers.	vithin a	N, E or HTE	Cover	Abund	stratu m	vouc her	Hei ht
1	Th	t	Eucaly	itus ca	onica				N	10	3			
2	Th	+	Encalyp	his m	crocarpa	22.0	12 1 1 1 1 1 1 1 1 1 1 1	an dama a	N	0.1	2			1
3	Th	t	Allocasua	wina	Leunani,		Bull Oak	1	N	1	5	- inco	17 21 - 12	
4	th	t	Calitris	glauc	ophylla		<u>O se vi</u>		N	2	45		-	-
5	Sh	5	Wein K	anifol	ia	. Care			N	5	4	112000		
6	Sh	5	Sennalca	sinia	eramophyl	la			N	0.5	6	1		
7	66	5	Themen	da a	stratic	inter on the		nat in	N	15	250			
8	54	S	Myopon	mm	ontanum	7 1913		(3)	N	0.1	1301	1798 300		
9	SG	S	Acacia	oswale	dii			m	N	0.1		J		
10	hh	9	Enoporon	nacia	lasis				N	10		az i		
11	FG	F	Sida a	arecato	2		-ser	- 12	N	0.1	20	10	in vitració	
12	Éa	II	- daisu	· see	pics.	-			N	0-01			evile#	
13	66	g	Austrost	IPG S	cabra		e est		N	1	500		and a second	
14	SG	s	Atriolex		1 Martin Par	meal	y salt bush		N	0.01	N. CONST			
15	EG		Cheilant	hes S	(iben'	for	ik fern		N	0.01	1	MCL		
16	FG	F	MUIDAY	un la	debile		ma BL	- ot	N	0.1	2			
17	-	-	lucium	ferci	ssimum	Africe	in Lox tho	n	HTE	0.0)	2	-	Na and	
18	FG	F	Vitladina	cure	ata	FU72	weed		N	0-14	150		1040.0	
19	FG	f	Einadia	maia	ns livitolic	2	and any trees 3		N	0.1	5			
20	GG	9	Chlook	verticil	ata			man in the	N	0.5	25		10000	
21	59	5	Scherola	ena k	pirchii	Gal	burr	41	N	0.1	2	21.0		
22										12.12	19	des -		
23			2.3.85	a key	The State of States				10		wyga h	here and	ing ar	4
24		1. 2	-						1216.2					
25	-	-	Cour	vt	COVE	rl	La company in		and the second	-				
26	and i	TG	4	1.1.00 100	13.1		acill en a	A TOND . I			1	1221-6		
27		SG	6	- mart	5-81		5.9.	and the second		/				
28		GG	4	-	26.5							-		
29		FG	5		0.41		0.5	and the second		State 2				
30		EG	1	C. D. C.	0.0	1	0.1	Change and the	-	-		-		-
31		06	0	-	0	-	All and the second			-				
32							Marine and an	04-14	-					
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34	1	-		A Street			and the second	-			And and			
35	1	- Star -	Property in		In multiple and	Constant	tant mail wat the tan	and the second		1. Kil				
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39	1	-	- 5-53		# 1				-	-				
40	123	The second		1.18	in the second		and the second second	and the second	1			AL THE		1

GF Code: see Growth Form definitions in BAM Appendix 1. Identify top 3 dominants in the veg zone. N: native, E: exotic, HTE: high threat exotic. Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); Note: 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded. Form version designed 15 September 2017 Printed 24 August 2019

Zone 10:

