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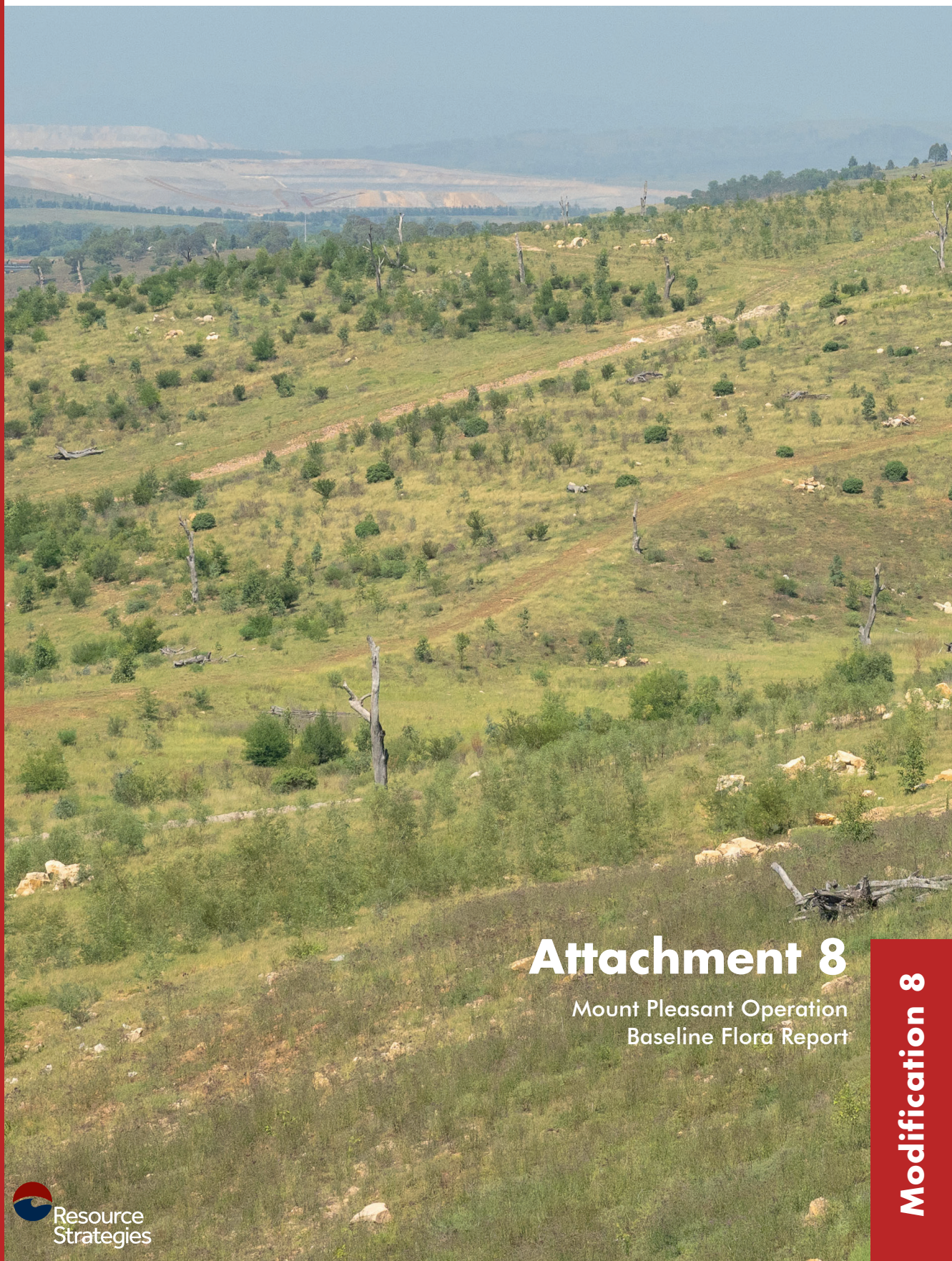
Mount Pleasant Operation

A JOINT VENTURE WITH JCDA Japan Coal Development Australia



Attachment 8

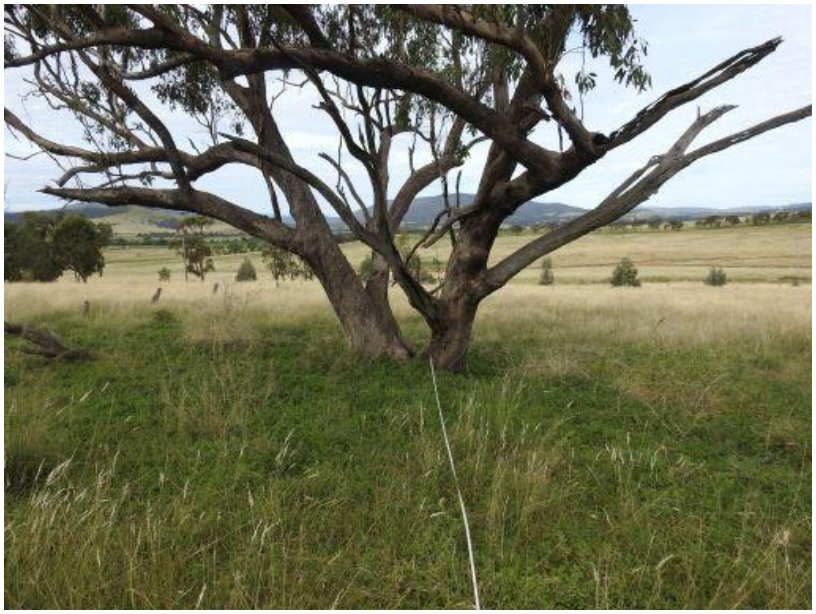
Mount Pleasant Operation Baseline Flora Report

Modification 8

Resource Strategies

MOUNT PLEASANT OPERATION

BASELINE FLORA REPORT



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May 2024

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The approved Mount Pleasant Operation is an open cut coal mine and associated infrastructure located approximately 3 kilometres (km) north-west of Muswellbrook in the Upper Hunter Valley of New South Wales (NSW) (Figure 1). Hunter Eco was commissioned by MACH Energy Australia Pty Ltd (MACH Energy) to undertake flora surveys inside a study area encompassing the mining leases associated with the Mount Pleasant Operation.

The objectives of this report were to:

- document plant species growing across the Study Area by drawing on the results of all past surveys and augmenting this information with that from contemporary surveys;
- classify and map the distribution of vegetation communities across the Study Area; and
- target species, communities and populations listed as threatened in the NSW *Biodiversity Conservation Act 2016* (BC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The surveys were conducted according to the methods and requirements of all relevant NSW and Commonwealth guidelines.

The land across the Study Area has been used for grazing of cattle and sheep for over 100 years, and as a result, the Study Area is a mosaic of majority cleared grassland with patches of woodland. Seven Plant Community Types were mapped across the Study Area. Several of these communities were present in both remnant vegetation form and derived native grassland form. For the derived native grassland, scattered paddock tree species indicated the likely Plant Community Type that had been cleared.

For each of the vegetation communities, floristic content was compared with that listed in the various Scientific Committee Determinations and related advice to identify any threatened ecological communities listed under the BC Act and/or the EPBC Act. The threatened communities found to be present are listed in Table ES-1.

Table ES-1: Threatened Ecological Communities Recorded Across the Study Area

Threatened Ecological Community	Conservation Status
Threatened Ecological Communities Listed under the BC Act	
Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin	Endangered
Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions - endangered ecological community	Endangered
Hunter Lowland Redgum Forest in the Sydney Basin and NSW North Coast Bioregions	Endangered
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Critically Endangered
Threatened Ecological Communities Listed Under the EPBC Act	
Central Hunter Valley Eucalypt Forest and Woodland	Critically Endangered
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered

Individuals of the *Cymbidium canaliculatum population in the Hunter Catchment* Endangered Population under the BC Act were recorded. All previously recorded locations were inspected during the current survey to confirm their presence/absence and identity, and the species was opportunistically targeted during all surveys. No other threatened flora species listed under the BC Act or EPBC Act were recorded in the Study Area, or were recorded in any past studies.

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1 INTRODUCTION

The approved Mount Pleasant Operation is an open cut coal mine and associated infrastructure located approximately 3 kilometres (km) north-west of Muswellbrook in the Upper Hunter Valley of New South Wales (NSW) (Figure 1). Hunter Eco was commissioned by MACH Energy Australia Pty Ltd (MACH Energy) to undertake flora surveys inside a study area encompassing the mining leases associated with the Mount Pleasant Operation.

2 OBJECTIVES, GUIDELINES AND SOURCES

The objectives of this report are to:

- document plant species growing across the Study Area by drawing on the results of all past surveys and augmenting this information with that from current surveys;
- classify and map the distribution of vegetation communities, Plant Community Types (PCTs) and threatened communities listed under the NSW *Biodiversity Conservation Act* 2016 (BC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

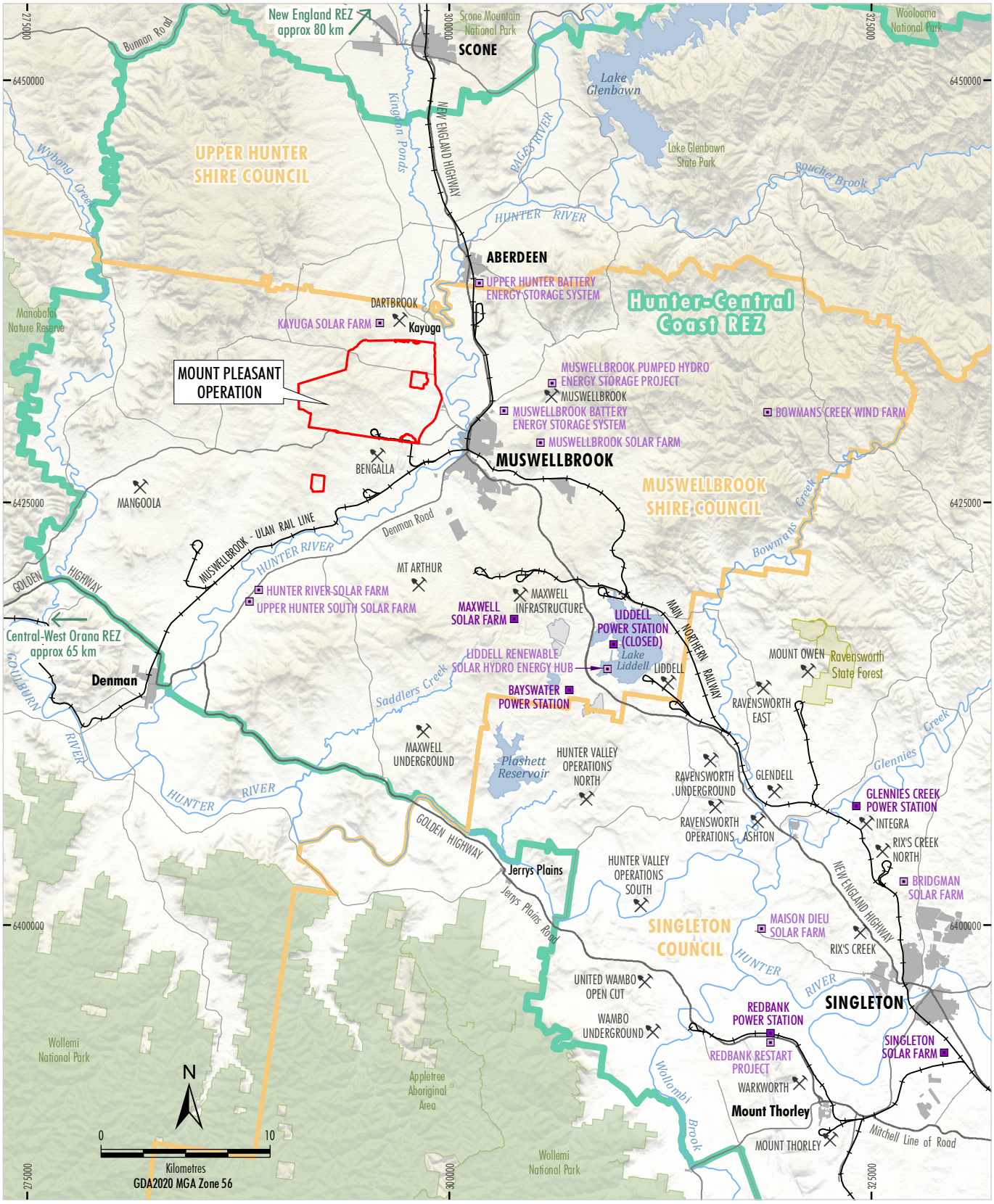
Matthew Bailey (Bolwarra) undertook target surveys for threatened species and populations listed under the BC Act and EPBC Act (Attachment A).

The following methods, guidelines and policies were consulted in the methodology of this study:

- *Biodiversity Assessment Method 2020* (BAM) (Department of Planning, Industry and Environment [DPIE] 2020a);
- *Surveying Threatened Plants and Their Habitats: NSW Survey Guide for the Biodiversity Assessment Method* (DPIE 2020b);
- Draft *Survey Guidelines for Australia's Threatened Orchids: Guidelines for Detecting Orchids Listed as 'Threatened' Under the Environment Protection and Biodiversity Conservation Act 1999* (Department of the Environment [DotE] 2013); and
- *IESC Information Guidelines Explanatory Note: Assessing Groundwater-Dependent Ecosystems.* (*Doody et al., 2019*).

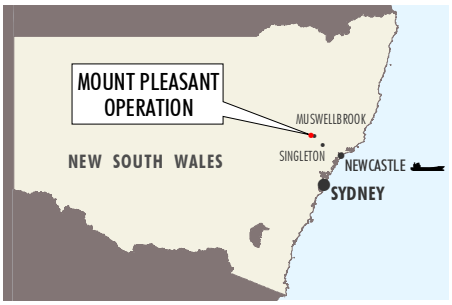
Threatened species and communities, habitat and distribution data were drawn from:

- *BioNet Atlas* (Department of Planning and Environment [DPE] 2023);
- *BioNet Threatened Biodiversity Data Collection* (NSW Department of Climate Change, Energy, the Environment and Water [NSW DCCEEW] 2024a);
- *BioNet Vegetation Classification* (NSW DCCEEW 2024b);
- Commonwealth *Protected Matters Search Tool* (Commonwealth [Cth] DCCEEW 2024a);
- Commonwealth *Species Profile and Threats Database* (Cth DCCEEW 2024b); and
- *Atlas of Living Australia* (ALA) (ALA 2023).



MAC-18-02A MOD7 BDAR_201C

Source: NSW Spatial Services (2024); EnergyCo (2024)



LEGEND

- Mining Operation
- Existing/Approved Major Energy Generation Site
- Proposed Major Energy Generation Site
- Railway
- National Parks and Wildlife Estate
- State Forest/Reserve
- Local Government Boundary
- Hunter-Central Coast Renewable Enery Zone (REZ)
- Mining Lease Boundary (Mount Pleasant Operation)

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MOUNT PLEASANT OPERATION

Regional Location

Figure 1

3 DESCRIPTION OF THE STUDY AREA AND SURROUNDS

The Study Area size is approximately 3,926 hectares (ha) and includes mining activities, assorted infrastructure, water bodies, remnant woodland and derived native grassland (DNG). Almost 50 percent (%) of the Study Area consists of DNG, over 30% mining related use and 22% woodland including a small amount of tree plantation. Figure 2 shows the spatial distribution of the land use categories. This study focuses on the remnant woodland and DNG, a total area of approximately 2,710 ha.

3.1 REGIONAL SETTING

The Study Area is located in:

- Sydney Basin Bioregion, Hunter Subregion;
- Central Western Slopes Botanical Division;
- Hunter Local Land Service Region; and
- Muswellbrook Local Government Area (LGA).

3.2 LANDUSE HISTORY

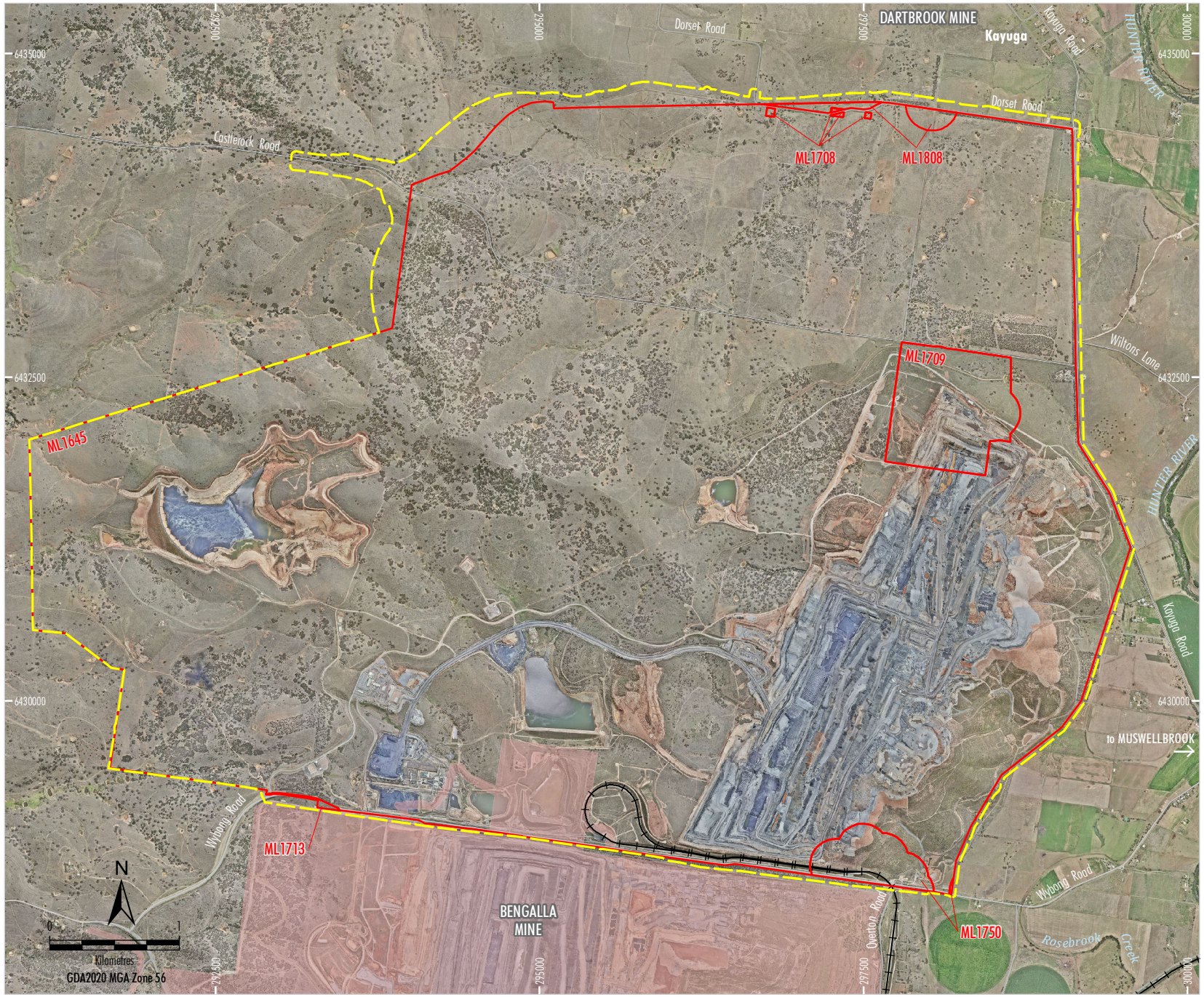
Agricultural industries within the wider locality include cattle grazing, horse breeding and viticulture. The land across the Study Area has been used for grazing of cattle and sheep for over 100 years.

3.2 MITCHELL LANDSCAPES

Mitchell Landscapes are mapped regions of NSW that collate areas having common attributes, including an estimate of the amount cleared since 1750 (Mitchell 2002; Office of Environment and Heritage [OEH] 2016). The Study Area lies entirely within the Central Hunter Foothills landscape which is 75% cleared and is classified as an over-cleared landscape.

3.3 TOPOGRAPHY AND DRAINAGE

The landform features a central multi-branched ridge system falling away in all directions. Maximum elevation is approximately 360 metres (m) Australian Height Datum (AHD) falling to approximately 200 m AHD. Topography across the Study Area is shown on Figure 3.



LEGEND

- Study Area
- Mining Lease Boundary (Mount Pleasant Operation)
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Source: MACH (2024); NSW Spatial Services (2024); Department of Planning and Environment (2016)
Orthophoto: MACH (Dec 2023)

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MOUNT PLEASANT OPERATION

Study Area

Figure 2

MAC-18-02A MOD7 Flora Baseline_201A

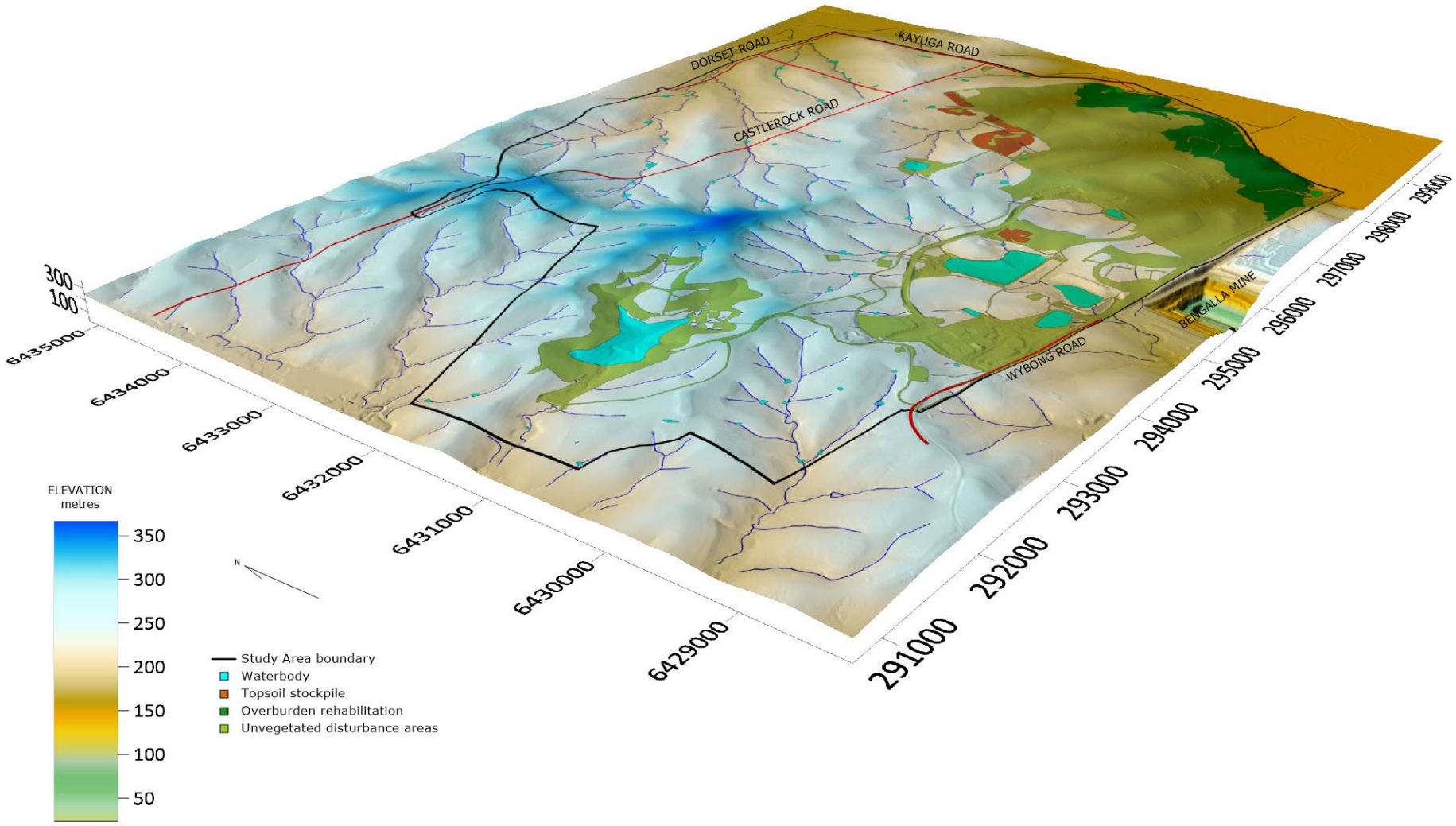

Figure 3: Topography Across the Study Area

The study area is located in the Hunter River catchment, with the Hunter River approximately 2.7 km southeast of the study area, at its closest point. The following streams (all intermittent) occur in the study area and drain to the Hunter River:

- Rosebrook Creek drains the extreme eastern part of the study area and is a 3rd order stream (Strahler Stream Ordering [DPI 2022c]) downstream of Kayuga and Wybong Roads;
- An un-named stream drains to the north-east of Mount Pleasant across Castlerock and Dorset Roads and is a 4th order stream downstream of Dorset and Kayuga Roads;
- An un-named stream (commonly referred to as Dry Creek) formerly drained to the south of Mount Pleasant but is now captured and diverted as part of the Bengalla Mine Dry Creek Project; and
- Sandy Creek drains to the west and southwest of Mount Pleasant and is a 5th order stream downstream of Wybong Road.

All of these streams are fed by several small ephemeral creeks and drainage lines that originate in the Mount Pleasant ridgeline and spur complex. Dry for much of the year, these watercourses commonly only flow after large rain events.

3.4 FIRE HISTORY

The *NPWS Fire History - Wildfires and Prescribed Burns* (NSW DCCEEW 2024) was searched for evidence of either wildfire or prescribed burns in or near the Study Area. No fires have been mapped in or near the Study Area with the nearest fire approximately 5 km to the south. The NSW DCCEEW (2024) records cover the time span from 1920 to April 2024. The lack of fire was also confirmed by discussion with a local landholder whose family has been there for three generations.

3.5 GEOLOGY AND SOILS

As expected for a coal-bearing area, the entirety of the Study Area is of Permian age, Sydney Basin Hunter Sequence, Singleton Supergroup with lithology of coal, claystone, siltstone, sandstone and tuff. The Australian Soil Classification (Isbell 2016) map shows the majority of the area to be Kurosols with some Vertosols in the northwest.

3.6 CLIMATE

The Study Area is located in the 650 millimetre (mm) average annual rainfall band (Bureau of Meteorology [BoM] 1986 – 2005 [BoM 2020a]). Figure 4 shows the mean and highest monthly rainfall from the Spring Creek (Castle Vale) weather station (Site 61192) which is located approximately 8 km west of Mount Pleasant. Monthly minimum rainfall is not shown as it varied between 0 and 1 mm.

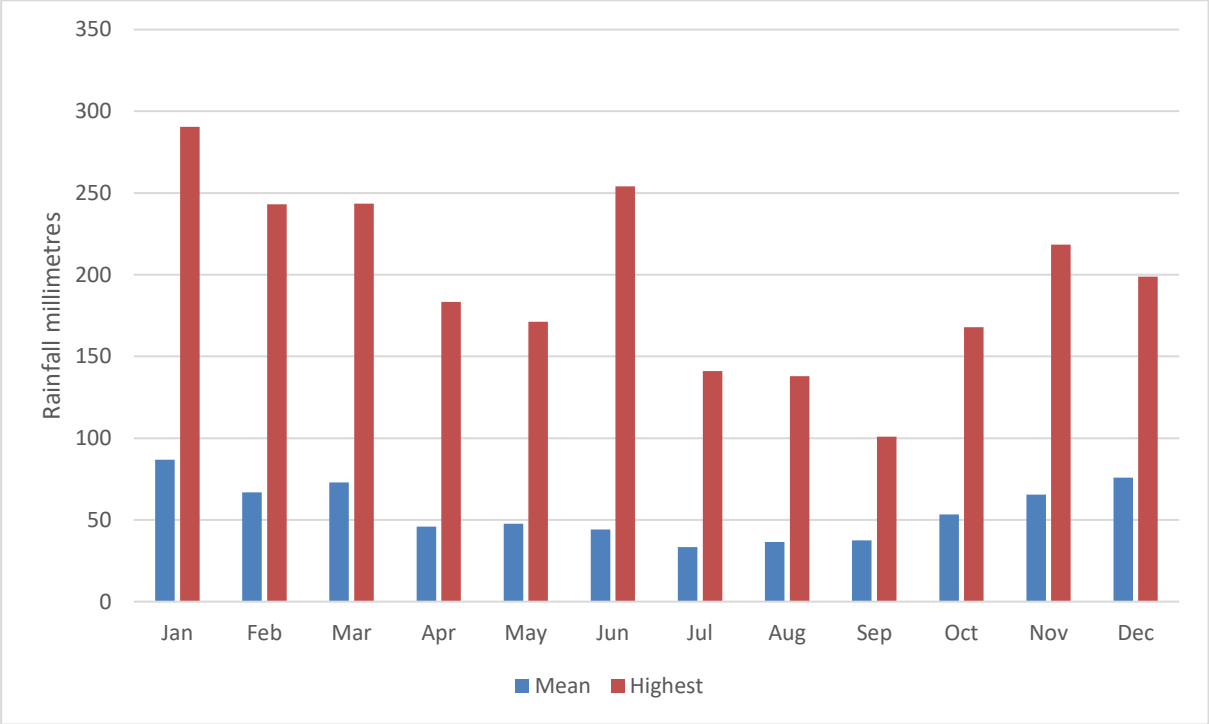

Figure 4: Long-term Average Monthly Rainfall from Spring Creek (Castle Vale)

A plot of annual rainfall from 1961 to 2023 (Figure 5) shows a rising but insignificant trend over the 63 years.

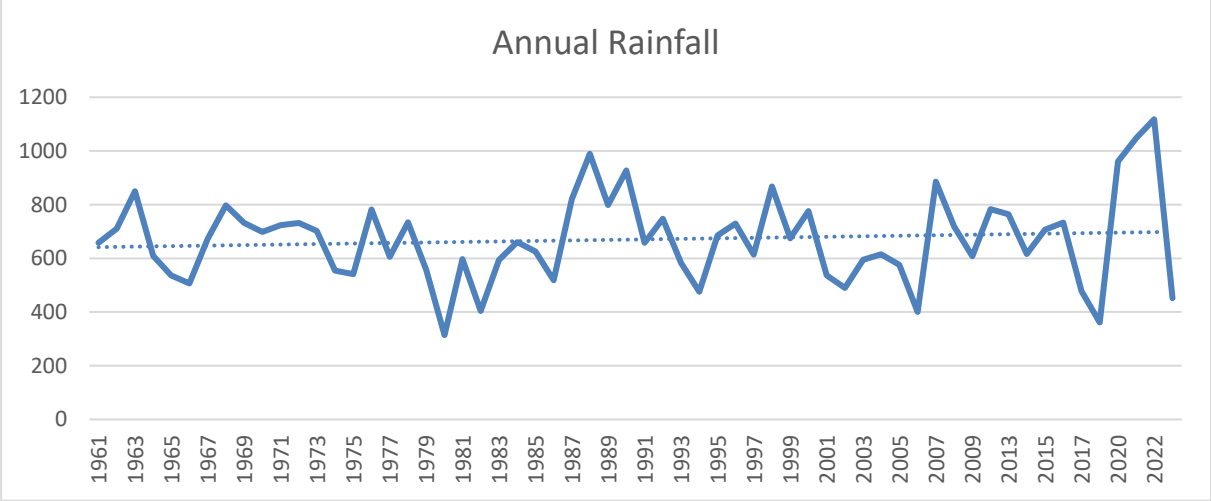

Figure 5: Annual Rainfall from Spring Creek (Castle Vale)

Figure 6 shows the mean maximum and minimum monthly temperatures from the Scone Airport weather Station (Site 61363), the nearest station with long-term temperature records. A comparison of Figures 4 and 6 illustrates that the coolest months of the year during winter are also the driest months.

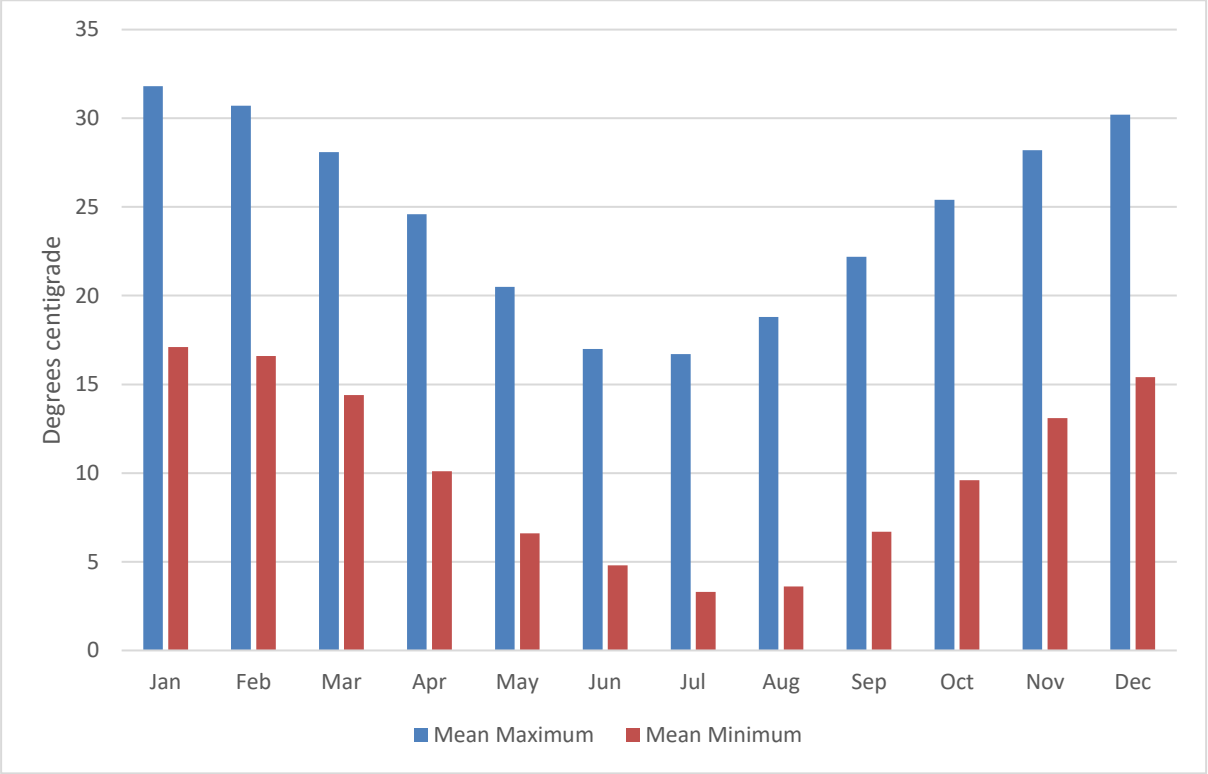

Figure 6: Long-term Monthly Average Maximum and Minimum Temperatures at Scone Airport

4 BACKGROUND INFORMATION

4.1 REGIONAL SURVEYS

Past regional vegetation classification and mapping surveys that include the Study Area:

- Greater Hunter Native Vegetation Mapping (GHM) (Sivertsen *et al*. 2011);
- Upper Hunter SVTM_UHVm (NSW DCCEEW 2024c); and
- Hunter Remnant Vegetation Project (HRVP) (Peake 2006).

Current classification and mapping is provided in the NSW State Vegetation Type Map (NSW DCCEEW 2023) which includes the recent Eastern New South Wales (ENSW) classification (DPE 2022a). Table 1 shows the vegetation communities mapped across the Study Area and the proportion of the total Study Area of mapped vegetation.

Table 1: Vegetation Communities Mapped over the Study Area in the NSW State Vegetation Type Map

PCT	PCT Name	Formation	Class	Area (ha)	Percentage
0	Not native vegetation	Not native vegetation	Not native vegetation	1567.5	58%
3314	Central Hunter Slopes Grey Box Forest	Grassy Woodlands	Coastal Valley Grassy Woodlands	115.5	4%
3431	Central Hunter Ironbark Grassy Woodland	Dry Sclerophyll Forests (Shrub/grass sub-formation)	Hunter-Macleay Dry Sclerophyll Forests	1008.9	37%
3439	Hunter Escarpment Grey Gum Sheltered Forest	Dry Sclerophyll Forests (Shrub/grass sub-formation)	Hunter-Macleay Dry Sclerophyll Forests	5	0.2%
3485	Central Hunter Slaty Gum Grassy Forest	Grassy Woodlands	Western Slopes Grassy Woodlands	7.3	0.3%
4073	Lower North Hinterland River Oak Forest	Forested Wetlands	Eastern Riverine Forests	3.7	0.1%
4089	Namoi-Upper Hunter River Red Gum Forest	Forested Wetlands	Inland Riverine Forests	2.7	0.1%

4.2 LOCAL SURVEYS

Several flora surveys have been conducted across the study area and surrounds (Table 2).

Table 2: Summary of Ecology Reports from the Immediate Region of, and Including, the Study Area

Report	Year	Content
Mount Pleasant Mine Environmental Impact Statement (ERM 1997).	1994 - 1997	Flora, vegetation communities and fauna.
Proposed Mount Pleasant Open Cut Mine – Flora and Fauna Assessment (Cumberland Ecology 2006).	Nov-06	Flora and Fauna Assessment, 11 floristic plots, targeted flora survey.
Mount Pleasant Mine: Survey Analysis of Box-Gum Woodland (Cumberland Ecology 2007a).	May-07	Survey and Analysis of Box-Gum Grassy Woodland.
Mount Pleasant: Ecology Gap Analysis Report (Cumberland Ecology 2007b).	Oct-07	Ecology Gap Analysis Report, 68 floristic plots within the project area, 15 in the wider locality, targeted flora survey.
Mount Pleasant Project - Flora and Fauna Report (Cumberland Ecology 2009).	Summer 08/09	Flora and Fauna Report, 14 20 x 50 m quadrats, random meander, transects, targeted threatened flora surveys.

Report	Year	Content
Mount Pleasant Project Modification Ecological Assessment (Cumberland Ecology 2010).	2010	Description of ecological values. Flora, vegetation and fauna. Six floristic plots, targeted threatened flora surveys.
Mount Pleasant Upper Hunter Strategic Assessment BCAM Project. Biodiversity Assessment Report (Cumberland Ecology 2015).	2015	Flora and vegetation surveys.
Mount Pleasant Operation - Mine Optimisation Modification Environmental Assessment, Biodiversity Assessment (Hunter Eco 2017a).	2017	Flora and vegetation surveys.
Mount Pleasant Operation Rail Modification, Terrestrial Ecology Assessment (Hunter Eco 2017b).	2017	Flora and vegetation surveys.
*Mount Pleasant Optimisation Project Baseline Flora Report (*Hunter Eco 2022*)*	2018-2022	Flora and vegetation surveys
*Mount Pleasant Optimisation Project Targeted Threatened Flora Surveys (*Ecosure 2022)	2022	Targeted flora surveys

5 METHODS

5.1 ACTIVITIES AND PERSONNEL

All floristic surveys by Hunter Eco are listed in Table 3. Collection of Rapid Data Points (RDPs) (see Section 5.2) was conducted by Dr Colin Driscoll (Hunter Eco) who has been conducting biodiversity surveys in the Hunter Valley since the 1980s. Dr Colin Driscoll holds a relevant Scientific Licence (SL101245) and is an Accredited Assessor (17004).

Collection of floristic plot and transect data was conducted by either Dr Colin Driscoll or Dr Stephen Bell (Eastcoast Flora Survey). Dr Bell has been conducting flora surveys in the Hunter region since 1990. Dr Bell holds a relevant Scientific Licence (SL100046). Orchid and threatened plant surveys were conducted by Dr Driscoll and Dr Bell.

Matthew Bailey (Bolwarra) has prepared a separate threatened flora species survey report and it is contained within Attachment A. Threatened flora surveys are not included in Table 3.

Table 3: Hunter Eco Floristic Survey Days

Date	Activity	Minimum Temperature (°C)	Maximum Temperature (°C)	Rainfall (mm)
July 2018				
9-Jul-18	RDP	3.4	15.1	0
10-Jul-28	RDP	0.9	15.1	0
11-Jul-18	RDP	-1.4	16.3	0
12-Jul-18	RDP	-0.5	17.8	0
13-Jul-18	RDP	1.8	14.8	0
23-Jul-18	RDP	-2.5	18.1	0
24-Jul-18	RDP	6.8	23.6	0
25-Jul-18	RDP	5.3	21.7	0
26-Jul-18	RDP	3.8	20.4	0
27-Jul-18	RDP	3.4	19.5	0
August 2018				
27-Aug-18	RDP	8.6	16.5	3.4
March 2020				
23-Mar-20	Floristic plots	14	20.9	0
24-Mar-20	Floristic plots	12	23	0
25-Mar-20	Floristic plots	11.1	19.8	5.7
27-Mar-20	Floristic plots	11.8	20.2	0.2
31-Mar-20	Floristic plots	12.5	24.7	0
April 2020				
2-Apr-20	Floristic plots	14.9	21.7	11.9
6-Apr-20	Floristic plots	8.6	22.8	0
7-Apr-20	Floristic plots	13.9	20.5	0
8-Apr-20	Floristic plots	12.1	19.6	0
9-Apr-20	Floristic plots	14.5	18.8	0
20-Apr-20	Floristic plots	6.9	20.7	0
21-Apr-20	Floristic plots	12.3	23.3	0
23-Apr-20	Floristic plots	7.9	22.9	0
24-Apr-20	Floristic plots	10	25.5	0
29-Apr-20	Floristic plots	16	28.4	0
May 2020				

Date	Activity	Minimum Temperature (°C)	Maximum Temperature (°C)	Rainfall (mm)
13-May-20	Floristic plots	3.6	19	0
14-May-20	Floristic plots	5	18.6	0.2
15-May-20	Floristic plots	10.1	18	0
November 2023				
6-Nov-23	Floristic plots	13.7	25.9	0
7-Nov-23	Floristic plots	8.9	28	0

Weather Data Source: MACH Mt Pleasant Real-time Data (A-PF2 and A-PF4). Note: No hail, strong winds, frost or any other weather event that may have affected the flora survey occurred during the dates listed in this table.

5.2 IDENTIFYING AND MAPPING NATIVE PLANT COMMUNITY TYPES

PCTs are described in the *BioNet Vegetation Classification* (NSW DCCEEW 2024b). The Study Area falls within the recently released PCT in eastern NSW coastal and tableland bioregions (ENSW classification [DPE 2022a]).

Using an aerial photograph, the Study Area was divided into woodland and derived native grassland areas based on the observed tree canopy density with derived grassland areas[1] having severely reduced canopy cover. Ultimately these woodland and grassland areas were subdivided into PCT coverage.

Initially a field survey was conducted that sampled the vegetation across the entire Study Area. The dominant canopy species were recorded as Rapid Data Points (RDP) along with their geographic location. All paddock trees were also identified and their location recorded.

The RDPs were grouped according to the dominant canopy species. An heuristic assessment of the likely associated PCT was made by matching the RDP floristic content, structural attributes and geographic distribution to PCT descriptions provided in BioNet.

A plot-based vegetation survey was stratified according to the potential PCTs and their condition. The data collected were used to assist with the identification and mapping of PCTs and Vegetation Zones.

Quantitative Analysis

Plot data were analysed in Primer 7 (Clarke and Gorley 2015) using similarity analysis whereby plots were grouped according to the degree of similarity in their floristic content. The plot data consisted of 140 plots from the Study Area.

Analysis was also conducted using the ANOSIM (analysis of similarities) module in Primer 7 to test whether there were significant differences between overall floristic content of the Local Communities for woodland and grassland separately.

Further analysis was conducted in Primer 7 using the bootstrap averages routine (with replacement) of the plot data collected from within woodland areas mapped for each vegetation community. Bootstrapping involves taking random samples from the plot data for each Local Community then running 100 iterations of the ordination.

Plot to PCT Assignment Tool

A Plot to PCT Assignment Tool (Assignment Tool) is available for PCT identification under the ENSW classification (DPE 2022a). A data matrix of the woodland/forest Vegetation Integrity (VI) Plots was prepared from the collected plot data for upload into the tool and the results used to inform final classification.

[1] ***Derived PCT:*** *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) …* (DPIE 2020a).

The Assignment Tool compares the floristic content of the VI plots against that of reference plots for each ENSW PCT. The similarity of the VI plots to the floristic content of any particular ENSW PCT is scored as Distance to Centroid. Distance values of 0.695 or less indicate that the VI plot meets the floristic match threshold for that PCT.

To assign the Local Communities to a PCT, a heuristic assessment involved extracting all PCTs having the locally characteristic species in the upper stratum from the *BioNet Vegetation Classification* (NSW DCCEEW 2024b). These PCTs were then filtered to include only those PCTs with an approved status and that occur in the Sydney Basin Bioregion, Hunter Subregion. The floristic content of the selected PCT was compared with that recorded in the Study Area plots and the final selection made on the best fit.

Previous studies across Mt Pleasant identified a hybrid eucalypt referred to as White Box x Grey Box or "Albemol" from *Eucalyptus albens* (White Box) and *Eucalyptus moluccana* (Grey Box). Albemol trees appear to have morphological characteristics in between those of White Box and Grey Box. Although present in the now superseded (legacy) classification, the ENSW classification does not include Albemol as a possibly occurring tree species. Consequently, all trees previously identified as Albemol have been identified as *Eucalyptus albens* (White Box) for use in the Assignment Tool and subsequent PCT descriptions.

5.3 ASSESSING VEGETATION INTEGRITY (SITE CONDITION)

All plot data were collected to meet the requirements of the BAM (DPIE 2020a). The plots/transects were established to provide a representative assessment of the VI of the vegetation zone, accounting for the level of variation in the broad condition state of the vegetation zone.

The plots/transects were randomly located within stratification units by walking a random distance into the vegetation zone. Plots were not located in or near ecotones that are readily distinguishable from the broad condition state of the vegetation zone. The plots were, however, spread across the separate areas of the vegetation zone.

A total of 140 Vegetation Integrity Plots were sampled in the Study Area (Figure 7). Each plot consisted of a 20 m x 20 m floristic plot nested at one end of a 20 m x 50 m plot. The following data were collected in the 20 m x 20 m plot as per the BAM (DPIE 2020a):

- identification of all flora species, stratum in which each species occurs and growth form;
- a record of the abundance of each species where the cover score is less than or equal to 5% (numbers above 20 are estimates only); and
- a record of whether each species is native, exotic or high threat exotic (DPE 2022b).

The following data were collected in the 20 m x 50 m plot:

- a record of the number of large trees[2], tree stem size class, tree regeneration[3], length of fallen logs[4], and number of trees with habitat hollows; and
- a record of the presence of trees having stem diameter at breast height (DBH) (1.4 m) <5 centimetre (cm), 5 – 10 cm, 10 – 20 cm, 30 – 50 cm, 50 – 80 cm, and 80+ cm.

The following data were collected in five 1 m x 1 m sub-plots:

- a record of the percentage of litter cover[5] at five specified locations in the 20 m x 50 m plot.

These data were tabulated in a format suitable for entry into the BAM Credit Calculator.

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[2] The number of large trees is a count of all living stems with a DBH equal to or greater than the large tree benchmark for the relevant PCT.

[3] Regeneration is based on the presence or absence of living trees with stems <5 cm DBH (DPIE 2020a).

[4] Total length in m of all woody material greater than 10 cm in diameter that is dead and entirely or in part on the ground (DPIE 2020a).

[5] Litter cover includes leaves, seeds, twigs, branchlets and branches (<10 cm in diameter). The assessment of litter cover must include all plant material that is detached from a living plant. Dead material still attached to a living plant (such as a grass) is assessed as litter cover where it is in contact with the ground. Dead material still attached to a living plant that is not in contact with the ground, or litter suspended in the canopies of other plants is not assessed as litter cover (DPIE 2020a).

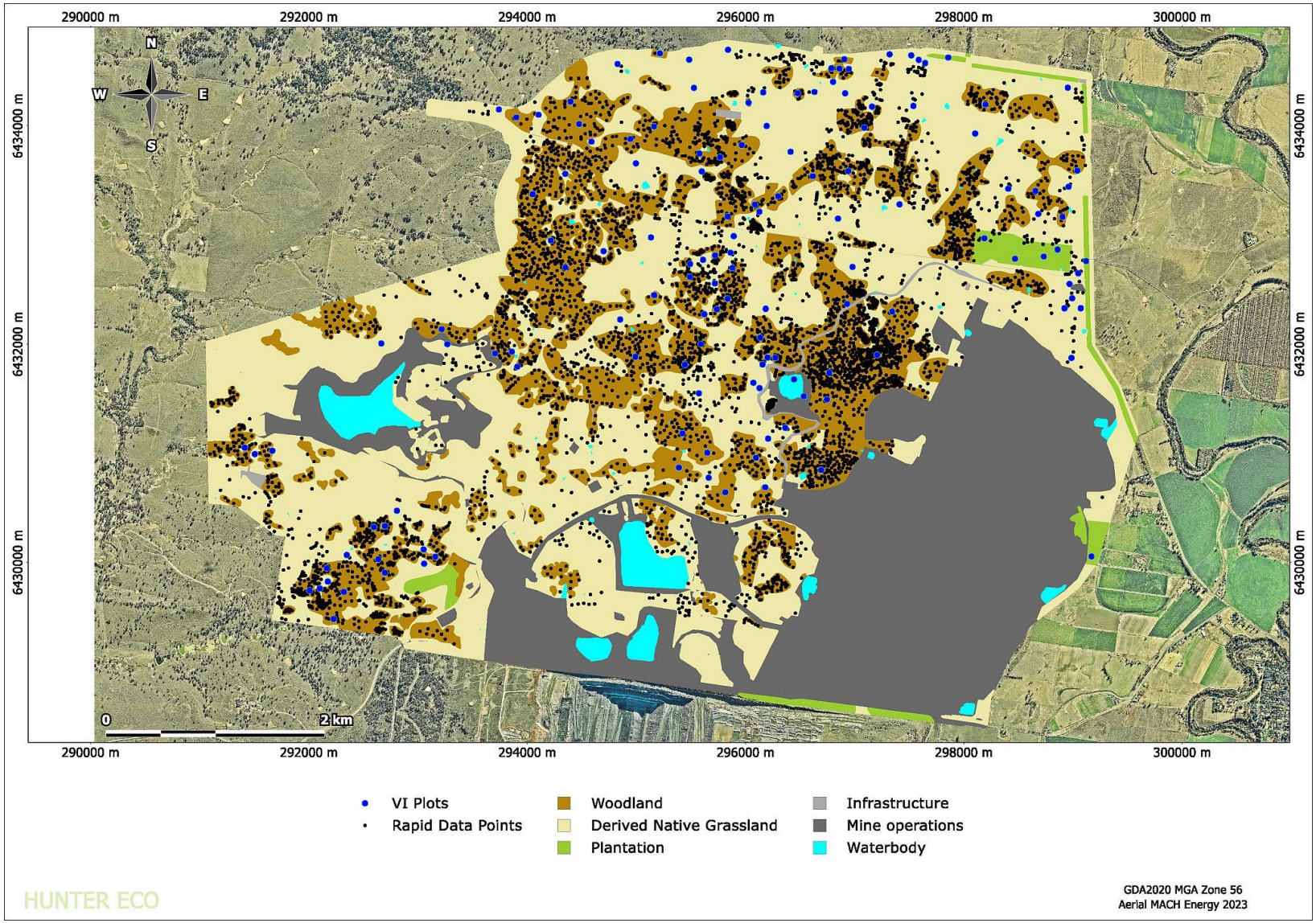

Figure 7: Vegetation Integrity Plots and Rapid Data Points across the Study Area

5.4 MAPPING POTENTIAL PADDOCK TREE HABITAT FOR SQUIRREL GLIDERS

A paddock tree assessment for Squirrel Glider (*Petaurus norfolcensis*) connectivity from woodland patches was conducted using maximum separation between canopies of 50 m potential gliding distance. To achieve this, paddock trees were digitally extracted from enhanced high-resolution aerial imagery into a vector drawing. A Distance Network with maximum distance 50 m was applied to the extracted canopies, and those trees were grouped that were within 50 m or less from each other, and similarly connected to woodland patches. A limitation of this conservative approach was that all paddock trees were extracted irrespective of height. This then would include regrowth trees that were likely to be too short for a Squirrel Glider to attain maximum gliding distance from. The method also does not account for the need for a glider to be able to return to the home woodland patch.

5.5 THREATENED ECOLOGICAL COMMUNITIES

Threatened Ecological Community (TEC) records from within 20 km of the Study Area were extracted from the BioNet Atlas (DPE 2023). TECs listed under the EPBC Act predicted to occur were also extracted using the Commonwealth *Protected Matters Search Tool* (Cth DCCEEW 2024a). Following initial field habitat assessment these communities were evaluated for their likelihood of occurring based on dominant canopy species and habitat conditions. Subsequently, after plot data analysis the floristic content of communities was compared with descriptions in the listed community determinations (NSW DCCEEW 2024b).

Table 4 provides a list of TEC extracted from the BioNet Atlas (DPE 2023). Table 4 also includes TEC from the Commonwealth *Protected Matters Search Tool* (Cth DCCEEW 2024a).

Table 4: Threatened Ecological Communities Possibly Occurring Within 20 km of the Study Area

Community Name (BC Act)	Conservation Status[1]		Likelihood of Occurring[2]
	BC Act	EPBC Act	
Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	E	-	Present. This report.
Central Hunter Ironbark—Spotted Gum—Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	E	-	Present. This report.
Central Hunter Valley eucalypt forest and woodland	-	CE	Present. This report.
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	Absent. Out of range, does not occur in the Muswellbrook LGA.
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	-	E	Absent. Not in a coastal area
Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	-	E	Absent. Not in these bioregions
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	Absent. Out of range, does not occur in the Muswellbrook LGA. The Project is not on a coastal floodplain.
Grey Box (*Eucalyptus moluccana*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	-	E	Absent. No *Eucalyptus moluccana* present.
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	E	-	Absent. No *Eucalyptus camaldulensis* (River Red Gum) and the Project is not on a major floodplain.

Community Name (BC Act)	Conservation Status[1]		Likelihood of Occurring[2]
	BC Act	EPBC Act	
Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	E	-	Present. This report.
Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion	V	-	Absent. No Slaty Gum woodland present.
Hunter Valley Vine Thicket in the NSW North Coast and Sydney Basin Bioregions	E	-	Absent. No vine thickets.
Hunter Valley Weeping Myall (*Acacia pendula*) Woodland	-	E	Absent. No *Acacia pendula* (Weeping Myall).
Hunter Valley Weeping Myall Woodland in the Sydney Basin Bioregion	CE	-	Absent. No *Acacia pendula* (Weeping Myall).
Kurri Sand Swamp Woodland in the Sydney Basin Bioregion	E	-	Absent. Out of range, does not occur in the Muswellbrook LGA.
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	Absent. Out of range, does not occur in the Muswellbrook LGA. No littoral habitat.
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	E	-	Absent – no *Eucalyptus fibrosa* (Red Ironbark).
Lower Hunter Valley Dry Rainforest in the Sydney Basin and NSW North Coast Bioregions	V	-	Absent. No rainforest.
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E	-	Absent. No lowland rainforest habitat.
Lowland Rainforest of Subtropical Australia	-	CE	Absent. No lowland rainforest habitat.
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	-	CE	Absent. Does not occur in the Sydney Basin Bioregion.
Quorrobolong Scribbly Gum Woodland in the Sydney Basin Bioregion	E	-	Absent. No Scribbly Gum (*Eucalyptus racemosa*) present.
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	-	CE	Absent. No coastal floodplains.
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	Absent. Out of range, does not occur in the Muswellbrook LGA.
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	Absent – elevation >20 m AHD.
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-	Absent. No swamp habitat. Does not occur in the Muswellbrook LGA.
Sydney Freshwater Wetlands in the Sydney Basin Bioregion	E	-	Absent. Unsuitable habitat, does not occur in the Muswellbrook LGA.
Themeda grassland on seacliffs and coastal headlands in the NSW North	E	-	Absent

Community Name (BC Act)	Conservation Status[1]		Likelihood of Occurring[2]
	BC Act	EPBC Act	
Coast, Sydney Basin and South East Corner Bioregions			
Warkworth Sands Woodland in the Sydney Basin Bioregion	E	-	Absent. Out of range, does not occur in the Muswellbrook LGA.
Weeping Myall Woodlands	-	E	Absent. No *Acacia pendula* (Weeping Myall).
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	CE	-	Present. This report.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	-	CE	Present. This report.

[1] Conservation status under the BC Act and/or EPBC Act. CE = Critically Endangered; E = Endangered; V = Vulnerable.

[2] Likelihood of occurring was assessed against information provided in the relevant listing advice.

Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions listed under the BC Act

Central Hunter Grey Box—Ironbark Woodland is listed as an endangered ecological community under the BC Act. It is a woodland to open forest dominated by Narrow-leaved Ironbark (*Eucalyptus crebra*), Kurrajong (*Brachychiton populneus* subsp. *populneus*) and Grey Box (*Eucalyptus moluccana*). A shrub layer can be present and ground cover can be moderately dense to dense (NSW Scientific Committee 2010a). This community occurs on slopes and undulating hills generally on Permian sediments (NSW Scientific Committee 2010a).

Central Hunter Ironbark—Spotted Gum—Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions listed under the BC Act

Central Hunter Ironbark—Spotted Gum—Grey Box Forest is listed as an endangered ecological community under the BC Act. It is an open forest to woodland dominated by Narrow-leaved Ironbark (*Eucalyptus crebra*), Spotted Gum (*Corymbia maculata*) and Grey Box (*Eucalyptus moluccana*). The community has a sparse layer of small trees, a shrub layer from sparse to moderately dense and a ground cover from sparse to moderately dense (NSW Scientific Committee 2010b).

Central Hunter Ironbark—Spotted Gum—Grey Box Forest listed under the BC Act occurs on undulating land mostly on clayey soils found on Permian sediments. It also occurs on alluvial and colluvial soils in valleys (NSW DCCEEW 2024b).

Central Hunter Valley Eucalypt Forest and Woodland listed under the EPBC Act

Central Hunter Valley Eucalypt Forest and Woodland listed under the EPBC Act was identified and mapped in accordance with the *Approved Conservation Advice (including listing advice) for the Central Hunter Valley Eucalypt Forest And Woodland Ecological Community* (DotE 2015) and the *Central Hunter Valley Eucalypt Forest And Woodland: A Nationally Protected Ecological Community* (Department of the Environment and Energy, 2016).

The condition classes and thresholds for the Central Hunter Valley Eucalypt Forest and Woodland listed under the EPBC Act (DotE 2015) are:

- Class A, Patch size is ≥ 5 ha; AND ≥ 50% of perennial understorey vegetative cover is native; AND the patch contains at least 12 native understorey species.
- Class B, Patch size is ≥ 0.5 ha AND ≥ 70% of perennial vegetative cover in each layer present is native; AND the patch contains at least 12 native understorey species.

- Class C, Patch size is ≥ 0.5 ha; AND ≥ 50% of perennial understorey vegetative cover is native; AND the patch contains at least 12 native understorey species.
- Class D, Patch size is ≥ 2 ha; AND ≥ 50% of perennial understorey vegetative cover is native; AND the patch is contiguous with another patch of native woody vegetation ≥ 1 ha in area OR The patch has at least one large locally indigenous tree (≥ 60 cm dbh2), or at least one tree with hollows.

Native grasslands and shrublands are not included in the Central Hunter Valley Eucalypt Forest and Woodland listed under the EPBC Act, except where there is a gap in, or at the edge of a patch, or between two patches across a short distance.

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed under the BC Act

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed under the BC Act is characterised by the assemblage of the species listed on the determination (NSW Threatened Species Scientific Committee [TSSC] 2020).

The key difference between the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and DNG listed under the BC Act and EPBC Act is that the BC Act listing does not require an intact tree layer with predominantly native ground layer, and there is no threshold for the number of native non grass species or requirement for 'important' species to be present. For listing under the BC Act, areas with predominately native canopy, dominated by the relevant species, but with a predominate non-native ground layer, are also included within the Box-Gum Woodland Critically Endangered Ecological Community (CEEC) (NSW DCCEEW 2024b).

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed under the EPBC Act

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed under the EPBC Act was identified and mapped in accordance with the *Commonwealth Listing Advice on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Box-Gum Woodland CEEC Listing Advice) (Cth TSSC 2006) and the *Conservation Advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Cth DCCEEW 2023).

The condition classes and thresholds for the Box-Gum Woodland CEEC listed under the EPBC Act (Cth DCCEEW 2023) are:

- Class A, a predominantly native perennial ground layer (≥50%); at least 12 native understorey species in any patch excluding grasses, with all patches >0.1 ha; at least one Important Species present; and 10 or more mature trees per hectare.
- Class B, a predominantly native perennial ground layer (≥50%); at least 12 native understorey species in any patch excluding grasses, with all patches >0.1 ha; at least one Important Species present; and canopy sparse or absent (e.g., derived native grassland).
- Class C, a predominantly native perennial ground layer (≥50%) with all patches ≥2 ha containing natural regeneration of dominant canopy eucalypts.

Sites without a predominantly native ground layer are not part of the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed under the EPBC Act.

Hunter Lowland Red Gum Forest listed under the BC Act

Hunter Lowlands Red Gum Forest is listed as an endangered ecological community under the BC Act. It is a woodland to open forest dominated by Forest Red Gum (*Eucalyptus tereticornis*) along with Narrow-leaved Ironbark (*Eucalyptus crebra*), Grey Box (*Eucalyptus moluccana*) and Spotted Gum (*Corymbia maculata*). A shrub layer can be present and the grassy ground cover can be moderately dense to dense (NSW Scientific Committee 2012). This community occurs on drainage flats generally on Permian sediments (NSW Scientific Committee 2012).

5.6 THREATENED FLORA SPECIES AND POPULATIONS

To establish a candidate list of threatened flora species and populations to target (Table 5), a number of sources were reviewed, including:

- threatened flora species records from within a 20 km radius of the Study Area were extracted from the *BioNet Atlas* (DPE 2023);
- threatened flora species predicted to occur in the Commonwealth *Protected Matters Search Tool* (Cth DCCEEW 2024a);
- threatened flora species records from the Study Area (Cumberland Ecology 2015); and
- threatened flora species listed in the *BioNet Threatened Biodiversity Data Collection* (NSW DCCEEW 2024a) as associated with the various PCTs likely to occur in the Study Area.

Table 5: Threatened Flora Species Potentially Occurring in the Study Area

Scientific Name	Common Name	Source	Conservation Status[1]	
			BC Act	EPBC Act
Acacia bynoeana	Bynoe's Wattle	E	E	V
Acacia pendula	Weeping Myall (Acacia pendula population in the Hunter Catchment)	A, D, E	EP	-
Angophora inopina	Charmhaven Apple	E	V	V
Callistemon linearifolius	Netted Bottle Bush	E	V	-
Cryptostylis hunteriana	Leafless Tongue Orchid	A	V	V
Cymbidium canaliculatum	Tiger Orchid (*Cymbidium canaliculatum population in the Hunter Catchment*)[C]	A, B, C, D, E	EP	-
Diuris tricolor	Pine Donkey Orchid (population in the Muswellbrook LGA)	A, D, E	V, EP	-
Eucalyptus castrensis	Singleton Mallee	B	E	-
Eucalyptus glaucina	Slaty Red Gum	A, B, D, E	V	V
Eucalyptus parramattensis subsp. decadens	-	E	V	V
Eucalyptus pumila	Pokolbin Mallee	E	V	V
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	B	V	V
Ozothamnus tesselatus	-	B, E	V	V
Persoonia pauciflora	North Rothbury Persoonia	E	CE	CE
Pomaderris queenslandica	Scant Pomaderris	E	E	-
Prasophyllum petilum (syn. Prasophyllum sp. Wybong)	Tarengo Leek Orchid	B, E	E	E
Prostanthera cineolifera	Singleton Mint Bush	E	V	V
Prostanthera cryptandroides subsp. cryptandroides	Wollemi Mint-bush	B, E	V	V
Prostanthera cineolifera	Singleton Mint Bush	E	V	V
Pterostylis chaetophora	-	E	V	-
Rhodamnia rubescens	Scrub Turpentine	B	CE	CE
Rutidosis heterogama	Heath Wrinklewort	E	V	V
Thesium australe	Austral Toadflax	A, B, D, E	V	V

A DPE (2023a)

B Cth DCCEEW (2024)

C Cumberland Ecology (2015)
D NSW DCCEEW (2024a)
E Hunter Eco (2024) – BAM Output

Bolwarra undertook target surveys for threatened species and populations listed under the BC Act and EPBC Act (Attachment A). As described above, field surveys were conducted according to the requirements in the DPIE (2020b) *Surveying Threatened Plants and Their Habitats: NSW Survey Guide for the Biodiversity Assessment Method*.

5.7 OPPORTUNISTIC OBSERVATIONS

Any additional flora species detected during the surveys that may not have been found in plots were recorded.

5.8 GROUNDWATER DEPENDENT ECOSYSTEMS

There are two types of Groundwater Dependent Ecosystem (GDE) relevant to terrestrial ecosystems: ecosystems that are dependent in whole or in part on water reserves held in the ground; and those dependent on the surface expression of groundwater. Water reserves held in the ground form the saturated part of the aquifer soil matrix that sits below the 'water table' or 'phreatic surface', and are differentiated from water bound in the soil matrix in the unsaturated zone above the water table. Water in the soil aquifers originates from all or any of: rainfall directly on the aquifer surface; runoff from areas immediately adjacent to the aquifer; or sub-surface inflow. The quantity of rainfall that stays in the unsaturated zone and the quantity that makes it into the water reserves is a function of unsaturated zone soil moisture dynamics.

Structure of these water reserves or aquifers is significant for plant use of the available water. For root access to water, the aquifer needs to be unconstrained by any impenetrable rock layers. Unconstrained aquifers consist of a lower saturated zone above which lies an unsaturated zone, referred to as the capillary fringe or vadose zone. The surface of the saturated zone where water pressure equals atmospheric pressure is the phreatic zone (from the Greek 'phrear' meaning spring or well).

Vegetation making up a GDE, termed phreatophytic and consisting of phreatophytes, can have varying degrees of dependency on the groundwater. Obligate GDEs are made up of species that depend entirely on the groundwater, and are capable of living with their roots continually wet or at least for seasonal periods of inundation. Facultative GDEs contain species that access the groundwater via the capillary fringe and also take up water from within the soil matrix above this area (Hatton and Evans 1998). These plants cannot cope with having their roots inundated with water.

Depth to water is an important consideration for identifying potential GDEs, and in this context plant rooting depth is relevant. While some plants are capable of sending roots tens of metres into the soil, generally the plants in dry sclerophyll woodland, including trees, would have maximum root depth of approximately 5 m (Canadell *et al*. 1996).

The time scale of availability of water to GDEs also needs to be considered and this has been shown to vary from annual seasonal to as infrequently as 6 months in 10 – 20 years (Eamus *et al*. 2006) with facultative vegetation tolerant of this variability. Thus, GDEs may be present at times when groundwater investigations do not detect any or few aquifers.

A GDE can also be in a perched system where the soil matrix holds water and prevents this water from penetrating the deeper soil layers. In these perched systems, the vegetation will consist of species that are dependent on a generally permanently wet environment. There can be a link between perched GDEs and an underlying aquifer where the replenishing of the water in the perched system occurs when, as a result of sufficient rainfall, the ground water overflows into the perched system.

Initially the GDE Atlas (BoM 2020b), which provides a model of potential GDE across Australia, was consulted for the Hunter catchment. The GDE Atlas (BoM 2020b) provides modelled distribution of Aquatic, Terrestrial and Subterranean GDE. Figure 8 shows an extract from the GDE Atlas for the Study Area that indicates vegetation potentially dependent on terrestrial groundwater but rated as low potential GDE. A final determination of GDE presence is based on an assessment of whether

species within each mapped vegetation community are known to be typically groundwater dependent, as well as a heuristic assessment of where accessible groundwater might occur.

To assist with the assessment a Topographic Wetness Index model (Conrad *et al*. 2015) was prepared that simulates increasing soil moisture as a result of downslope flow from rainfall.

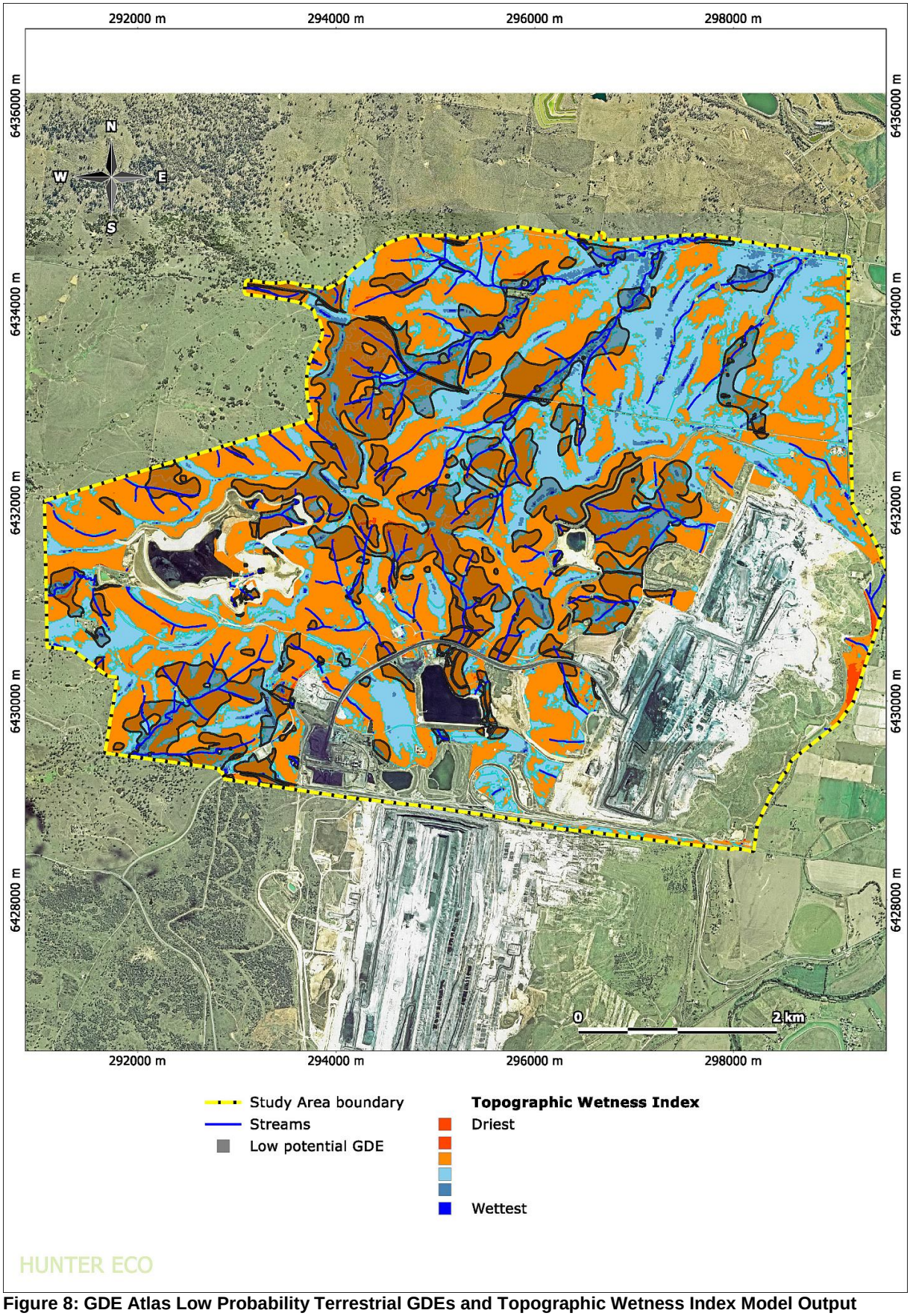

Figure 8: GDE Atlas Low Probability Terrestrial GDEs and Topographic Wetness Index Model Output

Figure 8 also shows Topographic Wetness and that the moist areas with potential for GDE occur along drainage lines flowing north east. The GDE Atlas includes these areas but also includes areas along dry ridges, unlikely to support groundwater dependent vegetation.

5.9 LIMITATIONS

There were no limitations to the vegetation survey other than the inherent limitations to sampling vegetation.

6 RESULTS

The Study Area consisted of a grassy landscape divided into grassy woodland and DNG with few paddock trees. As already noted, the floristic composition of the derived grassland was similar across the Study Area with no detectable difference between areas possibly being derived from different woodland vegetation. The grassy woodland canopy across all PCTs ranged from young re-growth to senescing hollow-bearing trees. There were also some same-aged (approximately 15-20 years old) planted stands of mixed eucalypt and other species.

6.1 PLANT COMMUNITY TYPES

Seven PCTs subdivided into 16 vegetation zones (PCTs and condition types) were mapped across the Study Area. Table 6 lists the mapped communities along with the hectares of each occurring in the Study Area[6]. Figure 9 shows the distribution of these communities. Detailed profiles of each community are provided in Appendix 4.

Floristic Plot Data Analysis

Plot data were analysed in Primer 7 (Clarke and Gorley 2015) using similarity analysis whereby plots were grouped according to the degree of similarity in their floristic content. The plot data consisted of 140 plots from the Study Area (Appendix 3). Preliminary analysis showed that weeds were distributed randomly across the Study Area with no association with any Local Communities, either woodland or grassland. Weeds were then excluded from further analysis with only native species included.

Similarity analysis of both woodland and grassland Local Communities using hierarchical agglomerative clustering and non-metric multidimensional scaling did not result in clear separation of these or any distinct alternative groups.

Further analysis was conducted using the ANOSIM (analysis of similarities) module in Primer 7 to test whether there were significant differences between overall floristic content of the Local Communities for woodland and grassland separately. The outcome was that no significant difference could be detected between derived grassland Local Communities indicating that these had effectively the same floristic composition across the Study Area.

However, there was a significant difference between woodland Local Communities and further analysis was justified. This was conducted in Primer 7 using the bootstrap averages routine (with replacement) of the plot data collected from within woodland areas mapped for each vegetation community (Figure 10). Bootstrapping involves taking random samples from the plot data for each Local Community then running 100 iterations of the ordination.

PCT Assignment Tool

The field data for 64 woodland plots were uploaded into the Assignment Tool. Table 8 provides a summary of the Assignment Tool results. Of particular note:

- The majority of plots from 1. White Box Grassy Woodland (10 of 15) were assigned to Central Hunter Slaty Gum Forest although no Slaty Gum were present;
- The 14 plots from 2. White Box-Sotted Gum Grassy Forest were assigned to six PCT;
- The five plots from 3. Forest Red Gum Grassy Open Forest were assigned to three PCT;
- The Assignment Tool could not distinguish between the three Local Communities containing Narrow-leaved Ironbark (4, 5 and 6) all majority assigned to Central Hunter Ironbark Grassy Woodland despite these three communities showing as different in composition (Figure 10).

Heuristic Assessment

The PCT Assignment Tool results were not definitive so a heuristic assessment was used. Table 7 provides the results of PCT assignment by comparing Local Community floristic content with formal

[6] Two areas of initially redefined PCT 3525 have been reassigned the PCT 3446 and PCT 3395. The change was implemented to recognize that the vegetation represents the correct TEC.

PCT descriptions and showing the options available for each Local Community, relevance and final selection. Table 6 summarises the Local Communities and PCT assignment for the Study Area.

Table 6: Vegetation Communities Mapped Across the Study Area Grouped by Formation and Class

Local Community	PCT ID	PCT Name	Study Area (ha)
Dry Sclerophyll Forests (Shrub/grass sub-formation)			
Hunter-Macleay Dry Sclerophyll Forests			
3. Forest Red Gum Grassy Forest (PCT 3446)	3446	Lower North Foothills Ironbark-Box-Gum Grassy Forest	1.5
6. Narrow-leaved Ironbark Shrubby Forest (PCT 3431)	3431	Central Hunter Ironbark Grassy Woodland	258.2
6a. Derived Native Grassland (PCT 3431)	3431	Central Hunter Ironbark Grassy Woodland	738.5
6b. Plantation (PCT 3431)	3431	Central Hunter Ironbark Grassy Woodland	50.9
6c. Topsoil Stockpile (PCT 3431)	3431	Central Hunter Ironbark Grassy Woodland	36.2
Dry Sclerophyll Forests (Shrub/grass sub-formation)			
North-west Slopes Dry Sclerophyll Woodlands			
1. White Box Grassy Woodland (PCT 3395)	3395	Northwest Elevated White Box Woodland	232.6
1a. Derived Native Grassland (PCT 3395)	3395	Northwest Elevated White Box Woodland	892.6
2. White Box - Spotted Gum Grassy Woodland (PCT 3395)	3395	Northwest Elevated White Box Woodland	244.7
2a. Derived Native Grassland (PCT 3395)	3395	Northwest Elevated White Box Woodland	134.2
Grassy Woodlands			
Coastal Valley Grassy Woodlands			
4. Narrow-leaved Ironbark - Grey Box grassy woodland (PCT 3314)	3314	Central Hunter Slopes Grey Box Forest	32.3
4a. Derived Native Grassland (PCT 3314)	3314	Central Hunter Slopes Grey Box Forest	2
5. Spotted Gum - Narrow-leaved Ironbark Woodland (PCT 3315)	3315	Central Hunter Ironbark-Spotted Gum Forest	35.6
5a. Derived Native Grassland (PCT 3315)	3315	Central Hunter Ironbark-Spotted Gum Forest	4.5
Grassy Woodlands			
Western Slopes Grassy Woodlands			
7. White Box - Narrow-leaved Ironbark - Blakely's Red Gum (PCT 3396)	3396	Northwest Slopes Box-Blakelys Red Gum Woodland	22.6
7a. Derived Native Grassland (PCT 3396)	3396	Northwest Slopes Box-Blakelys Red Gum Woodland	33
8a. Slaty Box Woodland Derived Native Grassland (PCT 3485)	3485	Central Hunter Slaty Gum Grassy Forest	25.8
		Sub-total	**2745.2**

Other			
Dam Wall Rehab			24.2
Dwellings and Infrastructure			6.4
Overburden Rehab			143.6
Roads			25.9
Stormwater diversion			24.3
Unvegetated			866.1
Waterbody			90.1
		Sub-total	**1180.6**
		Total	**3925.8**

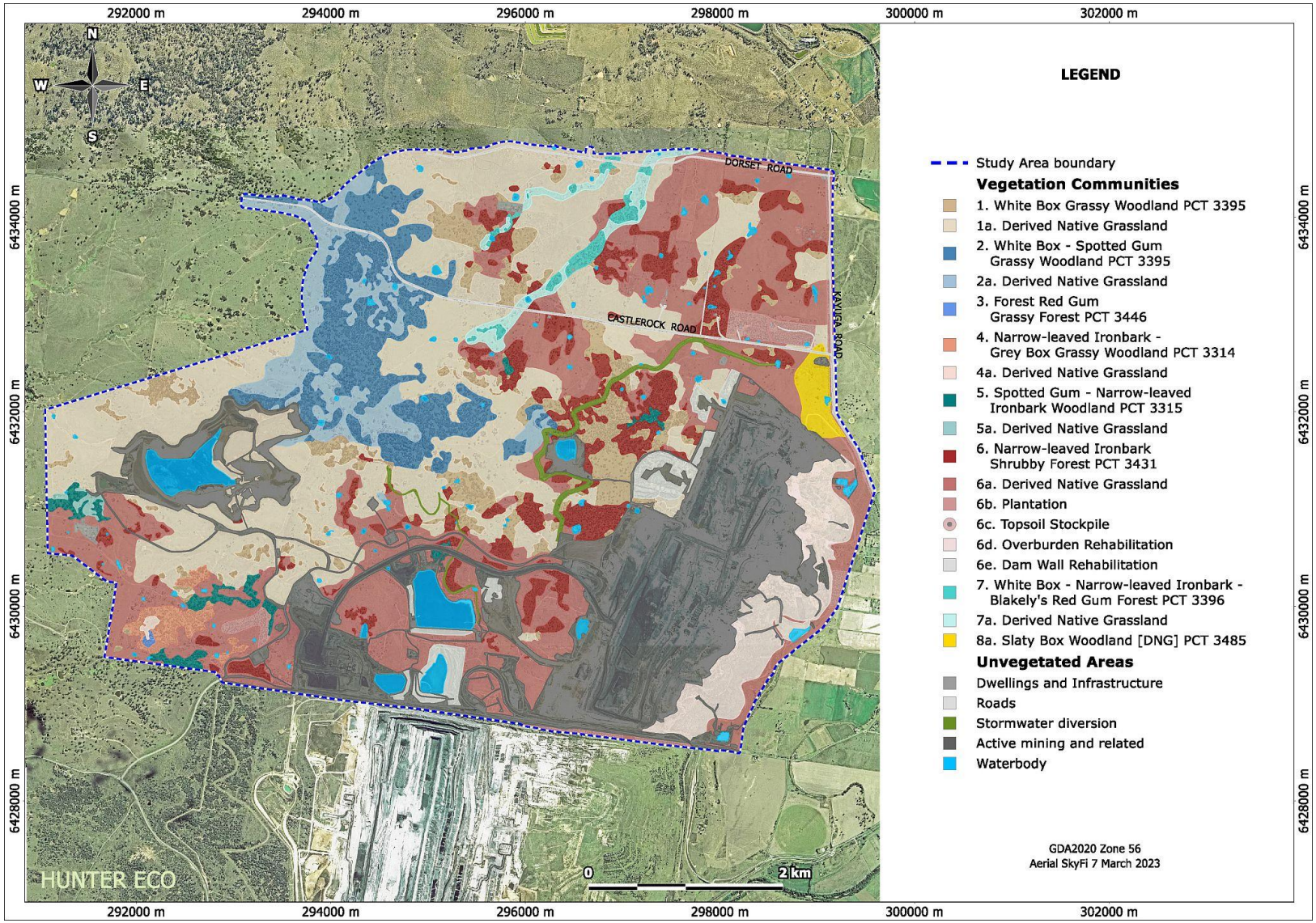

Figure 9: Local Vegetation Communities Mapped Across the Study Area

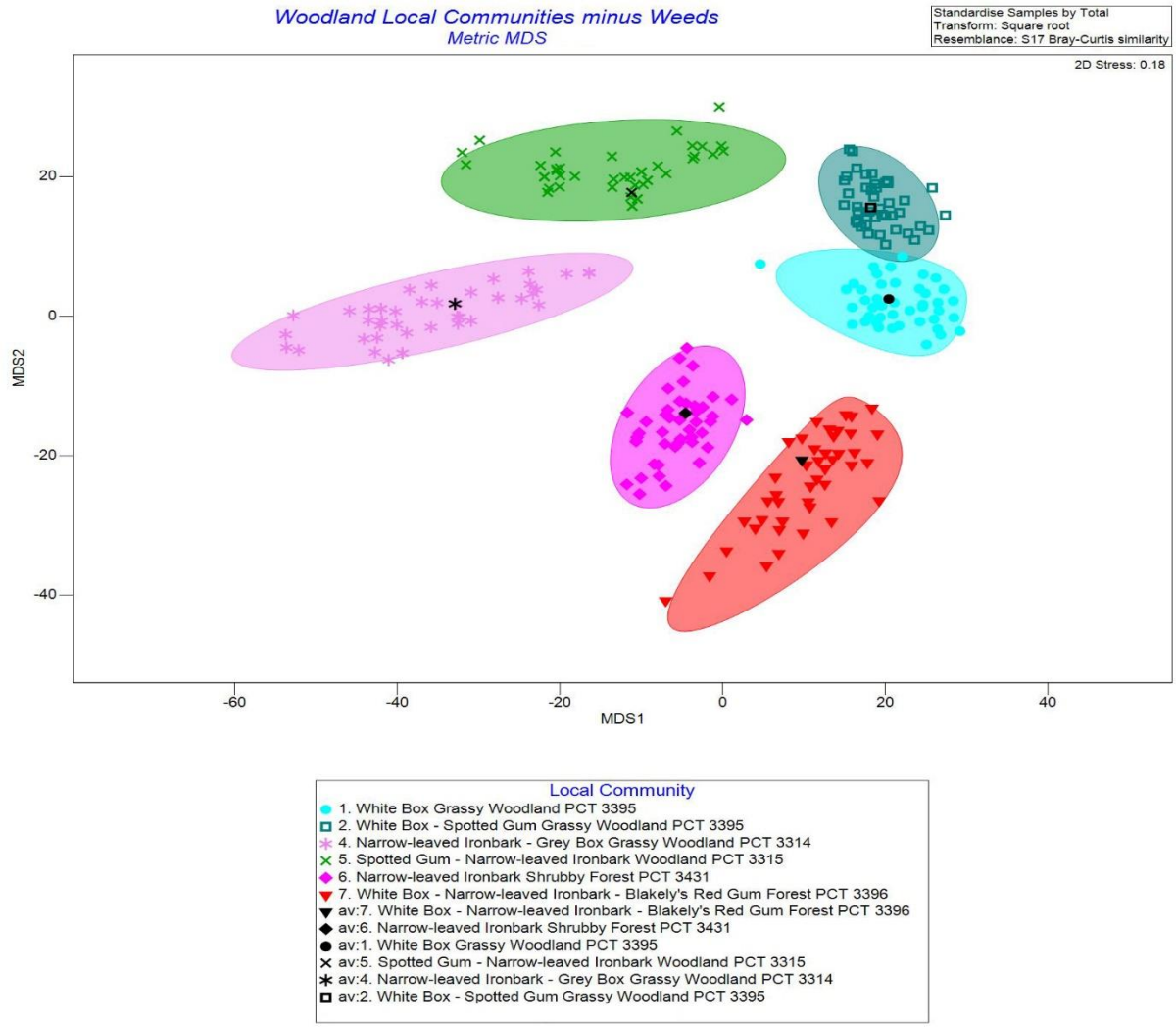

Figure 10: Bootstrap Regions for Six of the Woodland Local Communities
(Only one plot for Local Community 3)

Table 7: PCT Selection with Nominated PCT Highlighted

Local Community	PCT	PCT Name	Comment
1. White Box Grassy Woodland	3354	Liverpool Range Box-Silvertop Stringybark Forest	No Silvertop Stringybark and not on the Liverpool Range
	3395	**Northwest Elevated White Box Woodland**	**A wide-spread community occurring in five IBRA regions including Sydney Basin, Hunter subregion. Canopy dominated by *Eucalyptus albens*.**
	3396	Northwest Flats Box-Blakelys Red Gum Forest	No Blakely's Red Gum present
	3398	Northwest Slopes Box-Apple Woodland	No Rough-barked Apple present
	3401	Upper Hunter Sheltered Viney Shrub Forest	Not a viney shrub forest
	3489	Hunter Escarpment Grey Box Forest	No Grey Box present
	3521	Northwest White Box Woodland	This is a shrubby community not assigned to any TEC whereas the local community composition is consistent with Box-Gum Woodland TEC.
	3525	Upper Hunter Box-Blakelys Red Gum Grassy Forest	No Blakely's Red Gum present
	3768	Upper Hunter Ranges Enriched Ironbark Forest	Occurs in the Upper Hunter Valley north of the Study Area and often contains Grey Gum, Red Ironbark or White Bloodwood, species not present in the Study Area as a whole
2. White Box - Spotted Gum Grassy Woodland	**3395**	**There are no PCT that share White Box and Spotted Gum in the canopy**	**In the absence of a matching PCT, this canopy combination was treated as a variant of the Local Community *1. White Box Grassy Woodland* with the inclusion of Spotted Gum in the canopy**
3. Forest Red Gum Grassy Open Forest	3328	Lower Hunter Red Gum-Paperbark Riverflat Forest	No paperbarks present
	3435	Hunter Coast Lowland Flats Damp Forest	A coastal community
	3436	Hunter Coast Sandy Creekflat Low Paperbark Scrub	A coastal community
	3446	**Lower North Foothills Ironbark-Box-Gum Grassy Forest**	**Despite the name, this PCT can be locally dominated by Forest Red Gum as occurs in this Local Community, which also contains small numbers of Spotted Gum, Narrow Leaved Ironbark and Grey Box**
	3525	Upper Hunter Box-Blakelys Red Gum Grassy Forest	Blakely's Red Gum absent.
	3636	Warkworth Sands Woodland	Restricted to the Warkworth area outside of the Study Area
4. Narrow-leaved Ironbark - Grey Box Grassy Woodland	**3314**	**Central Hunter Slopes Grey Box Forest**	**Grey Box is dominant in the canopy along with Narrow-leaved Ironbark similar to the Local Community**

Local Community	PCT	PCT Name	Comment
	3401	Upper Hunter Sheltered Viney Shrub Forest	Not a viney shrub forest
	3431	Central Hunter Ironbark Grassy Woodland	Canopy frequently dominated by Narrow-leaved Ironbark along with Buloke with occasional occurrences of Grey Box, whereas the Local Community is dominated by Grey box with Buloke absent
	3438	Hunter Escarpment Footslopes Ironbark Forest	This PCT is restricted to the Singleton region and can contain Spotted Gum not present in this Local Community
	3439	Hunter Escarpment Grey Gum Sheltered Forest	No Grey Gum present
	3446	Lower North Foothills Ironbark-Box-Gum Grassy Forest	A Lower Hunter community frequently including Spotted Gum absent from the Local Community
	3485	Central Hunter Slaty Gum Grassy Forest	No Slaty Gum present
	3489	Hunter Escarpment Grey Box Forest	This PCT is restricted to the Wollemi National Park and immediate surrounds, outside of the Study Area
	3525	Upper Hunter Box-Blakelys Red Gum Grassy Forest	No Blakely's Red Gum present
5. Spotted Gum - Narrow-leaved Ironbark Woodland	**3315**	**Central Hunter Ironbark-Spotted Gum Forest**	**Canopy contains Narrow-leaved Ironbark and Spotted Gum located in the Central Hunter Valley**
	3438	Hunter Escarpment Footslopes Ironbark Forest	This PCT is restricted to the Singleton region and can contain Spotted Gum not present in this Local Community
	3439	Hunter Escarpment Grey Gum Sheltered Forest	No Grey Gum present
	3444	Lower Hunter Spotted Gum-Ironbark Forest	This PCT is located in the Lower Hunter Valley
	3446	Lower North Foothills Ironbark-Box-Gum Grassy Forest	This PCT is located in the Lower Hunter Valley
	3631	Kurri Sand-Clay Woodland	This PCT is located in the Lower Hunter Valley in the Kurri/Cessnock regions
	3768	Upper Hunter Ranges Enriched Ironbark Forest	Occurs in the Upper Hunter Valley north of the Study Area and often contains Grey Gum, Red Ironbark or White Bloodwood, species not present in the Study Area
6. Narrow-leaved Ironbark Shrubby Forest	3314	Central Hunter Slopes Grey Box Forest	No Grey Box present
	3315	Central Hunter Ironbark-Spotted Gum Forest	No Spotted Gum present
	3401	Upper Hunter Sheltered Viney Shrub Forest	Not a viney shrub forest

Local Community	PCT	PCT Name	Comment
	3431	**Central Hunter Ironbark Grassy Woodland**	**Canopy frequently includes Narrow-leaved Ironbark along with Buloke and occurs on Permian sediments as does the Local Community**
	3438	Hunter Escarpment Footslopes Ironbark Forest	This PCT is restricted to the Singleton region and can contain Spotted Gum not present in this Local Community
	3439	Hunter Escarpment Grey Gum Sheltered Forest	No Grey Gum present
	3444	Lower Hunter Spotted Gum-Ironbark Forest	No Spotted Gum present
	3446	Lower North Foothills Ironbark-Box-Gum Grassy Forest	A Lower Hunter community frequently including Spotted Gum absent from the Local Community
	3485	Central Hunter Slaty Gum Grassy Forest	No Slaty Gum present
	3489	Hunter Escarpment Grey Box Forest	This PCT is restricted to the Wollemi National Park and immediate surrounds, outside of the Study Area
	3525	Upper Hunter Box-Blakelys Red Gum Grassy Forest	No Blakely's Red Gum present
	3604	Hunter Range Grey Gum-Stringybark Forest	No Grey Gum present
	3605	Hunter Range Ironbark Forest	This PCT frequently includes Grey Gum, Stringybark and Rough-barked Apple, none of which occur in the Local Community
	3631	Kurri Sand-Clay Woodland	This PCT is located in the Lower Hunter Valley in the Kurri/Cessnock regions
	3757	Hunter Escarpment Ironbark Scrubby Low Forest	The canopy of this PCT includes Black Cypress Pine not occurring on the Study Area
	3759	Hunter Escarpment Wattle Scrub	A dense Acacia shrubland not present in the Study Area
	3767	Upper Hunter Escarpment Colluvial Ironbark Forest	The canopy of this PCT includes Grey Gum not occurring on the Study Area
	3768	Upper Hunter Ranges Enriched Ironbark Forest	Occurs in the Upper Hunter Valley north of the Study Area and often contains Grey Gum, Red Ironbark or White Bloodwood, species not present in the Study Area
	3769	Upper Hunter Sandstone Stringybark-Ironbark Forest	No Stringybark present
7. White Box - Narrow-leaved Ironbark - Blakely's Red Gum Forest	3395	Northwest Elevated White Box Woodland	Occurs New England Tableland and North West Slopes around the Liverpool Range and in the Inverell, Barraba and Glen Innes districts

Local Community	PCT	PCT Name	Comment
	3396	**Northwest Flats Box-Blakelys Red Gum Forest**	**Occurs on flats and lower slopes in the North West Slopes, Hunter Valley and the western margin of the New England Tableland. Canopy generally contains White Box, Yellow Box, Blakely's Red Gum and Rough-barked Apple, as does the Local Community**
	3397	Northwest Flats Yellow Box Woodland	This PCT is dominated by Yellow Box which is not typical of this Local Community
	3398	Northwest Slopes Box-Apple Woodland	This PCT is distributed in the New England Tableland and North West Slopes between the Liverpool Range and Ashford
	3525	Upper Hunter Box-Blakelys Red Gum Grassy Forest	Similar in composition to the Local Community but occurs at higher elevations and different geology
	3636	Warkworth Sands Woodland	Restricted to the Warkworth area outside of the Study Area
8a. Slaty Box Woodland	**3485**	**Central Hunter Slaty Gum Grassy Forest**	**Contains a high cover of Slaty Gum**
	3490	Hunter Valley Footslopes Slaty Gum Forest	Restricted to an area from Bulga to Baerami Creek in the Central Hunter Valley outside of the Study Area

Table 8: Summary of the Assignment Tool Results showing Plots Assigned to each PCT (Distance to Centroid ≤ 0.695) for Five PCT Matches

Local Community	Plot Count	Central Hunter Slopes Grey Box Forest	Central West Flats Grassy Box Woodland	Northwest Elevated White Box Woodland	Central Hunter Ironbark Grassy Woodland	Central Hunter Slaty Gum Grassy Forest	Central Hunter Swamp Oak Riparian Forest	Northwest White Box Sparse Grassy Woodland
		3314	3404	3395	3431	3485	4015	4147
1. White Box Grassy Woodland	15	1	5	3	7	12	2	8
2. White Box - Spotted Gum Grassy Woodland	14	3	1	2	9	8	2	8
3. Forest Red Gum Grassy Open Forest	5	-	1	-	1	1	2	-
4. Narrow-leaved Ironbark - Grey Box Grassy Woodland	6	3	2	-	3	3	1	2
5. Spotted Gum - Narrow-leaved Ironbark Woodland	6	4	3	-	5	5	2	2
6. Narrow-leaved Ironbark Shrubby Forest	13	4	7	-	10	9	4	2
7. White Box - Narrow-leaved Ironbark - Blakely's Red Gum Forest	5	1	-	1	5	5	-	2

6.2 THREATENED ECOLOGICAL COMMUNITIES LISTED UNDER THE BC ACT

The *BioNet Vegetation Classification* (NSW DCCEEW 2024a) assigns probable TECs to all PCTs and Table provides details of these assignments for each PCT mapped across the Study Area. Figures 11 and 12 show the TECs under the BC Act and/or EPBC Act mapped across the Study Area.

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions is listed as critically endangered under the BC Act (short title Box-Gum Woodland). The *BioNet Vegetation Classification* (NSW DCCEEW 2024a) assigned this TEC to the following PCTs in the Study Area:

- PCT 3395 *Northwest Elevated White Box Woodland*;
- PCT 3525 *Upper Hunter Box-Blakelys Red Gum Grassy Forest*; and
- PCT 3396 *Northwest Flats Box-Blakelys Red Gum Forest*.

Box-Gum Woodland is primarily characterised by a canopy dominated by *Eucalyptus albens* (White Box), *Eucalyptus blakelyi* (Blakely's Red Gum) or *Eucalyptus melliodora* (Yellow Box) with an open canopy and perennial grassy understorey with few shrubs. In the Study Area, PCT 3395 was an open grassy woodland with the canopy dominated by White Box. The NSW TSSC *Final Determination* for Box-Gum Woodland (NSW TSSC 2020) also describes a variant with *Corymbia maculata*) as a co-dominant canopy species in the upper Hunter referenced to Peake (2006) which describes this variant as occurring along Castlerock Road. There are no PCTs that include Spotted Gum with White Box so for this report the combination was assigned to a PCT 3395 variant (Spotted Gum or SG).

PCT 3395 and its Spotted Gum variant were widespread across the Study Area. PCT 3396 was restricted to ephemeral drainage lines in the middle of the northern portion of the Study Area.

Central Hunter Grey Box-Ironbark Woodland in the NSW North Coast and Sydney Basin Bioregions

The *BioNet Vegetation Classification* (NSW DCCEEW 2024b) assigned *Central Hunter Ironbark Grassy Woodland* (PCT 3431) and *Central Hunter Slopes Grey Box Forest* (PCT 3314) to the Central Hunter Grey Box—Ironbark Woodland listed under the under the BC Act.

In the Study Area, the woodland version of the PCT 3431 (Vegetation Community 6) and PCT 3314 (Vegetation Community 4) have been mapped as the TEC.

Narrow-leaved Ironbark (*Eucalyptus crebra*) is dominant in Vegetation Community 6, whereas Vegetation Community 4 is dominated by Narrow-leaved Ironbark (*Eucalyptus crebra*), and Grey Box (*Eucalyptus moluccana*).

Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions – endangered ecological community

The *BioNet Vegetation Classification* (NSW DCCEEW 2024b) assigned *Central Hunter Ironbark-Spotted Gum Forest* (PCT 3315) to the Central Hunter Ironbark—Spotted Gum—Grey Box Forest listed under the BC Act. In the Study Area, the woodland version of the PCT 3315 (Vegetation Community 5) has been mapped as the TEC.

Narrow-leaved Ironbark (*Eucalyptus crebra*) and Spotted Gum (*Corymbia maculata*) are dominant, though Grey Box (*Eucalyptus moluccana*) occurs sporadically. A full description of this TEC (Vegetation Community 5) is provided in Appendix 5.

Hunter Lowlands Red Gum Forest in the Sydney Basin and New South Wales North Coast Bioregions

The *BioNet Vegetation Classification* (NSW DCCEEW 2024b) assigned *Forest Red Gum Grassy Open Forest* (PCT 3446) to Hunter Lowlands Red Gum Forest in the Sydney Basin and New South Wales North Coast Bioregions listed under the BC Act.

Forest Red Gum (*Eucalyptus tereticornis*) dominated the canopy along with a small number of Spotted Gum (*Corymbia maculata*), Narrow-leaved Ironbark (*Eucalyptus crebra*) and Grey Box (*Eucalyptus moluccana*). There were scattered shrubs of *Acacia paradoxa* and ground cover was sparse with forbs and grasses.

Table 9: Threatened Ecological Community Assignment

#	Vegetation Community	PCT Name (NSW DCCEEW 2024a)	Potentially Associated TEC (NSW DCCEEW 2024a)	Assigned TEC (Figures 11 and 12)	Rationale for Assigned TEC
1	White Box Grassy Woodland (PCT 3395)	Northwest Elevated White Box Woodland	BC Act CE White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	BC Act CE White Box Yellow Box Blakely's Red Gum Woodland;	The vegetation community met the relevant NSW and Commonwealth listing advice, including a dominance of White Box and a predominantly native grassy understorey.
			EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	
1a	Derived Native Grassland (PCT 3395)		BC Act CE White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	BC Act CE White Box Yellow Box Blakely's Red Gum Woodland;	Derived native grassland is included in both the NSW and Commonwealth Scientific Committees determination for this community.
			EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	
2	White Box – Spotted Gum Grassy Woodland (P PCT 3395)	Northwest Elevated White Box Woodland	BC Act CE White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	BC Act CE White Box Yellow Box Blakely's Red Gum Woodland;	The vegetation community met the relevant NSW and Commonwealth listing advice, including a dominance of White Box and a predominantly native grassy understorey.
			EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	
2a	Derived Native Grassland (PCT 3395)		BC Act CE White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	BC Act CE White Box Yellow Box Blakely's Red Gum Woodland;	Derived native grassland is included in both the NSW and Commonwealth Scientific Committees determination for this community.
			EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	
3	Forest Red Gum Grassy Open Forest (PCT 3446)	Lower North Foothills Ironbark-Box-Gum Grassy Forest	BC Act E Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	BC Act E Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	Meets the NSW listing advice with locally dominant Forest Red Gum and also containing a small number of Spotted Gum, Narrow Leaved Ironbark and Grey Box

#	Vegetation Community	PCT Name (NSW DCCEEW 2024a)	Potentially Associated TEC (NSW DCCEEW 2024a)	Assigned TEC (Figures 11 and 12)	Rationale for Assigned TEC
			EBPC Act CE Central Hunter Valley Eucalypt Forest and Woodland	EBPC Act CE Central Hunter Valley Eucalypt Forest and Woodland	Meets Commonwealth listing advice with the patch satisfying the condition thresholds as per Section 1.5.3 of the Conservation Advice.
4	Narrow-leaved Ironbark – Grey Box Grassy Woodland (PCT 3314)	Central Hunter Slopes Grey Box Forest	BC Act CE White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland BC Act E Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	BC Act E Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions;	The vegetation community met the relevant NSW and Commonwealth listing advice for these two TECs. This Local Community did not contain canopy species characteristic of White Box Yellow Box Blakely's Red Gum Woodland.
			EBPC Act CE Central Hunter Valley Eucalypt Forest and Woodland EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	EBPC Act CE Central Hunter Valley Eucalypt Forest and Woodland	
4a	Derived Native Grassland (PCT 3314)		As above	Not a TEC	Derived native grassland is **not** included in the NSW or Commonwealth Scientific Committees determination for these TEC.
5	Spotted Gum – Narrow-leaved Ironbark Woodland (PCT 3315)	Central Hunter Ironbark-Spotted Gum Forest	BC Act E Central Hunter Ironbark—Spotted Gum—Grey Box Forest	BC Act E Central Hunter Ironbark—Spotted Gum—Grey Box Forest;	The vegetation community met the relevant NSW and Commonwealth listing advice for these TEC.
			EBPC Act CE Central Hunter Valley Eucalypt Forest and Woodland	EBPC Act CE Central Hunter Valley Eucalypt Forest and Woodland	
5a	Derived Native Grassland (PCT 3315)		As above	Not a TEC	Not a TEC.