					o page .	Joneia			ie nu	mbore	and	CAPICITO	itory no	ies on	page	4	aly	21			
Site sheet #	1 of	Date	22 171	21	Survey name	•	T	GE	P					Plot identifi	ier	4	J	uli	IC	200	2
Recorders	Add	y No	rtson	3 C	Caree	in		IBR/	A on							V	'eg zo)	ne	11	0	
Datum		Coord system	linate m		Projected Geograph	nic	Mo zo	GA ne	55	T'x	coord	dinate 6	144	32	1γ	(cool	rdinat	e 6	39	30	2
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Datum: AGD66 NSW or 54 (Wes	WGS84, stern NSV	GDA94	4, GDA202 coordina	20 or te: Lo	Other (song/Lat (pecify) for Pro	. MC	GA Zoi ed coo	ne (fo rdinat	r Proje e. syst	cted o em), l	coordinate Easting/N	e. system lorthing	m only): (for geog	56 (0 grapł	Coast nic co	al NS ordina	N), 55 ate. sys	(Cent tem)	tral	
Con	noosition	and stru	ucture sun	n valı	Jes may	be con	telar	Vegeta	ation er ent	integr erina c	i ty lata in	ito availat	ole tools	. It is no	t real	uired	while	in the f	ield		
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Total count of	Trees (TG)	2	Su 2.6	im of	WOF	Tree	es (TG	i)	3«	5	80 + cr	n		Col	int					
species (richness) in	Shrubs	(SG)	2	of sp	native pl ecies by	ant	Shru	ubs (S	G)	0.	3	50 - 79) cm		Cou If *1	arge t	est pra tree b	actice)/ enchma	tick. ark siz	ze ≥50	
form group (not individual	Grasse (GG)	s etc.	D		rowth form roup		Grasses etc. (GG)		tc.	0		30 - 49	9 cm		Count (best practice)/tick. In [®] arge tree benchmark size ≥ 3 cm, count						
each growth form)	Forbs (I	FG)	8				Fort	os (FG)	1.5	5	20 - 29) cm		Col	unt (bi	est pra	actice)/ enchma	tick. ark siz	ze ≥ 2	
	Ferns (I	EG)	0				Ferr	ns (EG	i)	O		10 - 19) cm		99	Htb	ELA	actice)	tick		
	Other (Other (OG)					Othe	er (OG	5)	0		5 – 9 ⁴Tree r	cm egenera	ation	Ticl	H-too	un	rctipq	tick		
				То	tal high t	hreat v	veed	l cover	r	5.	1 %	<5 cm	h of falle	en logs	Tall	ly spa	ce		Total	0	
Vegetation inter-	egrity - fu	inction	7 Litter	cove	er (%)		B	are gr	ound	cover	(%)	° Hollov Crypte	v bearin ogam c	over (%)	110	Roc	k cov	er (%)		G	
Subplot score (% in each)	70 :	30	60 51	020	> a	1 p	C	p d	0	0	00	21	0	C	ø	0	Ð	0	
Average of the	5 subplots	5		4	+6				6	.6			0	.2				0			
These attributes	require c	onsider	ation of si	te ob	servatio	ns and	may	/ be co	omple	ted aft	er field	d work:	20/ 30/	/ 50/ 80 [ОВН		Conf	idence		H/ M/	L
regetation clas	ss	intan	d kiver	ne	Thin	-	La	rge tre	e bei	ncnma	IFK SIZ	20		EEC		/	Conf	idence		H/ M/	1
Plant commun	ity type (I	РСТ)	1	CT	27	ning D	CT o	und ma		monta	000 (antional)	or for Di	ic Nict our	No	ck atio			10000		
Morphological type	in site les	itures u	Land	dform nent	1 1	ining i			Lan	idform tern		optionaly		Microre	elief	auc n		rvey po	лроз	cs.	
Lithology			Soil	surfa ure	ace .				Soi	l colou	r			Soil de	pth						
Slope			Asp	ect					Site	e draina	age			Distant water a	ce to and t	near ype	est				
Disturbance		Seve	rity Age code		Brief si	te des	cripti	ion or o	other	notes		an faire									
Cleaning (inc. lo	ogging)	-	-	-	Plo	t M	sp	reso	to	the	d	7 7	one								
Soil erosion	pasture)	-		-	h		-			an c		a tanta	1.1								
Firewood / CWI) removal		-	-	FID	+ 1	00	in'c	teo	A -	to	nam	sa	roa	d	Ce	mi	da			
Canaina (id. an)	tive/stock	1		-	116.00																
GISZING IID. DS	(second)	-		-																	
Fire damage					the second se		-					and the second s	-							State .	
Grazing (id. na Fire damage Storm damage		-	-	-	Emerg	ents he	eight	S	Upp	per stra	atum h	neights	Middle	e stratum	heic	ghts		Lowers	stratu	m hei	igh
Fire damage Storm damage Weediness		-		-	Emerg Top	ents he Mid	B	ottom	Upp	per stra	atum h	neights Bottom	Middle	Mid	Bot	ttom		Lower :	stratu /lid	m hei Bott	igh

400 m ²	floristics plot:	Survey name	Plot identifier	Recorder	s			
Date	22721	TGEP	14 ID AL	Addy	Wats	on		
GF code	Species name Full species name, or mandatory. Data from	a unique means of ident here will be used to ass	tifying separate taxa within a ign growth form richness and	survey is I cover.	N, HTW or non- HTW	² Foliage cover	Abund -ance	Voucher
TG	Acacia	perdula			N	10	3	
_	Conyza	Sumatrensis	Tall Fleaba	ne	E	0.5	100	
FG	oxali's	Chroades	·		N	0-1	100	
-	4 verbena	bonariensis	Phipletop		E	5	1000	
FG	5 Einadia	nutans	Applequerter president		N	1	15	
-	6 Souchus	Steraceus	Sow thi	stle	E	0.1	20	
FG	Crassula	colorata	Stonec	907	N	0.1	500	
_	8 Echium	plantagineum	Pattersonic	nise	E	0.1	20	
FG	9 Sida co	mipata.			N	0.1	10	
FG	10 Vittadini	a Curreata	FUZZ WE	ed	N	0.1	20	
FG	11 Convulu	ulus entesc	ens		N	0.1	5	
_	12 Lopidiu	n sp	au el altre		E	0.1	10	
-	13 Sinavei	s arvenis	Charlos	ck.)	E	0.1	20	
-	14 Plantara	anninghami			E	10	1000	
-	15 Sizymbril	in icio	Rocket m	nstard	E	0 - 1	50	
-	16 Sida vhe	ombitolia	Paddy Ince	M	E	0.5	100	
fa	17 Rumex	brownii			N	0.1	10	
-	18 N/A		Pasture s	p. Oat?	E	5	500	
-	19 Solanni	n nigra	Blackberry	niphtshoo	h E	0-1	5	
56	20 Mopor	um montanun	n .	V	N	0.1	5	
56	21 Greivera	marviflora			N	0.2	2	
TG	22 Acacia	salians			N	25	12	
-	23 Cenchri	s clandestinen	my Kyknyi	,	HTE	5	100	
-	24 Eracroshi	5 curinale	African lo	ve grass	E	25	0001	
-	25 Gain	terossissimum		J	HTE	0.1	5	
Fa	28 Dichandr	a repens			N	0.2	100+	
	27							
		1						
	29	Count	Cover					
	30 TG	2	35					
	SG SG	2	0.3					
	32 66	Ð	0					
	33 FG	8	1.8					
	31 EG	0	0					
	25 06	0	0					

Print more copies of this page to allow for higher species counts at a plot. All vascular plant species in a plot need to be recorded.

GF Code: see growth form definitions in BAM 2020 Appendix F. N: native, HTW: high threat weed.

² Foliage cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, 4, 5, 10, 15, 20, 25, ...100%; Note: 0.1% cover represents an area of approximately 63×63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4×1.4 m, and $1\% = 2.0 \times 2.0$ m, $5\% = 4 \times 5$ m, $25\% = 10 \times 10$ m. Note the top 3 dominant native species within each GF group.