#	Vegetation Community	PCT Name (NSW DCCEEW 2024a)	Potentially Associated TEC (NSW DCCEEW 2024a)	Assigned TEC (Figures 11 and 12)	Rationale for Assigned TEC
6	Narrow-leaved Ironbark Shrubby Forest (PCT 3431)	Central Hunter Ironbark Grassy Woodland	BC Act E Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	BC Act E Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	The NSW Threatened Species Scientific Committee determination for Central Hunter Grey Box – Ironbark Woodland lists only two Eucalypt species as characterising this TEC, Narrow-leaved Ironbark and Grey Box. Other tree species may be present: *Angophora floribunda* (Rough-barked Apple) (absent in PCT 3431); *Brachychiton populneus* (Kurrajong) (abundant across Mount Pleasant but rarely in PCT 3431); *Acacia pendula* (absent across Mount Pleasant); and *Allocasuarina luehmannii* (Buloke) (rarely in PCT 3431).
			EPBC Act CE Central Hunter Valley Eucalypt Forest and Woodland	EBPC Act CE Central Hunter Valley Eucalypt Forest and Woodland	Meets Commonwealth Central Hunter Valley Eucalypt Forest and Woodland TEC where a patch satisfies condition thresholds as per Section 1.5.3 of the Conservation Advice.
6a	Derived Native Grassland (PCT 3431)		As above	Not a TEC	Derived native grassland is **not** included in the NSW Threatened Species Scientific Committee determination for this community.
6b	Plantation (PCT 3431)		As above	Not a TEC	Not a TEC.
7	White Box – Narrow-leaved Ironbark – Blakely's Red Gum (PCT 3396)	Northwest Flats Box-Blakelys Red Gum Forest	BC Act CE White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	BC Act CE White Box Yellow Box Blakely's Red Gum Woodland;	The vegetation community met the relevant NSW and Commonwealth listing advice, including presence of White Box, Blakely's Red Gum and Yellow Box and a predominantly native grassy understorey.
			EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	EPBC Act CE White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	
7a	Derived Native Grassland (PCT 3396)		As above	As above	Derived native grassland is included in both the NSW and Commonwealth Scientific Committees determination for this community.
8a	Derived Native Grassland (PCT 3485)	Central Hunter Slaty Gum Grassy Forest	Not a TEC	Not a TEC	Not a TEC.

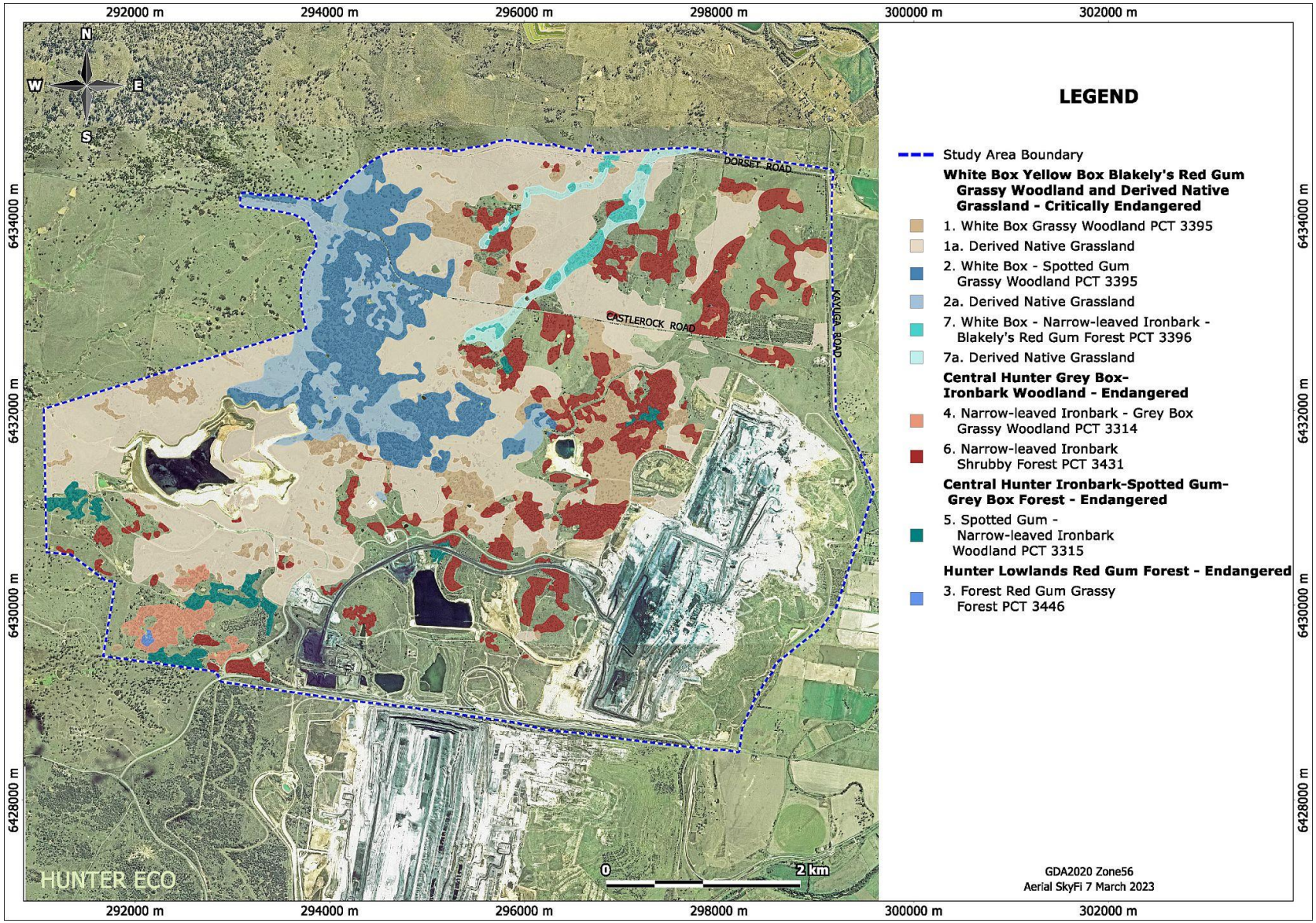

Figure 11: Threatened Ecological Communities NSW BC Act

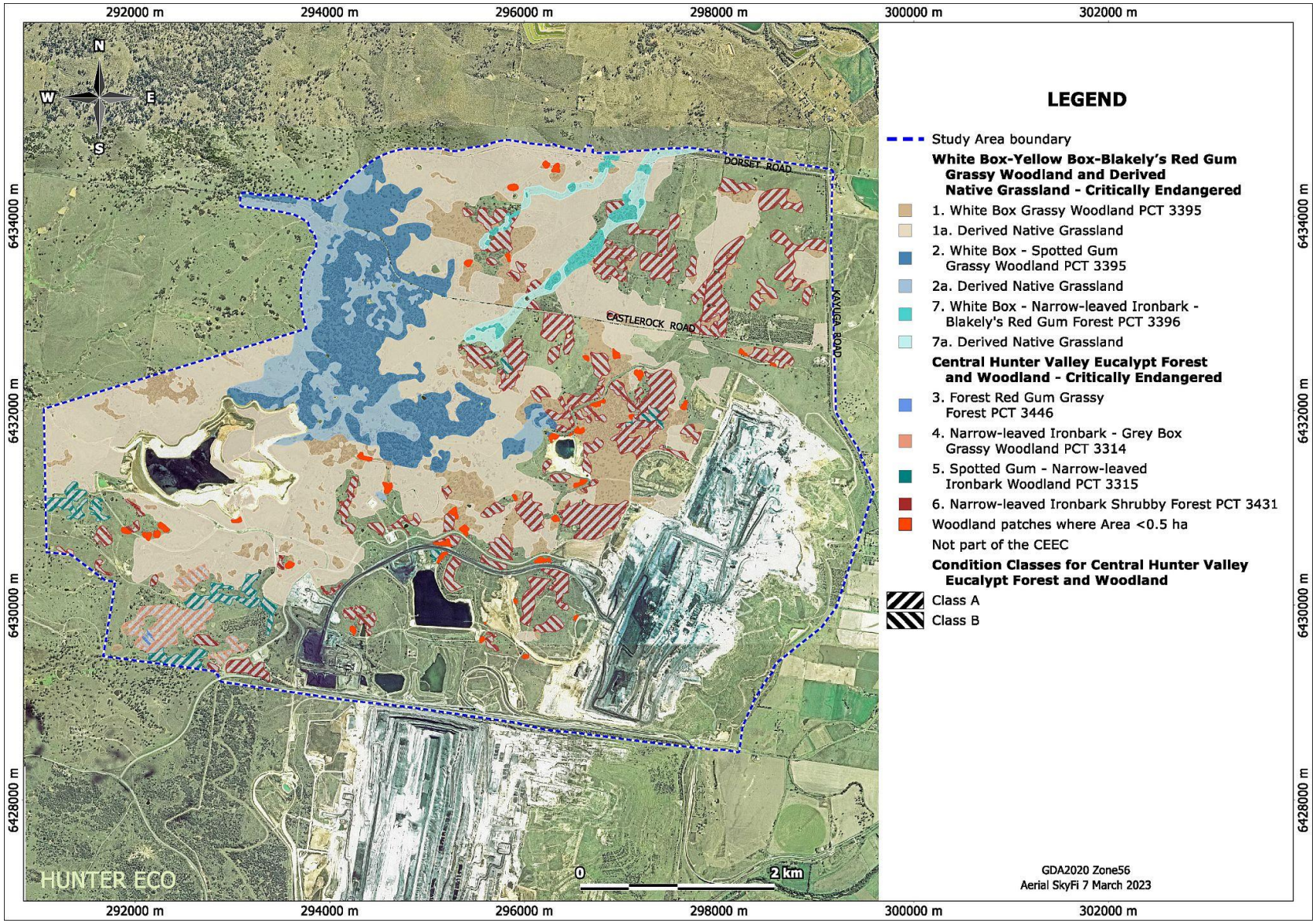

Figure 12: Threatened Ecological Communities Commonwealth EPBC Act

6.3 THREATENED ECOLOGICAL COMMUNITIES LISTED UNDER THE EPBC ACT

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

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as a CEEC under the EPBC Act. *Northwest Elevated White Box Woodland* (PCT 3395 and 3395 SG) and *Northwest Slopes Box-Blakelys Red Gum Woodland* (PCT 3396) were assessed as components of the TEC, including the DNG variants. The main identifying characteristics were the presence of:

- White Box in the canopy of PCT 3395 and the Spotted Gum variant; and
- White Box, Blakely's Red Gum and Yellow Box in the canopy of PCT 3396.

The condition classes and thresholds for Box-Gum Woodland CEEC (Cth DCCEEW 2023) are:

- Class A, a predominantly native perennial ground layer (≥50%); at least 12 native understorey species in any patch excluding grasses, with all patches >0.1 ha; at least one Important Species present; and 10 or more mature trees per hectare.
- Class B, a predominantly native perennial ground layer (≥50%); at least 12 native understorey species in any patch excluding grasses, with all patches >0.1 ha; at least one Important Species present; and canopy sparse or absent (e.g., derived native grassland).
- Class C, a predominantly native perennial ground layer (≥50%) with all patches ≥2 ha containing natural regeneration of dominant canopy eucalypts.

Table 10 shows that these three PCT meet the condition thresholds (Cth DCCEEW 2023) for this TEC with a predominantly native understorey and at least 12 native understorey species in any patch excluding grasses, with all patches >0.1 ha and at least one *Important Species* present in each PCT.

Table 10: EPBC Box Gum Condition Classes and Thresholds

Local Community	Number of Plots	Important Species	Percent Native Perennial Ground Species	Native Species Not Grass
Class A (Good quality understorey and mature overstorey both present)				
1. White Box Grassy Woodland PCT 3395	15	5	99	26
2. White Box - Spotted Gum Grassy Woodland PCT 3395	14	5	99	30
7. White Box - Narrow-leaved Ironbark - Blakely's Red Gum Forest PCT 3396	10	5	93	20
Class B (Good quality understorey present. Characteristic trees may be absent)				
1a. White Box Grassy Woodland [DNG] PCT 3395	22	3	99	15
2a. White Box - Spotted Gum Grassy Woodland [DNG] PCT 3395	10	4	100	22
7a. White Box - Narrow-leaved Ironbark - Blakely's Red Gum Forest [DNG] PCT 3396	10	3	95	15

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland was dispersed across the majority of the Study Area (Figure 15).

Central Hunter Valley Eucalypt Forest and Woodland

Central Hunter Valley Eucalypt Forest and Woodland is listed as a CEEC under the EPBC Act. *Central Hunter Ironbark-Spotted Gum Forest* (PCT 3315), *Central Hunter Ironbark Grassy Woodland* (PCT 3431) and *Central Hunter Slopes Grey Box Forest* (PCT 3314) were assessed as components of the TEC. The primary canopy of each of the local communities was consistent with that of the TEC given the presence of:

- Narrow-leaved Ironbark and Spotted Gum for PCT 3315;
- Narrow-leaved Ironbark for PCT 3431; and
- Narrow-leaved Ironbark and Grey Box for PCT 3314.

The condition classes and thresholds for the Central Hunter Valley Eucalypt Forest and Woodland listed under the EPBC Act (DotE 2015) are:

- Class A, Patch size is ≥ 5 ha; AND ≥ 50% of perennial understorey vegetative cover is native; AND the patch contains at least 12 native understorey species.
- Class B, Patch size is ≥ 0.5 ha AND ≥ 70% of perennial vegetative cover in each layer present24 is native; AND the patch contains at least 12 native understorey species.
- Class C, Patch size is ≥ 0.5 ha; AND ≥ 50% of perennial understorey vegetative cover is native; AND the patch contains at least 12 native understorey species.
- Class D, Patch size is ≥ 2 ha; AND ≥ 50% of perennial understorey vegetative cover is native; AND he patch is contiguous with another patch of native woody vegetation 25 ≥ 1 ha in area OR The patch has at least one large locally indigenous tree (≥ 60 cm dbh26), or at least one tree with hollows.

Table 11 shows that these three PCT meet the condition thresholds (DotE 2015) for this TEC with a predominantly native understorey and at least 12 native understorey species in any patch.

Table 11: EPBC Central Hunter Valley Eucalypt Forest and Woodland Condition Classes and Thresholds

Local Community and PCT	Number of Patches	Number of Plots	Percent Perennial Understory	Number of Native Understorey Species
Class A				
4. Narrow-leaved Ironbark - Grey Box Grassy Woodland PCT 3314	1	4	100	17
5. Spotted Gum - Narrow-leaved Ironbark Woodland PCT 3315	3	3	100	17
6. Narrow-leaved Ironbark Shrubby Forest PCT 3431	16	6	100	17
Class B				
4. Narrow-leaved Ironbark - Grey Box Grassy Woodland PCT 3314	2	2	100	49
5. Spotted Gum - Narrow-leaved Ironbark Woodland PCT 3315	6	2	95	54
6. Narrow-leaved Ironbark Shrubby Forest PCT 3431	83	6	100	22

The determination for the Central Hunter Valley Eucalypt Forest and Woodland listed under the EPBC Act specifically excludes derived grasslands other than for narrow (30 m or less) strips around woodland areas or connection between woodland areas. A total of 39 isolated patches of PCT 3314, 3315 and 3431 each having an area of <0.5 ha are excluded from the Central Hunter Valley Eucalypt Forest and Woodland listed under the EPBC Act.

6.4 FLORA SPECIES

Across the Study Area 331 species were recorded consisting 201 genera from 70 families. Within the total species there were 77 weed species and 24 High Threat Exotic species. The dominant families were Poaceae with 66 species including 5 weeds and 2 high threat weeds, and Asteraceae with 44 species including 15 weeds and 2 high threat weeds.

6.5 THREATENED FLORA SPECIES

No threatened flora species listed under the BC Act or EPBC Act were recorded across the Study Area.

6.6 ENDANGERED POPULATIONS

The Endangered Population *Cymbidium canaliculatum population in the Hunter Catchment* was represented by 11 *Cymbidium canaliculatum* (Tiger Orchid) records (Figure 13). These records were confirmed or recorded by Hunter Eco, EcoSure () and Bolwarra (2024).

6.7 GROUNDWATER DEPENDENT ECOSYSTEMS

The Topographic Wetness model shown in Figure 8 shows that there is potential for GDE to occur along ephemeral drainage lines in the north of the Study Area. PCT 3396 White Box-Narrow-leaved Ironbark-Blakely's Red Gum Forest is mapped along the drainage lines (Figure 9). Dominant tree species were Blakely's Red Gum (*Eucalyptus blakelyi*), Yellow Box (*Eucalyptus melliodora)* and White Box hybrid (*Eucalyptus albens*). There were a few scattered Narrow-leaved Ironbark (*Eucalyptus crebra*).

Considering that this community is restricted to the drainage lines suggests that they favour areas of higher moisture content and the groundwater assessment indicates that the groundwater is approximately 5 m below ground level in this location, which indicates also that the vegetation community is likely to have facultative groundwater dependence. While the streamlines are ephemeral, erosion and the incised stream beds indicate that there are periods of significant stormwater flow that could recharge transient aquifers.

Elsewhere across the Study Area there are no indications of other potential GDE.

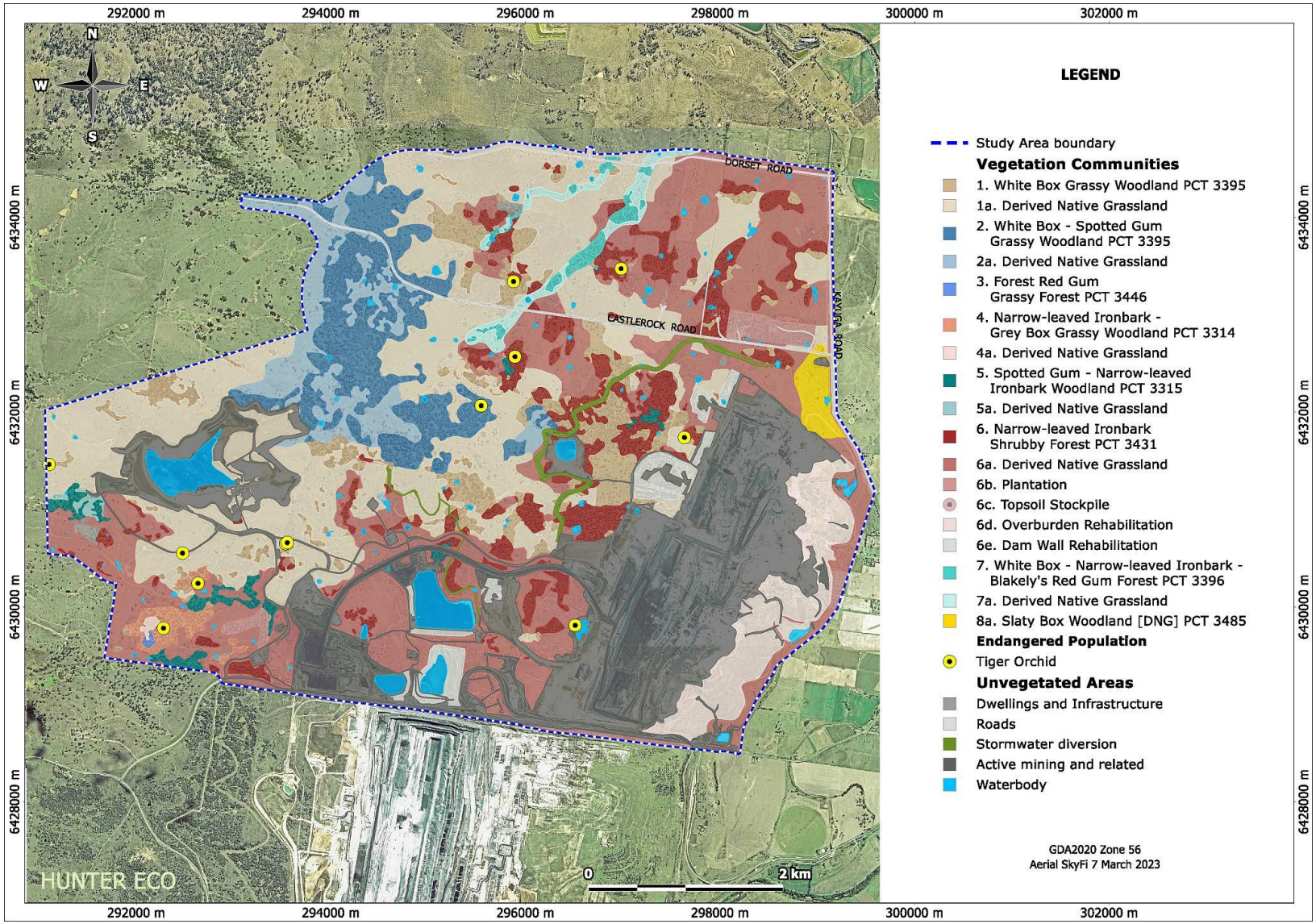

Figure 13: Tiger Orchid Records

7 CONCLUSION

Seven vegetation communities were mapped across the Study Area. Several of these communities were present in both remnant vegetation form and DNG form. For the DNG, scattered paddock tree species indicated the likely community that had been cleared.

For each of the vegetation communities, floristic content was compared with that listed in the various Scientific Committee Determinations and related advice to identify any TECs listed under the BC Act and/or the EPBC Act. The threatened communities found to be present are listed in Table 12.

Table 12: Threatened Ecological Communities Recorded Across the Study Area

Threatened Ecological Community	Conservation Status
Threatened Ecological Communities Listed under the BC Act	
Central Hunter Grey Box – Ironbark Woodland in the NSW North Coast and Sydney Basin	Endangered
Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions - endangered ecological community	Endangered
Hunter Lowland Redgum Forest in the Sydney Basin and NSW North Coast Bioregions	Endangered
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Critically Endangered
Threatened Ecological Communities Listed Under the EPBC Act	
Central Hunter Valley Eucalypt Forest and Woodland	Critically Endangered
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered

Individuals of the *Cymbidium canaliculatum population in the Hunter Catchment* Endangered Population under the BC Act were recorded. All previously recorded locations were inspected during the current survey to confirm their presence/absence and identity, and the species was opportunistically targeted during all surveys. No other threatened flora species listed under the BC Act or EPBC Act were recorded in the Study Area, or were recorded in any past studies.

8 REFERENCES

Atlas of Living Australia (2023) *Atlas of Living Australia*. Database search within the following area: -32.2376 150.9416, -32.2370 150.9409, -32.3438 150.9409, -32.3525 150.7143, -32.1318 150.7088, -32.1295 150.9396, -32.2376 150.9416.
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Bureau of Meteorology (2020a) *Climate Data Online*.
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APPENDIX 1 COMBINED FLORISTIC LIST

Family and Species [*Weed **High Threat Exotic]

Acanthaceae		**Linaceae**
Brunoniella australis		**Linum trigynum*
Rostellularia adscendens var. adscendens		*Linum marginale*
Aizoaceae		**Lobeliaceae**
***Galenia pubescens*		*Lobelia purpurascens*
Alliaceae		**Lomandraceae**
**Nothoscordum gracile*		*Lomandra confertifolia subsp. pallida*
Amaranthaceae		*Lomandra confertifolia subsp. rubiginosa*
***Alternanthera pungens*		*Lomandra filiformis subsp. coriacea*
**Amaranthus powellii*		*Lomandra filiformis subsp. filiformis*
**Gomphrena celosioides*		*Lomandra glauca*
Alternanthera denticulata		*Lomandra multiflora subsp. multiflora*
Alternanthera nana		**Loranthaceae**
Anacardiaceae		*Amyema miquelii*
**Schinus areira*		**Malvaceae**
Apiaceae		**Malva parviflora*
Daucus glochidiatus		**Malvastrum americanum*
Hydrocotyle laxiflora		**Modiola caroliniana*
Apocynaceae		**Sida rhombifolia*
**Gomphocarpus fruticosus*		**Sida spinosa*
Marsdenia viridiflora subsp. viridiflora		*Abutilon oxycarpum*
Parsonsia lanceolata		*Sida corrugata*
Asparagaceae		*Sida hackettiana*
Arthropodium milleflorum		**Meliaceae**
Arthropodium species B sensu Harden (1993)		*Melia azedarach*
Asphodelaceae		**Moraceae**
**Asphodelus fistulosus*		***Maclura pomifera*
Asteraceae		**Myoporaceae**
***Bidens pilosa*		*Eremophila debilis*
***Bidens subalternans*		*Myoporum montanum*
***Carthamus lanatus*		**Myrtaceae**
***Senecio madagascariensis*		*Angophora floribunda*
***Xanthium occidentale*		*Corymbia maculata*
***Xanthium spinosum*		*Eucalyptus acaciiformis*
**Cirsium vulgare*		*Eucalyptus albens*
**Conyza bonariensis*		*Eucalyptus blakelyi*
**Conyza sp.*		*Eucalyptus caleyi subsp. caleyi*
**Cyanthillium cinereum var. cinereum*		*Eucalyptus conica*
**Hypochaeris albiflora*		*Eucalyptus crebra*
**Hypochaeris radicata*		*Eucalyptus dawsonii*
**Lactuca serriola*		*Eucalyptus fibrosa*
**Leontodon rhagadioloides subsp. cretica*		*Eucalyptus melliodora*
**Schkuhria pinnata*		*Eucalyptus microcarpa*

**Soliva sessilis*		*Eucalyptus moluccana*
**Sonchus asper*		*Eucalyptus punctata*
**Sonchus oleraceus*		*Eucalyptus sideroxylon*
**Tagetes minuta*		*Eucalyptus sp.*
Brachyscome ciliaris		*Eucalyptus tereticornis*
Calotis lappulacea		*Melaleuca bracteata*
Cassinia sifton		**Nyctaginaceae**
Cassinia uncata		*Boerhavia dominii*
Chrysocephalum apiculatum		**Oleaceae**
Chrysocephalum semipapposum		**Olea europaea subsp. cuspidata*
Cotula australis		*Notelaea microcarpa var. microcarpa*
Cymbonotus lawsonianus		**Orchidaceae**
Eclipta platyglossa		*Cymbidium canaliculatum*
Glossocardia bidens		**Oxalidaceae**
Lagenophora gracilis		**Oxalis bowiei*
Lagenophora stipitata		*Oxalis exilis*
Leiocarpa panaetioides		*Oxalis perennans*
Minuria leptophylla		**Papaveraceae**
Ozothamnus diosmifolius		**Argemone ochroleuca subsp. ochroleuca*
Senecio quadridentatus		**Phormiaceae**
Solenogyne bellioides		*Dianella longifolia var. longifolia*
Vittadinia cervicularis var. subcervicularis		*Dianella revoluta var. revoluta*
Vittadinia cuneata var. cuneata		*Dianella tarda*
Vittadinia cuneata var. hirsuta		**Phyllanthaceae**
Vittadinia gracilis		*Phyllanthus gunnii*
Vittadinia muelleri		*Phyllanthus virgatus*
Vittadinia pterochaeta		**Pittosporaceae**
Vittadinia pustulata		*Bursaria spinosa*
Vittadinia sulcata		**Plantaginaceae**
Boraginaceae		**Plantago lanceolata*
**Echium plantagineum*		*Plantago debilis*
Hackelia suaveolens		*Plantago gaudichaudii*
Brassicaceae		*Plantago turrifera*
***Carrichtera annua*		*Plantago varia*
**Capsella bursa-pastoris*		**Poaceae**
**Hirschfeldia incana*		***Cenchrus clandestinus*
**Lepidium africanum*		***Cenchrus longisetus*
**Lepidium bonariense*		***Ehrharta erecta*
**Rapistrum rugosum*		***Hyparrhenia hirta*
Lepidium pseudohyssopifolium		***Paspalum dilatatum*
Cactaceae		**Avena sativa*
***Opuntia aurantiaca*		**Bromus molliformis*
***Opuntia humifusa*		**Cynodon dactylon*
***Opuntia stricta var. stricta*		**Eleusine tristachya*

Campanulaceae		**Lolium loliaceum*
Wahlenbergia communis		**Setaria parviflora*
Wahlenbergia gracilis		**Urochloa panicoides*
Wahlenbergia luteola		*Anthosachne scabra*
Caryophyllaceae		*Aristida leichhardtiana*
**Cerastium glomeratum*		*Aristida ramosa*
**Paronychia brasiliana*		*Aristida vagans*
**Petrorhagia dubia*		*Austrostipa aristiglumis*
**Polycarpon tetraphyllum*		*Austrostipa scabra*
Casuarinaceae		*Austrostipa scabra subsp. falcata*
Allocasuarina gymnanthera		*Austrostipa scabra subsp. scabra*
Allocasuarina luehmannii		*Austrostipa verticillata*
Casuarina cunninghamiana subsp. cunninghamiana		*Bothriochloa biloba*
Casuarina glauca		*Bothriochloa decipiens var. decipiens*
Celastraceae		*Bothriochloa macra*
Denhamia silvestris		*Chloris truncata*
Chenopodiaceae		*Chloris ventricosa*
Atriplex semibaccata		*Cymbopogon refractus*
Dysphania carinata		*Dichanthium sericeum subsp. sericeum*
Einadia hastata		*Dichelachne micrantha*
Einadia nutans		*Digitaria brownii*
Einadia nutans subsp. linifolia		*Digitaria diffusa*
Einadia nutans subsp. nutans		*Digitaria divaricatissima*
Einadia polygonoides		*Digitaria ramularis*
Enchylaena tomentosa		*Enneapogon nigricans*
Maireana enchylaenoides		*Enteropogon acicularis*
Maireana microphylla		*Eragrostis brownii*
Sclerolaena birchii		*Eragrostis lacunaria*
Sclerolaena muricata var. muricata		*Eragrostis leptostachya*
Clusiaceae		*Eragrostis sororia*
***Hypericum perforatum*		*Eriochloa pseudoacrotricha*
Commelinaceae		*Eulalia aurea*
Commelina cyanea		*Microlaena stipoides var. stipoides*
Convolvulaceae		*Panicum buncei*
Convolvulus angustissimus		*Panicum effusum*
Convolvulus erubescens		*Panicum queenslandicum var. queenslandicum*
Convolvulus graminetinus		*Panicum simile*
Dichondra repens		*Paspalidium aversum*
Dichondra sp. Inglewood (J.M.Dalby 86/93) Qld Herbarium		*Paspalidium criniforme*
Evolvulus alsinoides var. decumbens		*Paspalidium distans*
Crassulaceae		*Poa sieberiana var. hirtella*
***Bryophyllum delagoense*		*Rytidosperma caespitosum*
Cucurbitaceae		*Rytidosperma fulvum*

**Citrullus amarus*		*Rytidosperma longifolium*
**Cucumis myriocarpus subsp. leptodermis*		*Rytidosperma racemosum var. racemosum*
Cyperaceae		*Rytidosperma setaceum*
**Cyperus rotundus*		*Rytidosperma tenuius*
Carex inversa		*Sorghum leiocladum*
Cyperus gracilis		*Sporobolus caroli*
Fimbristylis dichotoma		*Sporobolus creber*
Scleria mackaviensis		*Themeda avenacea*
Euphorbiaceae		*Tragus australianus*
Chamaesyce drummondii		*Walwhalleya subxerophila*
Euphorbia drummondii		**Polygonaceae**
Fabaceae (Caesalpinioideae)		**Polygonum arenastrum*
Senna clavigera		*Rumex brownii*
Fabaceae (Faboideae)		**Portulacaceae**
**Medicago polymorpha*		*Portulaca oleracea*
**Medicago sativa*		**Primulaceae**
**Medicago spp.*		**Lysimachia arvensis*
**Trifolium glomeratum*		**Pteridaceae**
**Trifolium sp.*		*Cheilanthes distans*
Cullen tenax		*Cheilanthes sieberi subsp. sieberi*
Daviesia genistifolia		**Rosaceae**
Glycine clandestina		***Rosa rubiginosa*
Glycine tabacina		*Acaena sp.*
Grona varians		**Rubiaceae**
Medicago spp.		**Richardia stellaris*
Oxytes brachypoda		**Sherardia arvensis*
Pullenia gunnii		*Asperula conferta*
Rhynchosia minima		*Galium leiocarpum*
Swainsona galegifolia		*Psydrax odorata*
Templetonia stenophylla		**Rutaceae**
Zornia dyctiocarpa var. dyctiocarpa		*Geijera parviflora*
Fabaceae (Mimosoideae)		**Scrophulariaceae**
Acacia decora		**Kickxia elatine subsp. crinita*
Acacia melvillei		*Mimulus gracilis*
Acacia paradoxa		*Veronica plebeia*
Acacia parramattensis		**Solanaceae**
Acacia salicina		***Lycium ferocissimum*
Neptunia gracilis f. gracilis		**Datura ferox*
Gentianaceae		**Solanum nigrum*
**Centaurium erythraea*		**Solanum rostratum*
Geraniaceae		*Solanum brownii*
**Erodium cicutarium*		*Solanum campanulatum*
**Erodium moschatum*		*Solanum cinereum*
Erodium crinitum		*Solanum prinophyllum*

Geranium solanderi var. solanderi		**Stackhousiaceae**
Goodeniaceae		*Stackhousia muricata*
Goodenia hederacea subsp. hederacea		*Stackhousia viminea*
Goodenia pinnatifida		**Sterculiaceae**
Hypericaceae		*Brachychiton populneus subsp. populneus*
***Hypericum perforatum*		**Thymelaeaceae**
Hypericum gramineum		*Pimelea curviflora var. sericea*
Hypoxidaceae		*Pimelea linifolia*
Hypoxis pratensis var. pratensis		**Ulmaceae**
Iridaceae		*Trema tomentosa var. aspera*
***Romulea rosea*		**Verbenaceae**
Juncaceae		**Glandularia aristigera*
Juncus sp.		**Verbena bonariensis*
Lamiaceae		**Verbena officinalis*
**Lamium amplexicaule*		**Verbena rigida*
**Marrubium vulgare*		**Verbena rigida var. rigida*
**Prunella vulgaris*		*Oncinocalyx betchei*
**Salvia reflexa*		*Verbena gaudichaudii*
**Salvia verbenaca*		**Violaceae**
**Stachys arvensis*		*Viola betonicifolia subsp. betonicifolia*
Mentha satureioides		**Zygophyllaceae**
		Tribulus micrococcus

APPENDIX 2 VEGETATION INTEGRITY PLOT DATA

Plot	PCT	area	patchsize	conditionclass	Zone	Easting	Northing	Bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowTrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
200323P1	3396	8.5	101	DerivedNative Grassland	56	296160	6434306	72	0	0	19	7	1	2	0	0	180.6	0.7	0.1	0.2	0	0	8	0	0	0	0	0	0	0	0.4
200323P2	3396	5.28	101	Forest_good	56	296026	6434212	356	2	1	6	12	0	2	40	1	11.4	1.2	0	0.2	4	2	64	28	0	0	0	0	1	1	66.4
200323P3	3395	892.62	101	DerivedNative Grassland	56	296192	6433997	88	0	1	17	13	1	3	0	0.1	136.5	2.2	0.1	0.3	0	0	12	0	0	0	0	0	0	0	0.1
200323P4	3395	892.62	101	DerivedNative Grassland	56	296411	6433760	210	0	2	13	14	0	3	0	0.2	105.4	1.4	0	1.2	0	0	6	0	0	0	0	0	0	0	0.3
200323P5	3396	18.81	101	Forest_good	56	296615	6433536	210	2	2	19	17	1	2	30	0.2	54.4	1.7	0.1	0.2	1	1	31	29	1	1	1	1	0	1	0.3
200323P6	3396	18.81	101	Forest_good	56	296297	6433354	20	2	2	16	16	0	1	30.1	0.2	88.1	7.5	0	0.1	1	1	9	18	0	0	0	0	1	1	2.4
200324P1	3396	24.54	101	DerivedNative Grassland	56	296125	6433212	42	0	0	19	17	1	3	0	0	128.7	1.7	0.1	0.3	0	0	5	0	0	0	0	0	0	0	2.4
200324P2	3431	258.9	101	Forest_good	56	296085	6433278	20	2	2	17	15	0	3	30.1	2	17.2	1.5	0	0.3	1	0	52	6	1	1	1	0	0	1	0.3
200324P3	3395	232.57	101	Woodland_good	56	295834	6433169	206	1	1	17	11	1	3	15	0.1	53.2	1.1	0.1	0.3	0	0	21	14	1	1	1	0	0	1	0.2
200324P4	3431	714.52	101	DerivedNative Grassland	56	295598	6433579	320	0	1	16	9	1	0	0	0.1	109.7	0.9	0.1	0	0	0	5	0	0	0	0	0	0	0	0.4
200324P5	3396	8.5	101	DerivedNative Grassland	56	295577	6433744	230	1	0	12	15	1	2	3	0	114.4	1.5	0.1	0.2	0	0	8	7	1	1	0	0	0	1	1.3
200324P6	3431	258.9	101	Forest_good	56	295765	6433710	340	2	2	14	13	0	1	40.1	1.1	16.1	1.3	0	0.1	0	0	27	0	1	1	1	0	0	1	0.1
200324P7	3395	232.57	101	Woodland_good	56	295964	6433822	305	1	1	13	15	0	3	20	0.1	27	3.4	0	0.3	0	0	24	4	1	1	1	0	0	1	0
200324P8	3395	892.62	101	DerivedNative Grassland	56	295838	6434694	65	0	2	10	2	0	0	0	0.2	60.3	1.1	0	0	0	0	3	0	0	0	0	0	0	0	2.1
200325P1	3315	35.9	101	Woodland_good	56	292225	6429479	260	4	5	19	17	2	3	25.2	0.5	11.5	1.7	0.2	0.3	0	0	84	0	1	1	1	1	0	1	0.1
200325P2	3314	32.26	101	Woodland_good	56	292320	6429727	32	4	3	20	19	0	4	41.2	0.3	10.6	1.9	0	0.4	0	0	52	7	1	1	1	1	0	1	0.2
200325P3	3314	2.03	101	DerivedNative Grassland	56	292172	6429823	38	0	2	14	12	1	2	0	1.1	98.6	1.2	0.1	0.2	0	0	3	0	0	0	0	0	0	0	0.2
200325P4	3314	32.26	101	Woodland_good	56	292162	6429946	100	5	5	16	17	1	3	31.2	0.5	35.2	1.7	0.1	0.3	0	0	33	3	1	1	1	0	0	1	0.2
200327P1	3395	232.57	101	Woodland_good	56	295214	6434661	81	3	3	17	20	1	2	35.2	0.3	98	2	0.1	0.2	0	0	11	12	1	1	1	1	0	1	0.4
200327P2	3396	18.81	101	Forest_good	56	296904	6434607	80	2	4	21	12	1	1	37	0.4	35.4	1.2	0.1	0.1	0	0	32	3	0	1	1	1	1	1	6.5
200327P3	3396	24.54	101	DerivedNative Grassland	56	297318	6434652	52	1	1	15	9	1	2	35	0.1	41.2	0.9	0.1	0.2	1	0	2	6	0	0	0	0	0	0	2.6
200327P4	3431	714.52	101	DerivedNative Grassland	56	297585	6434601	58	0	2	11	14	1	2	0	0.2	62.3	1.4	0.1	0.2	0	0	3	0	0	0	0	0	0	0	0.4

Plot	PCT	area	patchsize	conditionclass	Zone	Easting	Northing	Bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowTrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
200327P5	3431	50.88	101	Plantation	56	297855	6434623	92	4	1	17	7	0	2	16.2	0.1	32.1	0.7	0	0.2	0	0	32	0	0	1	1	0	0	0	0.3
200327P6	3396	5.28	101	Forest_good	56	296785	6434525	35	1	2	21	14	1	3	35	0.2	56.7	1.4	0.1	0.3	3	2	84	0	1	1	1	0	0	1	0.5
200327P7	3396	8.5	101	DerivedNative Grassland	56	296630	6434310	235	0	0	13	9	0	3	0	0	98.8	0.9	0	0.3	0	0	9	0	0	0	0	0	0	0	1.4
200327P8	3395	892.62	101	DerivedNative Grassland	56	296911	6434297	94	0	0	9	7	1	2	0	0	97.5	0.7	0.1	0.2	0	0	5	0	0	0	0	0	0	0	1.1
200331P1	3431	714.52	101	DerivedNative Grassland	56	292346	6430067	196	1	2	20	8	1	1	0.1	0.2	89.1	0.8	0.1	0.1	0	0	2	0	0	0	0	0	0	0	6.1
200331P2	3314	32.26	101	Woodland_good	56	292595	6430320	76	3	6	19	15	2	4	17.1	0.6	1.9	1.5	0.2	0.4	1	1	74	28	1	1	1	1	0	1	1.3
200331P3	3395	892.62	101	DerivedNative Grassland	56	292805	6430470	6	0	2	13	17	0	3	0	0.2	94.7	1.7	0	0.3	0	0	2	0	0	0	0	0	0	0	40
200331P4	3431	714.52	101	DerivedNative Grassland	56	293054	6429987	64	1	2	18	15	1	2	0.1	0.2	96.1	1.5	0.1	0.2	0	0	7	0	0	0	0	0	0	0	0.3
200331P5	3315	35.9	101	Woodland_good	56	293157	6430052	75	3	6	14	19	1	4	40.2	13.4	11.3	1.9	0.1	0.4	1	0	43	0	1	1	1	1	0	1	0.4
200331P6	3431	714.52	101	DerivedNative Grassland	56	293050	6430118	250	0	5	17	16	1	3	0	0.5	97.2	1.6	0.1	0.3	0	0	10	0	0	0	0	0	0	0	0.2
200331P7	3431	258.9	101	Forest_good	56	296094	6430958	211	2	4	17	19	2	2	35.1	6.3	68.2	11.8	0.2	0.2	0	0	44	2	1	0	0	1	0	1	0.5
200331P8	3431	258.9	101	Forest_good	56	295648	6431004	218	1	4	10	7	0	2	25	0.4	50.9	20.5	0	0.2	0	0	58	2	0	0	1	1	0	5	7.1
200402P1	3395	241.45	101	Woodland_good	56	294049	6433372	187	4	3	14	21	2	3	32.1	0.3	81.1	2.1	0.2	0.3	0	1	48	34	1	0	1	1	1	1	0.4
200402P2	3395	137.46	101	DerivedNative Grassland	56	294347	6433557	84	0	2	14	15	2	2	0	0.2	92.8	1.5	0.2	0.2	0	0	6	0	0	0	0	0	0	0	0.3
200402P3	3395	137.46	101	DerivedNative Grassland	56	294216	6432947	347	0	2	15	17	1	3	0	0.2	88.2	1.7	0.1	0.3	0	0	5	0	0	0	0	0	0	0	0.1
200402P4	3395	241.45	101	Woodland_good	56	294348	6432700	108	2	3	15	22	2	3	40.1	0.3	72.1	2.2	0.2	0.3	1	1	42	26	1	1	1	0	0	1	0.6
200402P5	3395	137.46	101	DerivedNative Grassland	56	294102	6434100	26	0	1	13	13	0	2	0	0.1	98.6	1.3	0	0.2	0	0	6	0	0	0	0	0	0	0	0.4
200402P6	3395	241.45	101	Woodland_good	56	294395	6434221	98	4	3	13	16	0	3	41.2	0.3	14	1.6	0	0.3	3	1	46	15	1	0	0	0	0	1	60.2
200406P1	3396	24.54	101	DerivedNative Grassland	56	295491	6432732	220	1	3	18	19	2	2	10	0.3	90.9	2.8	6.1	0.2	0	0	25	10	1	1	1	0	0	0	0.4
200406P2	3396	24.54	101	DerivedNative Grassland	56	295609	6432771	115	0	1	17	11	1	2	0	0.1	84	1.1	0.1	0.2	0	0	15	7	0	0	0	0	0	0	10.2
200406P3	3396	18.81	101	Forest_good	56	295720	6432811	23	3	3	20	17	2	4	4.1	0.3	62.5	1.7	0.2	0.4	0	0	15	4	1	1	1	0	0	1	0.5
200406P4	3315	35.9	101	Woodland_good	56	295834	6432412	178	3	4	15	29	1	2	35.1	0.4	17.3	2.9	0.1	0.2	1	1	20	6	1	1	1	1	1	1	0.5

Plot	PCT	area	patchsize	conditionclass	Zone	Easting	Northing	Bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowTrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
200406P5	3431	258.9	101	Forest_good	56	295878	6432696	40	1	3	18	16	1	2	15	0.3	57.3	21.5	0.1	0.2	4	0	44	7	1	0	0	0	1	1	0.6
200406P6	3431	714.52	101	DerivedNative Grassland	56	295861	6432836	330	1	1	11	9	1	1	0.1	0.1	82.6	0.9	0.1	0.1	0	0	5	0	0	0	0	0	0	1	0.5
200406P7	3396	24.54	101	DerivedNative Grassland	56	295890	6432988	85	0	1	12	7	1	2	0	0.1	92.7	10.6	0.1	0.2	0	0	5	0	0	0	0	0	0	0	0.5
200406P8	3431	258.9	101	Forest_good	56	295488	6432613	268	2	2	19	20	2	3	40.1	0.2	81.2	2	0.2	0.3	1	0	48	0	1	1	1	1	1	1	0.4
200407P1	3395	892.62	101	DerivedNative Grassland	56	295132	6432976	20	0	2	15	11	1	2	0	0.2	75.9	7	0.1	0.2	0	0	2	0	0	0	0	0	0	0	70.2
200407P2	3395	137.46	101	DerivedNative Grassland	56	294698	6432849	256	0	3	12	16	1	3	0	0.3	100.4	1.6	0.1	0.3	0	0	3	0	0	0	0	0	0	0	50.2
200407P3	3395	232.57	101	Woodland_good	56	295162	6432445	100	1	3	17	23	1	3	40	0.3	7.3	2.3	0.1	1.2	0	0	32	0	1	1	1	1	0	1	0.6
200407P4	3395	892.62	101	DerivedNative Grassland	56	294850	6432225	134	0	2	13	16	1	3	0	0.2	82.8	1.6	0.1	1.2	0	0	4	0	0	0	0	0	0	0	60
200407P5	3395	241.45	101	Woodland_good	56	294989	6431882	320	4	4	14	20	1	3	40.2	0.4	3.2	2	0.1	0.3	1	0	72	55	1	1	1	1	1	1	0.3
200407P6	3395	892.62	101	DerivedNative Grassland	56	295571	6431546	124	0	2	13	15	1	4	0	0.2	59.4	7.4	0.1	1.3	0	0	3	0	0	0	0	0	0	0	30.2
200407P7	3395	241.45	101	Woodland_good	56	295443	6431810	119	2	4	18	17	1	2	35.1	0.4	1.8	1.7	0.1	0.2	0	0	44	10	1	1	1	1	0	1	0.2
200407P8	3395	241.45	101	Woodland_good	56	295590	6431999	113	2	3	19	23	2	3	35	0.3	23.4	2.3	0.2	0.3	0	0	26	0	0	1	1	1	0	1	0.2
200407P9	3395	232.57	101	Woodland_good	56	295621	6432273	352	1	2	18	20	1	3	35	1.1	48.2	3.8	0.1	0.3	1	1	30	1	0	1	1	1	1	0	0.3
200408P1	3395	241.45	101	Woodland_good	56	294474	6434015	64	1	2	9	18	0	5	10	0.2	92.4	1.8	0	1.4	0	0	7	0	1	1	0	0	0	0	0.3
200408P2	3395	892.62	101	DerivedNative Grassland	56	294587	6433853	215	0	1	12	12	1	4	0	0.1	93.9	1.2	0.1	0.4	0	0	8	0	0	0	0	0	0	0	10.3
200408P3	3395	241.45	101	Woodland_good	56	294943	6433877	98	1	0	13	20	1	3	3	0	95.9	2	0.1	0.3	0	0	10	9	1	1	0	0	0	1	1.3
200408P4	3395	892.62	101	DerivedNative Grassland	56	294994	6433653	308	0	1	9	9	0	3	0	0.1	97.5	0.9	0	0.3	0	0	7	0	0	0	0	0	0	0	25
200408P5	3395	232.57	101	Woodland_good	56	295160	6433993	63	2	3	17	21	0	3	10.1	0.3	78.1	3	0	0.3	0	0	15	14	0	1	1	0	0	1	2.5
200408P6	3395	892.62	101	DerivedNative Grassland	56	295526	6434347	252	0	1	11	11	1	1	0	0.1	167.7	1.1	0.1	0.1	0	0	7	0	0	0	0	0	0	0	35
200408P7	3395	892.62	101	DerivedNative Grassland	56	295482	6434603	49	0	0	10	7	0	2	0	0	101.5	0.7	0	0.2	0	0	13	0	0	0	0	0	0	0	6.1
200409P1	3431	714.52	101	DerivedNative Grassland	56	297409	6433280	14	0	1	17	10	1	2	0	0.1	101.8	1	0.1	0.2	0	0	5	0	0	0	0	0	0	0	0.1
200409P2	3395	892.62	101	DerivedNative Grassland	56	296845	6433149	251	0	2	14	8	1	2	0	0.2	114.6	0.8	0.1	0.2	0	0	7	0	0	0	0	0	0	0	20.1