Abundance: Count 1, 2, 3 ..., when ≤10, estimate when >10, 20, 30 ... 100, 200, 300 ..., 1000, 2000, 3000 ... (as integer values).

Appendix C – BAM plot photos

















Plot	Zone	PCT ID	Pictures
11	3	55	

Plot	Zone	PCT ID	Pictures
12	4	82	

Plot	Zone	PCT ID	Pictures
13	4	82	





Plot	Zone	PCT ID	Pictures
			<image/>
16	5	82	

Plot	Zone	PCT ID	Pictures
17	6	82	

Plot	Zone	PCT ID	Pictures
18	6	82	


Plot	Zone	PCT ID	Pictures
22	9	201	

Plot	Zone	PCT ID	Pictures
2 3	9 9	201	Pictures



Appendix D - BAM Credit summary reports

Standard BAM



BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00020946/BAAS19066/20/00021368	Tomingley Gold Extension Project	24/11/2021
Assessor Name	Report Created	BAM Data version *
Addy Watson	10/12/2021	50
Assessor Number	BAM Case Status	Date Finalised
BAAS19066	Open	To be finalised
Assessment Revision	Assessment Type	
0	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	Vegetatio n zone name	TEC name	Current Vegetatio n integrity score	Change in Vegetatio n integrity (loss / gain)	Are a (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversit y risk weighting	Potenti al SAII	Ecosyste m credits
Belah	woodland	on alluvial plaiı	ns and low ris	es in the ce	ntral	NSW wheatbe	lt to Pilliga and	d Liverpool Plain	s regions.			
1	55_Poor	Not a TEC	15.4	15.4	25.6		High Sensitivity to Potential Gain			2.00		0

Assessment Id

Proposal Name

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Tomingley Gold Extension Project



2	55_Moder ate	Not a TEC	53.1	53.1	14.9	High Sensitivity to Potential Gain			2.00		395
3	55_Good	Not a TEC	87.4	87.4	3.3	High Sensitivity to Potential Gain			2.00		145
										Subtot al	540
Fuzzy	Box Wood	and on alluvial brow	wn loam soi	ls mainly	in the NS	V South Western Slope	s Bioregion				
7	201_Mode rate_trees	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	25.9	25.9	0.03	High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00	TRUE	1
8	201_Mode rate_cleare d	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	22.9	22.9	2.4	High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00	TRUE	27

Assessment Id

Proposal Name

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Tomingley Gold Extension Project



9	201_Good	Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	94.7	94.7	8.4	High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00	TRUE	397
										Subtot al	425
Weepi	ing Myall o	pen woodland of th	e Darling Ri	iverine P	lains Bioreg	ion and Brigalow Belt	South Bioregie	on			
10	27_Moder ate	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	39.1	39.1	0.68	High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		13
										Subtot al	13

Assessment Id

Proposal Name

00020946/BAAS19066/20/00021368

Tomingley Gold Extension Project

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Weste	rn Grey Bo	x - Poplar Box - V	White Cypress F	Pine tall	woodland o	n red loams mainly of the eastern Coba	r Peneplain Bioregion		
4	82_Moder ate	Not a TEC	47.2	47.2	4	High Sensitivity to Potential Gain	2.00		95
5	82_Good	Not a TEC	82	82.0	14.8	High Sensitivity to Potential Gain	2.00		608
6	82_Kurrajo ng	Not a TEC	16.3	16.3	1.9	High Sensitivity to Potential Gain	2.00		0
								Subtot al	703
								Total	1681

Species credits for threatened species

Vegetation zone	Habitat condition	Change in	Area	Sensitivity to	Sensitivity to	BC Act Listing	EPBC Act listing	Potential	Species
name	(Vegetation	habitat	(ha)/Count	loss	gain	status	status	SAII	credits
	Integrity)	condition	(no.	(Justification)	(Justification)				
			individuals)						

Assessment Id

Proposal Name

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Tomingley Gold Extension Project



Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00020946/BAAS19066/21/00024506	TGEP	24/11/2021
Assessor Name	Report Created	BAM Data version *
Addy Watson	10/12/2021	50
Assessor Number	BAM Case Status	Date Finalised
BAAS19066	Open	To be finalised
Assessment Revision	Assessment Type	BOS entry trigger
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees Credit Requirement

Class	Contains hollows	Number of trees	Ecosystem credits
55-Belah woodlan	d on alluvial plains and low r	ises in the central NSW whea	atbelt to Pilliga and
Liverpool Plains re	egions.		
3	True	2.0	2
2	True	1.0	1
2	False	2.0	1
2	False	1.0	1
2	False	1.0	1
3	False	1.0	1
3	True	4.0	4
3	False	1.0	1
			12
201-Fuzzy Box Wo Bioregion	oodland on alluvial brown loa	am soils mainly in the NSW S	outh Western Slopes
3	False	1.0	1
			1
82-Western Grey I eastern Cobar Pen	3ox - Poplar Box - White Cyp eplain Bioregion	ress Pine tall woodland on re	ed loams mainly of the
3	True	3.0	3
3	False	10	1

Assessment Id

Proposal Name

TGEP

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3	5.0	False	2
1	1.0	False	2
2	2.0	True	3
3	5.0	False	2
2	3.0	False	3
2	2.0	False	3
2	4.0	False	2
2	2.0	True	2
1	1.0	False	3
1	1.0	False	2
1	1.0	True	3
3	5.0	False	2
1	1.0	False	2
1	1.0	False	2
1	1.0	False	2
30			
43			

Species credits for threatened species Nil

Assessment Id

Proposal Name

TGEP

Page 2 of 2

00020946/BAAS19066/21/00024506

Purpose

This procedure explains the actions to be taken if an animal or eggs are discovered on the site that require handling or rescue during vegetation and soil clearance and ongoing construction activities. The procedure relates primarily to injured shocked and juvenile individuals but also applies to nocturnal fauna or slow-moving species that may not be capable of moving away from mobile plant and equipment.