Plot	PCT	area	patchsize	conditionclass	Zone	Easting	Northing	Bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowTrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
200409P3	3431	258.9	101	Forest_good	56	296940	6433583	312	2	2	19	14	1	1	42	0.2	21.8	1.4	0.1	0.1	0	0	36	2	1	1	1	0	0	1	0.2
200409P4	3396	18.81	101	Forest_good	56	297086	6433981	264	2	1	22	17	2	2	36	0.1	85.6	1.7	0.2	0.2	0	0	40	4	1	1	1	0	0	1	0.4
200409P5	3431	714.52	101	DerivedNative Grassland	56	297536	6434182	36	0	2	11	7	1	1	0	0.2	100.3	0.7	0.1	0.1	0	0	18	0	0	0	0	0	0	0	0.2
200409P6	3396	24.54	101	DerivedNative Grassland	56	297157	6434175	302	0	0	12	9	1	2	0	0	103.6	0.9	0.1	0.2	0	0	2	0	0	0	0	0	0	0	20.1
200409P7	3431	714.52	101	DerivedNative Grassland	56	297644	6434572	260	0	1	15	7	1	2	0	0.1	99.1	0.7	6	0.2	0	0	30	0	0	0	0	0	0	0	0.4
200409P8	3395	232.57	101	Woodland_good	56	298196	6434194	210	2	4	20	22	0	4	35.1	0.4	91.1	3.1	0	0.4	3	3	32	47	0	0	0	0	1	1	10.4
200420P1	3431	714.52	101	DerivedNative Grassland	56	298950	6434349	258	0	2	13	14	1	3	0	0.2	100.6	2.3	0.1	0.3	0	0	3	0	0	0	0	0	0	0	15.2
200420P2	3395	892.62	101	DerivedNative Grassland	56	298102	6433927	237	0	1	16	13	1	2	0	0.1	99.9	1.3	0.1	0.2	0	0	3	0	0	0	0	0	0	0	0.1
200420P3	3431	714.52	101	DerivedNative Grassland	56	298405	6433421	164	0	1	17	8	1	2	0	0.1	102	6.7	0.1	0.2	0	0	9	0	0	0	0	0	0	0	10.3
200420P4	3431	258.9	101	Forest_good	56	298654	6433401	12	1	3	16	6	0	1	15	0.3	17.2	0.6	0	0.1	2	1	4	0	0	0	0	0	1	0	30.2
200420P5	3431	714.52	101	DerivedNative Grassland	56	298680	6433192	130	0	2	18	5	1	2	0	0.2	117.8	0.5	0.1	0.2	0	0	11	0	0	0	0	0	0	0	40.1
200420P6	3395	232.57	101	Woodland_good	56	299038	6433587	80	1	4	19	6	1	1	25	0.4	17.3	1.5	0.1	0.1	1	1	6	3	0	0	0	0	1	0	60.3
200420P7	3395	892.62	101	DerivedNative Grassland	56	298957	6433439	186	0	1	13	9	1	3	0	0.1	105.6	0.9	0.1	0.3	0	0	4	0	0	0	0	0	0	0	10.1
200420P8	3485	25.8	101	DerivedNative Grassland	56	299046	6432646	268	2	1	15	9	1	1	0.2	0.1	84.7	15.8	0.1	0.1	0	0	2	0	0	0	0	0	0	0	0.3
200420P9	3431	50.88	101	Plantation	56	299118	6432759	173	8	1	17	10	1	3	41	0.1	22.4	1	0.1	0.3	0	0	54	0	1	1	1	0	0	1	0.3
200421P1	3431	50.88	101	Plantation	56	298856	6432865	276	7	3	20	17	2	2	28.1	0.3	72.5	1.7	0.2	0.2	0	0	56	0	1	1	1	0	0	1	2.3
200421P2	3431	50.88	101	Plantation	56	298730	6432801	250	6	4	16	14	1	3	22	0.4	28.3	1.4	0.1	0.3	0	0	76	0	1	1	1	0	0	1	0.4
200421P3	3431	50.88	101	Plantation	56	298467	6432780	76	8	3	19	17	1	3	31.2	0.3	64.3	1.7	0.1	0.3	0	0	68	0	1	1	1	0	0	1	0.5
200421P4	3431	50.88	101	Plantation	56	298186	6432968	68	4	4	11	11	1	2	28	0.4	11	2	0.1	0.2	1	0	44	4	0	0	1	0	1	1	50.1
200421P5	3395	137.46	101	DerivedNative Grassland	56	293908	6431791	92	0	2	18	20	2	4	0	0.2	95	2	0.2	0.4	0	0	5	16	1	0	0	1	0	1	0.3
200421P6	3395	241.45	101	Woodland_good	56	293704	6431913	228	4	5	16	27	1	4	30.1	1.4	74.2	2.7	0.1	0.4	1	0	40	8	1	1	0	0	0	1	0.3
200421P7	3395	241.45	101	Woodland_good	56	293857	6431929	190	3	4	17	29	0	1	40.2	0.4	36.4	2.9	0	0.1	0	0	66	9	1	1	1	0	0	1	0.5

Plot	PCT	area	patchsize	conditionclass	Zone	Easting	Northing	Bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowTrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
200423P1	3395	866.04	101	DerivedNative Grassland	56	293267	6431998	250	0	2	16	16	1	3	0	0.2	83.1	1.6	0.1	0.3	0	0	2	0	0	0	0	0	0	0	10.2
200423P2	3395	241.45	101	Woodland_good	56	293215	6432136	324	3	2	20	21	0	4	40.2	0.2	45.5	2.1	0	0.4	0	0	38	2	0	0	0	0	0	0	0.4
200423P3	3395	892.62	101	DerivedNative Grassland	56	292662	6432005	325	0	2	17	9	1	1	0	2	99	20.8	0.1	0.1	0	0	7	2	0	0	0	0	0	0	10
200423P4	3395	241.45	101	Woodland_good	56	293899	6434076	298	1	3	15	14	2	3	20	1.2	100.7	1.4	0.2	0.3	1	2	17	15	0	0	0	1	1	1	0.5
200423P5	3395	137.46	101	DerivedNative Grassland	56	293739	6434149	275	0	2	13	5	0	1	0	0.2	111.8	0.5	0	0.1	0	0	6	0	0	0	0	0	0	0	40.2
200424P1	3395	892.62	101	DerivedNative Grassland	56	294826	6434564	234	0	1	12	6	1	2	0	0.1	112.5	0.6	0.1	0.2	0	0	4	0	0	0	0	0	0	0	25.2
200424P2	3431	714.52	101	DerivedNative Grassland	56	295718	6432553	136	1	2	15	16	1	3	0.1	0.2	88.9	1.6	0.1	0.3	0	0	2	0	0	0	0	0	0	1	10.1
200424P3	3395	232.57	101	Woodland_good	56	295421	6431181	282	2	3	23	27	1	4	35.1	0.3	81.6	2.7	0.1	0.4	2	2	48	47	1	1	1	1	1	1	0.5
200424P4	3395	892.62	101	DerivedNative Grassland	56	296205	6431133	118	0	4	15	9	0	2	0	7.3	92	45.8	0	0.2	0	0	3	0	0	0	0	0	0	0	1.1
200424P5	3431	714.52	101	DerivedNative Grassland	56	296363	6431232	130	1	2	10	5	1	1	0.1	0.2	3.9	16.3	0.1	0.1	0	0	3	0	0	0	0	0	0	0	0.1
200424P6	3395	137.46	101	DerivedNative Grassland	56	296070	6431643	98	0	3	11	12	0	3	0	1.2	104.3	1.2	0	0.3	0	0	3	0	0	0	0	0	0	0	15.2
200424P7	3395	137.46	101	DerivedNative Grassland	56	296154	6431812	154	0	3	14	14	1	3	0	0.3	92.6	1.4	0.1	0.3	0	0	3	0	0	0	0	0	0	0	30
200424P8	3431	714.52	101	DerivedNative Grassland	56	296126	6431594	168	0	2	15	9	1	1	0	0.2	88	0.9	0.1	0.1	0	0	2	0	0	0	0	0	0	0	40.1
200429P1	3395	232.57	101	Woodland_good	56	296744	6431490	54	1	4	18	17	0	4	25	0.4	98.4	1.7	0	0.4	1	1	17	9	0	0	0	0	1	1	1.7
200429P2	3431	866.04	101	Woodland_good	56	296532	6431519	137	1	3	16	8	1	1	20	0.3	9.3	20.7	0.1	0.1	1	0	18	2	1	2	0	0	1	1	0.4
200429P3	3315	91.64	101	Woodland_good	56	296443	6431675	258	3	5	18	19	1	3	30.1	0.5	11.5	2.8	0.1	0.3	2	0	48	18	0	1	0	0	1	1	0.5
200429P4	3395	232.57	101	Woodland_good	56	295388	6430867	55	1	4	18	20	1	2	10	0.4	45.3	2	0.1	0.2	0	0	10	4	1	1	0	0	0	1	0.4
200429P5	3395	892.62	101	DerivedNative Grassland	56	295661	6430774	87	0	2	15	11	1	3	0	1.1	96.7	1.1	0.1	0.3	0	0	2	0	0	0	0	0	0	0	20.1
200429P6	3431	258.9	101	Forest_good	56	295813	6430641	123	1	4	16	12	0	2	35	15.3	44.1	21.1	0	0.2	0	0	42	21	1	0	1	1	0	1	10.4
200513P1	3395	232.57	101	Woodland_good	56	296179	6430686	182	2	3	14	18	0	4	30.1	1.2	73.1	1.8	0	0.4	2	3	34	25	1	0	0	1	1	1	25.5
200513P2	3431	258.9	101	Forest_good	56	296691	6430845	55	2	5	18	18	2	3	30.1	0.5	63.4	26.7	0.2	0.3	0	0	56	0	1	0	1	1	1	1	0.4
200513P3	3395	232.57	101	Woodland_good	56	296766	6431736	115	1	4	22	24	2	3	45	0.4	4.9	2.4	0.2	0.3	0	6	56	6	1	1	1	0	0	0	0.4

Plot	PCT	area	patchsize	conditionclass	Zone	Easting	Northing	Bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowTrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
200513P4	3315	35.9	101	Woodland_good	56	297203	6431898	238	4	6	14	25	2	4	40.1	0.6	51.3	2.5	0.2	0.4	1	0	48	13	1	1	1	0	1	1	6.5
200513P5	3395	232.57	101	Woodland_good	56	296929	6432366	350	2	4	19	24	0	1	40.1	0.4	69.5	2.4	0	0.1	0	0	54	0	0	1	1	1	0	1	0.3
200513P6	3431	258.9	101	Forest_good	56	297341	6432296	192	1	6	21	14	1	3	35	0.6	35.4	2.3	0.1	0.3	0	0	46	15	0	1	1	1	0	0	1.2
200514P1	3395	892.62	101	DerivedNative Grassland	56	296944	6434518	80	0	2	16	9	1	2	0	0.2	80.7	1.8	0.1	0.2	0	0	6	0	0	0	0	0	0	0	40.2
200514P2	3431	258.9	101	Forest_good	56	298902	6433166	350	1	1	14	6	0	0	30	0.1	4.2	0.6	0	0	3	3	32	6	0	0	0	0	1	1	80.1
200514P3	3395	892.62	101	DerivedNative Grassland	56	296183	6432322	114	0	3	14	10	0	2	0	1.2	84.7	1	0	0.2	0	0	3	0	0	0	0	0	0	0	10.2
200514P4	3395	892.62	101	DerivedNative Grassland	56	296978	6432705	20	0	2	15	8	1	2	0	10.1	86.6	0.8	0.1	0.2	0	0	32	0	0	0	0	0	0	0	10.1
200514P5	3395	241.45	101	Woodland_good	56	296134	6432060	263	2	3	12	18	0	2	35	1.2	76.1	10.5	0	0.2	6	4	52	26	0	0	0	1	1	0	15.3
200514P6	3395	241.45	101	Woodland_good	56	296271	6431874	94	4	3	23	21	2	2	30.2	1.2	83.9	2.1	0.2	0.2	1	0	58	60	1	1	1	0	1	0	0.3
200514P7	3395	137.46	101	DerivedNative Grassland	56	296200	6431875	353	0	2	13	16	1	3	0	10.1	91.6	1.6	0.1	0.3	0	0	5	8	0	0	0	0	0	0	7
200515P1	3485	25.8	101	DerivedNative Grassland	56	298990	6432417	132	1	2	15	5	1	1	0.1	0.2	75.6	0.5	0.1	0.1	0	0	6	0	0	0	0	0	0	0	15.2
200515P2	3485	25.8	101	DerivedNative Grassland	56	299069	6432327	0	0	3	11	6	1	1	0	0.3	109.3	0.6	0.1	0.1	0	0	6	0	0	0	0	0	0	0	7.1
200515P3	3485	25.8	101	DerivedNative Grassland	56	298966	6432548	0	0	2	15	9	1	3	0	0.2	101.8	0.9	0.1	0.3	0	0	5	0	0	0	0	0	0	0	50.1
201207P1	3315	4.18	101	DerivedNative Grassland	56	291664	6431022	320	2	2	17	12	1	3	1.1	0.2	83.3	1.2	0.1	0.3	0	0	27	0	1	0	1	0	0	1	0.6
211025P1	33963446	5.28	101	Forest_good	56	292120	6429611	198	3	4	6	10	0	2	90.2	0.5	65.4	1.1	0	0.2	0	0	86	11	1	1	1	1	0	1	0.3
211025P2	3315	4.18	101	DerivedNative Grassland	56	291389	6431048	220	0	0	4	9	1	4	0	0	65.1	0.9	0.1	0.4	0	0	60	0	0	0	0	0	0	0	0.2
231106P1	3396	5.28	101	Forest_good	56	296834	6434560	130	1	1	3	9	1	2	25	0.1	50.4	1.8	0.1	0.2	1	1	54	27	1	1	1	0	1	1	0.6
231106P2	3396	8.5	101	DerivedNative Grassland	56	296798	6434406	201	0	2	6	10	0	2	0	0.3	40.3	1	0	0.2	0	0	28	0	0	0	0	0	0	0	5.3
231106P3	3396	5.28	101	Forest_good	56	296462	6434296	124	1	2	4	7	0	2	75	0.2	30.3	1.3	0	0.2	1	1	41	9	1	1	1	0	0	1	20.3
231106P4	3314	32.26	101	Woodland_good	56	292015	6429756	249	2	5	7	4	0	1	90.1	8.3	83.8	0.4	0	0.1	1	1	80	17	1	0	1	0	1	1	0.2
231106P5	3314	2.03	101	DerivedNative Grassland	56	292106	6429775	42	1	4	3	6	0	1	0.1	0.4	80.4	0.6	0	0.1	0	0	38	0	0	0	1	0	0	1	0.2
231106P6	3315	35.9	101	Woodland_good	56	292616	6430043	212	4	4	7	1	0	0	45.1	0.4	80.8	0.1	0	0	0	0	64	0	1	1	1	0	0	1	0.2

Plot	PCT	area	patchsize	conditionclass	Zone	Easting	Northing	Bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowTrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic
231106P7	3314	32.26	101	Woodland_good	56	292682	6430358	331	3	4	10	4	0	2	80.4	5.3	40.9	0.4	0	0.2	1	1	61	26	1	0	1	0	1	1	0.3
231106P8	3314	32.26	101	Woodland_good	56	292677	6429888	85	3	4	11	2	0	1	95.1	0.6	46	0.2	0	0.1	1	1	62	7	1	1	1	1	0	1	0.1
231107P1	3395	232.57	101	Woodland_good	56	295734	6432345	204	4	3	7	6	0	0	60.1	0.4	30.5	0.6	0	0	2	2	58	53	0	1	1	1	0	1	0.4
231107P2	3485	25.8	101	DerivedNative Grassland	56	299086	6431984	324	0	3	6	10	0	3	0	0.3	90.2	1	0	0.3	0	0	60	0	0	0	0	0	0	0	0.2
231107P3	3485	25.8	101	DerivedNative Grassland	56	298907	6432329	198	1	3	6	6	1	3	0.1	0.3	79.1	0.6	0.1	0.3	1	1	58	0	0	0	0	0	0	1	0.3
231107P4	3431	50.88	101	Plantation	56	299160	6430006	20	5	7	4	3	0	1	60.3	0.8	20.1	0.3	0	0.1	0	0	56	0	1	1	1	0	0	1	4.7
231107P5	3315	4.18	101	DerivedNative Grassland	56	291517	6431020	341	0	0	3	6	0	1	0	0	72.1	5.5	0	0.1	0	1	74	0	0	0	1	0	0	0	5.2
231107P6	3315	4.18	101	DerivedNative Grassland	56	291428	6431053	3	0	0	5	2	0	1	0	0	73.2	0.2	0	0.1	0	0	52	0	0	0	0	0	0	0	0.1

APPENDIX 3 PLOT FIELD DATA

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
***Alternanthera pungens*																					0.1						
***Bidens pilosa*																			0.1								
***Bidens subalternans*	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1			2.0					0.1		0.1		0.1	0.1	0.1		
***Bryophyllum delagoense*																											
***Carrichtera annua*																											
***Carthamus lanatus*	0.1			0.1			0.1			0.1	1.0						0.1					0.1			0.1	0.1	6.0
***Cenchrus clandestinus*		0.1																									
***Cenchrus longisetus*																					0.1			0.1	1.0		
***Ehrharta erecta*																											
***Galenia pubescens*		1.0				1.0	0.1			0.1		0.1		0.1			0.1	0.1		6.0	1.0	0.1	0.1	0.1	0.1	1.0	0.1
***Hyparrhenia hirta*																											
***Hypericum perforatum*				0.1																							
***Lycium ferocissimum*	0.1	65.0	0.1			1.0															1.0						
***Maclura pomifera*																											
***Opuntia aurantiaca*																				0.1							
***Opuntia humifusa*																0.1				0.1		0.1					
***Opuntia stricta*																											
***Opuntia stricta var. stricta*				0.1	0.1	0.1		0.1	0.1	0.1	0.1					0.1				0.1		0.1	0.1				
***Paspalum dilatatum*		0.1				0.1	2.0												0.1	0.1	0.1			0.1	0.1		
***Romulea rosea*																											
***Rosa rubiginosa*																											
***Senecio madagascariensis*	0.1	0.1			0.1	0.1	0.1	0.1			0.1				0.1			0.1	0.1	0.1				0.1			
***Xanthium occidentale*																					0.1						
***Xanthium spinosum*																					0.1						
**Amaranthus powellii*														0.1							2.0						
**Argemone ochroleuca subsp. ochroleuca*																							0.1				
**Asphodelus fistulosus*	0.1					0.1								0.1									0.1				
**Avena sativa*																											
**Bromus molliformis*																											
**Capsella bursa-pastoris*																											
**Centaurium erythraea*																											
**Cerastium glomeratum*																											

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
**Cirsium vulgare*	0.1						1.0																				0.1
**Citrullus amarus*																					0.1						
**Conyza bonariensis*																											
**Conyza sp.*	0.1																										
**Cucumis myriocarpus subsp. leptodermis*																											0.1
**Cyanthillium cinereum var. cinereum*																											
**Cyanthillium cinereum var. cinereum*															0.1												
**Cynodon dactylon*														80.0							10.0						
**Cyperus rotundus*																									0.1		
**Datura ferox*																											
**Echium plantagineum*																											
**Eleusine tristachya*																					0.1						
**Erodium cicutarium*																											
**Erodium moschatum*																											
**Glandularia aristigera*							0.1								0.1		0.1	0.1									3.0
**Gomphocarpus fruticosus*	0.1						0.1			0.1	0.1																0.1
**Gomphrena celosioides*				0.1	0.1	0.1														0.1		0.1					
**Hirschfeldia incana*																									0.1		
**Hypochaeris albiflora*		0.1			0.1			0.1				0.1	0.1			0.1			0.1	0.1				0.1			
**Hypochaeris radicata*																											
**Kickxia elatine subsp. crinita*										0.1													0.1				
**Lactuca serriola*	1.0		0.1	0.1		0.1	0.1			0.1	0.1																
**Lamium amplexicaule*																							0.1	0.1			
**Leontodon rhagadioloides subsp. cretica*																											
**Lepidium africanum*		0.1															0.1					0.1				0.1	0.1
**Lepidium bonariense*																											
**Linum trigynum*																											
**Lolium loliaceum*																											
**Lysimachia arvensis*	0.1		0.1				0.1			0.1	0.1					0.1	0.1		0.1				0.1			0.1	0.1
**Malva parviflora*						0.1				0.1				0.1			0.1				0.1		0.1			0.1	
**Malvastrum americanum*																											

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
**Marrubium vulgare*																					0.1						
**Medicago polymorpha*																											
**Medicago sativa*																											
**Medicago spp.*						0.1	0.1												0.1		0.1	0.1	0.1		0.1		0.1
**Modiola caroliniana*		0.1												0.1								0.1					
**Nothoscordum gracile*																							0.1				
**Olea europaea subsp. cuspidata*						0.1																					
**Oxalis bowiei*																											
**Paronychia brasiliana*																				0.1							
**Petrorhagia dubia*																											
**Plantago lanceolata*		0.1	0.1	0.1	0.1	0.1	1.0	0.1			0.1			0.1			0.1		0.1	0.1	0.1		0.1	0.1	0.1		
**Polycarpon tetraphyllum*																											
**Polygonum arenastrum*																											
**Prunella vulgaris*																											
**Rapistrum rugosum*	0.1		1.0			0.1					0.1			2.0						0.1	0.1		0.1		0.1		
**Richardia stellaris*					0.1							0.1				0.1								0.1			
**Salvia reflexa*			0.1																		0.1						
**Salvia verbenaca*																			0.1								
**Schinus areira*						1.0																					
**Schkuhria pinnata*	0.1			0.1	0.1		0.1							0.1			0.1			0.1	0.1	0.1	0.1				
**Setaria parviflora*	0.1						6.0			0.1																0.1	0.1
**Sherardia arvensis*																							0.1				
**Sida rhombifolia*	0.1	0.1	0.1	0.1	0.1	0.1	8.0	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	1.0		0.1	0.1		0.1	0.1
**Sida spinosa*			0.1		0.1	0.1	8.0	0.1	0.1	1.0	0.1	0.1			0.1	0.1	0.1	0.1		0.1	0.1	0.1	6.0	0.1	6.0	0.1	3.0
**Solanum nigrum*		0.1									0.1								0.1	0.1							
**Solanum rostratum*														0.1													
**Soliva sessilis*																											
**Sonchus asper*							0.1		0.1	0.1				0.1							0.1						
**Sonchus oleraceus*	0.1	0.1	0.1	0.1												0.1			0.1	0.1			0.1		0.1		0.1
**Stachys arvensis*																											0.1
**Tagetes minuta*																											
**Trifolium glomeratum*																											

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
**Trifolium sp.*																											
**Urochloa panicoides*							0.1						0.1	7.0						0.1	40.0	0.1	0.1		0.1	0.1	0.1
**Verbena bonariensis*	0.1					0.1	0.1	0.1		0.1	0.1									0.1		0.1				0.1	
**Verbena officinalis*																											
**Verbena rigida*																											
**Verbena rigida var. rigida*				0.1	0.1	0.1	0.1			0.1										0.1				0.1			
Abutilon oxycarpum																			0.1								
Acacia decora																											
Acacia melvillei																											
Acacia paradoxa															0.1			0.1									
Acacia parramattensis																											
Acacia salicina																							0.1				
Acaena sp.																											
Allocasuarina gymnanthera								1.0							0.1												
Allocasuarina luehmannii															0.1			0.1		2.0							
Alternanthera denticulata																											
Alternanthera nana		0.1			0.1																						
Amyema miquelii																											
Angophora floribunda		10.0									3.0										35.0						
Anthosachne scabra																0.1											0.1
Aristida leichhardtiana			0.1																								
Aristida ramosa	1.0		2.0	2.0	30.0	10.0	30.0	1.0	10.0	1.0	1.0	1.0	10.0	1.0	1.0	1.0	10.0	10.0	0.1	1.0	0.1	10.0	6.0	15.0	1.0	25.0	8.0
Aristida vagans																											
Arthropodium milleflorum																			0.1								
Arthropodium species B sensu Harden (1993)																											
Asperula conferta				0.1	0.1	0.1	0.1				0.1					0.1		0.1	0.1						0.1		
Atriplex semibaccata														0.1													
Austrostipa aristiglumis																			0.1				0.1				
Austrostipa scabra																											
Austrostipa scabra subsp. falcata																							0.1			0.1	
Austrostipa scabra subsp. scabra									0.1							0.1											

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
Austrostipa verticillata	0.1	10.0				60.0	1.0	0.1		0.1		0.1		30.0	0.1			0.1	20.0		10.0		1.0	0.1	0.1	0.1	1.0
Boerhavia dominii		0.1		0.1		0.1				0.1	0.1							0.1	0.1			0.1	0.1				
Bothriochloa biloba																											
Bothriochloa decipiens																											
Bothriochloa decipiens var. decipiens	20.0		1.0	8.0	0.1	0.1	8.0	7.0	15.0	2.0	1.0	7.0	15.0	1.0	7.0	1.0	10.0	10.0	1.0	10.0	0.1	1.0		15.0	0.1	7.0	15.0
Bothriochloa macra																					0.1						
Brachychiton populneus																											
Brachychiton populneus subsp. populneus						0.1						0.1			0.1	0.1		0.1	0.1								
Brachyscome ciliaris																											
Brunoniella australis	0.1		0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.0		0.1	0.1	0.1		0.1			0.1		0.1			
Bursaria spinosa															0.1	0.1		0.1									0.1
Calotis lappulacea		0.1			0.1	0.1	0.1	0.1	0.1			0.1	0.1		0.1	0.1		0.1	0.1	0.1	0.1			0.1		0.1	0.1
Carex inversa		0.1			0.1	0.1	0.1			0.1	0.1																
Cassinia sifton																											
Cassinia uncata																											
Casuarina cunninghamiana subsp. cunninghamiana																							0.1				
Casuarina glauca																											
Chamaesyce drummondii	0.1		0.1				0.1	0.1		0.1	0.1		0.1		0.1			0.1				0.1		0.1			
Cheilanthes distans															0.1			0.1									
Cheilanthes sieberi																											
Cheilanthes sieberi subsp. sieberi	0.1		0.1		0.1		0.1		0.1	0.1	0.1				0.1		0.1		0.1	0.1	0.1	0.1		0.1		0.1	0.1
Chloris truncata	0.1			0.1																		10.0		10.0			10.0
Chloris ventricosa	0.1		7.0		0.1	0.1			0.1	0.1	0.1	0.1	0.1		0.1	0.1	1.0	4.0	65.0		0.1		6.0	0.1			0.1
Chrysocephalum apiculatum	0.1		0.1	0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	
Chrysocephalum semipapposum																											
Commelina cyanea																				0.1							
Convolvulus angustissimus																											
Convolvulus erubescens																											
Convolvulus graminetinus	0.1		0.1	0.1				0.1	0.1		0.1		0.1		0.1	0.1	0.1		0.1			0.1	0.1	0.1	0.1	0.1	
Corymbia maculata															20.0												

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
Cotula australis																											
Cullen tenax																											
Cymbonotus lawsonianus																											
Cymbopogon refractus	0.1		10.0	0.1	2.0	0.1	0.1	0.1	10.0	10.0	8.0	0.1	0.1		1.0	0.1		0.1	1.0	0.1			0.1	0.1		0.1	
Cyperus gracilis					0.1	0.1		0.1	0.1			0.1			0.1	0.1		0.1	0.1	0.1				0.1			
Daucus glochidiatus																											
Daviesia genistifolia																											
Denhamia silvestris																											
Desmodium gunnii																											
Desmodium varians					0.1			0.1	0.1				0.1		0.1	0.1		0.1									
Dianella longifolia var. longifolia					0.1														0.1								
Dianella revoluta var. revoluta								0.1							0.1				0.1								
Dianella tarda																											
Dichanthium sericeum																											
Dichanthium sericeum subsp. sericeum	30.0		30.0	40.0	1.0	0.1	10.0	1.0	0.1	10.0	10.0	0.1	0.1	0.1	0.1	0.1	30.0		1.0		0.1	10.0	10.0	15.0	20.0		20.0
Dichelachne micrantha								0.1											0.1								
Dichondra repens		0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1				0.1	0.1		0.1
Dichondra sp. Inglewood (J.M.Dalby 86/93) Qld Herbarium															0.1	0.1											
Digitaria brownii	1.0		0.1		0.1		0.1		0.1	10.0					0.1		0.1		0.1	0.1	0.1		0.1	0.1	0.1	15.0	10.0
Digitaria diffusa																											
Digitaria divaricatissima	30.0		30.0	10.0	0.1		40.0	0.1		15.0	1.0			6.0						10.0	10.0	10.0	0.1	0.1	6.0	50.0	
Digitaria ramularis																											
Dysphania carinata		0.1					0.1									0.1	0.1			0.1	0.1	0.1					0.1
Eclipta platyglossa		0.1																									
Einadia hastata		0.1				0.1													0.1	0.1	0.1						
Einadia nutans																											
Einadia nutans subsp. linifolia																											
Einadia nutans subsp. nutans																											
Einadia polygonoides	0.1	0.1		0.1	0.1	6.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0		0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
Enchylaena tomentosa					0.1	0.1						0.1								0.1		0.1		0.1			
Enneapogon nigricans																											
Enteropogon acicularis	20.0		0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	35.0	0.1	0.1	1.0	0.1	5.0	7.0	0.1			0.1
Eragrostis brownii																											
Eragrostis lacunaria	20.0		1.0	1.0	0.1							0.1	0.1			0.1		0.1	0.1	0.1			0.1	0.1		0.1	0.1
Eragrostis leptostachya									0.1			0.1			0.1	0.1		0.1		0.1				0.1			
Eragrostis sororia																					0.1						
Eremophila debilis			0.1	0.1	0.1	0.1		1.0	0.1	0.1		1.0	0.1		0.1	0.1		0.1	0.1	0.1			0.1	0.1			
Eriochloa pseudoacrotricha	20.0	0.1	7.0	10.0	0.1	0.1	1.0	0.1		10.0	1.0		0.1	6.0		0.1	10.0		0.1	1.0	20.0	15.0		0.1	0.1		15.0
Erodium crinitum							0.1				0.1								0.1				0.1		0.1	0.1	0.1
Eucalyptus acaciiformis																											
Eucalyptus albens																											
Eucalyptus albens x moluccana					15.0				15.0				20.0					10.0	35.0								0.1
Eucalyptus blakelyi					15.0	30.0														35.0							
Eucalyptus caleyi subsp. caleyi																											
Eucalyptus conica																											
Eucalyptus crebra								30.0				40.0			5.0	35.0		6.0					6.0				
Eucalyptus dawsonii																											
Eucalyptus fibrosa																											
Eucalyptus melliodora																								35.0			
Eucalyptus microcarpa																							10.0				
Eucalyptus moluccana																6.0		15.0									
Eucalyptus punctata																											
Eucalyptus sideroxylon																											
Eucalyptus sp.																											
Eucalyptus tereticornis		30.0																									
Eulalia aurea																									0.1		
Euphorbia drummondii																											
Evolvulus alsinoides var. decumbens																											
Fimbristylis dichotoma	0.1						0.1	0.1	0.1	0.1		0.1	0.1		0.1		0.1			0.1		0.1					0.1
Galium leiocarpum																											

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
Geijera parviflora																											
Geranium solanderi var. solanderi							0.1																				
Glossocardia bidens			0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1	0.1											
Glycine clandestina		0.1	0.1	0.1			0.1									0.1		0.1			0.1			0.1	0.1		
Glycine tabacina	0.1	0.1	0.1	1.0	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Goodenia hederacea subsp. hederacea																											
Goodenia pinnatifida			0.1	0.1	0.1			0.1					0.1			0.1	0.1		0.1					0.1			
Grona varians																											
Hackelia suaveolens																		0.1									
Hydrocotyle laxiflora																		0.1									
Hypericum gramineum																											
Hypoxis pratensis var. pratensis											0.1						0.1										
Juncus sp.																											
Lagenophora gracilis																											
Lagenophora stipitata																		0.1									
Leiocarpa panaetioides																						0.1					
Lepidium pseudohyssopifolium																											
Linum marginale			0.1																								
Lobelia purpurascens															0.1												
Lomandra confertifolia subsp. pallida					10.0		0.1	1.0	10.0	0.1	0.1	7.0	0.1		0.1	0.1		0.1	0.1	0.1				0.1	0.1		0.1
Lomandra confertifolia subsp. rubiginosa																											
Lomandra filiformis subsp. coriacea																											
Lomandra filiformis subsp. filiformis																											
Lomandra glauca	0.1				0.1	0.1		0.1				0.1			0.1			0.1		0.1							
Lomandra multiflora																											
Lomandra multiflora subsp. multiflora					0.1				0.1						0.1	0.1		0.1		0.1							
Maireana enchylaenoides																											
Maireana microphylla		1.0															0.1	0.1									
Marsdenia viridiflora subsp. viridiflora																											

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
Medicago spp.																											
Melaleuca bracteata																											
Melia azedarach																											
Mentha satureioides			0.1	0.1	0.1						0.1				0.1	0.1		0.1							0.1		
Microlaena stipoides																											
Microlaena stipoides var. stipoides		1.0			10.0	15.0	10.0	6.0	7.0		7.0	0.1			1.0	6.0	1.0	10.0		10.0	0.1		1.0	0.1			0.1
Mimulus gracilis											0.1																
Minuria leptophylla				0.1																				0.1			
Myoporum montanum																											
Neptunia gracilis																											
Neptunia gracilis f. gracilis			1.0										0.1									0.1	0.1		0.1		
Notelaea microcarpa																											
Notelaea microcarpa var. microcarpa								0.1								0.1			0.1								
Oncinocalyx betchei																											
Oxalis exilis																											
Oxalis perennans	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1				0.1		0.1		0.1		0.1		0.1	0.1		0.1	0.1
Oxytes brachypoda																											
Ozothamnus diosmifolius																				0.1							
Panicum buncei			10.0			1.0	1.0																				1.0
Panicum effusum			0.1				10.0	0.1	0.1	1.0					0.1		0.1			0.1	0.1	0.1	0.1	0.1		0.1	0.1
Panicum queenslandicum																											
Panicum queenslandicum var. queenslandicum	30.0		30.0	25.0	0.1	0.1	10.0		0.1	50.0	85.0		0.1	10.0		0.1	0.1		7.0	0.1	0.1		0.1	0.1	70.0		
Panicum simile																							0.1				0.1
Parsonsia lanceolata																											
Paspalidium aversum	1.0	0.1	7.0	1.0		1.0	6.0		0.1					6.0			1.0			0.1	0.1				1.0		8.0
Paspalidium criniforme									0.1						0.1	0.1		0.1									
Paspalidium distans								0.1										0.1	2.0	0.1			0.1	0.1			
Phyllanthus gunnii																											
Phyllanthus virgatus	0.1			0.1	0.1	0.1		0.1	0.1			0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1			
Pimelea curviflora var. sericea							0.1								0.1	0.1		0.1	0.1								
Pimelea linifolia																											

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
Plantago debilis																0.1		0.1	0.1								
Plantago gaudichaudii																											
Plantago turrifera																											
Plantago varia																											
Poa sieberiana var. hirtella																											
Portulaca oleracea							0.1													0.1	0.1	0.1	0.1				
Psydrax odorata																											
Pullenia gunnii																											
Rhynchosia minima							0.1																				
Rostellularia adscendens var. adscendens									0.1			0.1			0.1	0.1		0.1	0.1								
Rumex brownii		0.1				0.1			0.1														0.1			0.1	
Rytidosperma caespitosum																											0.1
Rytidosperma fulvum																				1.0					0.1		
Rytidosperma longifolium							0.1	0.1					1.0		0.1	1.0	0.1	0.1					0.1	0.1			
Rytidosperma racemosum var. racemosum					0.1										0.1	0.1											
Rytidosperma setaceum																											
Rytidosperma tenuius	1.0	0.1	0.1	8.0	0.1	0.1								0.1													
Scleria mackaviensis																											
Sclerolaena birchii																											
Sclerolaena muricata var. muricata																											
Senecio quadridentatus																											
Senna clavigera																											
Sida corrugata		0.1	0.1	0.1	0.1			0.1	0.1	0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1		0.1		0.1			0.1
Sida hackettiana						0.1	0.1	0.1	0.1																		
Solanum brownii																											
Solanum campanulatum																											
Solanum cinereum				0.1										0.1	0.1	0.1	1.0	0.1	0.1	0.1	0.1	0.1					0.1
Solanum prinophyllum																											
Solenogyne bellioides													0.1											0.1			
Sorghum leiocladum																											
Sporobolus caroli																						0.1					

	200323P1	200323P2	200323P3	200323P4	200323P5	200323P6	200324P1	200324P2	200324P3	200324P4	200324P5	200324P6	200324P7	200324P8	200325P1	200325P2	200325P3	200325P4	200327P1	200327P2	200327P3	200327P4	200327P5	200327P6	200327P7	200327P8	200331P1
Sporobolus creber	3.0		1.0	0.1			1.0			0.1			0.1			0.1	0.1		0.1	0.1				0.1	0.1		0.1
Stackhousia muricata					0.1							0.1			0.1	0.1											
Stackhousia viminea																											
Swainsona galegifolia																											
Templetonia stenophylla																				0.1							
Themeda avenacea																											
Tragus australianus																						1.0					
Trema tomentosa var. aspera																											
Tribulus micrococcus							0.1												0.1							0.1	
Verbena gaudichaudii																											
Veronica plebeia												0.1															
Viola betonicifolia subsp. betonicifolia																											
Vittadinia cervicularis var. subcervicularis																											
Vittadinia cuneata var. cuneata																											
Vittadinia cuneata var. hirsuta											0.1							0.1									0.1
Vittadinia gracilis																											
Vittadinia muelleri	0.1		0.1	0.1		0.1	0.1			0.1	0.1		0.1				0.1					0.1		0.1			
Vittadinia pterochaeta				0.1																							
Vittadinia pustulata			0.1		0.1		0.1						0.1				0.1		0.1					0.1	0.1		
Vittadinia sulcata		0.1				0.1		0.1				0.1		0.1		0.1		0.1				0.1					
Wahlenbergia communis			0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1		0.1
Wahlenbergia gracilis																											
Wahlenbergia luteola																											
Walwhalleya subxerophila	3.0																										
Zornia dyctiocarpa var. dyctiocarpa																				0.1							

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
***Alternanthera pungens*																											
***Bidens pilosa*						0.1		0.1	0.1		0.1	0.1	30.0			0.1					0.1		0.1	0.1		0.1	
***Bidens subalternans*	0.1		0.1			0.1		0.1	0.1		0.1	0.1	30.0		0.1			0.1	0.1	0.1	0.1			0.1			
***Bryophyllum delagoense*																											
***Carrichtera annua*																											
***Carthamus lanatus*		40.0	0.1		0.1				0.1	0.1		0.1		0.1	10.0	0.1		0.1	0.1	0.1		70.0	50.0		60.0		30.0
***Cenchrus clandestinus*																											
***Cenchrus longisetus*																											
***Ehrharta erecta*																											
***Galenia pubescens*	1.0		0.1	0.1	0.1	0.1	7.0				0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1			0.1
***Hyparrhenia hirta*																											
***Hypericum perforatum*																											
***Lycium ferocissimum*	0.1					0.1					0.1		0.1				0.1	0.1									
***Maclura pomifera*																											
***Opuntia aurantiaca*																											
***Opuntia humifusa*						0.1	0.1				0.1											0.1		0.1		0.1	0.1
***Opuntia stricta*																											
***Opuntia stricta var. stricta*	0.1			0.1				0.1			0.1					0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1			
***Paspalum dilatatum*				0.1										0.1			0.1										
***Romulea rosea*																											
***Rosa rubiginosa*																											
***Senecio madagascariensis*				0.1				0.1					0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1			0.1		0.1	
***Xanthium occidentale*																											
***Xanthium spinosum*																											
**Amaranthus powellii*																											
**Argemone ochroleuca subsp. ochroleuca*									0.1																		
**Asphodelus fistulosus*										0.1		0.1	0.1														
**Avena sativa*																											
**Bromus molliformis*																											
**Capsella bursa-pastoris*																											
**Centaurium erythraea*																											
**Cerastium glomeratum*																											

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
**Cirsium vulgare*			0.1								0.1																
**Citrullus amarus*																											
**Conyza bonariensis*																											
**Conyza sp.*																				0.1							
**Cucumis myriocarpus subsp. leptodermis*																											
**Cyanthillium cinereum var. cinereum*																											
**Cyanthillium cinereum var. cinereum*											0.1															0.1	
**Cynodon dactylon*							40.0				0.1			0.1					1.0	0.1							
**Cyperus rotundus*																				0.1							
**Datura ferox*																											
**Echium plantagineum*																							0.1				0.1
**Eleusine tristachya*																				0.1							
**Erodium cicutarium*																											
**Erodium moschatum*																											
**Glandularia aristigera*	0.1	0.1	0.1	0.1	0.1									0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1		0.1
**Gomphocarpus fruticosus*										0.1				0.1		0.1	0.1						0.1				0.1
**Gomphrena celosioides*																		0.1	0.1	0.1							
**Hirschfeldia incana*																											
**Hypochaeris albiflora*				0.1	0.1	0.1											0.1				0.1			0.1			
**Hypochaeris radicata*																											
**Kickxia elatine subsp. crinita*															0.1												
**Lactuca serriola*																											
**Lamium amplexicaule*														0.1			0.1										
**Leontodon rhagadioloides subsp. cretica*																											
**Lepidium africanum*	0.1	0.1						0.1			0.1		0.1			0.1		0.1				0.1	0.1	0.1			
**Lepidium bonariense*																											
**Linum trigynum*																											
**Lolium loliaceum*																											
**Lysimachia arvensis*	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				0.1	0.1	0.1	0.1	0.1	0.1
**Malva parviflora*																								0.1			
**Malvastrum americanum*																											

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
**Marrubium vulgare*																											
**Medicago polymorpha*																											
**Medicago sativa*																											
**Medicago spp.*	0.1		0.1		0.1					0.1		0.1		0.1	0.1					0.1		0.1		0.1			0.1
**Modiola caroliniana*																0.1											
**Nothoscordum gracile*																											
**Olea europaea subsp. cuspidata*																											
**Oxalis bowiei*																											
**Paronychia brasiliana*	0.1																	0.1									
**Petrorhagia dubia*																											
**Plantago lanceolata*	0.1							0.1					0.1	0.1		0.1	0.1	0.1			0.1			0.1			
**Polycarpon tetraphyllum*																											
**Polygonum arenastrum*																											
**Prunella vulgaris*																											
**Rapistrum rugosum*												2.0								0.1		0.1					
**Richardia stellaris*				0.1										0.1													
**Salvia reflexa*																											
**Salvia verbenaca*																											
**Schinus areira*																											
**Schkuhria pinnata*													0.1			0.1							0.1				0.1
**Setaria parviflora*																			0.1	0.1							
**Sherardia arvensis*																											
**Sida rhombifolia*	0.1		0.1	0.1		0.1	0.1			0.1				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
**Sida spinosa*		1.0	0.1		0.1	0.1			0.1	0.1		0.1			0.1							0.1	0.1		0.1		0.1
**Solanum nigrum*	0.1				0.1	0.1		0.1						0.1	0.1	0.1					0.1		0.1		0.1		0.1
**Solanum rostratum*																											
**Soliva sessilis*																		0.1									
**Sonchus asper*																											
**Sonchus oleraceus*	0.1	0.1		0.1	0.1			0.1			0.1	0.1	0.1					0.1			0.1	0.1		0.1		0.1	
**Stachys arvensis*			0.1		0.1							0.1		0.1	0.1	0.1	0.1					0.1					0.1
**Tagetes minuta*																							0.1				
**Trifolium glomeratum*																					0.1						

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
**Trifolium sp.*								0.1				0.1	0.1														
**Urochloa panicoides*					0.1						0.1					0.1	0.1										0.1
**Verbena bonariensis*																0.1		0.1	0.1								
**Verbena officinalis*																											
**Verbena rigida*																											
**Verbena rigida var. rigida*					0.1																						
Abutilon oxycarpum						0.1	0.1						0.1														
Acacia decora																											
Acacia melvillei																											
Acacia paradoxa				0.1	0.1																				0.1		
Acacia parramattensis																											
Acacia salicina																											
Acaena sp.																											
Allocasuarina gymnanthera																											
Allocasuarina luehmannii																											
Alternanthera denticulata																											
Alternanthera nana								0.1					0.1														
Amyema miquelii	0.1																										
Angophora floribunda														10.0		1.0											
Anthosachne scabra																											
Aristida leichhardtiana																											
Aristida ramosa	0.1	10.0	10.0	0.1	15.0	0.1		40.0	0.1	0.1	0.1	10.0	0.1	10.0	8.0	15.0	1.0	1.0	15.0	10.0	30.0	1.0	6.0	0.1	0.1	1.0	10.0
Aristida vagans																											
Arthropodium milleflorum						0.1																					
Arthropodium species B sensu Harden (1993)								0.1			0.1							0.1						0.1		0.1	0.1
Asperula conferta		0.1			0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1			0.1				0.1			0.1	0.1	0.1	0.1
Atriplex semibaccata																											
Austrostipa aristiglumis																											
Austrostipa scabra																											
Austrostipa scabra subsp. falcata			0.1	0.1	0.1	0.1				0.1	0.1			0.1				50.0			0.1	0.1		1.0		0.1	0.1
Austrostipa scabra subsp. scabra	0.1						0.1																				

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
Austrostipa verticillata	0.1					6.0	50.0	0.1			0.1	0.1	6.0	0.1			0.1	3.0		70.0			0.1	2.0			
Boerhavia dominii								0.1		0.1	0.1		0.1	0.1		0.1	0.1	0.1					0.1	0.1			0.1
Bothriochloa biloba																											
Bothriochloa decipiens																											
Bothriochloa decipiens var. decipiens	0.1	2.0	50.0	0.1	50.0	1.0		0.1	1.0	15.0	10.0	10.0		40.0	20.0	20.0	15.0	1.0	45.0	10.0	10.0	1.0	20.0	0.1	10.0	0.1	15.0
Bothriochloa macra																											
Brachychiton populneus																											
Brachychiton populneus subsp. populneus	0.1		0.1	0.1		0.1		7.0					0.1				0.1									0.1	
Brachyscome ciliaris																	0.1										
Brunoniella australis	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1			0.1	0.1				0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bursaria spinosa	0.1	0.1		10.0	0.1												0.1									0.1	
Calotis lappulacea	0.1			0.1		10.0	10.0	0.1			0.1	0.1		0.1	0.1	0.1	0.1	20.0	0.1		0.1		0.1	0.1		0.1	0.1
Carex inversa						0.1	0.1	0.1				0.1	0.1					0.1						0.1			
Cassinia sifton	0.1																										
Cassinia uncata																											
Casuarina cunninghamiana subsp. cunninghamiana																											
Casuarina glauca																											
Chamaesyce drummondii		0.1	0.1			0.1		0.1	0.1	0.1	0.1			0.1			0.1	0.1			0.1		0.1	0.1	0.1	0.1	
Cheilanthes distans	0.1					0.1		0.1	0.1		0.1			0.1		0.1					0.1						
Cheilanthes sieberi																											
Cheilanthes sieberi subsp. sieberi	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1			6.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chloris truncata		6.0	10.0		0.1				0.1	0.1		0.1			0.1	0.1				0.1	0.1	60.0	10.0		50.0		15.0
Chloris ventricosa	0.1	0.1	0.1		0.1	20.0	0.1	30.0	0.1	0.1	6.0	1.0	0.1	0.1	0.1	0.1	0.1		0.1		2.0	0.1	0.1	0.1	0.1	0.1	1.0
Chrysocephalum apiculatum	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1
Chrysocephalum semipapposum																											
Commelina cyanea																											
Convolvulus angustissimus																											
Convolvulus erubescens																											
Convolvulus graminetinus	0.1	0.1		0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Corymbia maculata				40.0				10.0					40.0				10.0									25.0	

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
Cotula australis																											
Cullen tenax																											
Cymbonotus lawsonianus																											
Cymbopogon refractus		0.1	0.1	0.1	0.1	0.1		0.1	10.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.0	1.0	6.0	0.1	6.0	0.1	3.0
Cyperus gracilis	0.1			0.1		0.1	0.1	0.1			0.1		0.1				0.1	0.1			0.1			0.1		0.1	
Daucus glochidiatus																											
Daviesia genistifolia																											
Denhamia silvestris																											
Desmodium gunnii		0.1																									
Desmodium varians	0.1			0.1		0.1		0.1								0.1					0.1			0.1		0.1	
Dianella longifolia var. longifolia				0.1									0.1			0.1											
Dianella revoluta var. revoluta	0.1																										
Dianella tarda																											
Dichanthium sericeum																											
Dichanthium sericeum subsp. sericeum		65.0	15.0		20.0				50.0	70.0		60.0	1.0	10.0	10.0	15.0					0.1	10.0	40.0	0.1	15.0	0.1	3.0
Dichelachne micrantha																											
Dichondra repens	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1			0.1			0.1		0.1	
Dichondra sp. Inglewood (J.M.Dalby 86/93) Qld Herbarium																											
Digitaria brownii			0.1		0.1				0.1					6.0	10.0	0.1		0.1	2.0	0.1	0.1		7.0				
Digitaria diffusa																											
Digitaria divaricatissima		0.1	1.0				0.1	0.1	0.1			0.1		0.1	10.0	0.1		0.1	10.0	1.0		0.1			0.1		10.0
Digitaria ramularis																											
Dysphania carinata	0.1	0.1	0.1	0.1		0.1			0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	10.0	0.1	0.1	0.1	0.1	0.1		0.1
Eclipta platyglossa																											
Einadia hastata	0.1					0.1	10.0	0.1										0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Einadia nutans																											
Einadia nutans subsp. linifolia				0.1		0.1							0.1				0.1										
Einadia nutans subsp. nutans																											
Einadia polygonoides	0.1	0.1		0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1				0.1	6.0	0.1	0.1	0.1	0.1	