Scope

This procedure is applicable to all native and introduced species that are found on the site. Attendee construction staff and contractors will attend a project induction, which will include a section on fauna.

Procedure

In the event wildlife (including shocked, juvenile animals or eggs) are discovered on the site during vegetation and soil clearance and ongoing construction activities the following steps shall be taken:

1. STOP ALL WORK in the vicinity of the fauna and immediately notify the work supervisor, who will then notify a member of the Environmental/ management team.

2. If required, contact project ecologist to obtain positive identification of the subject species.

3. Preferably allow fauna to leave the area without intervention.

4. If immediately available, use a licensed fauna ecologist or wildlife carer with specific animal handling experience to carry out any fauna handling.

5. To minimise stress to native fauna and remove the risk of further injury an appropriately competent person shall:

a. If time permits call ecologist or fauna rescue for advice.

b. Attempt to herd animal into adjoining forest, outside construction area.

c. If capture is necessary cover larger animals with a towel or blanket and place in a large cardboard box and/or cotton/calico bag

d. Place smaller animals in a cotton/calico bag tied at the top

e. Keep the animal in a quiet, warm, ventilated and dark place away from noisy construction activities.

f. Aquatic fauna are to be placed in plastic aquaria or a moistened plastic bag. Frogs will be transported in moistened plastic bags (1 frog/bag) with a small amount of leaf litter. Handling and translocation of frogs shall be in accordance with the Hygiene Protocol for the Control of Disease in Frogs (DECC 2008)

6. Bats should only be handled by appropriately trained and vaccinated person.

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Appendix F – Sources of information

Spatial information	Reference
IBRA bioregions and subregion	NSW data portal
NSW landscape regions	NSW (Mitchell) Landscapes V3.1
Rivers and streams	Six Viewer / SEED WMS topographic layer
Wetlands	Directory of Important Wetlands
Waterways	Waterway NSW Final
Key Fish Habitat	DPI Key Fish Habitat GIS layer
Connectivity of different areas of habitat	Central West Lachlan State Vegetation Plant Community Type map 4468 and ESRI Satellite
Native vegetation extent	Central West Lachlan State Vegetation Plant Community Type map 4468 and ESRI Satellite
NSW woody vegetation extent	NSW woody vegetation extent & FPC 2011
NSW woody vegetation change	SLATS - Woody Vegetation Change - NSW 2015 and 2016
Landuse	NSW Landuse 2017 v1p2
Threatened species records	BioNet species sightings search

Spatial data used in this report

Web sites and links to documents used in this report

Title	Web address
Legislation	
Commonwealth Environment Protection & Biodiversity Conservation Act 1999	http://www.austlii.edu.au/au/legis/cth/consol_act/epabca1999588/
Environmental Planning and Assessment Act 1979	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+203+ 1979+cd+0+N
Fisheries Management Act 1994	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+38+1 994+cd+0+N
National Parks and Wildlife Act 1974	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+80+1 974+cd+0+N
Biodiversity Conservation Act 2016	https://www.legislation.nsw.gov.au/~/view/act/2016/63
Water Management Act 2000	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+92+2 000+cd+0+N
Local Land Services Act 2013	https://www.legislation.nsw.gov.au/~/view/act/2013/51
Biodiversity	
Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method (2020)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals- and-plants/Biodiversity/surveying-threatened-plants-and-habitats-nsw-survey-guide- biodiversity-assessment-method-200146.pdf
NSW Survey Guide for Threatened Frogs A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (2020)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals- and-plants/Threatened-species/nsw-survey-guide-for-threatened-frogs-200440.pdf
'Species credit' threatened bats and their habitats NSW survey guide for the	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals- and-plants/Threatened-species/species-credit-threatened-bats-survey-guide-180466.pdf

Title	Web address
Biodiversity Assessment Method (2018)	
Biodiversity Assessment Methodology (DPIE, 2020)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals- and-plants/Biodiversity/biodiversity-assessment-method-2020-200438.pdf
Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC, 2004)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals- and-plants/Threatened-species/draft-threatened-biodiversity-survey-guide.pdf
Survey requirements (birds, bats, reptiles, frogs, fish and mammals) for species listed under the EPBC Act	https://www.environment.gov.au/epbc/policy-statements
BAM Credit Calculator	http://www.environment.nsw.gov.au/biobanking/calculator.htm
Survey requirements (birds, bats, reptiles, frogs, fish and mammals) for species listed under the EPBC Act	http://www.environment.gov.au/topics/environmentprotection/environment-assessments.
Threatened biodiversity profile search	http://www.environment.nsw.gov.au/threatenedspeciesapp/
NSW BioNet	http://www.bionet.nsw.gov.au/
Vegetation Types databases	http://www.environment.nsw.gov.au/biobanking/vegtypedatabase. htm
PlantNET	http://plantnet.rbgsyd.nsw.gov.au/
Online Zoological Collections of Australian Museums	http://www.ozcam.org.au/
Threatened Species Assessment Guideline - The Assessment of Significance (DECCW, 2007)	http://www.environment.nsw.gov.au/resources/threatenedspecies /tsaguide07393.pdf
Significant Impact Guidelines 1.1 - Matters of National Environmental Significance	http://www.environment.gov.au/epbc/publications/significant-impact-guidelines-11- matters-national-environmental-significance
Principles for the use of biodiversity offsets in NSW	http://www.environment.nsw.gov.au/biodivoffsets/oehoffsetprincip .htm
The response of parrots to fire: Australian Geographic interview	https://erikaroper.com/blog/the-response-of-parrots-to-fire-australian-geographic-interview
Descriptions for NSW (Mitchell) Landscapes Version 2 (DECC 2002)	https://www.environment.nsw.gov.au/resources/conservation/LandscapesDescriptions.pdf

Appendix G – Glossary of terms from BAM (2020)

BAM definitions and acronyms used in this document

Accredited person: has the same meaning as in the BC Act, referred to in the BAM as 'assessor'.