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
Enchylaena tomentosa																		0.1									
Enneapogon nigricans																											
Enteropogon acicularis	0.1	0.1	1.0	0.1		0.1			10.0	2.0				1.0	0.1	0.1	0.1						1.0	0.1	0.1		
Eragrostis brownii	0.1																										
Eragrostis lacunaria		0.1	0.1		0.1			0.1						0.1	0.1	0.1		0.1	0.1	0.1	1.0	0.1		0.1			0.1
Eragrostis leptostachya	0.1		0.1	0.1	0.1	0.1	0.1																				
Eragrostis sororia																											
Eremophila debilis	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1
Eriochloa pseudoacrotricha	0.1	10.0	8.0	0.1	10.0	20.0	0.1		15.0	0.1	0.1	10.0	0.1		0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		1.0
Erodium crinitum		0.1	0.1		0.1				0.1			0.1		1.0	0.1	0.1		0.1	0.1	0.1	0.1						0.1
Eucalyptus acaciiformis																											
Eucalyptus albens																											
Eucalyptus albens x moluccana								15.0			40.0										0.1			40.0		15.0	
Eucalyptus blakelyi																											
Eucalyptus caleyi subsp. caleyi																											
Eucalyptus conica																0.1											
Eucalyptus crebra	10.0			0.1		35.0	25.0									3.0	25.0	15.0	0.1		40.0						
Eucalyptus dawsonii																											
Eucalyptus fibrosa																											
Eucalyptus melliodora																											
Eucalyptus microcarpa																											
Eucalyptus moluccana	7.0																										
Eucalyptus punctata																											
Eucalyptus sideroxylon																											
Eucalyptus sp.																											
Eucalyptus tereticornis																											
Eulalia aurea																0.1											
Euphorbia drummondii																											
Evolvulus alsinoides var. decumbens																											
Fimbristylis dichotoma	0.1			0.1										0.1	0.1	0.1			0.1		0.1						0.1
Galium leiocarpum																											

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
Geijera parviflora																											
Geranium solanderi var. solanderi								0.1						0.1		0.1											
Glossocardia bidens				0.1						0.1	0.1				0.1		0.1				0.1		0.1	0.1	0.1	0.1	
Glycine clandestina		0.1	0.1	0.1	0.1		0.1			0.1			0.1												0.1		
Glycine tabacina	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	1.0	0.1	1.0
Goodenia hederacea subsp. hederacea																											
Goodenia pinnatifida																											
Grona varians																											
Hackelia suaveolens											0.1			0.1											0.1		
Hydrocotyle laxiflora				0.1							0.1						0.1										
Hypericum gramineum																											
Hypoxis pratensis var. pratensis					0.1																						
Juncus sp.																											
Lagenophora gracilis																											
Lagenophora stipitata																											
Leiocarpa panaetioides																											
Lepidium pseudohyssopifolium																											
Linum marginale																											
Lobelia purpurascens											0.1		0.1											0.1		0.1	
Lomandra confertifolia subsp. pallida	0.1		0.1	0.1		0.1		0.1		0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1		0.1	0.1	0.1	2.0	0.1	1.0	
Lomandra confertifolia subsp. rubiginosa																											
Lomandra filiformis subsp. coriacea																	0.1	0.1									
Lomandra filiformis subsp. filiformis																											
Lomandra glauca	0.1																										
Lomandra multiflora																											
Lomandra multiflora subsp. multiflora	0.1		0.1	0.1		0.1				0.1				0.1		0.1	0.1				0.1					0.1	
Maireana enchylaenoides																											
Maireana microphylla	0.1			0.1	0.1	6.0	0.1		0.1			0.1	0.1	0.1		0.1	0.1							0.1			0.1
Marsdenia viridiflora subsp. viridiflora																											0.1

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
Medicago spp.																											
Melaleuca bracteata																											
Melia azedarach													0.1														
Mentha satureioides		0.1			0.1			0.1	0.1			0.1					0.1				0.1	0.1		0.1	0.1	0.1	
Microlaena stipoides																											
Microlaena stipoides var. stipoides	0.1			10.0	1.0	20.0	0.1	10.0			0.1		0.1	6.0	0.1	0.1	0.1	1.0			10.0			0.1		0.1	
Mimulus gracilis																											
Minuria leptophylla																											
Myoporum montanum				3.0				0.1			0.1																
Neptunia gracilis																											
Neptunia gracilis f. gracilis			0.1																								
Notelaea microcarpa																											
Notelaea microcarpa var. microcarpa								0.1			0.1		1.0													0.1	
Oncinocalyx betchei																											
Oxalis exilis																											
Oxalis perennans	0.1		0.1	0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1		0.1
Oxytes brachypoda																											
Ozothamnus diosmifolius																											
Panicum buncei																				0.1							
Panicum effusum	0.1			0.1	0.1				0.1					15.0	10.0	10.0		0.1	10.0	1.0	0.1	0.1					
Panicum queenslandicum																											
Panicum queenslandicum var. queenslandicum	0.1	0.1	0.1		0.1			0.1	6.0	0.1	0.1	6.0	0.1	1.0	15.0	1.0					0.1	2.0	10.0	0.1	1.0	0.1	1.0
Panicum simile																											
Parsonsia lanceolata											0.1																
Paspalidium aversum																		0.1		0.1							
Paspalidium criniforme								0.1			15.0		0.1				0.1	0.1						0.1		0.1	
Paspalidium distans			0.1		0.1	0.1				0.1		1.0				0.1										0.1	
Phyllanthus gunnii																											
Phyllanthus virgatus	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1					0.1	0.1				0.1	0.1		0.1	0.1	0.1	0.1
Pimelea curviflora var. sericea	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1						0.1	0.1	0.1	0.1	
Pimelea linifolia																											

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
Plantago debilis								0.1			0.1						0.1										
Plantago gaudichaudii																											
Plantago turrifera																											
Plantago varia																											
Poa sieberiana var. hirtella																											
Portulaca oleracea			0.1		0.1	0.1											0.1	0.1	0.1	0.1		0.1	0.1				0.1
Psydrax odorata																										0.1	
Pullenia gunnii																											
Rhynchosia minima																0.1	0.1						0.1				0.1
Rostellularia adscendens var. adscendens	0.1					0.1				0.1	0.1		0.1	0.1		0.1	0.1	0.1			0.1					0.1	0.1
Rumex brownii						0.1							0.1				0.1										
Rytidosperma caespitosum				0.1	0.1	0.1			0.1		40.0	0.1															
Rytidosperma fulvum	0.1																										
Rytidosperma longifolium		0.1											6.0														
Rytidosperma racemosum var. racemosum							0.1																				
Rytidosperma setaceum																											
Rytidosperma tenuius																0.1	0.1	0.1			25.0	0.1		1.0	0.1	0.1	
Scleria mackaviensis											0.1																
Sclerolaena birchii																											
Sclerolaena muricata var. muricata			0.1																								
Senecio quadridentatus																											
Senna clavigera																											
Sida corrugata	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1			0.1	0.1				0.1	0.1		0.1	0.1	0.1	
Sida hackettiana						0.1	0.1								0.1			0.1	0.1					0.1			
Solanum brownii								0.1															0.1				
Solanum campanulatum	0.1																										
Solanum cinereum	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Solanum prinophyllum				0.1																							
Solenogyne bellioides																								0.1		0.1	
Sorghum leiocladum																											
Sporobolus caroli																											

	200331P2	200331P3	200331P4	200331P5	200331P6	200331P7	200331P8	200402P1	200402P2	200402P3	200402P4	200402P5	200402P6	200406P1	200406P2	200406P3	200406P4	200406P5	200406P6	200406P7	200406P8	200407P1	200407P2	200407P3	200407P4	200407P5	200407P6
Sporobolus creber	0.1	1.0	0.1		0.1	0.1		0.1	0.1	0.1	0.1			1.0	0.1	0.1	0.1	0.1			0.1	0.1	0.1		0.1		0.1
Stackhousia muricata		0.1		0.1				0.1		0.1				0.1		0.1	0.1				0.1				0.1		
Stackhousia viminea																											
Swainsona galegifolia																											
Templetonia stenophylla	0.1			0.1												0.1	0.1									0.1	
Themeda avenacea																											
Tragus australianus										0.1																	
Trema tomentosa var. aspera																											
Tribulus micrococcus												0.1					0.1										6.0
Verbena gaudichaudii																	0.1			0.1							
Veronica plebeia																		0.1									
Viola betonicifolia subsp. betonicifolia								0.1																			
Vittadinia cervicularis var. subcervicularis																	0.1										
Vittadinia cuneata var. cuneata																										0.1	
Vittadinia cuneata var. hirsuta											0.1							0.1					0.1	0.1			
Vittadinia gracilis																											
Vittadinia muelleri		0.1	0.1		0.1				0.1	0.1				0.1	0.1	0.1					0.1	0.1	0.1		0.1		0.1
Vittadinia pterochaeta		0.1							0.1																		
Vittadinia pustulata	0.1		0.1	0.1	0.1					0.1		0.1		0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Vittadinia sulcata						0.1	0.1	0.1				0.1	0.1														
Wahlenbergia communis		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1
Wahlenbergia gracilis																											
Wahlenbergia luteola													0.1														
Walwhalleya subxerophila																											
Zornia dyctiocarpa var. dyctiocarpa														0.1		0.1											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
***Alternanthera pungens*																											
***Bidens pilosa*				0.1	0.1	0.1		0.1																			
***Bidens subalternans*	0.1	0.1		0.1	0.1	0.1		2.0						0.1			0.1	0.1	0.1								
***Bryophyllum delagoense*																											
***Carrichtera annua*																											
***Carthamus lanatus*				0.1	10.0	0.1	25.0	0.1	35.0	6.0	0.1	20.0		0.1	0.1	20.0			15.0	0.1	10.0		40.0	0.1	10.0	0.1	
***Cenchrus clandestinus*																											
***Cenchrus longisetus*																	0.1										
***Ehrharta erecta*																											
***Galenia pubescens*	0.1	0.1	0.1		0.1			0.1					0.1	0.1	0.1		0.1	10.0	0.1		0.1	30.0	0.1	60.0	0.1	0.1	0.1
***Hyparrhenia hirta*																										0.1	
***Hypericum perforatum*																											
***Lycium ferocissimum*																		0.1			0.1	0.1		0.1			0.1
***Maclura pomifera*																											
***Opuntia aurantiaca*																											
***Opuntia humifusa*								0.1																			
***Opuntia stricta*																											
***Opuntia stricta var. stricta*			0.1							0.1		0.1				0.1	0.1	0.1			0.1			0.1			0.1
***Paspalum dilatatum*						1.0																					
***Romulea rosea*																											
***Rosa rubiginosa*																											
***Senecio madagascariensis*			0.1					0.1					0.1	0.1								0.1					
***Xanthium occidentale*																											
***Xanthium spinosum*																		0.1									
**Amaranthus powellii*																									0.1		
**Argemone ochroleuca subsp. ochroleuca*															0.1			0.1		0.1							
**Asphodelus fistulosus*				0.1	0.1	0.1		0.1		0.1																	
**Avena sativa*																											
**Bromus molliformis*																											
**Capsella bursa-pastoris*																											
**Centaurium erythraea*																											
**Cerastium glomeratum*																											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
**Cirsium vulgare*																											
**Citrullus amarus*																											
**Conyza bonariensis*																											
**Conyza sp.*																											
**Cucumis myriocarpus subsp. leptodermis*																											
**Cyanthillium cinereum var. cinereum*																											
**Cyanthillium cinereum var. cinereum*																											
**Cynodon dactylon*											0.1					0.1						10.0		25.0			
**Cyperus rotundus*																											
**Datura ferox*																											
**Echium plantagineum*										0.1						0.1											
**Eleusine tristachya*																				0.1		0.1					
**Erodium cicutarium*																						0.1			0.1		
**Erodium moschatum*																								0.1			
**Glandularia aristigera*		0.1	0.1																								
**Gomphocarpus fruticosus*				0.1	0.1	0.1								0.1													
**Gomphrena celosioides*		0.1																								0.1	
**Hirschfeldia incana*																											
**Hypochaeris albiflora*			0.1	0.1				0.1						0.1													
**Hypochaeris radicata*																											
**Kickxia elatine subsp. crinita*			0.1				0.1				0.1																
**Lactuca serriola*																											
**Lamium amplexicaule*				0.1		0.1				0.1																	
**Leontodon rhagadioloides subsp. cretica*																											
**Lepidium africanum*	0.1	0.1	0.1											0.1					0.1		0.1	0.1	0.1	0.1		0.1	
**Lepidium bonariense*																											
**Linum trigynum*																											
**Lolium loliaceum*																											
**Lysimachia arvensis*	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1		0.1	0.1	0.1
**Malva parviflora*						0.1		0.1														0.1					
**Malvastrum americanum*																											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
**Marrubium vulgare*																											
**Medicago polymorpha*																											
**Medicago sativa*							0.1			0.1																	
**Medicago spp.*	0.1		0.1	0.1		0.1		0.1		0.1	0.1				0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
**Modiola caroliniana*																											
**Nothoscordum gracile*																											
**Olea europaea subsp. cuspidata*																		0.1									
**Oxalis bowiei*															0.1												
**Paronychia brasiliana*			0.1																								
**Petrorhagia dubia*																											
**Plantago lanceolata*			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				0.1		0.1	0.1	0.1							0.1		
**Polycarpon tetraphyllum*																											
**Polygonum arenastrum*																											
**Prunella vulgaris*																											
**Rapistrum rugosum*					0.1	0.1	0.1	0.1	0.1	0.1										0.1				0.1		0.1	0.1
**Richardia stellaris*								0.1																			
**Salvia reflexa*							0.1		0.1	0.1				0.1				0.1									
**Salvia verbenaca*																											
**Schinus areira*																											
**Schkuhria pinnata*									0.1			0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1					
**Setaria parviflora*																	0.1									0.1	
**Sherardia arvensis*																											
**Sida rhombifolia*	0.1	0.1		0.1	0.1	1.0		0.1					0.1		0.1	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	
**Sida spinosa*		0.1			0.1			0.1			0.1	0.1		0.1							0.1						
**Solanum nigrum*			0.1					0.1														0.1		0.1	0.1		
**Solanum rostratum*																											
**Soliva sessilis*			0.1																								
**Sonchus asper*																											
**Sonchus oleraceus*	0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1		
**Stachys arvensis*				0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1				0.1	0.1		0.1		0.1						
**Tagetes minuta*																											
**Trifolium glomeratum*																											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
**Trifolium sp.*						0.1	0.1																				
**Urochloa panicoides*			0.1	0.1		0.1	0.1		0.1	0.1				0.1		0.1	0.1	0.1	0.1	6.0		0.1					
**Verbena bonariensis*				0.1	0.1									0.1		0.1											
**Verbena officinalis*																											
**Verbena rigida*																											
**Verbena rigida var. rigida*											0.1			0.1				0.1									
Abutilon oxycarpum																											
Acacia decora																											
Acacia melvillei																											
Acacia paradoxa																											
Acacia parramattensis																											
Acacia salicina																											1.0
Acaena sp.			0.1																								
Allocasuarina gymnanthera																											
Allocasuarina luehmannii																											
Alternanthera denticulata																											
Alternanthera nana																											
Amyema miquelii																											
Angophora floribunda																											1.0
Anthosachne scabra																											
Aristida leichhardtiana						0.1				0.1	0.1							0.1		1.0							
Aristida ramosa	0.1	3.0	10.0	0.1	0.1	0.1		0.1	0.2		1.0	1.0	20.0	10.0	6.0	2.0	60.0	1.0	1.0	0.1	80.0	0.1	0.1	0.1	30.0	0.1	1.0
Aristida vagans													0.1														
Arthropodium milleflorum																											
Arthropodium species B sensu Harden (1993)	0.1		0.1																								
Asperula conferta	0.1	0.1	0.1	0.1		0.1		0.1	0.1		0.1									0.1							
Atriplex semibaccata									0.1									0.1				0.1		0.1			
Austrostipa aristiglumis										10.0								0.1		1.0							
Austrostipa scabra																											
Austrostipa scabra subsp. falcata	0.1	0.1	10.0					0.1			0.1		0.1	0.1				0.1			0.1	1.0	0.1	0.1			0.1
Austrostipa scabra subsp. scabra																											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
Austrostipa verticillata	0.1							0.1					0.1	0.1			0.1	0.1				0.1		0.1			
Boerhavia dominii	0.1		0.1					0.1									0.1	0.1									
Bothriochloa biloba																											
Bothriochloa decipiens																											
Bothriochloa decipiens var. decipiens	0.1	10.0	0.1	6.0	0.1	0.1	1.0	0.1	1.0	0.1	1.0	0.1	0.1	65.0	6.0		0.1	20.0		0.1	1.0	0.1	6.0	1.0	30.0	30.0	10.0
Bothriochloa macra			0.1																								
Brachychiton populneus																											
Brachychiton populneus subsp. populneus	0.1							0.1										0.1									
Brachyscome ciliaris		0.1																0.1	0.1							0.1	0.1
Brunoniella australis	0.1	0.1	0.1	0.1	0.1	0.1		0.1			0.1	0.1		0.1	0.1		0.1	0.1	0.1	0.1	0.1				0.1	0.1	0.1
Bursaria spinosa																											
Calotis lappulacea		0.1	0.1			0.1	0.1	0.1	0.1				0.1	0.1	0.1	0.1			0.1		0.1	0.1	0.1	0.1			0.1
Carex inversa	0.1		0.1															0.1			0.1	0.1		0.1			
Cassinia sifton																											
Cassinia uncata								0.1																			
Casuarina cunninghamiana subsp. cunninghamiana																											
Casuarina glauca																											6.0
Chamaesyce drummondii	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1	0.1				0.1		0.1							
Cheilanthes distans		0.1												0.1													
Cheilanthes sieberi																											
Cheilanthes sieberi subsp. sieberi	0.1	0.1	0.1		0.1	0.1			0.1		0.1	0.1	0.1	0.1	0.1	0.1	6.0		0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1
Chloris truncata		0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1		25.0	6.0	0.1	0.1	1.0	0.1	0.1	0.1	
Chloris ventricosa	0.1	1.0	0.1		0.1			0.1				1.0	0.1	0.1				30.0	0.1	0.1	0.1		10.0	1.0	0.1	10.0	
Chrysocephalum apiculatum	0.1	0.1	0.1	0.1		0.1	0.1	1.0	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1			15.0	0.1
Chrysocephalum semipapposum																											
Commelina cyanea																											
Convolvulus angustissimus																											
Convolvulus erubescens																											
Convolvulus graminetinus	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1			0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1		0.1		0.1
Corymbia maculata		10.0																									

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
Cotula australis																											
Cullen tenax				0.1	0.1	0.1												0.1		0.1							
Cymbonotus lawsonianus																											
Cymbopogon refractus	0.1	2.0	0.1	30.0	25.0	25.0	6.0	3.0	1.0	0.1	0.1	20.0	0.1	6.0	6.0	0.1	6.0	1.0		0.1	6.0	0.1	15.0	0.1			0.1
Cyperus gracilis	0.1	0.1	0.1											0.1				0.1									
Daucus glochidiatus																											
Daviesia genistifolia																											
Denhamia silvestris																											
Desmodium gunnii																											
Desmodium varians				0.1																							
Dianella longifolia var. longifolia											0.1																
Dianella revoluta var. revoluta																											
Dianella tarda																											
Dichanthium sericeum																											
Dichanthium sericeum subsp. sericeum	0.1	0.1		15.0	8.0	10.0	80.0	60.0	25.0	25.0	60.0	30.0		1.0	0.1	0.1	0.1	10.0	0.1	70.0	0.1	0.1	2.0	0.1	0.1	1.0	0.1
Dichelachne micrantha																											
Dichondra repens	0.1	0.1		0.1	0.1			0.1	0.1	0.1			0.1	0.1				0.1							0.1		
Dichondra sp. Inglewood (J.M.Dalby 86/93) Qld Herbarium																											
Digitaria brownii									0.1		6.0	0.1	0.1	0.1	30.0	40.0	1.0	0.1	7.0	0.1	6.0	0.1	7.0	0.1	25.0	0.1	
Digitaria diffusa																											
Digitaria divaricatissima		0.1	0.1	0.1	0.1	0.1		0.1		0.1	10.0	6.0	0.1	0.1	40.0	40.0	25.1	2.0	10.0	0.1	1.0	0.1	20.0	1.0	6.0	0.1	0.1
Digitaria ramularis																											
Dysphania carinata	0.1	0.1	0.1	0.1	0.1			0.1					0.1	0.1					0.1	0.1							
Eclipta platyglossa																											
Einadia hastata			0.1											0.1				0.1	0.1								
Einadia nutans																											
Einadia nutans subsp. linifolia																											
Einadia nutans subsp. nutans																					0.1						
Einadia polygonoides	0.1	0.1	1.0		0.1	0.1		0.1	0.1			0.1	0.1		0.1	0.1	0.1	1.0	0.1	0.1	0.1	0.1	0.1	1.0	0.1		

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
Enchylaena tomentosa	0.1																	0.1						0.1	0.1		
Enneapogon nigricans																											
Enteropogon acicularis	0.1		0.1				0.1						0.1	0.1				0.1				0.1	0.1	0.1		0.1	0.1
Eragrostis brownii																											
Eragrostis lacunaria	0.1	0.1	8.0		0.1			0.1	0.1		6.0	6.0	0.1	0.1	1.0	0.1	0.1	10.0	50.0	10.0	6.0	1.0	40.0	1.0	2.0	30.0	0.1
Eragrostis leptostachya	0.1													0.1													
Eragrostis sororia																											
Eremophila debilis	0.1	0.1	1.0	0.1	0.1			0.1			0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1			0.1	0.1				0.1
Eriochloa pseudoacrotricha	0.1	0.1	0.1		0.1		0.1	2.0	60.0	15.0		10.0	0.1	0.1		10.0	0.1		6.0	1.0	0.1	10.0	6.0	6.0	6.0	1.0	0.1
Erodium crinitum	0.1				0.1	0.1			0.1		0.1	0.1		0.1		0.1	0.1	0.1	1.0	0.1	6.0	0.1	0.1	0.1	0.1		
Eucalyptus acaciiformis																											
Eucalyptus albens																											
Eucalyptus albens x moluccana	35.0	25.0	35.0	10.0		3.0		10.0					2.0					35.0						25.0		0.1	1.0
Eucalyptus blakelyi														35.0													1.0
Eucalyptus caleyi subsp. caleyi																											
Eucalyptus conica																											
Eucalyptus crebra													40.0	1.0								15.0				0.1	
Eucalyptus dawsonii																											1.0
Eucalyptus fibrosa																											
Eucalyptus melliodora																											10.0
Eucalyptus microcarpa																											
Eucalyptus moluccana																											
Eucalyptus punctata																											
Eucalyptus sideroxylon																											20.0
Eucalyptus sp.																											
Eucalyptus tereticornis																											
Eulalia aurea											0.1																
Euphorbia drummondii																											
Evolvulus alsinoides var. decumbens																											
Fimbristylis dichotoma		0.1									0.1		0.1	0.1			0.1						0.1			0.1	0.1
Galium leiocarpum																											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
Geijera parviflora																											
Geranium solanderi var. solanderi				0.1																							
Glossocardia bidens	0.1	0.1	0.1					0.1					0.1	0.1				0.1									
Glycine clandestina				0.1	0.1							0.1						0.1	0.1						0.1		0.1
Glycine tabacina	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Goodenia hederacea subsp. hederacea																											
Goodenia pinnatifida		0.1				0.1		0.1			0.1			0.1	0.1			0.1	0.1							0.1	0.1
Grona varians																											
Hackelia suaveolens			0.1				0.1																				
Hydrocotyle laxiflora																											
Hypericum gramineum																											
Hypoxis pratensis var. pratensis																0.1											
Juncus sp.																											
Lagenophora gracilis																											
Lagenophora stipitata																											
Leiocarpa panaetioides						0.1																					
Lepidium pseudohyssopifolium																											
Linum marginale																											
Lobelia purpurascens																											
Lomandra confertifolia subsp. pallida	0.1	6.0	2.0	1.0	0.1	0.1					0.1	0.1	0.1	1.0													0.1
Lomandra confertifolia subsp. rubiginosa																											
Lomandra filiformis subsp. coriacea																											
Lomandra filiformis subsp. filiformis																											
Lomandra glauca			0.1										0.1	0.1													0.1
Lomandra multiflora																											
Lomandra multiflora subsp. multiflora		0.1											0.1														0.1
Maireana enchylaenoides																											0.1
Maireana microphylla	0.1	0.1																						0.1			
Marsdenia viridiflora subsp. viridiflora																											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
Medicago spp.																											
Melaleuca bracteata																											
Melia azedarach																											
Mentha satureioides		0.1	0.1	0.1		0.1		0.1				0.1						0.1									
Microlaena stipoides																											
Microlaena stipoides var. stipoides		0.1						0.1					0.1														
Mimulus gracilis																											
Minuria leptophylla																											
Myoporum montanum																											
Neptunia gracilis																											
Neptunia gracilis f. gracilis				0.1		0.1										0.1		0.1		0.1	0.1						
Notelaea microcarpa																											
Notelaea microcarpa var. microcarpa																											
Oncinocalyx betchei																											
Oxalis exilis																											
Oxalis perennans	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				0.1	0.1	0.1	0.1
Oxytes brachypoda		0.1																									
Ozothamnus diosmifolius																											
Panicum buncei								0.1								0.1											
Panicum effusum	0.1										6.0			0.1	1.0	1.0	0.1	0.1	1.0	0.1	1.0	0.1				1.0	0.1
Panicum queenslandicum																											
Panicum queenslandicum var. queenslandicum			2.0	40.0	60.0	50.0	10.0	10.0	80.0	50.0	10.0	40.0		1.0	10.0	10.0	6.0	0.1	0.1	10.0	0.1		10.0	0.1	6.0	10.0	0.1
Panicum simile																											
Parsonsia lanceolata			0.1																								
Paspalidium aversum						0.1										0.1	0.1		0.1		0.1				0.1		
Paspalidium criniforme	0.1	0.1	0.1					1.0						0.1				6.0						0.1			
Paspalidium distans		0.1				0.1							0.1											0.1		0.1	
Phyllanthus gunnii																											
Phyllanthus virgatus	0.1	0.1	0.1	0.1		0.1		0.1					0.1	0.1													
Pimelea curviflora var. sericea		0.1		0.1	0.1	0.1		0.1																			
Pimelea linifolia																											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
Plantago debilis			0.1																								
Plantago gaudichaudii																											
Plantago turrifera																											
Plantago varia																											
Poa sieberiana var. hirtella																											
Portulaca oleracea		0.1																0.1	0.1					0.1	0.1	0.1	
Psydrax odorata																											
Pullenia gunnii																											
Rhynchosia minima		0.1		1.0	0.1	0.1	0.1	0.1										0.1									
Rostellularia adscendens var. adscendens	0.1	0.1	1.0	0.1		0.1							0.1	0.1				0.1									
Rumex brownii								0.1																			
Rytidosperma caespitosum				0.1	0.1		0.1	1.0	0.1	1.0									0.1				0.1	6.0	0.1	1.0	10.0
Rytidosperma fulvum						0.1																					
Rytidosperma longifolium																				0.1							
Rytidosperma racemosum var. racemosum																											
Rytidosperma setaceum																											
Rytidosperma tenuius	0.1	0.1	15.0								1.0	0.1	0.1	0.1	0.1			10.0			0.1	4.0					
Scleria mackaviensis		0.1		0.1																							
Sclerolaena birchii																											
Sclerolaena muricata var. muricata							0.1																				
Senecio quadridentatus																											
Senna clavigera																		0.1									
Sida corrugata	0.1					0.1		0.1	0.1				0.1					0.1				0.1				0.1	0.1
Sida hackettiana	0.1	0.1		0.1			0.1	0.1							0.1												
Solanum brownii																											
Solanum campanulatum																											
Solanum cinereum	0.1	0.1	0.1	0.1				0.1				0.1	0.1		0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	
Solanum prinophyllum																											
Solenogyne bellioides																											
Sorghum leiocladum						10.0																					
Sporobolus caroli																											

	200407P7	200407P8	200407P9	200408P1	200408P2	200408P3	200408P4	200408P5	200408P6	200408P7	200409P1	200409P2	200409P3	200409P4	200409P5	200409P6	200409P7	200409P8	200420P1	200420P2	200420P3	200420P4	200420P5	200420P6	200420P7	200420P8	200420P9
Sporobolus creber	0.1						0.1	0.1	0.1		0.1	0.1		0.1			0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1
Stackhousia muricata		0.1		0.1									0.1	0.1													
Stackhousia viminea																											
Swainsona galegifolia																											
Templetonia stenophylla													0.1	0.1													
Themeda avenacea																							0.1				
Tragus australianus																		0.1					0.1				
Trema tomentosa var. aspera																											
Tribulus micrococcus		0.1																0.1			0.1			0.1	0.1		
Verbena gaudichaudii						0.1	0.1																				
Veronica plebeia			0.1																								
Viola betonicifolia subsp. betonicifolia																											
Vittadinia cervicularis var. subcervicularis										0.1																	
Vittadinia cuneata var. cuneata																											
Vittadinia cuneata var. hirsuta	0.1																	0.1			0.1	0.1					
Vittadinia gracilis							0.1												0.1						0.1		
Vittadinia muelleri					0.1	0.1		0.1	0.1	0.1	0.1	0.1			0.1				0.1	0.1						0.1	
Vittadinia pterochaeta				0.1	0.1			0.1		0.1										0.1							
Vittadinia pustulata		0.1	0.1			0.1			0.1		0.1	0.1		0.1		0.1											0.1
Vittadinia sulcata																											
Wahlenbergia communis		0.1		0.1	0.1		0.1	0.1	0.1	0.1			0.1	0.1		0.1	0.1	0.1	0.1	0.1			0.1		0.1	0.1	0.1
Wahlenbergia gracilis																											
Wahlenbergia luteola																											
Walwhalleya subxerophila																											
Zornia dyctiocarpa var. dyctiocarpa																											

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
***Alternanthera pungens*																											
***Bidens pilosa*							0.1				0.1															0.1	
***Bidens subalternans*	0.1	0.1	0.1			0.1	0.1				0.1	0.1	0.1		0.1	0.1					0.1	0.1	0.1				0.1
***Bryophyllum delagoense*																											
***Carrichtera annua*	1.0																										
***Carthamus lanatus*					0.1	0.1		10.0	0.1	10.0	0.1	40.0	25.0	10.0		1.0		15.0	30.0	40.0	0.1	0.1	0.1	0.1	20.0		0.1
***Cenchrus clandestinus*																											
***Cenchrus longisetus*													0.1														
***Ehrharta erecta*																											
***Galenia pubescens*	1.0	0.1	0.1	50.0			0.1					0.1		0.1	0.1		0.1	0.1			0.1		0.1	0.1	0.1	10.0	25.0
***Hyparrhenia hirta*																											
***Hypericum perforatum*																											
***Lycium ferocissimum*	0.1	0.1	0.1	0.1					0.1		0.1										1.0	0.1	0.1			0.1	0.1
***Maclura pomifera*																											
***Opuntia aurantiaca*																											
***Opuntia humifusa*															0.1						0.1			0.1		0.1	0.1
***Opuntia stricta*																											
***Opuntia stricta var. stricta*	0.1	0.1	0.1		0.1		0.1	0.1	0.1		0.1				0.1						0.1			0.1			
***Paspalum dilatatum*			0.1																	0.1	0.1						
***Romulea rosea*																											
***Rosa rubiginosa*																											
***Senecio madagascariensis*					0.1	0.1	0.1	0.1	0.1						0.1			0.1			0.1	0.1	0.1			0.1	0.1
***Xanthium occidentale*																											
***Xanthium spinosum*																											
**Amaranthus powellii*																											
**Argemone ochroleuca subsp. ochroleuca*																				0.1				0.1			
**Asphodelus fistulosus*										0.1	0.1								0.1								
**Avena sativa*																											
**Bromus molliformis*																											
**Capsella bursa-pastoris*							0.1																				
**Centaurium erythraea*																											
**Cerastium glomeratum*																											0.1

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
**Cirsium vulgare*						0.1	0.1								0.1												
**Citrullus amarus*																											
**Conyza bonariensis*																											
**Conyza sp.*																											
**Cucumis myriocarpus subsp. leptodermis*																											
**Cyanthillium cinereum var. cinereum*																											
**Cyanthillium cinereum var. cinereum*																					0.1		0.1			0.1	
**Cynodon dactylon*	1.0			20.0							1.0						0.1					1.0	1.0				
**Cyperus rotundus*																											
**Datura ferox*							0.1																				
**Echium plantagineum*																											
**Eleusine tristachya*														0.1													
**Erodium cicutarium*		0.1																									0.1
**Erodium moschatum*																											
**Glandularia aristigera*					1.0			30.0	0.1	10.0				0.1													
**Gomphocarpus fruticosus*					0.1	0.1		0.1												0.1					0.1		0.1
**Gomphrena celosioides*																		0.1									
**Hirschfeldia incana*																											
**Hypochaeris albiflora*						0.1	0.1							0.1									0.1				0.1
**Hypochaeris radicata*																											
**Kickxia elatine subsp. crinita*																											
**Lactuca serriola*																											
**Lamium amplexicaule*																											
**Leontodon rhagadioloides subsp. cretica*																											
**Lepidium africanum*				0.1					0.1		0.1							0.1		0.1							0.1
**Lepidium bonariense*																											
**Linum trigynum*								0.1										0.1									
**Lolium loliaceum*																											
**Lysimachia arvensis*	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
**Malva parviflora*																											0.1
**Malvastrum americanum*																											

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
**Marrubium vulgare*																					0.1						
**Medicago polymorpha*																											
**Medicago sativa*																											
**Medicago spp.*	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1			0.1	0.1		0.1
**Modiola caroliniana*																											
**Nothoscordum gracile*																											
**Olea europaea subsp. cuspidata*																											
**Oxalis bowiei*																											
**Paronychia brasiliana*							0.1																				
**Petrorhagia dubia*																											
**Plantago lanceolata*		0.1	0.1	0.1		0.1				0.1		0.1															
**Polycarpon tetraphyllum*																											
**Polygonum arenastrum*																											
**Prunella vulgaris*																				0.1	0.1						
**Rapistrum rugosum*	0.1										0.1	0.1															
**Richardia stellaris*																											
**Salvia reflexa*			0.1																								
**Salvia verbenaca*																											
**Schinus areira*																											
**Schkuhria pinnata*	0.1	0.1										0.1		0.1				0.1									
**Setaria parviflora*														0.1													
**Sherardia arvensis*																											
**Sida rhombifolia*	0.1			4.0	0.1		0.1	0.1	0.1	1.0	0.1	0.1	0.1			1.0	0.1	0.1		0.1		0.1	0.1	0.1	1.0	2.0	1.0
**Sida spinosa*					0.1					0.1				0.1		35.0	80.0	25.0	2.0	7.0	0.1	60.0		0.1	0.1		0.1
**Solanum nigrum*	0.1	0.1		0.1	0.1	0.1	0.1		0.1		0.1	0.1			0.1					0.1	0.1		0.1			0.1	0.1
**Solanum rostratum*																											
**Soliva sessilis*																											
**Sonchus asper*																											
**Sonchus oleraceus*	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1							0.1
**Stachys arvensis*				0.1	0.1		0.1	1.0	0.1	0.1			0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1
**Tagetes minuta*								0.1																			
**Trifolium glomeratum*																											

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
**Trifolium sp.*																											
**Urochloa panicoides*	0.1	0.1				0.1	0.1					10.0	0.1					0.1		0.1							
**Verbena bonariensis*																											
**Verbena officinalis*																											
**Verbena rigida*																											
**Verbena rigida var. rigida*																											
Abutilon oxycarpum				0.1												0.1					0.1	0.1	0.1	0.1		0.1	0.1
Acacia decora		0.1																									
Acacia melvillei																											
Acacia paradoxa																											
Acacia parramattensis																											
Acacia salicina																											
Acaena sp.																											
Allocasuarina gymnanthera																											
Allocasuarina luehmannii																											
Alternanthera denticulata																											
Alternanthera nana																							0.1				
Amyema miquelii																											
Angophora floribunda																											
Anthosachne scabra																											
Aristida leichhardtiana																											
Aristida ramosa	0.1	0.1	6.0	0.1	50.0	10.0	0.1	1.0	1.0	20.0		0.1	0.1	15.0	20.0	0.1	0.1	1.0	0.1	0.1	0.1	0.1	0.1	10.0	20.0	1.0	0.1
Aristida vagans																											
Arthropodium milleflorum																											
Arthropodium species B sensu Harden (1993)							0.1		0.1						0.1								0.1			0.1	
Asperula conferta	0.1	0.1	0.1		0.1	0.1	0.1		0.1		0.1	0.1	0.1		0.1			0.1						0.1	0.1		0.1
Atriplex semibaccata			0.1																								
Austrostipa aristiglumis	0.1		2.0																								
Austrostipa scabra																											
Austrostipa scabra subsp. falcata								0.1	0.1	0.1	0.1				7.0	0.1	0.1				0.1			0.1		0.1	
Austrostipa scabra subsp. scabra																											

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
Austrostipa verticillata	0.1	0.1			0.1	0.1	0.1		0.1	0.1	7.0	0.1			0.1	0.1	3.0			0.1		6.0	6.0	0.1		20.0	70.0
Boerhavia dominii	0.1	0.1				0.1					0.1																
Bothriochloa biloba												6.0															
Bothriochloa decipiens																											
Bothriochloa decipiens var. decipiens	20.0	10.0	25.0	10.0	10.0	20.0	15.0	20.0	0.1	10.0	20.0		30.0	30.0	20.0	60.0	0.1	30.0	40.0	30.0	0.1	0.1	0.1	2.0	1.0	0.1	1.0
Bothriochloa macra																											
Brachychiton populneus																											
Brachychiton populneus subsp. populneus	0.1					0.1	0.1		0.1						0.1								0.1				
Brachyscome ciliaris	0.1																				0.1						
Brunoniella australis	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1		0.1	0.1		0.1		0.1	0.1		0.1	0.1
Bursaria spinosa						0.1																					
Calotis lappulacea	0.1	0.1	0.1	0.1	0.1	0.1								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Carex inversa			0.1	0.1			0.1				0.1				0.1												
Cassinia sifton																											
Cassinia uncata																											
Casuarina cunninghamiana subsp. cunninghamiana																											
Casuarina glauca	1.0	1.0	6.0																								
Chamaesyce drummondii		0.1	0.1	0.1	0.1	0.1	0.1		0.1		0.1		0.1	0.1	0.1			0.1		0.1	0.1			0.1			
Cheilanthes distans	0.1			0.1	0.1						0.1																
Cheilanthes sieberi																											
Cheilanthes sieberi subsp. sieberi	0.1	0.1	0.1		0.1	0.1		0.1		0.1	0.1		0.1	0.1	0.1		0.1		0.1	0.1		0.1	0.1	0.1	0.1		
Chloris truncata				0.1	1.0			0.1					1.0	40.0		10.0		6.0	7.0	15.0				0.1	30.0		0.1
Chloris ventricosa	15.0	0.1	1.0		10.0	40.0	10.0	20.0	20.0	2.0	10.0	0.1	10.0	0.1	30.0	0.1		1.0	1.0	0.1	70.0	1.0	0.1	30.0	2.0	20.0	1.0
Chrysocephalum apiculatum	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chrysocephalum semipapposum																											
Commelina cyanea																							0.1				0.1
Convolvulus angustissimus																											
Convolvulus erubescens																											
Convolvulus graminetinus	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1		0.1	0.1	0.1	0.1		0.1	0.1		0.1		0.1	0.1	0.1		0.1
Corymbia maculata	3.0	4.0	10.0																				20.0				

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
Cotula australis																											
Cullen tenax																											
Cymbonotus lawsonianus								0.1																			
Cymbopogon refractus	0.1	0.1	0.1		1.0	0.1	0.1	0.1	0.1	0.1		0.1	0.1	1.0	0.1	0.1		10.0	0.1	0.1	7.0	0.1	0.1	0.1	0.1	0.1	0.1
Cyperus gracilis			0.1	0.1	0.1	0.1	0.1		0.1						0.1						0.1	0.1	0.1			0.1	0.1
Daucus glochidiatus						0.1	0.1		0.1		0.1				0.1												
Daviesia genistifolia																											
Denhamia silvestris																							0.1				
Desmodium gunnii							0.1																				
Desmodium varians		0.1			0.1				0.1						0.1								0.1				0.1
Dianella longifolia var. longifolia	0.1	0.1	0.1		0.1	0.1	0.1								0.1				0.1				0.1				
Dianella revoluta var. revoluta																											
Dianella tarda																											
Dichanthium sericeum																											
Dichanthium sericeum subsp. sericeum	0.1	0.1	0.1		10.0	0.1	0.1	40.0	1.0	30.0	15.0	30.0	30.0	0.1	1.0	10.0		40.0	25.0	30.0	10.0			0.1	20.0		0.1
Dichelachne micrantha																											
Dichondra repens	0.1		0.1		0.1	0.1	0.1		0.1		0.1			0.1	0.1				0.1	0.1	0.1		0.1	0.1			0.1
Dichondra sp. Inglewood (J.M.Dalby 86/93) Qld Herbarium																											
Digitaria brownii	0.1			0.1	6.0			0.1		25.0						0.1	0.1		6.0	0.1	0.1	0.1			2.0		
Digitaria diffusa																							1.0			1.0	
Digitaria divaricatissima	0.1	0.1			0.1			0.1	0.1	10.0	1.0	30.0	0.1	0.1	0.1	0.1	0.1	10.0	10.0	6.0	0.1	0.1	0.1	0.1	0.1		
Digitaria ramularis																											
Dysphania carinata	0.1			0.1			0.1	0.1						0.1	0.1	0.1	10.0	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1
Eclipta platyglossa																											
Einadia hastata							0.1							0.1									0.1			0.1	0.1
Einadia nutans																											
Einadia nutans subsp. linifolia		0.1					0.1								0.1												
Einadia nutans subsp. nutans																											
Einadia polygonoides	0.1	0.1	0.1		0.1		0.1		0.1	0.1	0.1	0.1	0.1			0.1								0.1	0.1		0.1

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
Enchylaena tomentosa	0.1	0.1	0.1	0.1																							
Enneapogon nigricans																											
Enteropogon acicularis	0.1	0.1	0.1	0.1				0.1		0.1	0.1	0.1		0.1	0.1						0.1	0.1				0.1	0.1
Eragrostis brownii																							0.1				
Eragrostis lacunaria	0.1	0.1	0.1		0.1		0.1		0.1	0.1	0.1		0.1	1.0	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	1.0	0.1	0.1	0.1
Eragrostis leptostachya	0.1																0.1						0.1			0.1	
Eragrostis sororia																											
Eremophila debilis	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1			0.1	0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	
Eriochloa pseudoacrotricha	10.0	0.1	0.1	0.1				0.1	0.1	1.0	30.0	30.0	30.0	0.1	0.1	10.0	0.1	6.0	2.0	6.0	0.1	0.1		0.1	20.0	0.1	0.1
Erodium crinitum	0.1	0.1	0.1	1.0	0.1			0.1		20.0				0.1		45.0	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1
Eucalyptus acaciiformis				6.0																							
Eucalyptus albens		10.0	3.0																								
Eucalyptus albens x moluccana	10.0	3.0	10.0			25.0			40.0		20.0				35.0						25.0			10.0			30.0
Eucalyptus blakelyi	1.0	1.0																									
Eucalyptus caleyi subsp. caleyi				10.0																							
Eucalyptus conica																											
Eucalyptus crebra	3.0		0.1											0.1			0.1					20.0	10.0			35.0	
Eucalyptus dawsonii																											
Eucalyptus fibrosa			0.1																								
Eucalyptus melliodora			1.0																								
Eucalyptus microcarpa																											
Eucalyptus moluccana						2.0	40.0																				
Eucalyptus punctata				10.0																							
Eucalyptus sideroxylon	10.0	3.0																									
Eucalyptus sp.			1.0	2.0																							
Eucalyptus tereticornis																											
Eulalia aurea								0.1																			
Euphorbia drummondii																											
Evolvulus alsinoides var. decumbens																						0.1	0.1				
Fimbristylis dichotoma									0.1													0.1	0.1				
Galium leiocarpum						0.1																					

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
Geijera parviflora																											
Geranium solanderi var. solanderi					0.1			0.1		0.1																	
Glossocardia bidens					0.1	0.1			0.1					0.1	0.1						0.1		0.1	0.1			
Glycine clandestina			0.1		0.1	0.1			0.1		0.1			0.1				0.1	0.1		0.1				0.1	0.1	0.1
Glycine tabacina	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Goodenia hederacea subsp. hederacea																											
Goodenia pinnatifida			0.1																						0.1		
Grona varians																											
Hackelia suaveolens					0.1	0.1	0.1	0.1	0.1	0.1					0.1						0.1			0.1			
Hydrocotyle laxiflora						0.1	0.1		0.1																		
Hypericum gramineum																											
Hypoxis pratensis var. pratensis																											
Juncus sp.																											
Lagenophora gracilis																											
Lagenophora stipitata																											
Leiocarpa panaetioides																											
Lepidium pseudohyssopifolium																											
Linum marginale																											
Lobelia purpurascens						0.1	0.1								0.1												
Lomandra confertifolia subsp. pallida	1.0	15.0	4.0	0.1	0.1	0.1	0.1	0.1	2.0	0.1				0.1	1.0				0.1		0.1		0.1	0.1	0.1	0.1	
Lomandra confertifolia subsp. rubiginosa																											
Lomandra filiformis subsp. coriacea																											
Lomandra filiformis subsp. filiformis																											
Lomandra glauca		0.1	0.1				0.1		0.1														0.1	0.1			
Lomandra multiflora																											
Lomandra multiflora subsp. multiflora		0.1	0.1		0.1	0.1		0.1							0.1							0.1	0.1			0.1	
Maireana enchylaenoides			0.1												0.1								0.1				0.1
Maireana microphylla							0.1				1.0	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1		15.0	1.0
Marsdenia viridiflora subsp. viridiflora						0.1									0.1						0.1						

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
Medicago spp.																											
Melaleuca bracteata																											
Melia azedarach																											
Mentha satureioides					0.1	0.1		0.1	0.1	0.1				0.1				0.1	0.1					0.1			0.1
Microlaena stipoides																											
Microlaena stipoides var. stipoides			0.1		0.1	0.1	0.1		0.1			0.1			0.1							1.0	3.0			1.0	
Mimulus gracilis																											
Minuria leptophylla																											
Myoporum montanum																											
Neptunia gracilis																											
Neptunia gracilis f. gracilis																					0.1						
Notelaea microcarpa																											
Notelaea microcarpa var. microcarpa						3.0	0.1		0.1																		0.1
Oncinocalyx betchei																											
Oxalis exilis																											
Oxalis perennans	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1	0.1		0.1	0.1		0.1		0.1	0.1			0.1
Oxytes brachypoda															0.1												
Ozothamnus diosmifolius																											
Panicum buncei															0.1	0.1					0.1			1.0			
Panicum effusum	0.1	0.1	0.1							0.1				1.0			0.1		0.1	0.1		0.1	0.1		0.1		
Panicum queenslandicum																											
Panicum queenslandicum var. queenslandicum	0.1	0.1	0.1		6.0	0.1	0.1	1.0	0.1	0.1	0.1	15.0	10.0	0.1	0.1	1.0		0.1	1.0		0.1			0.1	1.0		0.1
Panicum simile																											
Parsonsia lanceolata																											
Paspalidium aversum																											
Paspalidium criniforme	0.1		0.1			0.1	0.1		0.1	0.1	15.0				0.1						10.0		0.1	0.1			
Paspalidium distans	0.1				0.1						0.1				0.1		0.1										
Phyllanthus gunnii																											
Phyllanthus virgatus	0.1		0.1			0.1	0.1		0.1						0.1									0.1			
Pimelea curviflora var. sericea						0.1	0.1	0.1	0.1						0.1												
Pimelea linifolia																											

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
Plantago debilis						0.1	0.1		0.1		0.1				0.1												0.1
Plantago gaudichaudii																											
Plantago turrifera																											
Plantago varia																											
Poa sieberiana var. hirtella									0.1																		
Portulaca oleracea	0.1		0.1	0.1	0.1		0.1				0.1	0.1										0.1	0.1				
Psydrax odorata						1.0																					
Pullenia gunnii																											
Rhynchosia minima								0.1																			
Rostellularia adscendens var. adscendens		0.1			0.1	0.1	0.1	0.1	0.1	0.1					0.1				0.1		0.1			0.1		0.1	
Rumex brownii							0.1																				
Rytidosperma caespitosum	25.0				0.1			0.1	20.0		2.0	0.1	1.0	0.1	1.0	0.1				0.1	0.1			0.1	0.1	0.1	
Rytidosperma fulvum																											
Rytidosperma longifolium																											
Rytidosperma racemosum var. racemosum						0.1	0.1								0.1												
Rytidosperma setaceum																				0.1							
Rytidosperma tenuius		2.0	25.0	0.1		3.0	10.0																				0.1
Scleria mackaviensis						0.1	0.1																				
Sclerolaena birchii																											
Sclerolaena muricata var. muricata																											
Senecio quadridentatus																											
Senna clavigera																											
Sida corrugata		0.1				0.1		0.1	0.1														0.1	0.1	0.1	0.1	0.1
Sida hackettiana				0.1										0.1	0.1	0.1	6.0		0.1	0.1		20.0	1.0	0.1	0.1	20.0	0.1
Solanum brownii						0.1	0.1			1.0																	
Solanum campanulatum																											
Solanum cinereum	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	1.0	0.1	0.1		0.1	0.1	7.0	0.1	1.0	0.1	0.1	0.1	0.1	0.1	0.1	1.0	0.1	0.1
Solanum prinophyllum																											
Solenogyne bellioides						0.1	0.1																	0.1			
Sorghum leiocladum																											
Sporobolus caroli																											

	200421P1	200421P2	200421P3	200421P4	200421P5	200421P6	200421P7	200423P1	200423P2	200423P3	200423P4	200423P5	200424P1	200424P2	200424P3	200424P4	200424P5	200424P6	200424P7	200424P8	200429P1	200429P2	200429P3	200429P4	200429P5	200429P6	200513P1
Sporobolus creber	0.1			0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1
Stackhousia muricata					0.1	0.1	0.1	0.1							0.1								0.1				
Stackhousia viminea																											
Swainsona galegifolia						0.1	0.1		0.1																		
Templetonia stenophylla						0.1									0.1												
Themeda avenacea																											
Tragus australianus																											
Trema tomentosa var. aspera																											
Tribulus micrococcus	0.1										0.1										0.1						
Verbena gaudichaudii							0.1		0.1					0.1													
Veronica plebeia																											
Viola betonicifolia subsp. betonicifolia																											
Vittadinia cervicularis var. subcervicularis																											
Vittadinia cuneata var. cuneata																											
Vittadinia cuneata var. hirsuta	0.1	0.1	0.1	0.1		0.1			0.1		0.1	0.1			0.1									0.1	0.1	0.1	0.1
Vittadinia gracilis																											
Vittadinia muelleri					0.1			0.1					0.1	0.1				0.1	0.1	0.1	0.1			0.1	0.1		
Vittadinia pterochaeta							0.1																				
Vittadinia pustulata			0.1		0.1			0.1						0.1	0.1	0.1		0.1	0.1	0.1	0.1				0.1		0.1
Vittadinia sulcata																							0.1				
Wahlenbergia communis	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1		
Wahlenbergia gracilis																											
Wahlenbergia luteola																											
Walwhalleya subxerophila																											
Zornia dyctiocarpa var. dyctiocarpa																											

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
***Alternanthera pungens*					0.1																											
***Bidens pilosa*																																
***Bidens subalternans*										0.1			0.1																			
***Bryophyllum delagoense*																0.1																
***Carrichtera annua*																																
***Carthamus lanatus*						40.0		10.0	10.0		0.1	7.0	15.0	7.0	50.0	0.1	0.1	0.1		0.1												0.1
***Cenchrus clandestinus*																														4.0		
***Cenchrus longisetus*																																
***Ehrharta erecta*																					0.1											
***Galenia pubescens*		0.1	0.1	0.1	0.1	0.1	80.0	0.1		0.1						0.1				0.1	20.0				0.1		0.2	0.1	0.2	0.3	5.0	
***Hyparrhenia hirta*																																
***Hypericum perforatum*																			0.1													
***Lycium ferocissimum*	0.1	0.1	6.0	0.1	1.0					15.0						0.1	0.1				0.1				0.1		0.2	0.1		0.2		
***Maclura pomifera*																			0.1													
***Opuntia aurantiaca*	0.1		0.1																											0.1		
***Opuntia humifusa*	0.1	0.1													0.1																	
***Opuntia stricta*																			0.1	0.1		0.1		0.1		0.1				0.1		
***Opuntia stricta var. stricta*			0.1					0.1	0.1				0.1			0.1																
***Paspalum dilatatum*			0.1			0.1					0.1			0.1					0.2	5.0												
***Romulea rosea*																															0.1	
***Rosa rubiginosa*																							0.1									
***Senecio madagascariensis*	0.1	0.1	0.1	0.1			0.1			0.1	0.1					0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1				0.1		0.1	
***Xanthium occidentale*																																
***Xanthium spinosum*																																
**Amaranthus powellii*																																
**Argemone ochroleuca subsp. ochroleuca*								0.1																								
**Asphodelus fistulosus*			0.1	0.1																												

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
**Avena sativa*					0.1																											
**Bromus molliformis*																				0.1												
**Capsella bursa-pastoris*																																
**Centaurium erythraea*																0.1		0.1														
**Cerastium glomeratum*		0.1	0.1																													
**Cirsium vulgare*						0.1													0.1	0.1												
**Citrullus amarus*																																
**Conyza bonariensis*							0.1								0.1																	
**Conyza sp.*																												0.1				
**Cucumis myriocarpus subsp. leptodermis*																																
**Cyanthillium cinereum var. cinereum*																	0.1															
**Cyanthillium cinereum var. cinereum*		0.1	0.1																													
**Cynodon dactylon*	6.0					0.1	30.0			3.0			0.1	0.1	0.1			2.0		5.0	0.2		0.1		0.1					0.1		
**Cyperus rotundus*																																
**Datura ferox*																																
**Echium plantagineum*																																
**Eleusine tristachya*															0.1																	
**Erodium cicutarium*																																
**Erodium moschatum*																																
**Glandularia aristigera*								0.1								20.0	0.1	60.0					0.1	0.1		0.1	0.1				5.0	
**Gomphocarpus fruticosus*				0.1				0.1				0.1	0.1		0.1		0.1	0.1		0.2	0.1	0.1	0.1			0.1	0.1	0.1	0.1			
**Gomphrena celosioides*	0.1		0.1											0.1	0.1																	
**Hirschfeldia incana*																																
**Hypochaeris albiflora*			0.1								0.1										0.1											
**Hypochaeris radicata*																		0.1			0.1											

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
**Kickxia elatine subsp. crinita*						0.1									0.1																	
**Lactuca serriola*																		0.1										0.1				
**Lamium amplexicaule*										0.1																						
**Leontodon rhagadioloides subsp. cretica*													0.1	0.1																		
**Lepidium africanum*				0.1			0.1		0.1		0.1	0.1																				
**Lepidium bonariense*																0.1																
**Linum trigynum*																		0.1		0.1												
**Lolium loliaceum*																				0.1												
**Lysimachia arvensis*	0.1	0.1	0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1		0.2			0.1					0.1	0.1		0.1	
**Malva parviflora*										0.1					0.1																	
**Malvastrum americanum*			0.1																													
**Marrubium vulgare*																																
**Medicago polymorpha*															0.1																	
**Medicago sativa*																																
**Medicago spp.*			0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1																				
**Modiola caroliniana*																	0.1	0.1													0.1	
**Nothoscordum gracile*																																
**Olea europaea subsp. cuspidata*																																
**Oxalis bowiei*																																
**Paronychia brasiliana*											0.1																					
**Petrorhagia dubia*																		0.1														
**Plantago lanceolata*				0.1		1.0								0.1	0.1		0.1		0.2	0.1	0.2							0.1	0.1	0.1		
**Polycarpon tetraphyllum*																0.1																
**Polygonum arenastrum*																					0.1											
**Prunella vulgaris*												0.1																				
**Rapistrum rugosum*																																
**Richardia stellaris*																																

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
**Salvia reflexa*																																
**Salvia verbenaca*																			0.1	0.1												
**Schinus areira*																																
**Schkuhria pinnata*				0.1				0.1	0.1																							
**Setaria parviflora*						0.1			0.1			0.1	20.0	0.1	0.1																	
**Sherardia arvensis*																																
**Sida rhombifolia*	0.1		0.1	0.1	0.1	0.1	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			0.1		0.1	0.1	0.1	0.1	0.1	0.1
**Sida spinosa*				0.1		0.1		7.0	0.1	0.1	0.1	2.0			0.1																	
**Solanum nigrum*	0.1	0.1	0.1		0.1		0.1			0.1	0.1					0.1																
**Solanum rostratum*				0.1																												
**Soliva sessilis*																																
**Sonchus asper*																																
**Sonchus oleraceus*		0.1	0.1	0.1		0.1	0.1	0.1			0.1	0.1	0.1		0.1																	
**Stachys arvensis*		0.1				0.1		0.1	0.1		0.1	0.1			0.1			0.1		0.1									0.1			
**Tagetes minuta*																																
**Trifolium glomeratum*																																
**Trifolium sp.*								0.1																								
**Urochloa panicoides*					0.1			0.1																								
**Verbena bonariensis*						0.1									0.1				0.1	0.2				0.1					0.1		0.1	0.1
**Verbena officinalis*											0.1																					
**Verbena rigida*																				0.1			0.1									
**Verbena rigida var. rigida*														0.1																		
Abutilon oxycarpum	0.1	0.1	0.1	0.1	0.1					0.1	0.1																					
Acacia decora																																
Acacia melvillei																													0.1			
Acacia paradoxa																	0.2					3.0	0.1	0.1	0.1	0.1						
Acacia parramattensis			0.1																											5.0		
Acacia salicina																																
Acaena sp.																																
Allocasuarina gymnanthera																																

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Allocasuarina luehmannii																0.1																
Alternanthera denticulata			0.1																													
Alternanthera nana																																
Amyema miquelii																																
Angophora floribunda																																
Anthosachne scabra																0.1																
Aristida leichhardtiana																																
Aristida ramosa	0.1	1.0	0.1	6.0	0.1	20.0	0.1	1.0	10.0	0.1	0.1	1.0	15.0	20.0	60.0	50.0		50.0	50.0	20.0	30.0	60.0	80.0	80.0	25.0	10.0	15.0	40.0	40.0	10.0	70.0	50.0
Aristida vagans																								0.1								
Arthropodium milleflorum																																
Arthropodium species B sensu Harden (1993)			0.1	0.1						0.1																						
Asperula conferta		0.1	0.1	0.1							0.1				0.1		0.1		0.1	0.1			0.1					0.1				
Atriplex semibaccata																																
Austrostipa aristiglumis																																
Austrostipa scabra																								0.2	0.2	30.0	5.0					
Austrostipa scabra subsp. falcata	0.1	0.1		1.0	3.0		2.0				0.1				0.1	0.1																
Austrostipa scabra subsp. scabra																																
Austrostipa verticillata	0.1	0.1	50.0	0.1	1.0		0.1		0.1	75.0	0.1				0.1	0.1	5.0		0.2		0.5	0.5	0.2	0.2	5.0	0.2	0.2	0.1	2.0			3.0
Boerhavia dominii				0.1				0.1								0.1																
Bothriochloa biloba																																
Bothriochloa decipiens																												5.0				10.0
Bothriochloa decipiens var. decipiens	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	0.1	0.1	1.0	6.0	25.0	15.0																	
Bothriochloa macra																																
Brachychiton populneus																	0.1					0.1	0.1	0.1	0.1		5.0					
Brachychiton populneus subsp. populneus			10.0	0.1							0.1																					

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Brachyscome ciliaris		0.1		0.1																								0.1			0.1	
Brunoniella australis	0.1	0.1	0.1	0.1	0.1	0.1			0.1	0.1	0.1	0.1		0.1	0.1	0.1				0.1							0.1	0.1				
Bursaria spinosa																	0.1					5.0	0.1	0.1		0.3				0.1		
Calotis lappulacea	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1				0.1	0.1	0.1	0.1										0.1			0.1	
Carex inversa		0.1			0.1					0.1	0.1					0.1	0.1	0.1														
Cassinia sifton																																
Cassinia uncata																																
Casuarina cunninghamiana subsp. cunninghamiana																																
Casuarina glauca																														15.0		
Chamaesyce drummondii		0.1	0.1	0.1		0.1					0.1	0.1																				
Cheilanthes distans	0.1	0.1	0.1								0.1																					
Cheilanthes sieberi																		0.1	0.1										0.1			
Cheilanthes sieberi subsp. sieberi	0.1	0.1	0.1		0.1	0.1			0.1		0.1	0.1	0.1	0.1	0.1	0.1																
Chloris truncata											0.1	1.0	0.1							10.0												
Chloris ventricosa	1.0	1.0	0.1	10.1	25.0	1.0		0.1	10.0	0.1	60.0	50.0	30.0	1.0	1.0	30.0						3.0			5.0	5.0	5.0		30.0	5.0		
Chrysocephalum apiculatum	0.1	0.1	0.1	0.1	0.1	1.0	0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1																
Chrysocephalum semipapposum																			0.1	0.1	0.2	0.1		0.1			0.1	0.1				0.1
Commelina cyanea			0.1																													
Convolvulus angustissimus																0.1		0.1														
Convolvulus erubescens																													0.1			
Convolvulus graminetinus		0.1	0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1		0.1	0.1			0.1										0.1	0.1			
Corymbia maculata			20.0							20.0	20.0													30.0					0.3		
Cotula australis			0.1							0.1																						
Cullen tenax								0.1																								
Cymbonotus lawsonianus												0.1																				
Cymbopogon refractus	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0													0.1		0.1	
Cyperus gracilis	0.1	0.1	0.1	0.1	0.1					0.1	0.1										0.1											

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Daucus glochidiatus			0.1									0.1																				
Daviesia genistifolia																						0.1										
Denhamia silvestris	0.1	0.1																														
Desmodium gunnii																																
Desmodium varians	0.1	0.1	0.1		0.1												0.1	0.1														
Dianella longifolia var. longifolia		0.1									0.1																					
Dianella revoluta var. revoluta																																
Dianella tarda																													0.1			
Dichanthium sericeum																					0.1								5.0	5.0		
Dichanthium sericeum subsp. sericeum		0.1		0.1		10.0		25.0	20.0			0.1	1.0	1.0	6.0																	
Dichelachne micrantha																																
Dichondra repens	0.1	0.1	0.1	0.1	0.1						0.1	0.1		0.1	0.1	0.1	0.2	0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1		0.1		0.1	
Dichondra sp. Inglewood (J.M.Dalby 86/93) Qld Herbarium				0.1																												
Digitaria brownii				0.1		1.0		0.1	1.0		0.1	1.0			0.1																	
Digitaria diffusa	40.0	0.1			1.0						0.1																					
Digitaria divaricatissima				0.1		15.0	0.1	10.0	0.1				1.0	0.1	0.1																	
Digitaria ramularis																											5.0					
Dysphania carinata	0.1	0.1	0.1	0.1	1.0		0.1	0.1		0.1	0.1																					
Eclipta platyglossa																																
Einadia hastata	0.1		0.1	0.1	0.1		0.1			1.0	0.1																					
Einadia nutans																				0.1	0.1				0.1		0.1	0.1	0.1			
Einadia nutans subsp. linifolia										0.1																						
Einadia nutans subsp. nutans																																
Einadia polygonoides	0.1	0.1		0.1	0.1	0.1		0.1	0.1	0.1			0.1	0.1	0.1	0.1	0.1	0.1														
Enchylaena tomentosa					0.1	0.1										0.1					0.1							0.1		0.2		
Enneapogon nigricans		0.1																														

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Enteropogon acicularis	0.1	0.1	0.1	0.1	0.1	1.0	0.1	6.0	1.0		0.1		1.0	20.0	2.0	0.1		10.0														
Eragrostis brownii		0.1	0.1		0.1																											
Eragrostis lacunaria	0.1	0.1	0.1	0.1	0.1	6.0	0.1	1.0	7.0	0.1	0.1	0.1	10.0	2.0	0.1	0.1																
Eragrostis leptostachya	1.0				0.1		0.1				1.0											0.1		0.1	0.1	0.1						
Eragrostis sororia																																
Eremophila debilis	0.1	0.1	0.1	0.1	0.1			0.1			0.1	0.1	0.1	0.1					0.1		0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1		
Eriochloa pseudoacrotricha			0.1	0.1	0.1	0.1	0.1	1.0	30.0	0.1	15.0	30.0	1.0	20.0	7.0	1.0																
Erodium crinitum		0.1		0.1				0.1	0.1	6.0	0.1	0.1	0.1		0.1																	
Eucalyptus acaciiformis																																
Eucalyptus albens																										50.0						
Eucalyptus albens x moluccana		45.0		40.0						15.0	10.0																					
Eucalyptus blakelyi	0.1																		25.0		75.0											
Eucalyptus caleyi subsp. caleyi																																
Eucalyptus conica																																
Eucalyptus crebra	30.0		10.0		35.0		30.0						0.1			1.0	0.1					90.0		10.0		90.0	5.0					
Eucalyptus dawsonii																																
Eucalyptus fibrosa																																
Eucalyptus melliodora																																
Eucalyptus microcarpa																																
Eucalyptus moluccana																								5.0	80.0	5.0				20.0		
Eucalyptus punctata																																
Eucalyptus sideroxylon																														20.0		
Eucalyptus sp.																																
Eucalyptus tereticornis																	90.0															
Eulalia aurea																																
Euphorbia drummondii																					0.1											
Evolvulus alsinoides var. decumbens		0.1																														

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Fimbristylis dichotoma	0.1					0.1	0.1				0.1		0.1																			
Galium leiocarpum																																
Geijera parviflora					0.1																											
Geranium solanderi var. solanderi											0.1	0.1																				
Glossocardia bidens	0.1	0.1	0.1	0.1								0.1				0.1		0.1			0.1											
Glycine clandestina	0.1		0.1		0.1							0.1			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1			0.1		0.1	0.1	
Glycine tabacina	0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1																
Goodenia hederacea subsp. hederacea																													0.1			
Goodenia pinnatifida				0.1																												
Grona varians																			0.1	0.1	0.1				0.1	0.1		0.1	0.1			0.1
Hackelia suaveolens																																
Hydrocotyle laxiflora																																
Hypericum gramineum																						0.1	0.1									
Hypoxis pratensis var. pratensis																																
Juncus sp.																				0.1												
Lagenophora gracilis																	0.1															
Lagenophora stipitata																																
Leiocarpa panaetioides																																
Lepidium pseudohyssopifolium																		0.1														
Linum marginale																		0.1														
Lobelia purpurascens											0.1																					
Lomandra confertifolia subsp. pallida	0.1	1.0	0.1	0.1	2.0	0.1	0.1		0.1	0.1	0.1	0.1				0.1																
Lomandra confertifolia subsp. rubiginosa																						20.0		0.1			0.2		2.0		2.0	0.2
Lomandra filiformis subsp. coriacea																																
Lomandra filiformis subsp. filiformis																	0.1		0.2	0.1			0.2			0.1						
Lomandra glauca					0.1						0.1									0.1					0.1	0.1						

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Lomandra multiflora																	0.1					0.1		0.1	0.1	0.1	0.1					
Lomandra multiflora subsp. multiflora	0.1	0.1	0.1		0.1					0.1	0.1					0.1																
Maireana enchylaenoides			0.1				0.1			0.1																						
Maireana microphylla	0.1		0.1	0.1	0.1			0.1	0.1	1.0				0.1	0.1		0.1					0.1	0.1	0.1	5.0	0.1	0.2		0.1	0.1		
Marsdenia viridiflora subsp. viridiflora																																
Medicago spp.																		0.1										0.1				
Melaleuca bracteata																														0.1		
Melia azedarach																																
Mentha satureioides		0.1		0.1				0.1			0.1																	0.1	0.1			
Microlaena stipoides																	60.0								0.3							
Microlaena stipoides var. stipoides	20.0	0.1		0.1	1.0		1.0				6.0					0.1																
Mimulus gracilis																																
Minuria leptophylla																																
Myoporum montanum			0.1																					0.1								
Neptunia gracilis																				0.1												
Neptunia gracilis f. gracilis																																
Notelaea microcarpa																									0.3	0.1	0.1					
Notelaea microcarpa var. microcarpa											0.1																					
Oncinocalyx betchei											0.1																					
Oxalis exilis																		0.1	0.1	0.1			0.1								0.1	
Oxalis perennans	0.1	0.1	0.1	0.1	0.1	0.1		0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1									0.1					0.1		
Oxytes brachypoda	0.1	0.1	0.1																									0.1				
Ozothamnus diosmifolius																																
Panicum buncei													0.1																			
Panicum effusum	0.1				0.1	20.0	0.1	0.1			0.1	7.0	10.0	20.0	10.0	0.1		5.0								0.1		5.0				
Panicum queenslandicum																									0.1							
Panicum queenslandicum var. queenslandicum				0.1		6.0		40.0	6.0																							
Panicum simile																																

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Parsonsia lanceolata																																
Paspalidium aversum													0.1		0.1																	
Paspalidium criniforme		0.1		1.0												0.1																
Paspalidium distans		0.1	0.1																							0.1						
Phyllanthus gunnii																				0.1							0.1	0.1	0.1	0.1		
Phyllanthus virgatus	0.1		0.1	0.1	0.1																											
Pimelea curviflora var. sericea																0.1																
Pimelea linifolia																				0.2												
Plantago debilis	0.1		0.1							0.1	0.1																					
Plantago gaudichaudii																	0.1															
Plantago turrifera																			1.0		0.2	0.1	0.1									
Plantago varia																		0.1														
Poa sieberiana var. hirtella																																
Portulaca oleracea							0.1					0.1																				
Psydrax odorata																																
Pullenia gunnii																			0.1	0.1								0.1				
Rhynchosia minima																																
Rostellularia adscendens var. adscendens	0.1	0.1	0.1	0.1	0.1						0.1					0.1																
Rumex brownii																																
Rytidosperma caespitosum																	0.1				0.1	0.1			5.0	0.2		0.1		0.1		
Rytidosperma fulvum																0.1																
Rytidosperma longifolium										0.1																						
Rytidosperma racemosum var. racemosum																0.1																
Rytidosperma setaceum																																
Rytidosperma tenuius	0.1	0.1	0.1	50.0	1.0	0.1	0.1	0.1	0.1		0.1	0.1																				
Scleria mackaviensis		0.1																														
Sclerolaena birchii																														0.1		

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Sclerolaena muricata var. muricata																																
Senecio quadridentatus																													0.1			
Senna clavigera																																
Sida corrugata	0.1	0.1	0.1	0.1		0.1				0.1						0.1	0.1	0.1	0.1	0.1	0.1		0.1			0.1	0.1	0.1		0.1	5.0	0.1
Sida hackettiana	25.0	0.1	0.1						0.1	2.0	0.1	0.1							0.1								0.1					
Solanum brownii																																
Solanum campanulatum																																
Solanum cinereum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	10.0	0.1	1.0	10.0	0.1	0.1	0.1	0.1	0.1								0.1							
Solanum prinophyllum																																
Solenogyne bellioides		0.1																														
Sorghum leiocladum																																
Sporobolus caroli																																
Sporobolus creber	0.1	0.1		0.1	0.1	0.1		0.1	0.1		0.1	0.1	0.1	0.1	0.1					10.0							40.0				10.0
Stackhousia muricata	0.1	0.1			0.1																											
Stackhousia viminea																	0.1															
Swainsona galegifolia																																
Templetonia stenophylla			0.1	0.1																												
Themeda avenacea																																
Tragus australianus																																
Trema tomentosa var. aspera			0.1																													
Tribulus micrococcus												0.1																				
Verbena gaudichaudii																																
Veronica plebeia		0.1									0.1						0.1															
Viola betonicifolia subsp. betonicifolia																																
Vittadinia cervicularis var. subcervicularis																									0.1							
Vittadinia cuneata var. cuneata																														0.1	0.1	

	200513P2	200513P3	200513P4	200513P5	200513P6	200514P1	200514P2	200514P3	200514P4	200514P5	200514P6	200514P7	200515P1	200515P2	200515P3	201207P1	211025P1	211025P2	231106P1	231106P2	231106P3	231106P4	231106P5	231106P6	231106P7	231106P8	231107P1	231107P2	231107P3	231107P4	231107P5	231107P6
Vittadinia cuneata var. hirsuta	0.1	0.1	0.1	0.1	0.1					0.1					0.1																	
Vittadinia gracilis																																
Vittadinia muelleri						0.1		0.1	0.1			0.1																				
Vittadinia pterochaeta																																
Vittadinia pustulata					0.1			0.1		0.1	0.1	0.1				0.1																
Vittadinia sulcata																																
Wahlenbergia communis	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				0.1	0.1	0.1											
Wahlenbergia gracilis																	0.1															
Wahlenbergia luteola																																
Walwhalleya subxerophila																																
Zornia dyctiocarpa var. dyctiocarpa																																

APPENDIX 4 VEGETATION ZONE DESCRIPTIONS

1. White Box Grassy Woodland PCT 3395


Plant Community Type

PCT 3395 Northwest Elevated White Box Woodland

Status

Listed BC Act, CE: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions Listed EPBC Act, CE: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

General Description

This community covered 25% of the mapped woodland areas. The dominant canopy species was White Box (*Eucalyptus albens*) making up over 99% of the total canopy species. Narrow-leaved Ironbark (*Eucalyptus crebra*) occurred sporadically and generally towards the edges of the mapped areas. There were no tall shrubs present with the ground cover consisting of forbs (51 species) and grasses (42 species). While there were a number of weed species present (36 species), including high threat weeds (10 species), they were in low abundance.

Species Richness

Native species 113; Weeds 36 including High Threat Weeds 10 Plots: 14 Mean species/plot 57±10.6SD

Key Diagnostic Species

Average similarity: 48.48						
BAMC Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Tree	*Eucalyptus albens*	3.33	2.92	2.37	6.03	6.03
Shrub	*Eremophila debilis*	1.4	1.06	1.42	2.19	45.22
	Solanum cinereum	1.2	0.74	1.14	1.52	69.83
	Maireana microphylla	0.73	0.32	0.55	0.66	85.53
Forb	*Brunoniella australis*	1.73	1.56	2.07	3.22	22.2
	Chrysocephalum apiculatum	1.6	1.29	1.43	2.66	33.78
	Calotis lappulacea	1.53	1.2	1.49	2.47	36.25
	Sida corrugata	1.4	1.02	1.01	2.11	47.34
	Oxalis perennans	1.47	1.01	1.17	2.09	49.43
	Einadia polygonoides	1.4	1	1.19	2.05	51.48
	Glossocardia bidens	1.27	0.82	0.9	1.69	58.57
	Dichondra repens	1.2	0.8	1.18	1.66	63.58
	Chamaesyce drummondii	1.27	0.76	0.82	1.56	66.75
	Rostellularia adscendens var. *adscendens*	1.2	0.67	0.71	1.38	74.1
	Wahlenbergia communis	1.13	0.6	0.68	1.25	77.92
	Phyllanthus virgatus	1	0.52	0.64	1.07	78.99
	Asperula conferta	1.07	0.52	0.67	1.06	80.06
	Dysphania carinata	0.93	0.42	0.65	0.86	81.93
	Vittadinia pustulata	0.93	0.41	0.49	0.85	82.78
	Mentha satureioides	0.87	0.34	0.56	0.69	84.18
	Sida hackettiana	0.67	0.3	0.58	0.62	86.79
Grass	*Chloris ventricosa*	2.87	2.31	2.78	4.77	10.8
	Aristida ramosa	2.4	2.12	2.2	4.38	15.18
	Bothriochloa decipiens var. *decipiens*	2.13	1.84	2.2	3.81	18.98
	Dichanthium sericeum subsp. *sericeum*	2	1.44	1.52	2.97	28.34
	Cymbopogon refractus	1.73	1.35	1.74	2.77	31.12
	Panicum queenslandicum var. *queenslandicum*	1.6	1.11	1.41	2.29	38.54
	Eragrostis lacunaria	1.6	1.1	1.35	2.26	40.8
	Austrostipa verticillata	1.53	0.82	0.91	1.7	56.88
	Lomandra confertifolia subsp. *pallida*	1.33	0.82	0.81	1.68	60.25
	Eriochloa pseudoacrotricha	1.33	0.81	0.91	1.67	61.92
	Austrostipa scabra subsp. *falcata*	1.4	0.76	0.81	1.56	68.31
	Paspalidium criniforme	1.33	0.72	0.94	1.48	71.31
	Sporobolus creber	1.2	0.68	0.83	1.41	72.71
	Enteropogon acicularis	1.07	0.63	0.93	1.3	75.39
	Cyperus gracilis	1.13	0.62	0.77	1.28	76.68
	Digitaria divaricatissima	0.87	0.34	0.55	0.71	83.49

BAMC Growth Form Group	Scientific Name	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Grass	*Microlaena stipoides* var. *stipoides*	0.87	0.29	0.4	0.59	87.98
	Rytidosperma tenuius	1	0.25	0.38	0.52	90.16
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1	0.5	0.57	1.02	81.08
Other	*Glycine tabacina*	1.73	1.54	1.63	3.18	25.37
	Convolvulus graminetinus	1.47	1.08	1.43	2.23	43.03
Weed	*Medicago spp.*	1.4	0.91	1	1.87	53.35
	Lysimachia arvensis	1.4	0.89	1	1.83	55.18
	Sida rhombifolia	0.73	0.31	0.58	0.65	86.17
	Solanum nigrum	0.73	0.29	0.56	0.6	87.39
	Sonchus oleraceus	0.73	0.27	0.58	0.56	89.11
	Bidens subalternans	0.6	0.26	0.6	0.53	89.64
High Threat Exotic	*Galenia pubescens*	1.47	0.78	1.01	1.6	65.19
	Senecio madagascariensis	0.73	0.33	0.71	0.69	84.87
	Opuntia stricta var. stricta	0.53	0.27	0.59	0.56	88.54

1a. White Box Grassy Woodland [DNG] PCT 3395


Plant Community Type

PCT 3395 Northwest Elevated White Box Woodland

Status

Listed BC Act, CE: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions
Listed EPBC Act, CE: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

General Description

This community made up over 61% of the total mapped derived native grassland. There were 41 forb species and 26 grass species. However, grass species dominated cover with *Dichanthium sericeum subsp. sericeum*, *Panicum queenslandicum var. queenslandicum*, *Bothriochloa decipiens var. decipiens* and *Eriochloa pseudoacrotricha* most abundant.

Species Richness

Native species 82; Weeds 46 including High Threat Weeds 3
Plots: 14
Mean species/plot 37.7±5.6SD

Key Diagnostic Species

Average similarity: 53.01						
BAMC Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Shrub	*Solanum cinereum*	1	0.55	0.65	1.03	86.84
Forb	*Einadia polygonoides*	1.59	1.55	1.29	2.92	52.45
	Oxalis perennans	1.36	1.21	0.97	2.29	67.56
	Wahlenbergia communis	1.32	1.11	1.05	2.09	71.86
	Vittadinia muelleri	1.32	1.1	0.94	2.07	73.93
	Brunoniella australis	1.18	0.83	0.71	1.56	79.05
	Chrysocephalum apiculatum	1.09	0.8	0.83	1.51	80.55
	Erodium crinitum	1.14	0.63	0.66	1.2	85.81
	Chamaesyce drummondii	0.82	0.41	0.43	0.77	88.52
Grass	*Dichanthium sericeum* subsp. *sericeum*	3.36	3.51	2.33	6.62	6.62
	Panicum queenslandicum var. *queenslandicum*	2.95	3.02	2.23	5.7	12.32
	Bothriochloa decipiens var. *decipiens*	2.55	2.82	4.92	5.32	23.14
	Eriochloa pseudoacrotricha	2.59	2.78	2.35	5.24	28.39
	Aristida ramosa	2.27	2.29	1.96	4.32	37.18
	Digitaria divaricatissima	2.32	2.29	1.76	4.32	41.51
	Cymbopogon refractus	2.05	2.1	1.89	3.96	49.53
	Eragrostis lacunaria	1.68	1.46	1.24	2.75	55.2
	Sporobolus creber	1.5	1.41	1.16	2.66	57.86
	Chloris truncata	1.86	1.33	0.88	2.51	60.37
	Chloris ventricosa	1.59	1.31	1.02	2.47	62.84
	Digitaria brownii	1.27	0.7	0.6	1.31	83.37
	Rytidosperma tenuius	0.86	0.4	0.43	0.75	89.27
	Enteropogon acicularis	0.86	0.4	0.47	0.75	90.02
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1.36	1.17	0.9	2.21	69.77
Other	*Glycine tabacina*	1.91	2.37	3.02	4.48	32.86
	Convolvulus graminetinus	1.41	1.29	1.2	2.44	65.27
Weed	*Lysimachia arvensis*	1.82	2.15	2.1	4.06	45.57
	Sida rhombifolia	1.23	0.96	0.83	1.81	75.74
	Sida spinosa	1.36	0.92	0.77	1.74	77.48
	Stachys arvensis	1.14	0.8	0.69	1.5	82.06
	Medicago spp.	1.05	0.66	0.61	1.25	84.62
	Sonchus oleraceus	0.82	0.48	0.67	0.91	87.75
High Threat Exotic	*Carthamus lanatus*	2.91	2.92	1.89	5.5	17.83

2. White Box - Spotted Gum Grassy Woodland PCT 3395


Plant Community Type

PCT 3395 Northwest Elevated White Box Woodland

Status

Listed BC Act, CE: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions
Listed EPBC Act, CE: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

General Description

This community made up approximately 43% of the total mapped woodland communities. The canopy was dominated (64%) by Grey Box x White Box hybrid (*Eucalyptus moluccana* x *Eucalyptus albens*) but also included 31% Spotted Gum (*Corymbia maculata*). Narrow-leaved Ironbark (*Eucalyptus crebra*) and Grey Box (*Eucalyptus moluccana*) were also present at approximately 2% each. These two low abundance species were found in small patches rather than being dispersed through the community. There were no tall shrubs and ground cover was comprised of forbs (58 species) and grasses (37 species).
As noted in Section 5.5 there are no PCTs having Spotted Gum in combination with White Box x Grey Box hybrid or White Box itself. This community was described in ERM (1997) and subsequently in Cumberland Ecology (2010). Peake (2006) noted the presence of this community along Castlerock Road, however only one floristic sample plot was recorded which was insufficient data to determine whether this constituted a discrete vegetation community.
In the absence of any associated PCT, this community has been assessed as being part of NSW State and Commonwealth Box-Gum TEC given that it is a grassy woodland dominated by Grey Box x White Box hybrid. It does not meet the description of the EPBC Act *Central Hunter Valley Eucalypt Forest and Woodland* because the Spotted Gum content is less than 50% (31%) of the canopy cover.

Species Richness

Native species 120; Weeds 37 including High Threat Weeds 9
Plots: 14
Mean species/plot 58±7.5SD

Key Diagnostic Species

Average similarity: 50.39						
BAM Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Tree	*Eucalyptus albens*	2.71	2.07	1.52	4.11	4.11
	Corymbia maculata	1.43	0.51	0.44	1	76.85
	Brachychiton populneus subsp. *populneus*	0.86	0.33	0.63	0.65	86.53
	Notelaea microcarpa var. *microcarpa*	0.79	0.31	0.63	0.62	87.79
Shrub	*Eremophila debilis*	1.5	1.08	1.41	2.13	53.19
	Solanum cinereum	1	0.54	0.89	1.07	74.82
Forb	*Brunoniella australis*	2	1.97	10.85	3.9	8.01
	Asperula conferta	1.86	1.67	2.37	3.31	21.95
	Dichondra repens	1.71	1.41	1.59	2.8	36.8
	Chamaesyce drummondii	1.64	1.29	1.48	2.55	39.35
	Wahlenbergia communis	1.64	1.28	1.5	2.53	41.89
	Rostellularia adscendens var. *adscendens*	1.57	1.17	1.21	2.33	46.66
	Chrysocephalum apiculatum	1.5	1.13	1.84	2.23	48.9
	Oxalis perennans	1.5	1.09	1.36	2.16	51.06
	Einadia polygonoides	1.29	0.8	0.92	1.58	61.87
	Sida corrugata	1.21	0.71	0.77	1.4	64.79
	Pimelea curviflora var. sericea	1.21	0.7	0.89	1.39	66.17
	Phyllanthus virgatus	1.21	0.7	0.76	1.38	67.55
	Calotis lappulacea	1.07	0.52	0.63	1.03	75.85
	Arthropodium species B sensu Harden *(1993)*	1	0.47	0.54	0.93	78.77
	Plantago debilis	1	0.43	0.62	0.85	81.43
	Mentha satureioides	0.93	0.4	0.61	0.79	83.04
	Dysphania carinata	0.86	0.34	0.5	0.67	85.22
	Glossocardia bidens	0.79	0.27	0.42	0.54	88.88
	Boerhavia dominii	0.79	0.27	0.42	0.53	89.41
	Vittadinia cuneata var. *hirsuta*	0.71	0.22	0.42	0.44	90.37
Grass	*Bothriochloa decipiens* var. *decipiens*	2.21	1.69	1.96	3.36	15.27
	Aristida ramosa	2.07	1.69	2.35	3.36	18.63
	Chloris ventricosa	2.5	1.64	1.53	3.26	25.21
	Lomandra confertifolia subsp. *pallida*	1.86	1.55	2.14	3.07	28.28
	Cymbopogon refractus	2	1.46	1.84	2.9	31.17
	Cyperus gracilis	1.43	0.96	1.13	1.9	55.09
	Paspalidium criniforme	1.5	0.89	0.93	1.76	58.63
	Dichanthium sericeum subsp. *sericeum*	1.5	0.83	0.88	1.65	60.28
	Austrostipa verticillata	1.57	0.67	0.81	1.33	68.88
	Panicum queenslandicum var. *queenslandicum*	1.36	0.61	0.81	1.21	71.41
	Microlaena stipoides var. *stipoides*	1.29	0.59	0.75	1.16	73.75
	Eragrostis lacunaria	0.93	0.41	0.6	0.82	82.25
	Carex inversa	0.93	0.38	0.53	0.76	83.8
	Eriochloa pseudoacrotricha	1.07	0.38	0.6	0.75	84.55

BAM Growth Form Group	Scientific Name	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Grass	*Austrostipa scabra* subsp. *falcata*	0.86	0.34	0.51	0.67	85.89
	Sporobolus creber	0.79	0.28	0.51	0.55	88.34
	Rytidosperma tenuius	0.86	0.26	0.42	0.51	89.93
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1.14	0.59	0.76	1.17	72.59
Other	*Glycine tabacina*	2	1.97	10.85	3.9	11.91
	Convolvulus graminetinus	1.57	1.23	1.85	2.44	44.33
High Threat Exotic	*Senecio madagascariensis*	1	0.44	0.62	0.88	80.58

2a. White Box - Spotted Gum Grassy Woodland [DNG] PCT 3395


Plant Community Type

PCT 3395 Northwest Elevated White Box Woodland

Status

Listed BC Act, CE: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions
Listed EPBC Act, CE: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

General Description

This community made up approximately 12% of the total mapped derived native grassland and consisted mainly of forbs (33 species) and grasses (27 species). Dominant grass species were *Dichanthium sericeum* subsp. *sericeum Chloris ventricosa, Aristida ramosa* and *Bothriochloa decipiens* var*. decipiens.*

Species Richness

Native species 71; Weeds 37 including High Threat Weeds 9
Plots: 10
Mean species/plot 45±6.3 SD

Key Diagnostic Species

Average similarity: 58.36						
BAM Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Shrub	*Solanum cinereum*	1.4	0.97	1.11	1.67	74.9
	Eremophila debilis	1.3	0.96	1.09	1.64	76.54
Forb	*Wahlenbergia communis*	1.9	2.11	4.19	3.62	42.5
	Chrysocephalum apiculatum	1.6	1.43	1.64	2.46	55.99
	Brunoniella australis	1.6	1.4	1.26	2.41	58.39
	Vittadinia pustulata	1.6	1.4	1.26	2.41	60.8
	Vittadinia muelleri	1.5	1.24	1.16	2.13	67.31
	Oxalis perennans	1.5	1.23	1.18	2.1	69.41
	Erodium crinitum	1.3	0.91	0.87	1.56	79.68
	Einadia polygonoides	1.2	0.79	0.69	1.36	81.04
	Chamaesyce drummondii	1.2	0.76	0.7	1.3	82.33
	Dichondra repens	1.1	0.64	0.66	1.09	85.85
	Dysphania carinata	0.9	0.46	0.65	0.79	90.5
Grass	*Dichanthium sericeum* subsp. *sericeum*	3.7	3.7	3.93	6.34	6.34
	Aristida ramosa	2.4	2.42	8.48	4.14	15.32
	Chloris ventricosa	2.4	2.42	9.04	4.14	19.46
	Bothriochloa decipiens var. *decipiens*	2.6	2.35	1.83	4.02	23.48
	Cymbopogon refractus	2.2	2.16	3.95	3.71	35.22
	Panicum queenslandicum var. *queenslandicum*	2.3	2.14	1.77	3.66	38.89
	Chloris truncata	2.1	1.9	1.88	3.26	45.76
	Eriochloa pseudoacrotricha	2.2	1.64	1.05	2.8	48.56
	Sporobolus creber	1.5	1.3	1.15	2.23	63.03
	Digitaria divaricatissima	1.8	1.19	0.89	2.03	71.45
	Lomandra confertifolia subsp. *pallida*	1.2	0.73	0.7	1.26	83.59
	Digitaria brownii	1.4	0.68	0.64	1.16	84.75
	Enteropogon acicularis	1.1	0.54	0.53	0.92	88.81
	Rytidosperma caespitosum	1	0.52	0.53	0.9	89.71
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1.4	1.04	0.92	1.79	73.23
Other	*Glycine tabacina*	2	2.34	12.8	4.02	27.5
	Convolvulus graminetinus	1.6	1.44	1.64	2.46	53.53
Weed	*Lysimachia arvensis*	2	2.34	12.8	4.02	31.52
	Medicago spp.	1.6	1.46	1.26	2.51	51.07
	Sida spinosa	1.6	1.26	1.17	2.15	65.18
	Sida rhombifolia	1.3	0.92	0.87	1.58	78.12
	Stachys arvensis	1.1	0.62	0.66	1.06	86.91
	Sonchus oleraceus	0.9	0.57	0.89	0.98	87.89
High Threat Exotic	*Carthamus lanatus*	2.9	2.82	3.49	4.84	11.18

3. Forest Red Gum Grassy Forest PCT 3446

Plant Community Type

PCT 3446 Lower North Foothills Ironbark-Box-Gum Grassy Forest

Status

Listed BC Act, E: Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions Listed EPBC Act, CE: Central Hunter Valley Eucalypt Forest and Woodland

General Description

A small patch approximately 1.5 ha in area. The dominant canopy species was Forest Red Gum (*Eucalyptus tereticornis*) along with a small number of Spotted Gum (Corymbia maculata), Narrow-leaved Ironbark (*Eucalyptus crebra*) and Grey Box (*Eucalyptus moluccana*). There were a few *Acacia paradoxa* shrubs and a sparse grassy ground cover.

Species Richness

Native species 27; Weeds 7 including High Threat Weeds 3 Plots: 1

Key Diagnostic Species

Unavailable, only one plot required.

4. Narrow-leaved Ironbark - Grey Box Grassy Woodland PCT 3314


Plant Community Type

PCT 3314 Central Hunter Slopes Grey Box Forest

Status

Listed BC Act, E: Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions Listed EPBC Act, CE: Central Hunter Valley Eucalypt Forest and Woodland

General Description

This community made up only approximately 4.2% of the mapped woodland and consisted of a mixed canopy dominated by Narrow-leaved Ironbark (*Eucalyptus crebra*) and Grey Box (*Eucalyptus moluccana*). Other tree species present were Grey Box x White Box hybrid (*Eucalyptus albens* x *Eucalyptus moluccana*), Kurrajong (*Brachychiton populneus* subsp. *populneus),* Bulloke (*Allocasuarina luehmannii*) and Native Olive (*Notelaea microcarpa* var. *microcarpa*). There were seven mostly low shrub species including *Bursaria spinosa*, 30 forb and 27 grass species.

Species Richness

Native species 77; Weeds 18 including High Threat Weeds 6 Plots: 3 Mean species/plot 57±4.1SD

Key Diagnostic Species

Average similarity: 38.40						
BAM Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Tree	*Eucalyptus crebra*	3.67	3.66	0.97	9.54	19.79
	Eucalyptus moluccana	3	2.91	1.28	7.58	36.8
	Brachychiton populneus subsp. *populneus*	0.5	0.22	0.48	0.58	90.03
Shrub	*Eremophila debilis*	1.5	1.81	4.62	4.7	52.16
	Maireana microphylla	1.33	1.24	1.23	3.23	59.7
	Bursaria spinosa	1.33	1.15	0.94	3.01	62.71
	Acacia paradoxa	0.83	0.77	0.77	2	67.23
	Solanum cinereum	0.67	0.51	0.78	1.34	76.72
Forb	*Dichondra repens*	1.33	1.66	3.99	4.32	56.48
	Sida corrugata	1.17	0.75	0.77	1.96	69.19
	Pimelea curviflora var. *sericea*	0.83	0.3	0.45	0.78	87.17
	Rostellularia adscendens var. *adscendens*	0.83	0.3	0.45	0.78	87.94
	Calotis lappulacea	0.83	0.3	0.45	0.77	88.71
Other	*Glycine clandestina*	0.83	0.62	0.76	1.62	72.44
	Desmodium varians	1	0.45	0.48	1.16	79.08
	Glycine tabacina	1	0.45	0.48	1.16	80.24
Grass	*Aristida ramosa*	3.17	3.94	2.26	10.25	10.25
	Chloris ventricosa	2.5	3.62	2.11	9.44	29.22
	Austrostipa verticillata	1.83	2.29	1.27	5.95	42.75
	Eragrostis leptostachya	1.5	1.81	4.62	4.7	47.46
	Lomandra glauca	0.83	0.63	0.76	1.64	70.83
	Rytidosperma caespitosum	1	0.61	0.45	1.58	74.03
	Microlaena stipoides var. *stipoides*	1.33	0.52	0.47	1.36	75.39
	Lomandra multiflora	0.5	0.46	0.48	1.19	77.92
	Lomandra confertifolia subsp. *pallida*	1	0.45	0.48	1.16	81.41
	Austrostipa scabra	1	0.3	0.26	0.78	84.06
	Bothriochloa decipiens var. *decipiens*	1	0.3	0.45	0.78	84.84
	Cyperus gracilis	0.83	0.3	0.45	0.78	85.62
	Enteropogon acicularis	0.83	0.3	0.45	0.78	86.39
High Threat Exotic	*Galenia pubescens*	0.83	0.37	0.44	0.96	82.36
	Senecio madagascariensis	0.5	0.35	0.47	0.92	83.28

4a. Narrow-leaved Ironbark - Grey Box Grassy Woodland [DNG] PCT 3314

Plant Community Type

PCT 3314 Central Hunter Slopes Grey Box Forest

Status

Not a TEC

General Description

This community made up only 0.07% of the mapped derived native grasslands and consisted mainly of forbs (12 species) and grasses (14 species).

Species Richness

Native species 31; Weeds 10 including High Threat Weeds 2 Plots: 1 Mean species/plot N/A

Key Diagnostic Species

Average similarity: 13.33						
BAM Growth Form Group	**Species**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Shrub	*Maireana microphylla*	1	1.9	SD=0!	14.29	100
Forb	*Dichondra repens*	1.5	1.9	SD=0!	14.29	57.14
Grass	*Aristida ramosa*	4.5	5.71	SD=0!	42.86	42.86
Weed	*Glandularia aristigera*	1.5	1.9	SD=0!	14.29	71.43
	Lysimachia arvensis	1	1.9	SD=0!	14.29	85.71

5. Spotted Gum - Narrow-leaved Ironbark Woodland PCT 3315


Plant Community Type

PCT 3315 Central Hunter Ironbark-Spotted Gum Forest

Status

Listed BC Act, E: Central Hunter Ironbark Spotted Gum Grey Box Forest
Listed EPBC Act, CE: Central Hunter Valley Eucalypt Forest and Woodland

General Description

This community made up only approximately 4% of the mapped woodland with the canopy dominated by Spotted Gum (*Corymbia maculata*) and Narrow-leaved Ironbark (*Eucalyptus crebra*). Shrub cover consisted of 10 mostly low species and ground cover consisted of 47 forb species and 30 grass species.

Species Richness

Native species 99; Weeds 28 including High Threat Weeds 8
Plots: 6
Mean species/plot 59±6.5SD

Key Diagnostic Species

Average similarity: 45.45						
BAM Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Tree	*Corymbia maculata*	3.33	3.53	3.53	7.76	7.76
	Eucalyptus crebra	2.83	2.69	2.01	5.91	13.67
	Brachychiton populneus subsp. *populneus*	1.5	0.84	1.18	1.86	64.22
Shrub	*Eremophila debilis*	1.5	1.04	1.21	2.29	53.63
	Maireana microphylla	1	0.76	1.28	1.66	69.5
	Solanum cinereum	0.83	0.65	1.35	1.44	77.47
	Bursaria spinosa	1.17	0.61	0.67	1.34	80.16
Forb	*Brunoniella australis*	1.67	1.31	1.35	2.88	24.59
	Calotis lappulacea	1.67	1.31	1.35	2.88	27.47
	Dichondra repens	1.67	1.31	1.35	2.88	30.34
	Sida corrugata	1.67	1.31	1.35	2.88	38.97
	Glossocardia bidens	1.5	1.04	1.21	2.29	55.92
	Oxalis perennans	1.5	1.03	1.23	2.27	58.19

	Chrysocephalum apiculatum	1.33	0.87	1.1	1.91	62.37
	Stackhousia muricata	1.33	0.82	0.79	1.81	67.84
	Dysphania carinata	1.33	0.75	0.79	1.66	71.16
	Phyllanthus virgatus	1	0.45	0.72	1	83.53
	Wahlenbergia communis	1	0.44	0.75	0.98	84.5
	Pimelea curviflora var. sericea	1	0.41	0.48	0.9	86.35
	Rostellularia adscendens var. *adscendens*	1	0.38	0.48	0.83	90.57
Grass	*Aristida ramosa*	2.67	2.28	4.45	5.02	18.7
	Bothriochloa decipiens var. *decipiens*	2	1.37	1.31	3.02	21.72
	Lomandra confertifolia subsp. *pallida*	1.67	1.31	1.35	2.88	36.09
	Austrostipa verticillata	2	1.29	1.14	2.84	41.81
	Cyperus gracilis	1.5	1.05	1.18	2.32	46.77
	Cymbopogon refractus	1.5	1.04	1.21	2.29	51.35
	Microlaena stipoides var. *stipoides*	1.5	0.82	0.79	1.81	66.03
	Eragrostis leptostachya	1.17	0.74	0.77	1.63	74.45
	Lomandra multiflora subsp. *multiflora*	1.17	0.72	1.24	1.58	76.03
	Chloris ventricosa	1.17	0.57	0.74	1.25	81.41
	Fimbristylis dichotoma	1	0.43	0.48	0.94	85.45
	Enteropogon acicularis	0.83	0.39	0.78	0.85	88.08
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1.5	1.04	1.21	2.29	49.06
Other	*Glycine tabacina*	1.67	1.31	1.35	2.88	33.22
	Desmodium varians	1.17	0.61	0.7	1.35	78.82
	Convolvulus graminetinus	0.67	0.4	0.78	0.88	87.23
High Threat Exotic	*Senecio madagascariensis*	1.33	1.2	4.23	2.64	44.45
	Galenia pubescens	0.83	0.38	0.79	0.83	88.91

5a. Spotted Gum - Narrow-leaved Ironbark Woodland [DNG] PCT 3315

Plant Community Type

PCT 3315 Central Hunter Ironbark-Spotted Gum Forest

Status

Not a TEC

General Description

This community made up approximately 0.1% of the mapped derived native grasslands and was dominated by 14 grass species (Poaceae). The remainder consisted of scattered small herbs, twiners and low shrubs. There were also juvenile Narrow-leaved Ironbark (*Eucalyptus crebra*).

Species Richness

Native species 37; Weeds 12 including 6 High Threat Weeds
Plots: 1
Mean species/plot: N/A only one plot

Key Diagnostic Species

Average similarity: 29.21

BAM Growth Form Group	Scientific Name	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Forb	*Sida corrugata*	1.5	2.72	2.85	9.33	45.01
	Calotis lappulacea	1	0.98	0.85	3.36	72.42
	Dichondra repens	1	0.98	0.85	3.36	75.78
Grass	*Aristida ramosa*	4.75	10.42	1.99	35.69	35.69
	Lomandra confertifolia subsp. *rubiginosa*	1	1.33	0.41	4.56	65.5
	Enteropogon acicularis	1.5	0.49	0.41	1.69	86.48
	Panicum effusum	1.25	0.49	0.41	1.69	88.17
Other	*Glycine clandestina*	1	0.98	0.85	3.36	79.14
Weed	*Sida rhombifolia*	1.25	2.44	2.54	8.35	53.37
	Glandularia aristigera	2.5	2.21	0.88	7.57	60.94
	Verbena bonariensis	0.5	0.67	0.41	2.28	84.79
	Lysimachia arvensis	0.5	0.45	0.41	1.54	89.71
	Modiola caroliniana	0.5	0.45	0.41	1.54	91.25
High Threat Exotic	*Carthamus lanatus*	1	1.04	0.84	3.55	69.05
	Senecio madagascariensis	1	0.98	0.85	3.36	82.5

6. Narrow-leaved Ironbark Shrubby Forest PCT 3431


Plant Community Type

PCT 3431 Central Hunter Ironbark Grassy Woodland

Status

Listed BC Act, E: Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions
Listed EPBC Act, CE: Central Hunter Valley Eucalypt Forest and Woodland

General Description

This community made up approximately 19% of the mapped woodland and was the second most abundant community present. Canopy was clearly dominated by Narrow-leaved Ironbark (*Eucalyptus crebra*) making up 99% of the tree species with 1% being White Box (*Eucalyptus albens*) mostly recorded at the edges of the mapped areas. Ground cover consisted of 37 grass species and 37 forb species.