Ancillary rules: has the same meaning as set out in clause 6.5 of the BC Regulation.

Annual probability of decline in vegetation and habitat condition: an estimate of the average probability of decline of each attribute through clearing, stochastic factors or ongoing degrading actions (firewood removal, weed invasion, livestock grazing).

Areas of geological significance: geological features such as karst, caves, crevices, cliffs.

Assessment area surrounding the subject land: the area of land in the 1500m buffer zone

around a Development Site, or land to be biodiversity certified or a biodiversity stewardship

site, that is determined in accordance with Subsection 4.3.2.

Assessor: the person accredited under the BC Act referred to in Subsection 2.1.2 and who has been engaged by the proponent.

Averted loss: the gain in vegetation and habitat condition that arises from managing the proposed land as an offset compared to the probable future vegetation condition if the land was to be left unmanaged (see *Annual probability of decline*).

Avoid: measures taken by a proponent such as careful site selection or actions taken through the design, planning, construction and operational phases of the development to completely avoid impacts on biodiversity values, or certain areas of biodiversity. Refer to the BAM for operational guidance.

BAM: the Biodiversity Assessment Method.

BC Act: the Biodiversity Conservation Act 2016.

BC Regulation: the Biodiversity Conservation Regulation 2017.

Benchmark data: for a PCT, vegetation class or vegetation formation benchmark data is contained in the BioNet Vegetation Classification. A local reference site may also be used to establish benchmark data for a PCT that may be used in a BAM assessment.

Benchmarks: the quantitative measures that represent the 'best-attainable' condition, which acknowledges that native vegetation within the contemporary landscape has been subject to both natural and human-induced disturbance. Benchmarks are defined for specified variables for each PCT. Vegetation with relatively little evidence of modification generally has minimal timber harvesting (few stumps, coppicing, cut logs), minimal firewood collection, minimal exotic weed cover, minimal grazing and trampling by introduced or overabundant native herbivores, minimal soil disturbance, minimal canopy dieback, no evidence of recent fire or flood, is not subject to high frequency burning, and has evidence of recruitment of native species.

Biodiversity certification: has the same meaning as in the BC Act.

Biodiversity Certification Assessment Report (BCAR): has the same meaning as in the BC Act.

Biodiversity credit report: the report produced by the Credit Calculator that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a Development Site, or on land to be biodiversity certified, or that sets out the number and class of biodiversity credits that are created at a biodiversity stewardship site.

Biodiversity Development Assessment Report (BDAR): has the same meaning as in the BC Act.

Biodiversity offsets: management actions that are undertaken to achieve a gain in biodiversity values on areas of land in order to compensate for losses to biodiversity values from the impacts of development.

Biodiversity Stewardship Agreement: has the same meaning as in the BC Act.

Biodiversity Stewardship Assessment Report (BSAR): the report that must be prepared in accordance with the BAM and submitted as part of an application for a biodiversity stewardship agreement.

Biodiversity values: has the same meaning as clause 1.5(2) of the BC Act.

Biodiversity values map: is established according to clause 7.3 of the BC Regulation. Development within an area identified on the map requires assessment using the BAM.

BioNet Atlas: the DPIE database of flora and fauna records (formerly known as the NSW Wildlife Atlas). The Atlas contains records of plants, mammals, birds, reptiles, amphibians, some fungi, some invertebrates (such as insects and snails listed under the BC Act) and some fish.

BioNet Vegetation Classification: the master vegetation community-level classification for use in vegetation mapping programs and regulatory biodiversity impact assessment frameworks in NSW. The BioNet Vegetation Classification is published by DPIE and available at <u>www.environment.nsw.gov.au/research/Visclassification.htm.</u>

Broad condition state: areas of the same PCT that are in relatively homogenous condition. Broad condition is used for stratifying areas of the same PCT into a vegetation zone for the purpose of determining the vegetation integrity score. **Certified more appropriate local data:** has the same meaning as set out in Subsection 2.2.2.

Change in vegetation integrity score for a biodiversity stewardship site: the difference (gain) between the estimated vegetation integrity score without management at a biodiversity stewardship site and the predicted future vegetation integrity score with management at a biodiversity stewardship site, calculated in accordance with Equation 28. Class of biodiversity credit: as defined in Section 11.3.

Clearing site: the site proposed to be cleared of native vegetation where approval is sought under Part 5A of the Local Land Services Act 2013 or the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017.

Clonal species: flora species that propagate asexually at a site or have a limited degree of sexual reproduction, either within or between sites. Modes of asexual reproduction will include vegetative reproduction such as by rhizomes, root suckers or bulb replication.

Connectivity: the measure of the degree to which an area(s) of native vegetation is linked with other areas of vegetation. **Credit Calculator:** the computer program that provides decision support to assessors and proponents by applying the BAM, in particular by using the data required to be entered and the equations in Appendix 6 and Appendix 9 to calculate the number and class of biodiversity credits required to offset the impacts of a development or created at a biodiversity stewardship site.

Critically endangered ecological community (CEEC): an ecological community specified as critically endangered in Schedule 2 of the BC Act and/or listed under Part 13, Division 1,

Subdivision A of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). **Crown cover:** the vertical projection of the periphery of tree crowns within a designated area.