Species Richness

Native species 94; Weeds 36 including High Threat Weeds 10
Plots: 13
Mean species/plot 45±9.8SD

Key Diagnostic Species

Average similarity: 50.35

BAM Growth Form Group	Scientific name	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Tree	*Eucalyptus crebra*	3.77	4.48	4.86	8.91	8.91
Shrub	*Eremophila debilis*	1.46	1.27	1.32	2.53	46.18
	Solanum cinereum	1.08	0.91	1.39	1.81	63.08
	Abutilon oxycarpum	0.92	0.46	0.48	0.91	85.35
Forb	*Calotis lappulacea*	2.08	2.17	3.11	4.31	13.22
	Chrysocephalum apiculatum	1.69	1.72	1.85	3.42	40.43
	Wahlenbergia communis	1.31	0.96	0.86	1.9	61.27
	Rostellularia adscendens var. *adscendens*	1.23	0.8	0.74	1.6	68.21
	Sida corrugata	1.15	0.8	0.85	1.58	69.79
	Einadia hastata	1.23	0.74	0.69	1.47	71.26
	Einadia polygonoides	1.08	0.69	0.69	1.37	72.63

	Dichondra repens	1.08	0.69	0.86	1.37	74
	Dysphania carinata	1.08	0.67	0.86	1.32	75.32
	Brunoniella australis	1.08	0.6	0.6	1.2	77.8
	Sida hackettiana	1.23	0.6	0.56	1.2	79
	Oxalis perennans	0.92	0.42	0.58	0.84	87.09
	Phyllanthus virgatus	0.77	0.36	0.55	0.71	89.43
Grass	*Microlaena stipoides* var. *stipoides*	2.08	2.14	2.19	4.26	17.48
	Bothriochloa decipiens var. *decipiens*	2.08	2.1	2.15	4.17	21.65
	Aristida ramosa	2.08	2.07	2.21	4.11	29.87
	Austrostipa verticillata	2	1.77	1.61	3.51	37.01
	Eriochloa pseudoacrotricha	1.77	1.62	1.39	3.22	43.65
	Enteropogon acicularis	1.38	1.19	1.03	2.37	50.95
	Cymbopogon refractus	1.38	1.16	1.25	2.3	53.24
	Lomandra confertifolia subsp. *pallida*	1.46	1.11	0.9	2.2	55.45
	Cyperus gracilis	1.31	1.02	0.99	2.03	57.47
	Austrostipa scabra subsp. *falcata*	1.46	0.96	0.86	1.9	59.37
	Chloris ventricosa	1.46	0.9	0.85	1.79	64.87
	Eragrostis lacunaria	1.15	0.87	0.98	1.74	66.61
	Panicum effusum	1.08	0.65	0.69	1.28	76.61
	Fimbristylis dichotoma	1	0.58	0.58	1.16	82.49
	Eragrostis leptostachya	0.92	0.49	0.57	0.97	84.44
	Rytidosperma tenuius	1	0.45	0.58	0.9	86.25
	Sporobolus creber	0.92	0.42	0.58	0.84	87.92
	Digitaria divaricatissima	0.69	0.4	0.58	0.8	88.72
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1.08	0.59	0.6	1.17	80.17
Other	*Glycine tabacina*	1.85	2.07	2.2	4.11	25.76
High Threat Exotic	*Galenia pubescens*	1.92	1.21	0.87	2.39	48.57
	Senecio madagascariensis	0.85	0.58	0.89	1.16	81.33

6a. Narrow-leaved Ironbark Shrubby Forest [DNG] PCT 3431


Plant Community Type

PCT 3431 Central Hunter Ironbark Grassy Woodland

Status

Not a TEC

General Description

This community made up approximately 24% of the mapped derived native grasslands and consisted mainly of forbs (34 species) and grasses (35 species).

Species Richness

Native species 83; 39 Weeds including High Threat Weeds 9 Plots: 15 Mean species/plot 41±7.3SD

Key Diagnostic Species

Average similarity: 53.12						
BAM Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Shrub	*Solanum cinereum*	1.13	0.94	1.13	1.77	77.24
Forb	*Erodium crinitum*	1.6	1.48	1.19	2.79	55.49
	Chrysocephalum apiculatum	1.4	1.22	1.01	2.29	67.67
	Brunoniella australis	1.27	0.96	0.82	1.8	75.47
	Oxalis perennans	1.2	0.87	0.79	1.63	78.87
	Wahlenbergia communis	1.2	0.84	0.8	1.58	82.03
	Einadia polygonoides	1.07	0.69	0.6	1.3	83.33
	Calotis lappulacea	0.93	0.61	0.64	1.14	85.71
	Vittadinia muelleri	1	0.59	0.67	1.11	86.82
	Dysphania carinata	0.93	0.45	0.47	0.85	90.67
Grass	*Aristida ramosa*	2.87	2.85	3.29	5.37	5.37
	Bothriochloa decipiens var. *decipiens*	2.73	2.71	2.08	5.1	10.47
	Digitaria divaricatissima	2.47	2.49	1.52	4.68	20.06
	Eriochloa pseudoacrotricha	2.27	2.22	1.59	4.19	24.25
	Dichanthium sericeum subsp. *sericeum*	2.4	2.1	1.57	3.95	28.2

	Digitaria brownii	2.2	2.09	1.42	3.94	32.14
	Panicum effusum	1.87	1.97	1.63	3.71	43.6
	Chloris truncata	2.13	1.74	1.24	3.27	46.87
	Eragrostis lacunaria	1.93	1.54	1.15	2.9	52.7
	Cymbopogon refractus	1.73	1.35	0.93	2.53	60.71
	Sporobolus creber	1.47	1.26	1.04	2.38	63.09
	Panicum queenslandicum var. *queenslandicum*	1.67	1.1	0.77	2.07	71.83
	Chloris ventricosa	1.27	0.84	0.8	1.58	80.45
	Fimbristylis dichotoma	0.87	0.45	0.48	0.85	89.83
Fern	*Cheilanthes sieberi* subsp. *sieberi*	2.07	2.61	8.36	4.91	15.38
Other	*Glycine tabacina*	1.8	2.07	2.3	3.89	36.03
	Convolvulus graminetinus	1	0.57	0.58	1.07	88.98
Weed	*Lysimachia arvensis*	1.6	1.56	1.28	2.93	49.8
	Sida rhombifolia	1.47	1.42	1.03	2.68	58.17
	Medicago spp.	1.4	1.22	0.98	2.29	65.38
	Sida spinosa	1.6	0.98	0.8	1.84	73.67
	Sonchus oleraceus	1	0.66	0.77	1.24	84.57
	Stachys arvensis	1	0.58	0.65	1.09	87.9
High Threat Exotic	*Carthamus lanatus*	2.27	2.05	1.57	3.86	39.89
	Galenia pubescens	1.2	1.11	1.34	2.09	69.76

6b. Narrow-leaved Ironbark Shrubby Forest [Plantation] PCT 3431


Plant Community Type

3431 Central Hunter Ironbark Grassy Woodland

Status

Not a TEC

General Description

This community comprised approximately 4% of the mapped woodland and consisted of a number of tree species that had been planted in previously cleared areas several years ago. The canopy generally consisted of Eucalypt species many not from the immediate region and several from other States. There were also a number of *Acacia*, *Allocasuarina*, *Casuarina* and *Melaleuca* species. These plantations were assigned to PCT 3431 as being the most likely original pre-clearing community.

Species Richness

Native species 89; 28 Weeds including High Threat Weeds 6 Plots: 6 Mean species/plot 53±6.0SD

Key Diagnostic Species

Average similarity: 40.48						
BAM Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Tree	*Casuarina glauca*	1.71	0.95	0.68	2.34	57.78
	Eucalyptus sideroxylon	1.71	0.72	0.52	1.78	65.79
	Corymbia maculata	1	0.4	0.55	0.99	81.35
	Eucalyptus albens	1.14	0.4	0.53	0.99	82.34
Shrub	*Eremophila debilis*	1.29	1.25	4.77	3.08	39.46
	Enchylaena tomentosa	1.43	1.15	0.91	2.85	42.31
Forb	*Oxalis perennans*	1.86	1.99	4.91	4.92	10.52
	Wahlenbergia communis	1.43	1.1	1.32	2.71	45.02
	Brunoniella australis	1.43	1.06	0.93	2.63	47.65
	Calotis lappulacea	1.43	1.06	0.93	2.63	50.28
	Erodium crinitum	1.14	0.67	0.83	1.66	69.15

	Vittadinia cuneata var. *hirsuta*	1	0.46	0.59	1.13	80.36
	Chrysocephalum apiculatum	0.86	0.37	0.57	0.92	83.26
	Portulaca oleracea	0.57	0.31	0.62	0.76	85.7
	Boerhavia dominii	0.86	0.3	0.4	0.73	86.43
Grass	*Aristida ramosa*	2.29	2.27	2.41	5.6	5.6
	Bothriochloa decipiens var. *decipiens*	2.14	1.6	0.93	3.95	18.84
	Enteropogon acicularis	1.71	1.31	1.39	3.22	33.22
	Chloris ventricosa	1.86	1.28	0.87	3.16	36.38
	Lomandra confertifolia subsp. *pallida*	1.57	1.06	0.93	2.63	52.91
	Dichanthium sericeum subsp. *sericeum*	1.43	0.83	0.84	2.05	61.98
	Eragrostis lacunaria	1.29	0.82	0.85	2.03	64.01
	Eriochloa pseudoacrotricha	1.29	0.69	0.84	1.7	67.49
	Cymbopogon refractus	1.14	0.66	0.85	1.63	70.78
	Panicum effusum	1	0.57	0.85	1.4	75.3
	Panicum queenslandicum var. *queenslandicum*	1	0.57	0.85	1.4	76.7
	Digitaria divaricatissima	0.86	0.36	0.59	0.89	84.14
	Lomandra glauca	0.86	0.32	0.4	0.79	84.94
	Austrostipa aristiglumis	0.86	0.29	0.4	0.71	87.87
	Rytidosperma caespitosum	1	0.28	0.36	0.7	88.58
	Sporobolus creber	0.71	0.23	0.36	0.56	90.32
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1.14	0.61	0.62	1.52	73.9
Other	*Glycine tabacina*	1.71	1.59	1.53	3.92	22.76
	Convolvulus graminetinus	1.57	1.34	1.32	3.31	30
	Glycine clandestina	0.71	0.24	0.39	0.6	89.17
High Threat Exotic	*Galenia pubescens*	2	1.77	2.58	4.38	14.9
	Lycium ferocissimum	1	0.87	1.49	2.15	59.93
	Opuntia stricta var. stricta	0.71	0.51	0.93	1.26	79.23

7. White Box - Narrow-leaved Ironbark - Blakely's Red Gum Forest PCT 3396


Plant Community Type

PCT 3396 Northwest Flats Box-Blakelys Red Gum Forest

Status

Listed BC Act, CE: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions
Listed EPBC Act, CE: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

General Description

This community made up only approximately 0.6% of the mapped woodland and was found along an ephemeral drainage line in the north of the Study Area. It was characterised by patches of Blakely's Red Gum (*Eucalyptus blakelyi*) along with Rough-barked Apple (*Angophora floribunda*) and Narrow-leaved Ironbark (*Eucalyptus crebra*). Ground cover consisted of forbs (34 species) and grasses (32 species).

Species Richness

Native species 101; Weeds 38 including High Threat Weeds 16
Plots: 9
Mean species/plot 49±14.88SD

Key Diagnostic Species

Average similarity: 38.22						
BAM Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib %**	**Cum. %**
Tree	*Eucalyptus blakelyi*	3.22	2.94	1.05	7.7	7.7
Shrub	*Eremophila debilis*	1.44	1.21	1.61	3.16	32.7
	Enchylaena tomentosa	0.56	0.32	0.6	0.84	83.4
Forb	*Wahlenbergia communis*	1.33	0.99	1.12	2.59	38.04
	Dichondra repens	1.22	0.88	1.04	2.31	47.79
	Sida corrugata	1.11	0.86	1.08	2.26	50.05
	Chrysocephalum apiculatum	1.33	0.81	0.83	2.13	54.3
	Calotis lappulacea	1.11	0.69	1.09	1.8	58.23

	Phyllanthus virgatus	1.22	0.68	0.78	1.78	60.01
	Brunoniella australis	1.11	0.54	0.61	1.42	69.39
	Oxalis perennans	0.89	0.47	0.81	1.22	74.69
	Einadia polygonoides	1	0.38	0.44	0.99	78.02
	Dysphania carinata	0.67	0.2	0.42	0.53	88.96
	Glossocardia bidens	0.56	0.2	0.43	0.52	89.99
	Einadia hastata	0.56	0.18	0.44	0.48	90.98
	Vittadinia pustulata	0.67	0.16	0.3	0.43	91.41
	Stackhousia muricata	0.67	0.16	0.3	0.41	93.09
	Asperula conferta	0.56	0.14	0.29	0.37	94.27
	Boerhavia dominii	0.56	0.12	0.29	0.32	94.58
	Goodenia pinnatifida	0.56	0.11	0.28	0.29	94.87
	Vittadinia muelleri	0.56	0.11	0.28	0.28	95.15
Grass	*Aristida ramosa*	3.11	2.8	1.24	7.32	15.01
	Austrostipa verticillata	1.67	1.05	0.71	2.75	35.45
	Microlaena stipoides var. *stipoides*	1.67	0.98	0.81	2.55	40.6
	Bothriochloa decipiens var. *decipiens*	2	0.97	0.81	2.54	43.13
	Eriochloa pseudoacrotricha	1.33	0.9	0.82	2.34	45.48
	Cymbopogon refractus	1.44	0.81	0.83	2.13	56.43
	Enteropogon acicularis	1.22	0.67	0.78	1.76	61.77
	Cyperus gracilis	1.11	0.63	0.78	1.66	63.43
	Dichanthium sericeum subsp. *sericeum*	1.33	0.57	0.6	1.49	66.49
	Panicum queenslandicum var. *queenslandicum*	1.11	0.57	0.76	1.48	67.97
	Digitaria brownii	1.11	0.54	0.61	1.4	70.79
	Digitaria divaricatissima	1.22	0.54	0.61	1.4	72.19
	Rytidosperma tenuius	1	0.46	0.59	1.2	75.9
	Chloris ventricosa	1	0.43	0.58	1.13	77.02
	Lomandra confertifolia subsp. *pallida*	1	0.35	0.57	0.91	79.86
	Eragrostis lacunaria	0.89	0.35	0.57	0.9	80.76
	Sporobolus creber	0.89	0.31	0.44	0.82	84.22
	Lomandra glauca	0.78	0.25	0.42	0.65	87.81
	Panicum effusum	0.89	0.24	0.42	0.62	88.43
	Carex inversa	0.67	0.2	0.3	0.52	89.48
	Paspalidium aversum	0.67	0.19	0.3	0.51	90.5
	Eragrostis leptostachya	0.67	0.16	0.3	0.42	92.26
	Fimbristylis dichotoma	0.67	0.15	0.3	0.4	93.9
Fern	*Cheilanthes sieberi* subsp. *sieberi*	0.89	0.35	0.57	0.9	81.67
Other	*Glycine tabacina*	1.56	1.22	1.15	3.19	29.54
	Glycine clandestina	0.56	0.29	0.43	0.75	85.79
	Convolvulus graminetinus	0.67	0.16	0.3	0.41	93.5
Weed	*Plantago lanceolata*	1.67	1.78	2.09	4.66	19.68
	Sida rhombifolia	1.44	1.31	1.57	3.42	23.09
	Hypochaeris albiflora	1	0.6	0.76	1.57	65
	Sida spinosa	0.89	0.36	0.57	0.94	78.95

	Verbena bonariensis	0.56	0.31	0.6	0.82	85.04
	Verbena rigida var. *rigida*	0.56	0.28	0.61	0.72	86.51
	Schkuhria pinnata	0.56	0.16	0.44	0.42	92.68
HTE	*Senecio madagascariensis*	1.11	1.24	3.88	3.25	26.35
	Galenia pubescens	1.44	0.81	0.9	2.13	52.17
	Paspalum dilatatum	0.89	0.49	0.52	1.28	73.47
	Bidens subalternans	0.78	0.34	0.56	0.89	82.56
	Lycium ferocissimum	1	0.25	0.29	0.66	87.17
	Opuntia stricta var. *stricta*	0.44	0.16	0.44	0.43	91.84

7a. White Box - Narrow-leaved Ironbark - Blakely's Red Gum Forest [DNG] PCT 3396

Plant Community Type

PCT 3396 Northwest Flats Box-Blakelys Red Gum Forest

Status

Listed BC Act, CE: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions
Listed EPBC Act, CE: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

General Description

This community made up approximately 1.2% of the mapped derived native grasslands and consisted mainly of forbs (38 species) and grasses (33 species).

Species Richness

Native species 84; Weeds 52 including High Threat Weeds 12
Plots: 10
Mean species/plot 45±9.0SD

Key Diagnostic Species

Average similarity: 45.11						
BAM Growth	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib %**	**Cum. %**

Form Group						
Shrub	*Solanum cinereum*	0.7	0.22	0.36	0.5	93.76
Forb	*Einadia polygonoides*	1.5	1.24	1.14	2.75	43.54
	Oxalis perennans	1.5	1.23	1.14	2.74	49.02
	Wahlenbergia communis	1.4	1.1	1.17	2.44	51.46
	Chrysocephalum apiculatum	1.3	0.92	0.88	2.04	62.51
	Erodium crinitum	1.2	0.79	0.85	1.75	67.79
	Vittadinia pustulata	1.1	0.63	0.66	1.4	76.85
	Vittadinia muelleri	0.9	0.38	0.49	0.85	86.06
	Asperula conferta	0.8	0.34	0.5	0.75	87.57
	Dysphania carinata	0.9	0.31	0.48	0.68	89.72
	Calotis lappulacea	0.8	0.31	0.48	0.68	90.4
	Brunoniella australis	0.7	0.23	0.38	0.52	93.26
	Dichondra repens	0.5	0.18	0.38	0.39	95.12
Grass	*Aristida ramosa*	2.7	2.7	3.95	5.98	5.98
	Digitaria divaricatissima	2.7	2.29	1.7	5.08	11.06
	Panicum queenslandicum var. *queenslandicum*	2.8	1.91	1.09	4.23	15.28
	Dichanthium sericeum subsp. *sericeum*	2.4	1.8	1.18	3.98	23.34
	Bothriochloa decipiens var. *decipiens*	2.2	1.64	1.21	3.64	30.82
	Eriochloa pseudoacrotricha	1.9	1.55	1.22	3.43	34.25
	Digitaria brownii	2	1.49	1.22	3.3	37.55
	Cymbopogon refractus	1.5	1.05	0.91	2.34	56.24
	Panicum effusum	1.5	0.79	0.69	1.75	66.04
	Paspalidium aversum	1.3	0.78	0.69	1.73	69.52
	Enteropogon acicularis	1.3	0.7	0.7	1.55	71.07
	Austrostipa verticillata	1.5	0.65	0.63	1.43	74.01
	Sporobolus creber	1.2	0.65	0.66	1.43	75.45
	Chloris truncata	1.1	0.6	0.52	1.33	78.18
	Microlaena stipoides var. *stipoides*	1.3	0.52	0.52	1.16	83.05
	Lomandra confertifolia subsp. *pallida*	1	0.49	0.52	1.09	84.14
	Chloris ventricosa	1	0.48	0.53	1.07	85.21
	Eragrostis lacunaria	0.9	0.34	0.48	0.76	86.82
	Fimbristylis dichotoma	0.8	0.27	0.39	0.6	92.21
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1.6	1.23	1.14	2.74	46.28
Other	*Glycine tabacina*	1.8	1.84	1.92	4.07	19.36
	Convolvulus graminetinus	1.3	0.97	0.86	2.16	58.39
Weed	*Medicago spp.*	1.1	0.68	0.82	1.51	72.58
	Sida rhombifolia	1.7	1.46	1.67	3.24	40.8
	Lysimachia arvensis	1.4	1.1	0.91	2.44	53.9
	Plantago lanceolata	1.2	0.8	0.87	1.77	64.28
	Cynodon dactylon	1.2	0.59	0.51	1.3	79.48
	Sida spinosa	1.2	0.52	0.52	1.16	81.89
	Gomphocarpus fruticosus	0.8	0.33	0.49	0.73	89.04
	Verbena bonariensis	0.6	0.28	0.52	0.61	91.01

	Rapistrum rugosum	0.5	0.27	0.53	0.61	91.62
	Urochloa panicoides	0.9	0.22	0.37	0.49	94.26
	Glandularia aristigera	0.7	0.22	0.36	0.48	94.73
HTE	*Carthamus lanatus*	1.9	1.74	1.75	3.85	27.19
	Galenia pubescens	1.3	0.94	0.86	2.08	60.47
	Bidens subalternans	0.9	0.56	0.9	1.25	80.73
	Paspalum dilatatum	0.9	0.33	0.48	0.74	88.31
	Senecio madagascariensis	0.5	0.24	0.52	0.53	92.75

8a. Slaty Box Woodland [DNG] PCT 3485


Plant Community Type

PCT 3485 Central Hunter Slaty Gum Grassy Forest

Status

Not a TEC

General Description

This community was characterised by widely scattered Slaty Box (*Eucalyptus dawsonii*) paddock trees and made up approximately 0.3% of the mapped derived native grasslands; there was no Slaty Box woodland in the Study Area. The ground cover consisted mainly of forbs (15 species) and grasses (21 species).

Species Richness

Native species 45; Weeds 28 including High Threat Weeds 7 Plots: 4 Mean species/plot 39±6.0SD

Key Diagnostic Species

Average similarity: 39.51						
BAM Growth Form Group	**Scientific Name**	**Av.Abund**	**Av.Sim**	**Sim/SD**	**Contrib%**	**Cum.%**
Shrub	*Eremophila debilis*	0.67	0.77	0.78	1.95	78.1
	Solanum cinereum	1	0.64	0.74	1.61	83.4
Forb	*Oxalis perennans*	1.33	1.11	0.78	2.8	63.45
	Brunoniella australis	1.17	0.87	0.75	2.2	67.97
	Wahlenbergia communis	1	0.63	0.75	1.6	85
	Einadia polygonoides	1	0.56	0.48	1.41	87.83
	Chrysocephalum apiculatum	1	0.4	0.45	1.01	90.13
Grass	*Aristida ramosa*	3.67	4.94	2.17	12.51	12.51
	Panicum effusum	2.33	2.64	1.24	6.69	19.2
	Chloris ventricosa	2.5	2.53	1.12	6.39	25.6
	Bothriochloa decipiens var. *decipiens*	2.17	1.66	0.78	4.2	35.36
	Sporobolus creber	1.83	1.25	0.77	3.16	46.19
	Eragrostis lacunaria	1.83	1.2	0.76	3.04	49.23
	Eriochloa pseudoacrotricha	1.67	1.19	0.77	3.02	52.25

BAM Growth Form Group	Scientific Name	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Grass	*Dichanthium sericeum* subsp. *sericeum*	1.5	1.11	0.78	2.8	57.85
	Enteropogon acicularis	1.5	1.11	0.78	2.8	60.65
	Cymbopogon refractus	1.17	0.92	0.75	2.33	65.78
	Digitaria divaricatissima	1.17	0.81	0.74	2.06	72.14
	Cynodon dactylon	1	0.56	0.48	1.41	86.41
	Austrostipa verticillata	0.83	0.51	0.4	1.3	89.12
Fern	*Cheilanthes sieberi* subsp. *sieberi*	1.33	1.11	0.78	2.8	55.05
Other	*Convolvulus graminetinus*	1	0.79	0.76	2	74.14
Weed	*Lysimachia arvensis*	1.67	2.2	3.98	5.56	31.16
	Sida rhombifolia	1.17	1.64	5.25	4.16	39.52
	Setaria parviflora	1.33	0.83	0.72	2.11	70.08
	Plantago lanceolata	1	0.79	0.76	2	76.14
	Gomphocarpus fruticosus	0.83	0.69	0.76	1.74	81.78
High Threat Exotic	*Galenia pubescens*	1	0.77	0.48	1.94	80.04
	Carthamus lanatus	2	1.39	0.76	3.51	43.02

ATTACHMENT A

MOUNT PLEASANT OPERATION THREATENED FLORA SURVEY REPORT

bolwarra
environmental services

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MOUNT PLEASANT OPERATION

THREATENED FLORA SURVEY REPORT

PREPARED BY
BOLWARRA ENVIRONMENTAL SERVICES

May 2024

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EXECUTIVE SUMMARY

The Mount Pleasant Operation is an open cut coal mine and associated infrastructure located approximately 3 kilometres (km) north-west of Muswellbrook in the Upper Hunter Valley of New South Wales (NSW) (Figure 1). Bolwarra Environmental Services (Bolwarra) was commissioned by MACH Energy Australia Pty Ltd (MACH)[1] to undertake supplementary threatened flora surveys in survey gaps resulting from contemporary vegetation mapping and report on this together with past independent surveys in one report.

The objective of this report is to describe how threatened flora species and populations listed as under the NSW *Biodiversity Conservation Act 2016* (BC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have been targeted during surveys and to document any threatened entities found.

A number of past studies on flora have been undertaken in the Study Area by Hunter Eco, Future Ecology and Ecosure between 1994 and 2017. During that time only one flora species listed under the BC Act was recorded in the Study Area, Tiger Orchid (*Cymbidium canaliculatum*). This species is a component of the *Cymbidium canaliculatum population in the Hunter Catchment* Endangered Population under the BC Act. MACH has an existing programme in place that records and relocates Tiger Orchid (*Cymbidium canaliculatum*) from surface disturbance areas.

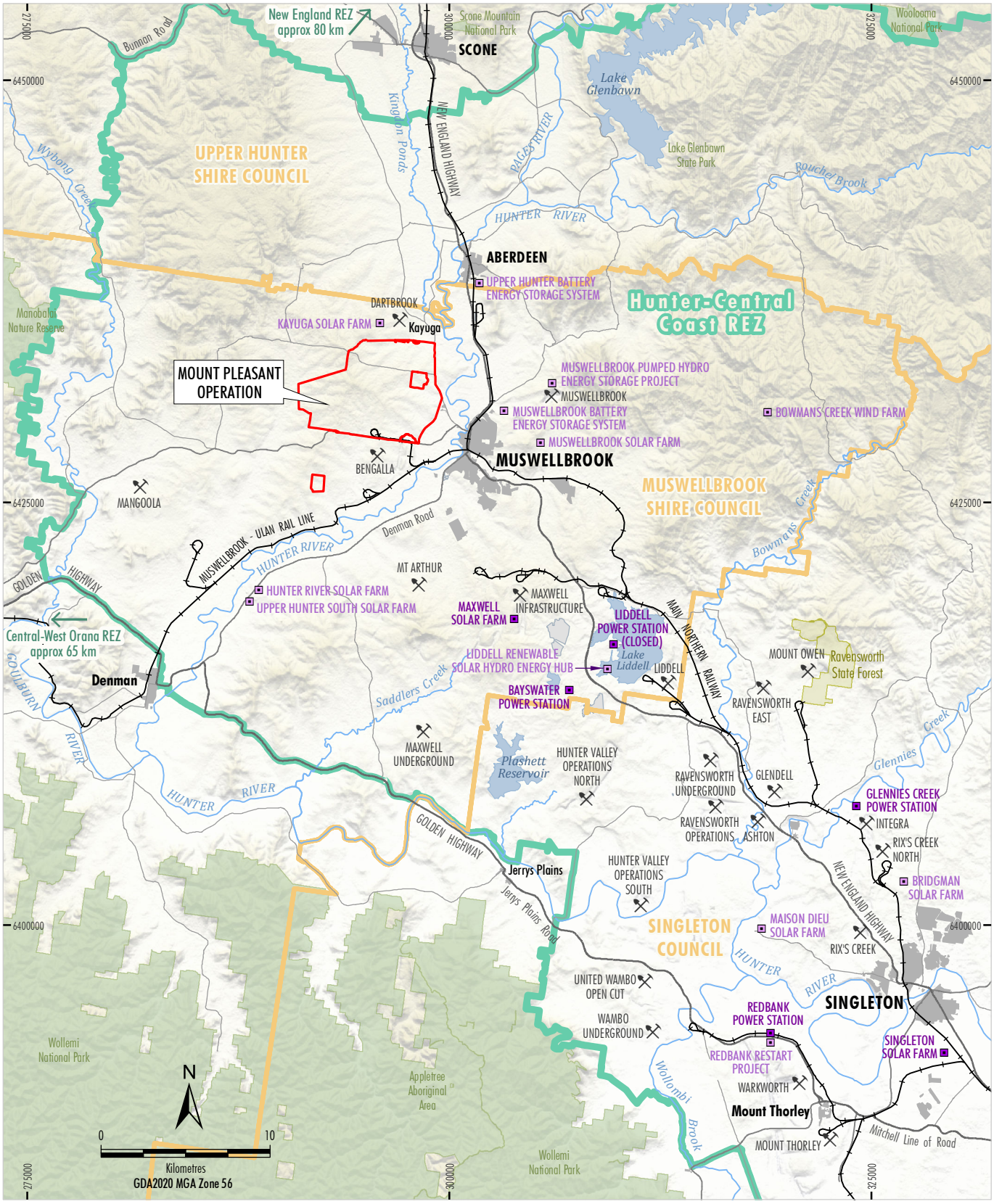
This report documents the methods and findings of contemporary threatened flora searches (within 5 years), conducted by Hunter Eco, Future Ecology, Ecosure and Bolwarra across the Study Area. The surveys have been undertaken by six very experienced ecologists. The surveys were undertaken in accordance with the methods specified in the *Surveying Threatened Plants and Their Habitats: NSW Survey Guide for the Biodiversity Assessment Method* (Department of Planning, Industry and Environment [DPIE], 2020). In addition to this methodology, threatened flora species were targeted during random meanders and during other flora survey techniques (vegetation mapping and floristic data collection).

As a result of the past and more contemporary surveys, there is a high confidence in the survey result. Only the *Cymbidium canaliculatum population in the Hunter Catchment* Endangered Population under the BC Act was identified in the Study Area. It was recorded in ten locations. No flora species listed as threatened under the BC Act or EPBC Act were recorded in the Study Area or were recorded in any past studies.

The survey effort for this end result has been substantial and often involved walking highly intensive field transects in areas that were unsuitable habitat for many of the target species in my experience. The Study Area has been heavily modified by past agricultural activities which significantly reduces the chances of finding many of the threatened flora species predicted by the NSW Government (Biodiversity Assessment Method) BAM Credit Calculator to occur in the Plant Community Types (PCTs) in the Study Area.

In addition to the targeted surveys, Dr Stephen Bell (Eastcoast Flora Survey) prepared an Expert Report for the Pine Donkey Orchid (*Diuris tricolor*), Tarengo Leek Orchid (*Prasophyllum petilum)* and *Pterostylis chaetophora* (Bell, 2024). Dr Bell concludes that none of these species are likely to occur in the Study Area based on a combination of differing floristics, geology, soil landscape, soil and rainfall attributes, together with a largely absent *Orchidaceae* population (used as a surrogate mycorrhizal fungi).

[1] MACH Mount Pleasant Operations Pty Ltd is the manager of the Mount Pleasant Operation as agent for and on behalf of the unincorporated Mount Pleasant Joint Venture between MACH Energy Australia Pty Ltd (MACH Energy) (95 per cent [%] owner) and J.C.D. Australia Pty Ltd (5% owner). This report refers to MACH Mount Pleasant Operations Pty Ltd and the unincorporated Mount Pleasant Joint Venture as MACH.



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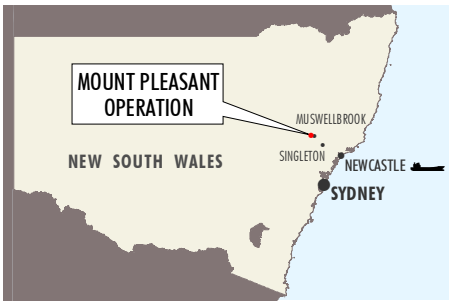
Source: NSW Spatial Services (2024); EnergyCo (2024)



LEGEND

- Mining Operation
- Existing/Approved Major Energy Generation Site
- Proposed Major Energy Generation Site
- Railway
- National Parks and Wildlife Estate
- State Forest/Reserve
- Local Government Boundary
- Hunter-Central Coast Renewable Enery Zone (REZ)
- Mining Lease Boundary (Mount Pleasant Operation)

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MOUNT PLEASANT OPERATION

Regional Location

Figure 1

1 INTRODUCTION

1.1 BACKGROUND

The Mount Pleasant Operation is an open cut coal mine and associated infrastructure located approximately 3 kilometres (km) north-west of Muswellbrook in the Upper Hunter Valley of New South Wales (NSW) (Figure 1). Bolwarra Environmental Services (Bolwarra) was commissioned by MACH Energy Australia Pty Ltd (MACH) to prepare a threatened flora survey report for a study area encompassing surface disturbance areas.

A number of past studies on flora have been undertaken in the Study Area between 1994 and 2017 and during this time only one flora species listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) has been recorded in the Study Area, namely Tiger Orchid (*Cymbidium canaliculatum*). This species is a component of the *Cymbidium canaliculatum population in the Hunter Catchment* Endangered Population under the BC Act. MACH has an existing programme in place that records and relocates Tiger Orchid (*Cymbidium canaliculatum*) from disturbance areas.

1.2 OBJECTIVES

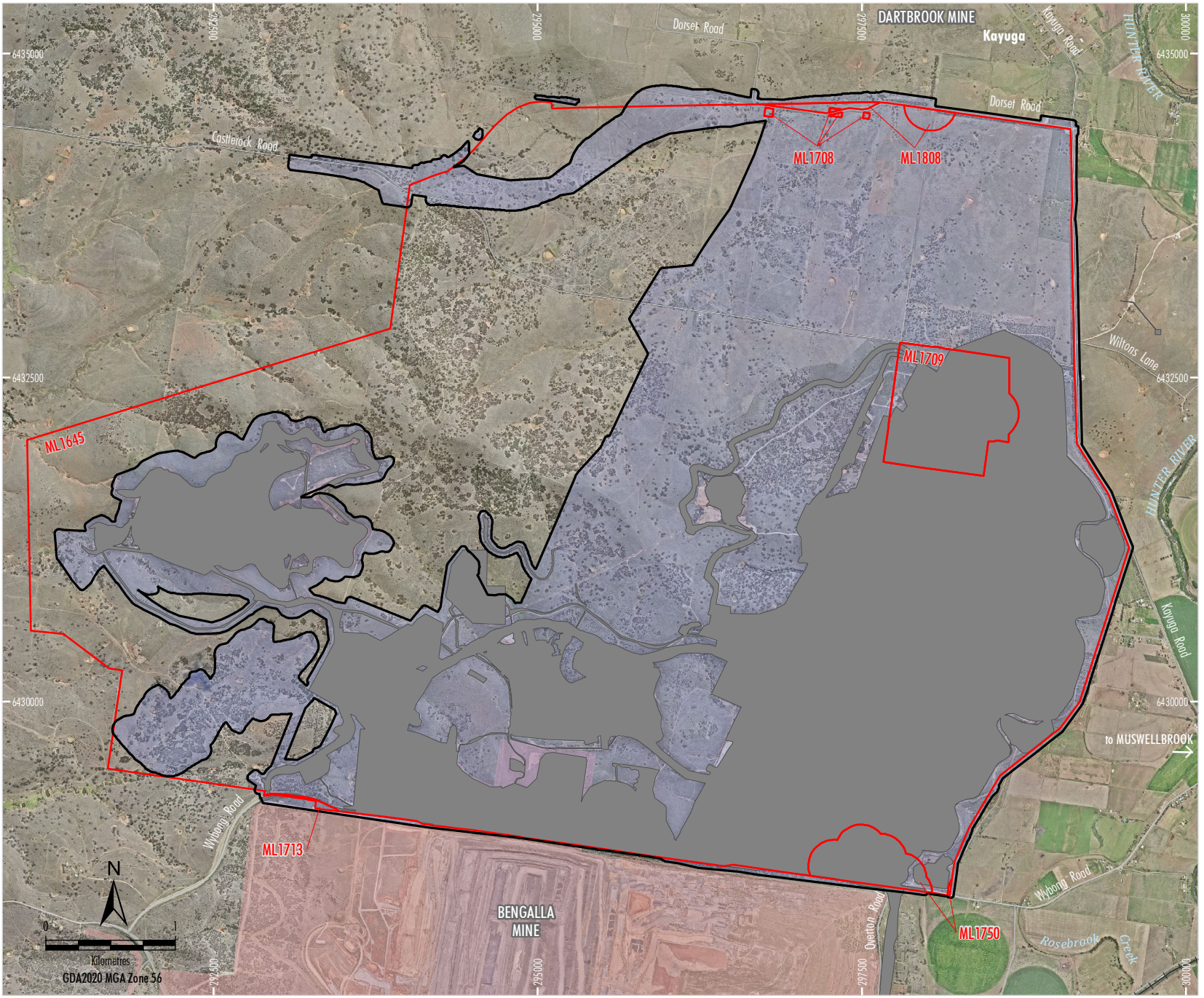
The objectives of this report are to describe how threatened flora species and populations listed as threatened under the (BC Act) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) have been targeted during surveys and to document any threatened entities found.

The Study Area is approximately 2,907 hectares (ha) excluding surface disturbance areas (Figure 2). The Study Area excluded disturbed/modified areas associated with the existing mine. The original vegetation in the Study Area has been heavily modified and is now derived native grassland (DNG) with patches of woodland and open forest. The Study Area contains approximately 1,742.9 ha of native vegetation (Table 1).

The Plant Community Types (PCTs) and vegetation zones in the Study Area for the Modification were identified by Dr Colin Driscoll (Hunter Eco, 2024) (Table 1) and are shown on Figure 3. Target species, locations of suitable habitat requiring survey and transect spacing for the relevant threatened flora species of each vegetation zone were provided by Dr Colin Driscoll (Hunter Eco) and used to prepare a survey plan.

Table 1
Vegetation Communities within the Study Area

Vegetation	Study Area (ha)
1. White Box Grassy Woodland (PCT 3395)	152.9
1a. Derived Native Grassland (PCT 3395)	463.1
2. White Box - Spotted Gum Grassy Woodland (PCT 3395)	39.5
2a. Derived Native Grassland (PCT 3395)	25.1
3. Forest Red Gum Grassy Forest (PCT 3446)	1.5
4. Narrow-leaved Ironbark - Grey Box grassy woodland (PCT 3314)	28.5
4a. Derived Native Grassland (PCT 3314)	2.0
5. Spotted Gum - Narrow-leaved Ironbark Woodland (PCT 3315)	23.2
5a. Derived Native Grassland (PCT 3315)	3.4
6. Narrow-leaved Ironbark Shrubby Forest (PCT 3431)	226.9
6a. Derived Native Grassland (PCT 3431)	632.4
6b. Plantation (PCT 3431)	44.6
6c. Topsoil Stockpile (PCT 3431)	36.2
7. White Box - Narrow-leaved Ironbark - Blakely's Red Gum (PCT 3396)	17.7
7a. Derived Native Grassland (PCT 3396)	20.1
8a. Slaty Box Woodland Derived Native Grassland (PCT 3485)	25.8
Subtotal	**1,742.9**
Unvegetated	865.5
Waterbodies	83.9
Other	214.6
Subtotal	**1,163.9**
Total	**2,906.9**



LEGEND

- Threatened Flora Study Area
- Mining Lease Boundary (Mount Pleasant Operation)
- Existing/Approved Development Area within Approved Mine Life (DA92/97)
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Source: MACH (2024); NSW Spatial Services (2024); Department of Planning and Environment (2016); Orthophoto: MACH (Dec 2023)

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MOUNT PLEASANT OPERATION

Threatened Flora Study Area

Figure 2

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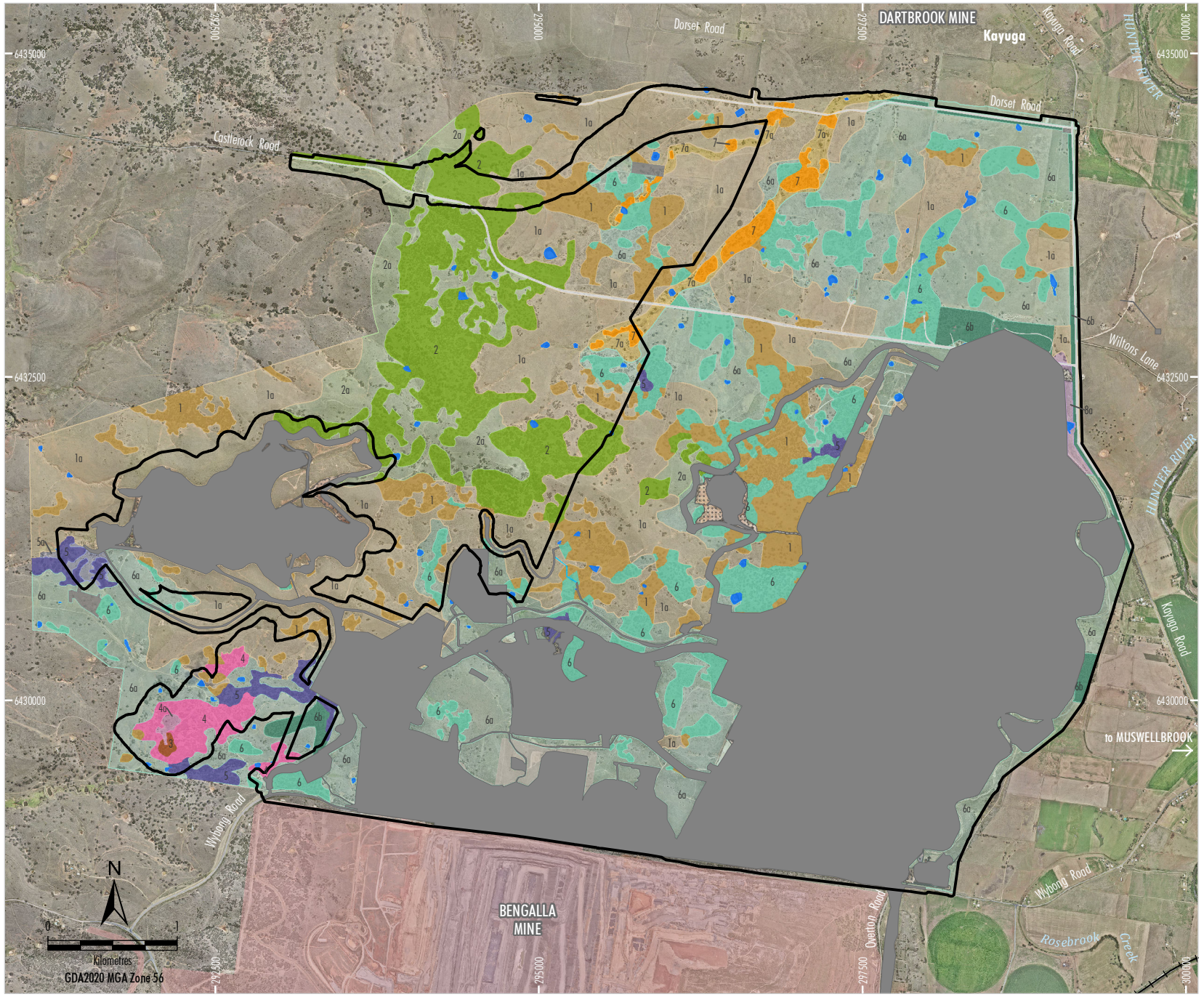

LEGEND

- Threatened Flora Study Area
- Existing/Approved Development Area within Approved Mine Life (DA92/97)
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Plant Community Types

- 1. White Box Grassy Woodland (PCT 3395)
- 1a. Derived Native Grassland (PCT 3395)
- 2. White Box - Spotted Gum Grassy Woodland (PCT 3395)
- 2a. Derived Native Grassland (PCT 3395)
- 3. Forest Red Gum Grassy Forest (PCT 3446)
- 4. Narrow-leaved Ironbark - Grey Box Grassy Woodland (PCT 3314)
- 4a. Derived Native Grassland (PCT 3314)
- 5. Spotted Gum - Narrow-leaved Ironbark Woodland (PCT 3315)
- 5a. Derived Native Grassland (PCT 3315)
- 6. Narrow-leaved Ironbark Shrubby Forest (PCT 3431)
- 6a. Derived Native Grassland (PCT 3431)
- 6b. Plantation (PCT 3431)
- 7. White Box - Narrow-leaved Ironbark - Blakely's Red Gum (PCT 3396)
- 7a. Derived Native Grassland (PCT 3396)
- 8a. Derived Native Grassland (PCT 3485)
- Stormwater Diversion
- Waterbody
- Dwellings and Infrastructure
- Road
- Unvegetated

Source: MACH (2024); Hunter Eco (2024); NSW Spatial Services (2024); Department of Planning and Environment (2016)
Orthophoto: MACH (Dec 2023)

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MOUNT PLEASANT OPERATION

Vegetation Mapping

Figure 3

MAC-18-02A_MOD7_TFlora_202G

2 METHODOLOGY

This report documents the methods and findings of contemporary threatened flora searches between 2019 and 2024 across the Study Area.

2.1 TARGET SPECIES

Dr Colin Driscoll (Hunter Eco, 2024) established a list of potentially occurring threatened species and populations to target considering the likely PCTs in the Study Area and previous threatened flora species records. Threatened species and populations listed in Table 2 were targeted during the surveys.

Table 2
Target Threatened Flora Species

Scientific Name	Common Name	BC Act Status*	EPBC Act Status*	PCT Association (NSW DCCEEW, 2024a)
Acacia bynoeana	Bynoe's Wattle	E	V	3315
Acacia pendula	Weeping Myall (*Acacia pendula* population in the Hunter Catchment)	EP	-	3431
Angophora inopina	Charmhaven Apple	V	V	3315
Callistemon linearifolious	Netted Bottle Bush	V	-	3315
Cymbidium canaliculatum	Tiger Orchid (*Cymbidium canaliculatum* population in the Hunter Catchment)	EP	-	-
Diuris tricolor	Pine Donkey Orchid (population in the Muswellbrook LGA)	V, EP	-	3314, 3315, 3431, 3485
Eucalyptus castrensis	Singleton Mallee	E	-	3446
Eucalyptus glaucina	Slaty Red Gum	V	V	3314, 3315, 3431, 3446
Eucalyptus parramattensis subsp. decadens	-	V	V	3315
Eucalyptus pumila	Pokolbin Mallee	V	V	3446
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	V	V	3446
Ozothamnus tesselatus	-	V	V	3315, 3431
Persoonia pauciflora	North Rothbury Persoonia	CE	CE	3314, 3315, 3431, 3446
Pomaderris queenslandica	Scant Pomaderris	E	-	3314
*Prasophyllum petilum (*syn. *Prasophyllum* sp. Wybong*)*	Tarengo Leek Orchid	E	E	3315, 3431, 3485
Prostanthera cryptandroides subsp*. cryptandroides*	Wollemi Mint-bush	V	V	3396
Prostanthera cineolifera	Singleton Mint Bush	V	V	3315, 3446
Pterostylis chaetophora	-	V	-	3314, 3315, 3431, 3485, 3446
Rhodamnia rubescens	Scrub Turpentine	CE	CE	3446
Rutidosis heterogama	Heath Wrinklewort	V	V	3315, 3446
Thesium australe	Austral Toadflax	V	V	3396, 3395

* Threatened species status listed under the BC Act and EPBC Act, current as at May 2024; V = Vulnerable, E = Endangered, EP = Endangered Population, CE = Critically Endangered.

Table 3 demonstrates that the survey requirements have been met for the threatened species and populations. As described in Section 2.3, an Expert Report was prepared for Pine Donkey Orchid (*Diuris tricolor*), Tarengo Leek Orchid (*Prasophyllum petilum)* and *Pterostylis chaetophora* (Bell, 2024).