Derived vegetation: PCTs that have changed to an alternative stable state as a consequence of land management practices since European settlement. Derived communities can have one or more structural components of the vegetation entirely removed or severely reduced (e.g. over-storey of grassy woodland) or have developed new structural components where they were previously absent (e.g. shrubby mid-storey in an open woodland system).

Development Footprint: the area of land that is directly impacted on by a proposed development, including access roads, and areas used to store construction materials. The term *Development Footprint* is also taken to include clearing footprint except where the reference is to a small area development or a major project development.

Development Site: an area of land that is subject to a proposed development that is under the EP&A Act. The term *Development Site* is also taken to include clearing site except where the reference is to a small area development or a major project development.

Ecosystem credits: a measurement of the value of threatened ecological communities, threatened species habitat for species that can be reliably predicted to occur with a PCT, and PCTs generally. Ecosystem credits measure the loss in biodiversity values at a Development Site and the gain in biodiversity values at a biodiversity stewardship site. **Endangered ecological community (EEC):** an ecological community specified as endangered in Schedule 2 of the BC Act, or listed under the EPBC Act.

Environment Agency Head: has the same meaning as in the BC Act.

EP&A Act: the NSW Environmental Planning and Assessment Act 1979.

EPBC Act: the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

Ephemeral flora species: flora species where the abundance of the species above ground fluctuates in response to the plant life history in combination with environmental conditions and/or disturbance regimes. Fluctuations in abundance may be short-term (seasonal) or long-term (yearly to decadal). Many ephemeral species persist underground through unfavorable conditions via soil seed banks or dormant vegetative organs (bulbs, tubers, rootstocks).

Estuarine area: a semi-enclosed body of water having an open or intermittently open connection with the ocean, in which water levels do not vary with the ocean tide (when closed to the sea) or vary in a predictable, periodic way in response to the ocean tide at the entrance (when open to the sea).

Expert: a person who has the relevant experience and/or qualifications to provide expert opinion in relation to the biodiversity values to which an expert report relates.

Foliage cover: the percentage of a plot area that would be covered by a vertical projection of the foliage and branches and trunk of a plant, or plants or a growth form group. Foliage cover can also be referred to as percent foliage cover. **Gain:** the gain in biodiversity values at a biodiversity stewardship site, over time from undertaking management actions at a biodiversity stewardship site. Gain in biodiversity values is the basis for creating biodiversity credits at the biodiversity stewardship site.

Grassland: native vegetation classified in the vegetation formation 'Grasslands' in Keith (2004)². Grasslands are generally dominated by large perennial tussock grasses, lack of woody plants, the presence of broad-leaved herbs in inter-tussock spaces, and their ecological association with fertile, heavy clay soils on flat topography in regions with low to moderate rainfall.

Growth form: the form that is characteristic of a particular flora species at maturity. Growth forms are set out in Appendix 4.

Habitat: an area or areas occupied, or periodically or occasionally occupied, by a species or ecological community, including any biotic or abiotic component.

Habitat component: the component of habitat that is used by a threatened species for either breeding, foraging or shelter.

Habitat surrogates: measures of habitat that predict the occurrence of threatened species and communities: IBRA subregion, PCT, percent vegetation cover and vegetation condition.

Herbfield: native vegetation which predominantly does not contain an over-storey or mid- storey and where the ground cover is dominated by non-grass species.

High threat exotic plant cover: plant cover composed of vascular plants not native to Australia that if not controlled will invade and outcompete native plant species. Also referred to as high threat weeds.

Hollow bearing tree: a living or dead tree that has at least one hollow. A tree is considered to contain a hollow if: (a) the entrance can be seen; (b) the entrance width is at least 5cm; (c) the hollow appears to have depth (i.e. you cannot see solid wood beyond the entrance); (d) the hollow is at least 1m above the ground. Trees must be examined from all angles.

IBRA region: a bioregion identified under the Interim Biogeographic Regionalisation for Australia (IBRA) system³, which divides Australia into bioregions on the basis of their dominant landscape-scale attributes.

IBRA subregion: a subregion of a bioregion identified under the IBRA system.

Impact assessment: an assessment of the impact or likely impact of a development on biodiversity values which is prepared in accordance with the BAM.

Impacts on biodiversity values: loss in biodiversity values from direct or indirect impacts of development in accordance with Chapters 8, 1 and 10.

Important wetland means:

(a) a wetland that is listed in the Directory of Important Wetlands of Australia

(DIWA) from time to time, and

(b) for the purposes of all paragraphs except 4.2.1.6 the actual location on the

ground that corresponds to a SEPP 14 Coastal wetland

(c) for the purposes of Paragraph 4.2.1.6:

(i) a SEPP 14 Coastal Wetland, and

(ii) the actual location on the ground that corresponds to a SEPP 14 Coastal Wetland

Individual: in relation to organisms, a single, mature organism that is a threatened species, or any additional threatened species listed under Part 13 of the EPBC Act.

Intact vegetation: vegetation where all tree, shrub, grass and/or forb structural growth form groups expected for a plant community type are present.

Intrinsic rate of increase (*ir***):** an estimate of the rate of gain for an attribute at a biodiversity stewardship site from actions undertaken as part of the management plan. The intrinsic rate of increase is specified for an attribute according to the formation of the PCT being assessed (see Appendix 8).

Landscape attributes: in relation to a Development Site or a biodiversity stewardship site, native vegetation cover, vegetation connectivity, patch size and the strategic location of a biodiversity stewardship site.

Large tree benchmark: is the largest stem size class for a PCT as determined by the benchmark for the PCT.

Life cycle: the series of stages of reproduction, growth, development, aging and death of an organism.