Table 3
Survey Effort

Scientific Name	Common Name	BC Act Status*	EPBC Act Status*	Growth Form Group	Habitat Suitability	Survey Requirement (Timing, PCTs and Transect Width) (NSW DCCEEW, 2024a; DPIE, 2020b)	Survey Effort (Timing, PCTs, Methodology and Transect Width)	Guideline Met
Acacia bynoeana	Bynoe's Wattle	E	V	Medium Shrub	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	Any month, PCT 3315, 10 metres (m) transect.	October 2023, PCT 3315 Woodland, 10 m transects.	Yes
Acacia pendula	Weeping Myall (*Acacia pendula* population in the Hunter Catchment)	EP	-	Tall Shrub/ Tree	Geographic limits – Within the Hunter River Catchment Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	-	October to December 2019, searches during random meanders. October to December 2020, searches during 20 m transects and floristic surveys. September to October 2021, PCT 3396 10 m transects. October and September 2023, PCTs 3431, 3314 and 3315 Woodland, 10 m transects.	Yes
Angophora inopina	Charmhaven Apple	V	V	Tree	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	Any month, PCT 3315, 20 m transect.	October 2023, PCT 3315 Woodland, 10 m transects.	Yes
Callistemon linearifolious	Netted Bottle Bush	V	-	Medium Shrub	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	October to January, PCT 3315, 10 m transect.	October 2023, PCT 3315 Woodland, 10 m transects.	Yes

Scientific Name	Common Name	BC Act Status*	EPBC Act Status*	Growth Form Group	Habitat Suitability	Survey Requirement (Timing, PCTs and Transect Width) (NSW DCCEEW, 2024a; DPIE, 2020b)	Survey Effort (Timing, PCTs, Methodology and Transect Width)	Guideline Met
Cymbidium canaliculatum	Tiger Orchid (*Cymbidium canaliculatum* population in the Hunter Catchment)	EP	-	Orchid	Known to Occur	-	October to December 2019, searches during random meanders. October to December 2020, 20 m transects and paddock tree searches. September to October 2021, 20 m transects. September and October 2023, PCTs 3314, 3315, 3396, 3431 and 3485 Woodland (November), 10 m transects.	Yes
Diuris tricolor	Pine Donkey Orchid (population in the Muswellbrook LGA)	V, EP	-	Orchid	Geographic limits – none Habitat constraints - none	September and October, PCTs 3314, 3315, 3431 and 3485, 10 m transect.	Expert Report (Bell, 2024)	N/A
Eucalyptus castrensis	Singleton Mallee	E	-	Mallee Tree	Geographic limits – none Habitat constraints – none	Any month PCT3446 20m transect.	April 2024 PCT 3446 10m transects. November 2023 PCT 3446 (when surveyed was mapped as PCT 3525) 20m transects	Yes
Eucalyptus glaucina	Slaty Red Gum	V	V	Tree	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	Any month, PCT 3314, 3315, 3431 and 3446 20 m transect.	October to December 2020, PCTs 3314, 3315 and 3431, 20 m transects. October 2021, PCT 3314, 20 m transects. September and October 2023, PCT 3315 and 3431 Woodland, 10 m transects. November 2023, PCT 3525 (PCT 3446). April 2024, PCT 3446 10m transects.	Yes
Eucalyptus parramattensis subsp. decadens	-	V	V	Tree	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	Any month, 3315, 20 m transect.	October 2023, PCT 3315 Woodland, 10 m transects.	Yes
Eucalyptus pumila	Pokolbin Mallee	V	V	Mallee Tree	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	Any Month PCT 3315 and 3485 10m transects, PCT3446, 20m transect.	October and November 2023, PCTs 3315 and 3485 Woodland, 10 m transects. November 2023 PCT3446 (when surveyed was mapped as PCT3525) 20m transects. April 2024, PCT3446 10m transects.	Yes

Scientific Name	Common Name	BC Act Status*	EPBC Act Status*	Growth Form Group	Habitat Suitability	Survey Requirement (Timing, PCTs and Transect Width) (NSW DCCEEW, 2024a; DPIE, 2020b)	Survey Effort (Timing, PCTs, Methodology and Transect Width)	Guideline Met
Grevillea parviflora subsp. *Parviflora*	Small-flower Grevillea	V	V	Shrub	Geographic limits – none Habitat constraints – none	August to November, PCT 3446 10m transect	November 2023 PCT3446 (when surveyed was mapped as PCT3525) 20m transects. April 2024 PCT3446 10m transects.	See note[1]
Ozothamnus tesselatus	-	V	V	Shrub	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	September and October, PCTs 3315 and 3431, 20 m transect	November 2020, PCT 3396, 20 m transects. September to October 2021, PCT 3396, 10 m transects. September and October 2023, PCT 3315 and 3431(September) Woodland, 10 m transects.	Yes
Persoonia pauciflora	North Rothbury Persoonia	CE	CE	Shrub	Geographic limits – Within 10 km of North Rothbury Habitat constraints – none	N/A	N/A	N/A
Pomaderris queenslandica	Scant Pomaderris	E	-	Shrub	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	Any month, PCT 3314, 20 m transect	October to December 2020, PCT 3314, 3396, 20 m transects. September to October 2021, PCT 3396, 10 m transects.	Yes
Prasophyllum petilum (syn. Prasophyllum sp. Wybong)	Tarengo Leek Orchid	E	E	Orchid	Geographic limits – none Habitat constraints – none	September to December, PCTs 3315, 3431 and 3485, 10 m transect	Expert Report (Bell, 2024)	N/A
Prostanthera cryptandroides subsp. *Cryptandroides*	Wollemi Mint-bush	V	V	Sub-shrub	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	September to November, PCT 3396, 10 m transect	October 2023, PCT 3396 Woodland, 10 m transects	Yes
Prostanthera cineolifera	Singleton Mint Bush	V	V	Medium Shrub	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	September and October, PCTs 3315, and 3446, 10 m transect	October 2023, PCT 3315 Woodland, 10 m transects. November 2023, PCT 3446 (when surveyed was mapped as PCT 3525) 20m transects. April 2024, PCT3446 10m transects.	Yes

Scientific Name	Common Name	BC Act Status*	EPBC Act Status*	Growth Form Group	Habitat Suitability	Survey Requirement (Timing, PCTs and Transect Width) (NSW DCCEEW, 2024a; DPIE, 2020b)	Survey Effort (Timing, PCTs, Methodology and Transect Width)	Guideline Met
Pterostylis chaetophora	-	V	-	Orchid	Geographic limits – none Habitat constraints – none	September to November, PCTs 3314, 3315, 3431, 3485 and 3446, 10 m transect	Expert Report (Bell, 2024)	N/A
Rhodamnia rubescens	Scrub Turpentine	CE	CE	Tree	Geographic limits – none Habitat constraints – none	Any month, PCT 3446, 20m transect	April 2024 PCT 3446 10m transects.	Yes
Rutidosis heterogama	Heath Wrinklewort	V	V	Herbs and Forbs	Geographic limits – none Habitat constraints – none Habitat substantially degraded – Yes, areas of DNG due to past heavy clearance	Any month, PCT 3315, 3446 10 m transect in open and 5 m in dense	October 2023, PCT 3315 Woodland, 10 m transects. November 2023, PCT 3315 DNG, 5 m transects. April 2024 PCT3446 10m transects.	Yes
Thesium australe	Austral Toadflax	V	V	Herbs and Forbs	Geographic limits – none Habitat constraints – none	November to February, PCTs 3395 and 3396, 10 m transect	November and December 2020, habitat assessment (no Kangaroo Grass recorded anywhere across the Study Area). November 2021, PCT 3485, 10 m transects. November 2023, PCTs 3395 and 3396 DNG. February 2024, PCT 3395. April 2024, PCT 3395 (2 large area survey points to cover a minor increase in the Study Area near tailings dam).	Yes

* Threatened species status listed under the BC Act and EPBC Act, current as at May 2024; V = Vulnerable, E = Endangered, EP = Endangered Population.

^ Months of survey from the BioNet Threatened Species Profile Database (NSW Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2024b).

[1] Additional areas of Small-flower Grevillea (*Grevillea parviflora* subsp. *parviflora*) were determined outside of the prescribed survey window (DCCEEW 2024b). Irrespective of this, this threatened species was still surveyed within PCT 3446 in April 2024 and no *Grevillea* sp were detected.

2.2 SURVEY DETAILS

The surveys have been undertaken by six very experienced ecologists (Table 4).

Table 4
Surveyors

Surveyor	Company	Qualifications
Dr Colin Driscoll	Hunter Eco	Bachelor of Science, PhD, University of Queensland Adjunct Associate Professor, BAM Accreditation BAAS 17004.
Garon Staines	Future Ecology	Bachelor of Applied Science (Natural Resource Management), Certificate in Bushland Regeneration (Supervisor), Principal Ecologist. 30 years' experience in natural area management, biodiversity survey and impact assessment.
Nigel Cotsell	Ecosure	Bachelor of Science, Master of Natural Resources, BAM Accreditation BAAS 18026.
Anthony Jarvis	Ecosure	Bachelor of Applied Science, Cert III Conservation and Land Management, BAM Accreditation BAAS 19043.
Vanessa Cain	Ecosure	Bachelor of Environmental Science (Honours), Master of Environmental Management (Conservation).
Matthew Bailey	Bolwarra	Bachelor of Arts (Aboriginal Anthropology/Vegetation Ecology), Graduate Certificate Environmental Science (GPA 7.0), Certificate 2 Bush Regeneration. 28 years' experience in Vegetation Ecology. NSW BAM Accredited Assessor BAAS18021.

Matthew Bailey (Bolwarra) has the following recent and relevant threatened flora experience:

- 2005-present identification of >50 *Rhodamnia rubescens* plants at multiple locations on the mid north coast NSW.
- Oct 2021 Identification of a *Thesium australe* population at Muswellbrook during Biodiversity Assessment Method (BAM) Threatened Species Surveys.
- Oct 2021 Identification of *Acacia pendula* plants at Muswellbrook BAM Threatened Species Survey.
- Oct 2021 Identification of *Cymbidium canaliculatum*, Muswellbrook BAM Threatened Species Survey.
- September 2022 Identification of a *Callistemon linearifolious* population during a statutory Review of Environmental Factors assessment, Bucketts Way, Limeburners Creek (Lower Hunter Valley).
- March 2023 Identification of *Thesium australe* population at Warialda during a Biodiversity Stewardship Site Assessment Report (BSSAR) BAM plot survey.

Eleven rounds of surveys were undertaken between October 2019 and February 2024 (Table 5). Prior to 2019 (in 2018), earlier surveys were undertaken by Dr Colin Driscoll and Dr Stephen Bell (Eastcoast Flora Survey) (Hunter Eco, 2021).

Table 5
Survey Timing

Survey Period	Dates	Activity	Location	Surveyor
Round 1	1-Oct-19 2-Oct-19 3-Oct-19 18-Nov-19 19-Nov-19	Random meander Orchid survey	Conducted through open grassy groundcover of associate Grey Box x White Box vegetation north-west of the active mine site.	Dr Colin Driscoll Garon Staines
Round 2	1-Oct-20 2-Oct-20	Random meander Orchid survey	Conducted through woodland and DNG of varying conditions of ironbark and box gum communities. Several surveys completed north and west of the active mine site.	Dr Colin Driscoll
	16-Nov-20 17-Nov-20 18-Nov-20 19-Nov-20 20-Nov-20 25-Nov-20 7-Dec-20 9-Dec-20 11-Dec-20	Threatened species targeted surveys	Conducted within both Woodland and DNG conditions of Box Gum and Ironbark communities. Surveys were distributed predominantly south of Castlerock Road, with one exception directly north of the active mine site.	
Round 3	27-Sep-21 28-Sep-21 29-Sep-21 30-Sep-21 1-Oct-21	Threatened species targeted surveys	Conducted within the southern section of the Study Area, encompassing Ironbark and Box Gum communities extending as far north as Castle Rock Road. Surveys were extended roughly 123 ha north of Castle Rock Road, within mainly Shrubby woodland and DNG vegetation types.	Nigel Cotsell Anthony Jarvis Vanessa Cain
Round 4	11-Oct-21 12-Oct-21 13-Oct-21 14-Oct-21 15-Oct-21			
Round 5	1-Nov-21 2-Nov-21 3-Nov-21	Threatened species targeted surveys	Conducting within the northern section of the Study Area, within a long strip of PCT 3396 and the eastern border within a single area of PCT 3485.	
Round 6	25-Sep-23 26-Sep-23 27-Sep-23 28-Sep-23 29-Sep-23	Threatened species targeted surveys – 10 m separation width transects	Conducted through PCT 3431 between Dorset and Castlerock Roads north of the active mine site.	Matthew Bailey
Round 7	18-Oct-23 19-Oct-23 20-Oct-23 21-Oct-23 22-Oct-23 23-Oct-23 24-Oct-23	Threatened species targeted surveys – 10 m separation width transects	Conducted through PCT 3431, 3314, 3315 (Woodland) north and west of the active mine site.	

Survey Period	Dates	Activity	Location	Surveyor
	25-Oct-23			
	26-Oct-23			
	27-Oct-23			
	28-Oct-23			
	29-Oct-23			
Round 8	15-Nov-23	Threatened species targeted surveys – 5 m (PCTs 3315 and 3396 DNG), 10 m (PCT 3485) and 20 m (PCT 3446) separation width transects.	Conducted through PCT 3396, 3485, 3446, 3315 (DNG) north and west of the active mine site.	
	16-Nov-23			
	17-Nov-23			
	18-Nov-23			
	19-Nov-23			
	20-Nov-23			
Round 9	29-Jan-24	Large area two-phase grid-based systematic survey method	All locations of mapped PCT 3395 surveyed for *Thesium australe* totalling 673.8 ha (189.7 ha Woodland and 484 ha DNG). This PCT makes up a large portion of the Study Area stretching both north and south of Castle Rock Road and roughly 4 km west of the active Mine site. 689 100 m survey points were searched, each a 40 m diameter survey point.	
	30-Jan-24			
	31-Jan-24			
	1-Feb-24			
	2-Feb-24			
	12-Feb-24			
	13-Feb-24			
	14-Feb-24			
	15-Feb-24			
	16-Feb-24			
	19-Feb-24			
	20-Feb-24			
	21-Feb-24			
	26-Feb-24			
Round 10	5-March-24	Targeted search for Slaty Red Gum (*Eucalyptus glaucina)*	South-west portion of the Study Area.	Dr Colin Driscoll
Round 11	30-April-24	Threatened species targeted surveys – *Eucalyptus castrensis, Eucalyptus glaucina, Eucalyptus pumila, Grevillea parviflora subsp. Parviflora, Persoonia pauciflora, Prostanthera cineolifera, Rhodamnia rubescens, Rutidosis heterogama.* Large area two-phase grid-based systematic survey method – two survey points targeting *Thesium australe*	A 1.5 ha polygon of PCT 3446 located in the south-west portion of Study Area, re-assigned from PCT3525 to PCT3446 polygon, previously surveyed November 2023 via 20 m separation width transects. Two 100 m survey points located east of the tailings dam were surveyed for *Thesium australe*, each a 40 m diameter survey point.	Matthew Bailey

In addition to the above, Dr Colin Driscoll (Hunter Eco, 2024) watched for the target threatened flora species through the flora survey work he completed in the Study Area (e.g., identification of each tree, floristic plots, vegetation mapping and flora species list compilation).

The weather conditions preceding the surveys in 2023 consisted of above average yearly rainfall in 2021 (981 millimetres [mm]) and 2022 (826 mm) with 608.4 mm recorded for 2023 compared to an annual average of 614.9 mm across 1990-2023. Winter and early spring rainfall in 2023 was below average with August and October rainfall close to average. The weather conditions preceding the surveys in 2024 consisted of above average monthly rainfall in November 2023, December 2023 and January 2024. Daily weather conditions during the survey periods are reported in Table 6.

Table 6
Weather Conditions

Date	Minimum Temperature (°C)	Maximum Temperature (°C)	Rainfall (mm)
1-Oct-19	10	21.5	0
2-Oct-19	5.8	25.4	0
3-Oct-19	9.5	28.3	0
18-Nov-19	12.1	28.6	0
19-Nov-19	12.8	34.8	0
1-Oct-20	7.2	23.7	1.8
2-Oct-20	5.2	24.9	0
16-Nov-20	10.6	36.9	0
17-Nov-20	14.8	25.9	0
18-Nov-20	12.7	26.1	0
19-Nov-20	10.4	29.2	0
20-Nov-20	13.2	35.5	0
25-Nov-20	14.1	27.4	0
7-Dec-20	15.3	29.4	0
9-Dec-20	7.4	27.6	0
11-Dec-20	13	18.9	0
27-Sep-21	4.3	20.7	0.0
28-Sep-21	5.1	24.4	0.0
29-Sep-21	10.4	20.6	12.8
30-Sep-21	9.2	23.7	0.2
1-Oct-21	11.9	23.6	17.6
11-Oct-21	12	16.3	1.4
12-Oct-21	11.4	13.7	11.4
13-Oct-21	13.6	19.7	2.4
14-Oct-21	11.4	27.2	1.0
15-Oct-21	10.4	20.4	4.2
1-Nov-21	7.3	23.8	0.0
2-Nov-21	15	26.3	0.0
3-Nov-21	9	27	0.0
25-Sep-23	4.7	26.2	0.0
26-Sep-23	7.6	28.3	0.0
27-Sep-23	11.4	29.1	0.8
28-Sep-23	10.8	23.8	0.0
29-Sep-23	7.9	31	0.0
18-Oct-23	9.3	21.9	0.2

Date	Minimum Temperature (°C)	Maximum Temperature (°C)	Rainfall (mm)
19-Oct-23	8.1	24.7	0.0
20-Oct-23	7.4	30.2	0.0
21-Oct-23	10.5	32.9	0.0
22-Oct-23	14	31.1	0.0
23-Oct-23	7.5	29.5	0.0
24-Oct-23	6.5	34.6	0.0
25-Oct-23	14.5	32.7	0.0
26-Oct-23	11	17.8	17.2
27-Oct-23	11.1	16.1	3.4
28-Oct-23	7	20.3	0.0
29-Oct-23	6.6	25.8	0.0
15-Nov-23	16.3	33.6	0.0
16-Nov-23	16.2	33.3	0.0
17-Nov-23	15.2	23	0.0
18-Nov-23	13.4	26.7	0.0
19-Nov-23	9.7	33	0.0
20-Nov-23	18.8	22.3	2.4
29-Jan-24	19.7	37.3	0.0
30-Jan-24	23.6	33.7	0.0
31-Jan-24	21.7	32.3	0.0
1-Feb-24	20.6	32.6	1.2
2-Feb-24	18.4	39.2	0.0
12-Feb-24	15.4	32.4	0.0
13-Feb-24	16	34.9	1.8
14-Feb-24	17.5	34.9	8.0
15-Feb-24	19.4	26.6	0.4
16-Feb-24	19.8	31.7	4.0
19-Feb-24	18.7	27.1	4.6
20-Feb-24	18.3	24.5	1.0
21-Feb-24	17.9	29	0.0
26-Feb-24	16.2	35.3	0.0
5-March-24	11.6	29.6	0.0
30-April-24	10.5	22.0	1.2

Source: MACH Mt Pleasant Real-time Data (A-PF2 and A-PF4). Note: Degrees Celsius = (°C)

Surveys were undertaken in accordance with the *Surveying Threatened Plants and their Habitats: NSW Survey Guide for the Biodiversity Assessment Method* (2020) (the Guide) (DPIE, 2020). In addition to this methodology, threatened flora species were searched for during random meanders and during other flora survey techniques (vegetation mapping and floristic data collection).

Across the Study Area (See Photos 1 – 10), the presence of fences, farm sheds and machinery, steep eroding banks, steep areas, gullies, drains, wombat burrows, rabbit warrens, fallen trees, standing trees, dense thickets of African Boxthorn (*Lycium ferocissimum)* and Velvet Mock Olive (*Notelaea macrocarpa)* necessitated minor deviations at times during the field survey from pre-survey grid transect lines.

In such instances the grid mapped transect line was visually observed from the adjacent area, with binoculars, if necessary, to ensure adequate coverage as per the Guide. The visibility in all vegetation zones was up to 20 m either side of the transect lines.

2.2.1 Round 1 – October to November 2019

Dr Colin Driscoll (Hunter Eco) and Garon Staines (Future Ecology) undertook searches for *Diuris tricolor*, and any other terrestrial orchid species across a total of 33 km of random targeted surveys from 1 to 3 October 2019 and 18 to 19 November 2019 (Hunter Eco, 2021). The survey transects are shown on Figure 4a and Figure 4c.

2.2.2 Round 2 – October to December 2020

Dr Colin Driscoll (Hunter Eco) undertook targeted surveys for a range of threatened flora species in October, November and December 2020 (Hunter Eco, 2021). A random meander survey specifically targeting *Diuris tricolor* and *Prasophyllum petilum* (syn. *Prasophyllum* sp. Wybong) (Tarengo Leek Orchid) was conducted on 1 and 2 October 2020 (Figure 4b). Transects with a separation width of 20 m were undertaken in November and December 2020, targeting threatened shrubs, herbs and *Cymbidium canaliculatum* (Figure 4a, 4c).

Hunter Eco (2021) explains that surveys were also conducted with consideration of previously unrecorded threatened species potentially being present. In other words, all threatened flora species were targeted irrespective of habitat suitability or likelihood of occurring. All flora species encountered were positively identified, so it is unlikely that any potential occurrence of a species which was not expected to occur was misidentified (and therefore not recorded).

2.2.3 Round 3 – September to October 2021

Ecosure (2022) undertook targeted surveys between 27 September and 1 October 2021. Transects with a separation width of 20 m were undertaken, targeting threatened shrubs and trees (1-6 m in height), *Cymbidium canaliculatum*, *Pomaderris queenslandica* and *Acacia pendula* (Figure 4a, 4c).

2.2.4 Round 4 – October 2021

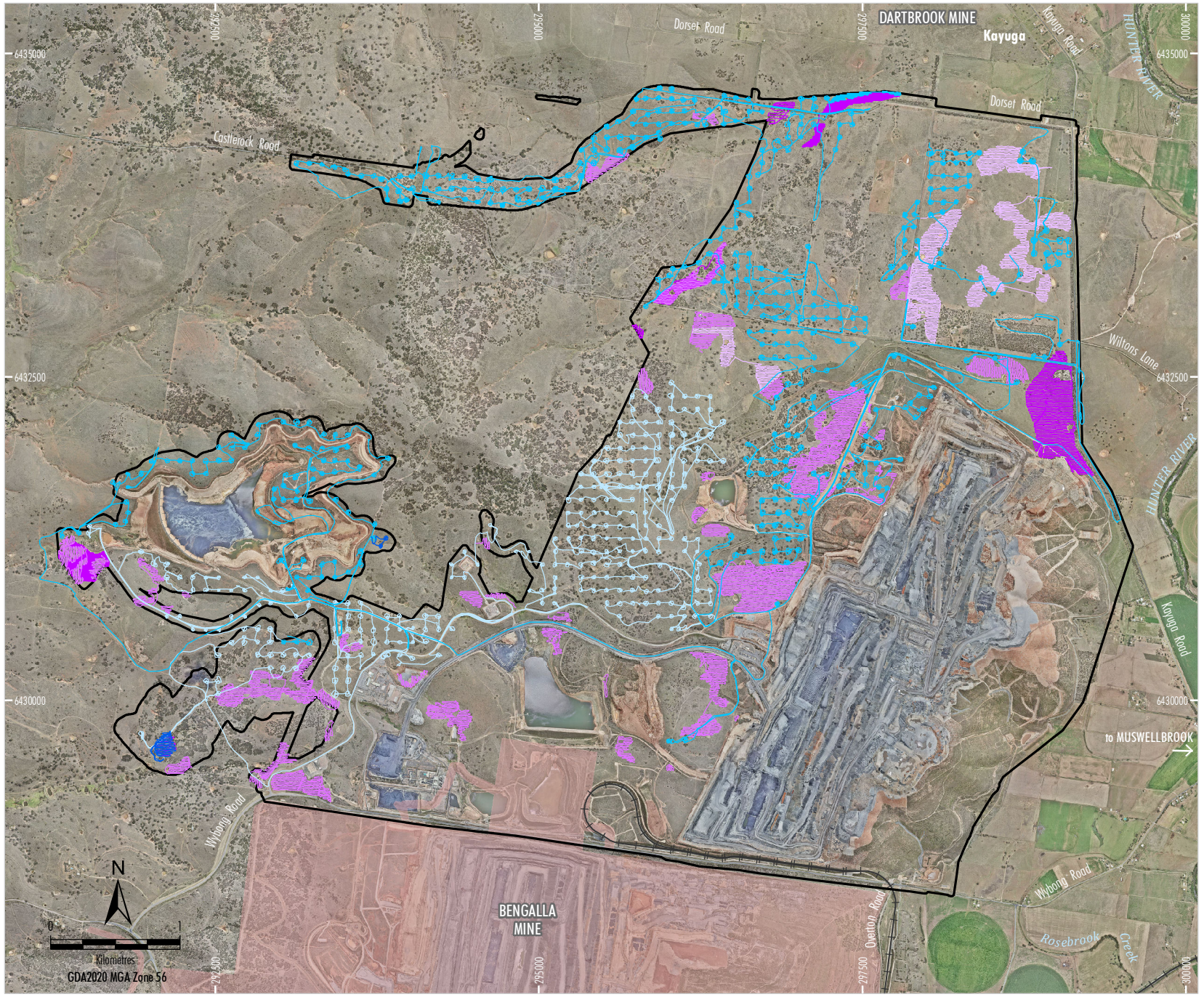
Ecosure (2022) undertook targeted surveys between 11 and 15 October 2021. Transects with a separation width of 20 m were undertaken, targeting *Cynanchum elegans, Cymbidium canaliculatum, Ozothamnus tesselatus, Pomaderris bodalla, P. queenslandica, P. reperta, Acacia pendula, Cryptostylis hunteriana, Thesium australe,* and *Eucalyptus glaucina* (Figure 4a, 4c).

2.2.5 Round 5 – November 2021

Ecosure (2022) undertook targeted surveys between 1 and 3 November 2021. Transects with a separation width of 10 m were undertaken, targeting *Cryptostylis hunteriana* and *Thesium australe.* The survey transects are shown on Figure 4a and Figure 4c.

2.2.6 Round 6 – September 2023

Bolwarra undertook targeted surveys between 25 and 29 September 2023. Transects with a separation width of 10 m were undertaken, targeting *Acacia pendula, Cymbidium canaliculatum, Eucalyptus glaucina* and *Ozothamnus tesselatus.* Utilising ArcGIS, 10 m grid based transect point files were generated by Bolwarra for upload into a Garmin Montana 700 handheld GPS used to navigate and log tracks during the 2023/24 survey (Figure 4b).



LEGEND

- Threatened Flora Study Area
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Survey Transects (Bolwarra)

- September 2023
- October 2023
- November 2023
- January 2024
- February 2024
- April 2024

Source: MACH (2024); Bolwarra (2024); NSW Spatial Services (2024); Department of Planning and Environment (2016)
Orthophoto: MACH (Dec 2023)

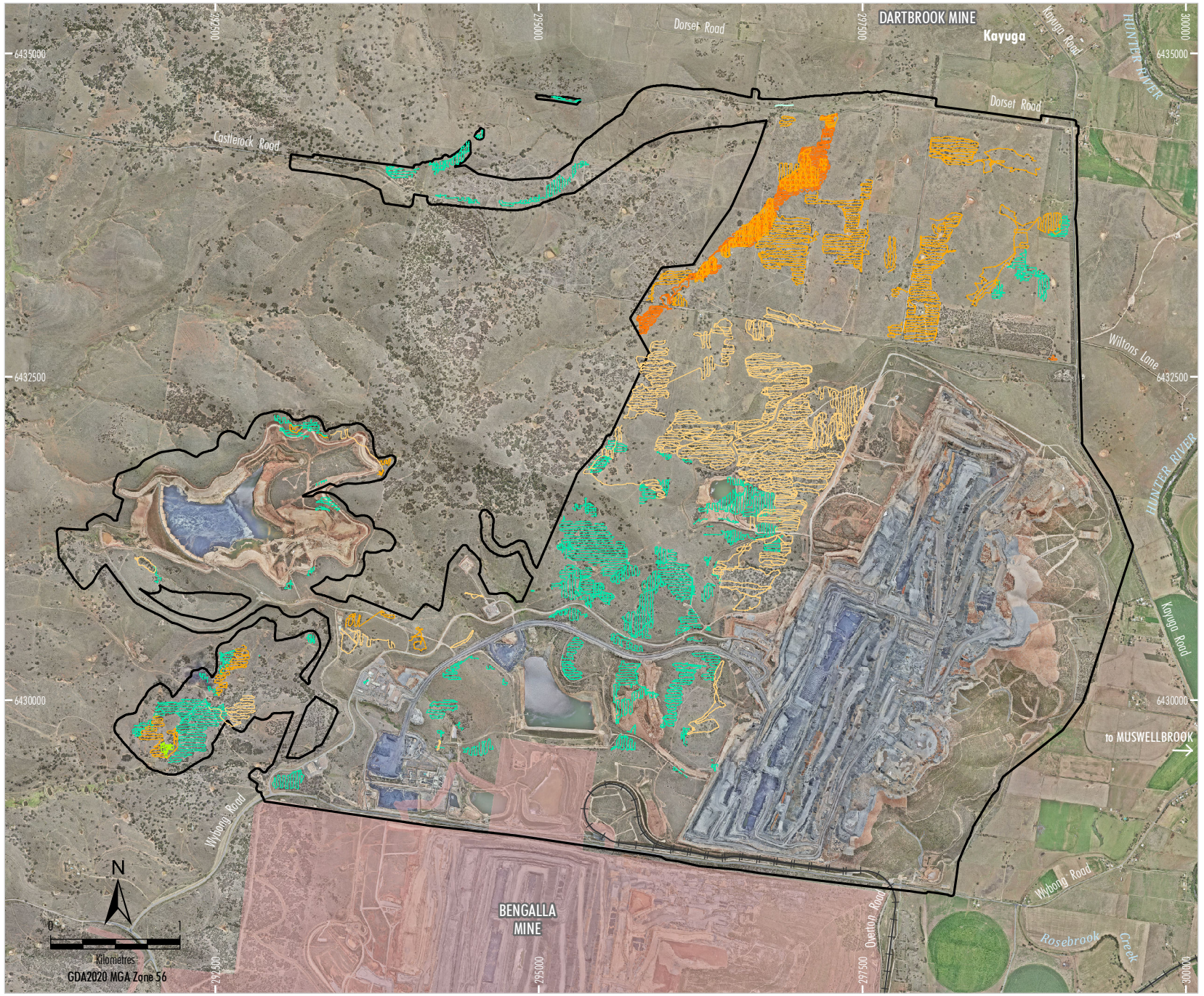
MACHEnergy

MOUNT PLEASANT OPERATION

Bolwarra Survey Transects

Figure 4a

MAC-18-02A_MOD7_TFlora_206A



LEGEND

- Threatened Flora Study Area
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Survey Transects (Hunter Eco)

- March 2020
- December 2020
- March 2024

Survey Transects (Ecosure)

- September 2020
- October 2020
- November 2020

Source: MACH (2024); Hunter Eco (2021, 2024); Ecosure (2022); NSW Spatial Services (2024); Department of Planning and Environment (2016)
Orthophoto: MACH (Dec 2023)

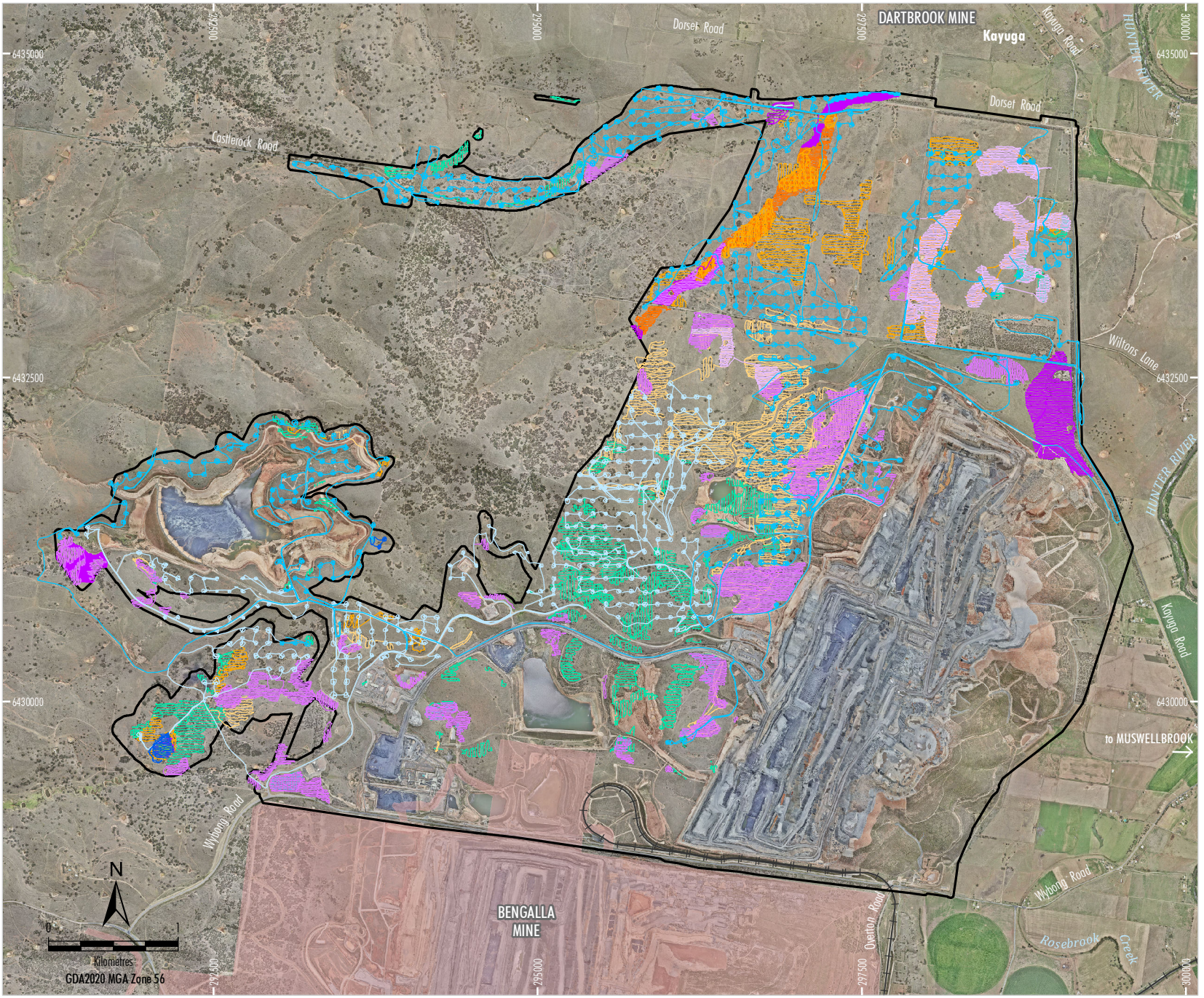
MACHEnergy

MOUNT PLEASANT OPERATION

Hunter Eco and Ecosure Survey Transects

Figure 4b

MAC-18-02A_MOD7_TFlora_205A



LEGEND

- Threatened Flora Study Area
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Survey Transects (Hunter Eco)

- March 2020
- December 2020
- March 2024

Survey Transects (Ecosure)

- September 2020
- October 2020
- November 2020

Survey Transects (Bolwarra)

- September 2023
- October 2023
- November 2023
- January 2024
- February 2024
- April 2024

Source: MACH (2024); Bolwarra (2024); Hunter Eco (2021, 2024); Ecosure (2022); NSW Spatial Services (2024); Department of Planning and Environment (2016)
Orthophoto: MACH (Dec 2023)

MACHEnergy

MOUNT PLEASANT OPERATION

Combined Survey Transects

Figure 4c

MAC-18-02A_MOD7_TFlora_203H

2.2.7 Round 7 – October 2023

Bolwarra undertook targeted surveys between 18 and 29 October 2023. Transects with a separation width of 10 m were undertaken, targeting *Acacia pendula, Cymbidium canaliculatum, Eucalyptus glaucina, Ozothamnus tesselatus, Acacia bynoeana, Angophora inopina, Callistemon linearifolius, Eucalyptus pumila, Eucalyptus glaucina, Eucalyptus parramattensis subsp. decadens, Prostanthera cineolifera* and *Prostanthera cryptandroides subsp. cryptandroides.*

2.2.8 Round 8 – November 2023

Bolwarra undertook targeted surveys between 15 and 20 November 2023. Transects with separation width of 10 m were undertaken, targeting *Acacia pendula, Cymbidium canaliculatum, Eucalyptus pumila, Rutidosis heterogama, Thesium australe* and *Prostanthera cryptandroides subsp. cryptandroides*.

2.2.9 Round 9 – February 2024

Bolwarra undertook targeted surveys between 29 January and 2 February 2024, 12 and 16 February 2024 and 19 and 21 February 2024. The large area two-phase grid-based systematic survey method (utilising a 100 m grid and 40 m diameter search areas located on grid intersects) was undertaken.

In many instances where the grassland was low (<30 cm high) this was able to be undertaken by visually scanning a radius from the grid intersect point. When the ground layer was less open and/or >30 cm in height a radius of approximately 10 m was walked around the grid intersect point so that a 40 m diameter area could be visually scanned with inter-tussock areas inspected where required to determine presence or absence of *Thesium australe*. Where necessary, in some survey point locations with taller grasses e.g., *Austrostipa verticillata* further transects were walked within the 40 m diameter survey point to ensure detection of all species present.

The following common wiry native herb and sub-shrubs, often found growing intertwined with grasses, were detectable from up to 20 m: *Stackhousia muricata, Templetonia stenophylla, Boerhavia dominii, Gallium leiocarpum* and *Mimulus gracilis*. These common native species however were only present in the better condition areas surveyed which were a minority of survey points searched.

Where a 100 m grid survey point coincided with thickets of African Boxthorn, disturbed tracks, road edge, disturbed drill pad locations, the edge of the mapped PCT polygon, fence line or other disturbance feature (Photo 1) the survey point was moved nearby where habitat potential was likely to be improved.

2.2.10 Round 10 – March 2024

On 5 March 2024, Hunter Eco (2024) undertook a targeted search for Slaty Red Gum (*Eucalyptus glaucina*) in the south-west portion of the Study Area. The survey transects are shown on Figure 4a.

2.2.11 Round 11 – April 2024

Bolwarra undertook targeted surveys on 30 April 2024 on two separate areas requiring survey due to a PCT reassignment and a minor extension to the Study Area. The large area two-phase grid-based systematic survey method (utilising a 100 m grid and 40 m diameter search areas located on grid intersects) was undertaken on a 1.8 ha hectare patch of PCT 3395 DNG targeting *Thesium australe*. This was required due to a minor extension to the Study Area.

A 1.5 ha polygon of PCT 3525, previously surveyed in November via transects with 20 m separation width, was reassigned to PCT 3446. As a result of this PCT reassignment additional species were required to be surveyed within this polygon. Transects with separation width of 10 m were undertaken in April 2024, targeting *Eucalyptus castrensis, Eucalyptus glaucina, Eucalyptus pumila, Grevillea parviflora* subsp. *Parviflora, Persoonia pauciflora, Prostanthera cineolifera, Rhodamnia rubescens, Rutidosis heterogama* and Austral Toadflax (*Thesium australe*).

Photo 1 Highly Disturbed Area – *Thesium australe* Surveys.

Photo 2 PCT 3395 – Low Vegetation Integrity DNG

Photo 3 PCT 3395 – Low Vegetation Integrity DNG

Photo 4 PCT 3395 – DNG and Woodland

Photo 5 PCT 3395 – DNG and Woodland

Photo 6 PCT 3431 – DNG

Photo 7 PCT 3431 – Woodland

Photo 8 PCT 3431 – Woodland

Photo 9 PCT 3431 – DNG

Photo 10 PCT 3431 and 3485 – DNG

2.2.12 Observations Bolwarra Surveys

The vegetation surveyed consisted of open forest, woodland, and DNG (see Photos 1 – 10), generally lacking in a shrub layer, with a structure consistent with open vegetation as per Walker and Hopkins (1990). The areas surveyed had not been slashed, burnt, or logged recently with some portions showing evidence of recent or current low intensity grazing by cattle. Some initially mapped survey areas close to the operational mine were found to be disturbed/modified (cleared, earthworks, bare mineral earth, excavation, mine, road and or drainage infrastructure or otherwise). These disturbed/modified areas are consistent with the Existing/Approved Development Area within Approved Mine Life (DA 92/97) (see Figure 3) and being absent of vegetation were subsequently excluded from this survey.

The ground cover of the DNG vegetation surveyed was mid-dense to sparse consisting of mostly native grass and herb species together with exotic species, including PurpleTop (*Verbena bonariensis*) and some exotic grasses. The visibility in DNG was up to 20 m either side of the transect lines. Within woodland and open forest patches groundcover was also mid-dense to sparse, as with the DNG areas native grass and herbs mostly dominated, however the woody high threat weed species African Boxthorn (*Lycium ferocissimum)* occurred with a greater frequency, at times forming impenetrable thickets with little to no groundcover. The visibility in the woodland and open forest patches was similarly up to 20 m either side of the transect lines. For the floristics of the low Vegetation Integrity areas surveyed and dominant species present in all areas please refer to the *Mount Pleasant Optimisation Project Baseline Flora Report (Hunter Eco, 2024).*

2.3 EXPERT REPORT

Dr Stephen Bell (Eastcoast Flora Survey) prepared an Expert Report for the Pine Donkey Orchid (*Diuris tricolor*), *Prasophyllum petilum* and *Pterostylis chaetophora* (Bell, 2024). Dr Bell concludes that none of these species are likely to occur in the Study Area based on a combination of differing floristics, geology, soil landscape, and rainfall attributes, together with a largely absent *Orchidaceae* population (used as a surrogate mycorrhizal fungi).

3 RESULTS

The vegetation surveyed consisted of open forest, woodland, and DNG, generally lacking in a shrub layer, with a structure consistent with open vegetation as per Walker and Hopkins (1990). The areas surveyed had not been slashed, burnt, or logged recently with some portions showing evidence of recent or current low intensity grazing by cattle.

3.1 THREATENED FLORA SPECIES

No threatened flora species listed under the BC Act or EPBC Act were recorded in the Study Area or were recorded in any past studies.

Common native grass species observed included *Aristida ramosa var. ramosa*, *Sporobolus creber*, *Cymbopogon refractus*, *Bothriochloa decipiens*, *Chloris ventricosa* and *Dichanthium sericeum* subsp*. sericeum*. Notably *Themeda australis*, considered the main host plant and/or associate for the semi-parasitic threatened herb *Thesium australe (*NSW DCCEEW, 2024c; Eddy et al, 1998*),* was not observed during the entire extensive survey in 2023/24 across the Mount Pleasant Operation threatened flora survey Study Area.

However *Thesium australe* can be found associated with a number of grassland species both native and introduced and has been found within grasslands dominated by *Cymbopogon refractus* (Barbed Wire Grass) and *Andropogon virginicus* (Whiskey Grass) (Hunter, 2015) as well as the native tussock grasses *Sorghum leiocladum, Poa labillardierei* subsp. *labillardierei, Cymbopogon refractus, Elymus scaber, Rytidosperma racemosum var. racemosum, Dichelachne sieberiana* and *Dichanthium sericeum* (Doyle and Pellow, 2018). Of these species, only *Cymbopogon refractus* and *Dichanthium sericeum* occur commonly (in patches) on the Study Area. During all 2023/24 surveys groundcover patches dominated by these species were carefully observed during 10 m separation width transect surveys (outside of the specific *Thesium australe* survey), whilst travelling between 100 m grid survey point *Thesium australe* survey (via foot and vehicle) and whilst undertaking the 689 40 m diameter survey points.

Thesium australe has been reported as often growing in wet sites (Eddy et al, 1998) and rocky, sloping areas with water seepage, without full sunlight all day (Doyle and Pellow, 2018). Within the site survey only a few habitat patches encountered could be described as wet and these tended to be dominated by exotic species (eg. *Verbena bonariensis*).

Two yellow flowering species were present occasionally; Fireweed (*Senecio madagascariensis)* and Yellow Buttons (*Chrysocephalum apiculatum*), these were easily distinguishable from up to 10 m. Any flowering species was identified during the survey so that any occurrence of flowering threatened species eg *Diuris tricolor, Monotaxis macrophylla, Thesium australe* and *Rutidosis heterogama* would be detected. The following wiry herb and sub-shrub species were able to be detected up to 20 m away; *Stackhousia muricata, Templetonia stenophylla, Boerhavia dominii, Gallium leiocarpum* and *Mimulus gracilis*. Where detected, these were investigated further at closer proximity to eliminate the possibility of *Thesium australe* presence.

Cymbidium canaliculatum transect surveys including ground searches for relevant microhabitats such as fallen branches or logs. Tree canopies were scanned with binoculars where required.

All shrubs and trees observed during the survey were positively identified and none of them were threatened species.

3.2 THREATENED FLORA POPULATIONS

As a result of the past and more contemporary surveys, there is a high confidence that the threatened flora species/populations present in the Study Area have been identified (see Photo 11 and Photo 12). Only the *Cymbidium canaliculatum population in the Hunter Catchment* Endangered Population under the BC Act was identified in the Study Area during the contemporary threatened flora searches. It was recorded in ten locations (See Table 7 and Figure 5).

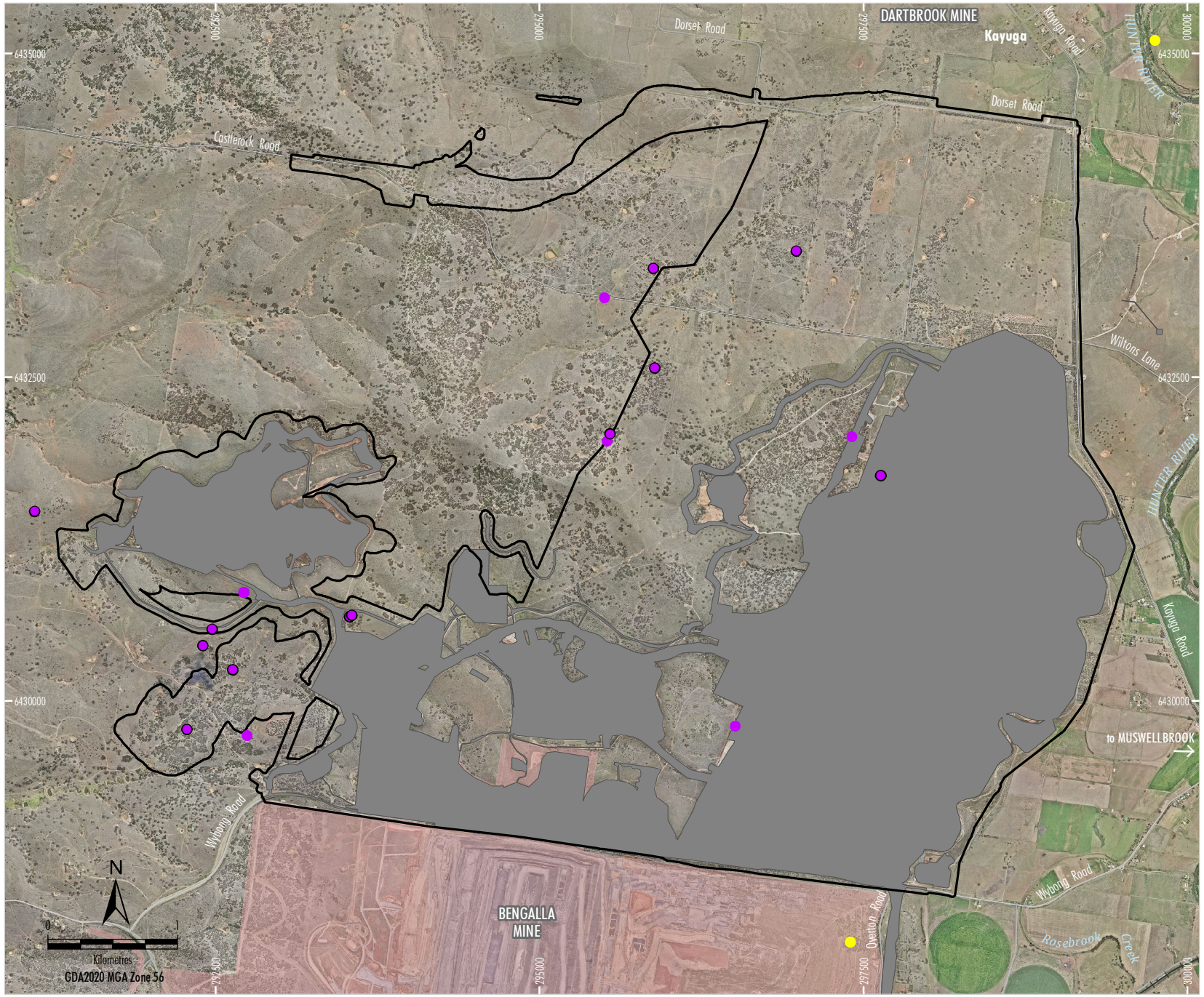
Table 7
Tiger Orchid (*Cymbidium canaliculatum*) Records

Number	Source of Record	Date Recorded	Easting	Northing	Habitat
1	Hunter Eco (2021)	October 2020	295877	6433338	PCT 3431
2	Hunter Eco (2021)	October 2020	297633	6431739	PCT 3395
3	Hunter Eco (2021)	October 2020	291103	6431461	PCT 3395
4	Hunter Eco (2021)	October 2020	295544	6432063	PCT 3395
5	Hunter Eco (2021)	October 2020	292279	6429778	PCT 3431
6	Ecosure (2022)	October 2021	295891	6432568	PCT 3431
7	Ecosure (2022)	October 2021	292633	6430240	PCT 3314
8	Ecosure (2022)	October 2021	296982	6433471	PCT 3431
9	Ecosure (2022)	October 2021	293534	6430650	PCT 3395 Relocated specimen from vegetation clearance area
10	Ecosure (2022)	October 2021	293551	6430659	PCT 3395 Relocated specimen from vegetation clearance area

The survey effort for this end result has been substantial and often involved walking highly intensive field traverses in areas that were unsuitable habitat for many of the target species in my experience. The Study Area has been heavily modified by past agricultural activities which significantly reduces the chances of finding many of the threatened flora species predicted by the NSW Government BAM Credit Calculator to occur in the PCTs in the Study Area.

3.3 EXPERT REPORT

Dr Stephen Bell (Eastcoast Flora Survey) concludes that the Pine Donkey Orchid (*Diuris tricolor*), *Prasophyllum petilum* and *Pterostylis chaetophora* are unlikely to occur in the Study Area based on a combination of differing floristics, geology, soil landscape, soil and rainfall attributes, together with a largely absent Orchidaceae population (used as a surrogate mycorrhizal fungi) (Bell, 2024).



LEGEND

- Threatened Flora Study Area
- Existing/Approved Development Area within Approved Mine Life (DA92/97)
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Survey Database

Threatened Flora

- *Cymbidium canaliculatum* population in the Hunter Catchment
- *Eucalyptus camaldulensis* population in the Hunter Catchment

Survey Record Sources: Cumberland Ecology (2010); Hunter Eco (2021); Ecosure (2022)
Database Record Sources: NSW DCCEEW (2024)

Source: MACH (2024); NSW Spatial Services (2024); Department of Planning and Environment (2016); Orthophoto: MACH (Dec 2023)

MACHEnergy

MOUNT PLEASANT OPERATION

Threatened Flora Species

Figure 5

MAC-18-02A_MOD7_TFlora_204D

Source: Ecosure (2022)

Photo 11 Tiger Orchid (*Cymbidium canaliculatum*)

Source: Ecosure (2022)

Photo 12 Tiger Orchid (*Cymbidium canaliculatum*) - Relocated Specimen from Vegetation Clearance Area

4 CONCLUSION

As a result of the past and more contemporary surveys, there is a high confidence in the survey result. Only the *Cymbidium canaliculatum population in the Hunter Catchment* Endangered Population under the BC Act was identified in the Study Area during the contemporary threatened flora searches. It was recorded in ten locations. No threatened flora species listed under the BC Act or EPBC Act were recorded in the Study Area or were recorded in any past studies.

The completed survey effort has been substantial and often involved walking highly intensive field traverses in areas that were unsuitable habitat for many of the target species in my experience. The Study Area has been heavily modified by past agricultural activities which significantly reduces the chances of finding many of the threatened flora species predicted by the NSW Government BAM Credit Calculator to occur in the PCTs in the Study Area.

Dr Stephen Bell (Eastcoast Flora Survey) prepared an Expert Report for the Pine Donkey Orchid (*Diuris tricolor*), *Prasophyllum petilum* and *Pterostylis chaetophora.* Dr Bell concludes that none of these species are likely to occur in the Study Area based on a combination of differing floristics, geology, soil landscape, soil and rainfall attributes, together with a largely absent Orchidaceae population (used as a surrogate mycorrhizal fungi).

Transects and meanders undertaken across the pasture (mapped as DNG) in the Study Area identified that much of it, apart from the minor woodland portions, did not represent potential habitat for the targeted species as this area was heavily modified by agricultural activities. It is likely that decades of cultivation, grazing by cattle and sheep, droughts, exotic species dominance and high pig and rabbit abundance has severely impacted the potential for threatened species, including orchid species (or any members of the family *Orchidaceae*) to occur.

As no individuals of any of the targeted threatened species were recorded during targeted surveys of the Study Area, it is considered unlikely that any of these species are present within the Study Area.

5 References

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