Life form: the form that is characteristic of a particular species at maturity. In the BAM, life form has the same meaning as growth form for flora species.

Linear shaped development: development that is generally narrow in width and extends across the landscape for a distance greater than 3.5 kilometres in length.

Litter cover: the percentage ground cover of all plant material that has detached from a living plant, including leaves, seeds, twigs, branchlets and branches (<10cm in diameter).

Local population: the population that occurs in the study area. In cases where multiple populations occur in the Development Site or a population occupies part of the Development Site, impacts on each subpopulation must be assessed separately.

Local wetland: any wetland that is not identified as an important wetland (refer to definition of *Important wetland*). **Loss of biodiversity:** the loss of biodiversity values from a Development site, native vegetation clearing site or land where biodiversity certification is conferred.

Major project: State Significant Development and State Significant Infrastructure.

Minimise: a process applied throughout the development planning and design life cycle which seeks to reduce the residual impacts of development on biodiversity values.

Mitchell landscape: landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000.

Multiple fragmentation impact development: developments such as wind farms and coal seam gas extraction that require multiple extraction points (wells) or turbines and a network of associated development including roads, tracks, gathering systems/flow lines, transmission lines.

Native ground cover: all native vegetation below 1m in height, including all such species native to NSW (i.e. not confined to species indigenous to the area).

Native ground cover (grasses): native ground cover composed specifically of native grasses. Native ground cover (other): native ground cover composed specifically of non-woody

native vegetation (vascular plants only) <1m in height that is not grass (e.g. herbs, ferns).

Native ground cover (shrubs): native ground cover composed specifically of native woody vegetation <1m in height. **Native mid-storey cover:** all vegetation between the over-storey stratum and a height of 1m (typically tall shrubs, understorey trees and tree regeneration) and including all species native to NSW (i.e. native species not local to the area can contribute to mid-storey structure).

Native over-storey cover: the tallest woody stratum present (including emergent) above 1m and including all species native to NSW (i.e. native species not local to the area can contribute to over-storey structure). In a woodland

community, the over-storey stratum is the tree layer, and in a shrubland community the over-storey stratum is the tallest shrub layer. Some vegetation types (e.g. grasslands) may not have an over-storey stratum.

Native plant species richness: the number of different native vascular plant species that are characteristic of a PCT. **Native vegetation:** has the same meaning as in section 1.6 of the BC Act.

Native vegetation cover: the percentage of native vegetation cover on the subject land and the surrounding buffer area. Cover estimates are based on the cover of native woody and

non-woody vegetation relative to the approximate benchmarks for the PCT, taking into

account vegetation condition and extent. Native over-storey vegetation is used to determine

the percent cover in woody vegetation types, and native ground cover is used to assess cover in non-woody vegetation types.

Number of trees with hollows: a count of the number of living and dead trees that are hollow bearing.

Offset rules: are those established by the BC Regulation.

Onsite measures: measures and strategies that are taken or are proposed to be taken at a Development site to avoid and minimise the direct and indirect impacts of the development on biodiversity values.

Operational Manual: the Operational Manual published from time to time by DPIE, which is a guide to assist assessors when using the BAM.

Patch size: an area of intact native vegetation that:

a) occurs on the Development site or biodiversity stewardship site, and

b) includes native vegetation that has a gap of less than 100m from the next area of

moderate to good condition native vegetation (or ≤30m for non-woody ecosystems).

Patch size may extend onto adjoining land that is not part of the Development site or biodiversity stewardship site. **PCT classification system:** the system of classifying native vegetation approved by the NSW Plant Community Type Control Panel and described in the BioNet Vegetation Classification.

Percent cleared value: the percentage of a PCT that has been cleared as a proportion of its pre-1750 extent, as identified in the BioNet Vegetation Classification.

Plant community type (PCT): a NSW plant community type identified using the PCT classification system. **Plot:** an area within a vegetation zone in which site attributes are assessed.

Population: a group of organisms, all of the same species, occupying a particular area.

Probability of reaching benchmark: the probability of a specific attribute or growth form group reaching benchmark conditions in the vegetation zone at the end of the management timeframe.

Proponent: a person who intends to apply for consent or approval to carry out development, clearing, biodiversity certification or for approval for infrastructure.

Reference sites: the relatively unmodified sites that are assessed to obtain local benchmark information when benchmarks in the Vegetation Benchmarks Database are too broad or otherwise incorrect for the PCT and/or local situation. Benchmarks can also be obtained from published sources.

Regeneration: the proportion of over-storey species characteristic of the PCT that are naturally regenerating and have a diameter at breast height <5cm within a vegetation zone.

Residual impact: an impact on biodiversity values after all reasonable measures have been taken to avoid and minimise the impacts of development. Under the BAM, an offset requirement is calculated for the remaining impacts on biodiversity values.

Retirement of credits: the retirement of biodiversity credits from a biobank site or a biodiversity stewardship site secured by a biodiversity stewardship agreement.

Riparian buffer: an area of land determined according to Appendix 3.

Risk of extinction: the likelihood that the local population or CEEC or EEC will become extinct either in the short term or in the long term as a result of direct or indirect impacts on the viability of that population or CEEC or EEC.

SEPP 14 Coastal wetland: a wetland to which *State Environmental Planning Policy No 14 – Coastal Wetlands* applies or an area that is identified as a coastal wetland within the meaning of the term *coastal wetlands and littoral rainforests* area for the purposes of *Coastal Management Act 2016*.

Site attributes: the matters assessed to determine vegetation integrity. They include: native plant species richness, native over-storey cover, native mid-storey cover, native ground cover (grasses), native ground cover (shrubs), native ground cover (other), exotic plant cover (as a percentage of total ground and mid-storey cover), number of trees with hollows, proportion of over-storey species occurring as regeneration, and total length of fallen logs.

Site-based development: a development other than a linear shaped development, or a multiple fragmentation impact development.

Site context: the value given to landscape attributes of a Development Site or biodiversity stewardship site after an assessment undertaken in accordance with Section 4.3.

Species credit species: are threatened species or components of species habitat that are identified in the Threatened Species Data Collection as requiring assessment for species credits.

Species credits: the class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection.

State Significant Development: has the meaning given by Division 4.1 of Part 4 of the EP&A Act.

State Significant Infrastructure: has the meaning given by Part 5.1 of the EP&A Act. Stream order: has the same meaning as in Appendix 3.

Subject land: is land to which the BAM is applied in Stage 1 to assess the biodiversity

values of the land. It includes land that may be a Development Site, clearing site, proposed for biodiversity certification or land that is proposed for a biodiversity stewardship agreement.

Threat status class: the extent to which a species or ecological community is threatened with extinction, or the extent to which a PCT is estimated to have been cleared (see *Percent cleared value*).

Threatened Biodiversity Data Collection: part of the BioNet database, published by DPIE and accessible from the BioNet website at <u>www.bionet.nsw.gov.au</u>.

Threatened ecological community (TEC): means a critically endangered ecological community, an endangered ecological community or a vulnerable ecological community listed in Schedule 2 of the BC Act.

Threatened species: critically endangered, endangered or vulnerable threatened species as defined by Schedule 1 of the BC Act, or any additional threatened species listed under Part 13 of the EPBC Act as critically endangered, endangered or vulnerable.

Threatened species survey: a targeted survey for threatened species undertaken in accordance with Section 6.5. Threatened species survey guidelines: survey methods or guidelines published by DPIE from time to time at www.environment.nsw.gov.au/topics/animals-and-plants/threatened-

species/about-threatened-species/surveys-and-assessments.

Total length of fallen logs: the total length of logs present in a vegetation zone that are at least 10cm in diameter and at least 0.5m long.

Transect: a line or narrow belt along which environmental data is collected.

Upland Swamp Policy: the document entitled Addendum to NSW Biodiversity Offsets Policy for Major Projects: Upland swamps impacted by longwall mining subsidence as in force on the day when the BAM is published until such time as the Environment Agency Head publishes any further document for the purpose of it being adopted by the BAM as the Upland Swamp Policy.

Vegetation Benchmarks Database: a database of benchmarks for vegetation classes and some PCTs. The Vegetation Benchmarks Database is published by DPIE and is part of the BioNet Vegetation Classification. It is available at www.environment.nsw.gov.au/research/Visclassification.htm.

Vegetation class: a level of classification of vegetation communities defined in Keith (2004)⁴. There are 99 vegetation classes in NSW.

Vegetation formation: a broad level of vegetation classification as defined in Keith (2004)⁴. There are 16 vegetation formations and sub-formations in NSW.

Vegetation integrity: the condition of native vegetation assessed for each vegetation zone against the benchmark for the PCT.

Vegetation integrity score: the quantitative measure of vegetation condition calculated in accordance with Equation 15 or Equation 16.

Vegetation zone: a relatively homogenous area of native vegetation on a Development Site, land to be biodiversity certified or a biodiversity stewardship site that is the same PCT and broad condition state.

Viability: the capacity of a species to successfully complete each stage of its life cycle under normal conditions so as to retain long-term population densities.

Vulnerable ecological community (VEC): an ecological community specified as vulnerable in Schedule 2 of the BC Act and/or listed under Part 13, Division 1, Subdivision A of the EPBC Act.

Wetland: an area of land that is wet by surface water or ground water, or both, for long enough periods that the plants and animals in it are adapted to, and depend on, moist conditions for at least part of their life cycle. Wetlands may exhibit wet and dry phases and may be wet permanently, cyclically or intermittently with fresh, brackish or saline water (see also *Important wetland* and *Local wetland*).

Woody native vegetation: native vegetation that contains an over-storey and/or mid-storey that predominantly consists of trees and/or shrubs.

Acronyms

Acronym	Definition
BAR	Biodiversity Assessment Report
BAMC	Biodiversity Assessment Method Calculator
BASSAR	Biodiversity Steward Site Assessment Report
BoM	Bureau of Meteorology
BC Act	Biodiversity Conservation Act 2016
BOS	Biodiversity Offset Strategy
CEEC	Critically Endangered Ecological Community
DAWE	Department of Agriculture, Water and the Environment
DECC	Department of Environment & Climate Change (Now DPIE)
DECCW	Department of Environment, Climate Change & Water (Now DPIE)
DPIE	Department of Planning, Industry and Environment
DPI	Department of Primary industries
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EPBC	Environment Protection and Biodiversity Conservation Act 1999
FBA	Framework of Biodiversity Assessment
GDE	Groundwater dependent ecosystems
GIS	Geographic information system
GPS	Global positioning system
IBRA	Interim Biogeographic Regionalisation for Australia
KTP	Key threatening process
LEP	Local Environmental Plan
LGA	Local Government Area
MNES	Matters of National Environmental Significance
NP&W Act	National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Services
NSW	New South Wales
OEH	Office of Environment and Heritage (Now DPIE)
PCT	Plant Community Types
PMST	Protected Matters Search Tool
SAT	Scat Assessment Technique
SEARS	Secretary's Environmental Assessment Requirement
SEPP	State Environmental Planning Policy
SSD	State Significant Development
TAFE	Technical and Further Education Institute
TEC	Threatened Ecological Community
TBDC	NSW BioNet Threatened Biodiversity Profile Data Collection
VEC	Vulnerable Ecological Community
VIS	Vegetation Information System
WIRES	Wildlife Information, Rescue and Education Services