



Premise

ACENERGY PTY LTD

APSLEY BATTERY ENERGY STORAGE SITE

BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

REPORT NO: 221284/BDAR




REV: 001F

5 September 2022

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DOCUMENT AUTHORISATION		
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BDAR_00F	05/09/2022	Final for lodgment
Prepared by		Reviewed by
		Authorised by


Sally Kirby		Isobel Colson		David Walker	
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BAM CERTIFICATION

This report was prepared using Version 54 of BAM Credit Calculator 2020 and adhering to the requirements of the Biodiversity Assessment Method 2020.

This BDAR comprises BAM-C analyses; vegetation clearance covered by BAM-C case number 00032717/BAAS21027/22/00032718 (Revision 3). Finalised 05/09/2022.

Certified by: Sally Kirby (Assessor No: BAAS21027)

Signed: 

Date: 05/09/2022

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1. INTRODUCTION TO PROPOSAL AND ASSESSMENT TEAM

Premise Australia Pty Ltd (Premise) was engaged to prepare an Environmental Impact Statement (EIS) to assess the impacts associated with a proposed Battery Energy Storage System (BESS) to be located at 9010 Mitchell Highway, Apsley, NSW. The capital value of the proposed BESS exceeds thirty million dollars and the Project is considered a State Significant Development and the Biodiversity Offset Scheme is triggered under the *Biodiversity Conservation Act 2016* (BC Act). A Biodiversity Development Assessment Report (BDAR) is required to assess the biodiversity values of the site, identify potential impacts of the proposal on threatened entities and their habitat and outline any biodiversity offset liability for remaining impacts.

The proposed BESS and transmission line traverse cleared agricultural land and will not result in the loss of any trees or shrubs. Premise Australia Pty Ltd (Premise) ecologists undertook a site inspection and identified the majority of the subject land to be consistent with Category 1 – exempt land under Section 60H of the *Local Land Services Act 2013* (LLS Act). Clearing vegetation on Category 1 land does not require assessment under the BC Act as the land can lawfully be cleared under the LLS Act. A separate Land Category Report was prepared (**Appendix A**) and endorsed by the Biodiversity, Conservation and Science Directorate of the Department of Planning, Industry and Environment in December 2021 (**Appendix B**). The Subject Land in the Land Category Report (7.65 ha) is considered Category 1 land, including the proposed BESS, associated infrastructure, and the land to connect to the electricity transmission line (**Figure 1**). Vegetation clearing on the Subject Land for the Land Category Report is not considered further in this BDAR, however prescribed impacts are included in Section 6.3.

Access to the proposed BESS site along the Mitchell Highway will require clearing to allow vehicles to turn safely. The access point is not Category 1 land and therefore requires assessment under the BC Act and is the Subject Land for this BDAR.

The assessment of impacts on biodiversity are conducted in accordance with the Biodiversity Assessment Method (BAM) (DPIE, 2020) established under the BC Act. The access to the BESS is 0.03 ha which is below the area clearing limit for application of the small area development module of the BAM. This BDAR has been prepared using the Streamlined Assessment Module – Small Area according to the requirements outlined in Table 13 of Appendix C of BAM 2020 (DPIE, 2020). The Assessment Type listed in the BAM Calculator is Part 4 Developments (Small Area) and the Biodiversity Offset Scheme entry Trigger is BOS Threshold: Biodiversity Values Map and area clearing threshold, following advice from BAM Support (H. Campbell, personal communication, February 9, 2022). The BDAR has been prepared by Sally Kirby (Premise), who is an accredited assessor under section 6.10 of the BC Act (assessor accreditation number BAAS21027).

1.1 Administration



The proponent for the proposed solar farm is ACenergy Pty Ltd located at Suite 502, 689 Burke Road Camberwell, Victoria 3124 Australia. The contact name is Danny Wilkinson danny.w@acenergy.com.au.

The Project Identification for Premise Pty Ltd is 221284 and the State Significant Development Project is PDA-28968048.

Senior Ecologists, Sally Kirby and Isobel Colson at Premise Pty Ltd undertook the site inspection and prepared the BDAR Streamlined Assessment Module (Small Area) under the supervision of Principle Ecologist, Dr Colin Bower.

Figure 1 – Location and Site Layout



- Legend**
- | | |
|--|---|
|  Site |  Electricity Easement (By Survey) |
|  Development Area |  Electricity Transmission Line (By Survey) |
|  Disturbed Area |  Natural Contours (2m Interval) |
|  Cadastre | Residential Receivers |
|  Crown Enclosure Permit |  Associated Receiver |
|  Crown Land | |
|  Road | |
|  Water Body | |
|  Watercourse | |

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The BAM-C Version 50 was used for this assessment BAAS21027/22/00032718 (Revision 0).

On 3 March 2022, ACEnergy Pty Ltd received Secretary's Environmental Assessment Requirements (SEARs) for the project. The relevant requirements of the SEARs, and where they are addressed in this BDAR, are listed below:

- an assessment of the biodiversity values and the likely biodiversity impacts of the project in accordance with Section 7.9 of the *Biodiversity Conservation Act 2016* (NSW), the Biodiversity Assessment Method (BAM) and documented in a Biodiversity Development Assessment Report (BDAR), unless BCS and DPIE determine the proposed development is not likely to have any significant impacts on biodiversity values (**this Report**);
- the BDAR must document the application of the avoid, minimise, and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the BAM (**Section 5**); and
- if an offset is required, details of the measures proposed to address the offset obligations (**Section 8**).

1.2 Project Overview

The main elements of the Proposal include the following:

- 120 Megawatt (MW), 240 Megawatt hour (MWhour) Battery Energy Storage System (BESS);
- Connection to an existing overhead transmission line via either an underground or aboveground connection;
- Temporary laydown areas; and
- Site access from Mitchell Highway.

2. ESTABLISHING THE SITE CONTEXT (BAM CHAPTER 3)

2.1 IBRA region

The proposed Battery Energy Storage System (BESS) is to be located at 9010 Mitchell Highway, Apsley NSW on Lot 3 DP1012686. The proposal is located in the Dubbo Local Government Area, and is part of the NSW South Western Slopes Region and Inland Slopes Subregion according to the Interim Biogeographic Regionalisation of Australia (IBRA) (Thackway and Cresswell, 1995). The site lies on the Wellington – Molong Karst Mitchell Landscape (NSW Government, 2021).

2.2 Site Context

The BESS site is bounded by the Mitchell Highway to the west and cleared agricultural land to the north, east and south. It is relatively flat, lying between 366 m and 370 m AHD (Australian Height Datum) from north to south and 368 to 371 m east to west. There is a farm dam to the east of the proposed BESS, and native trees and shrubs have been planted along the Mitchell Highway to the north. The site is rectangular in shape, with infrastructure proposed in bays covering an area approximately 300 metres by 150 metres (4.5 ha). An overhead electricity transmission line runs north to south along the eastern boundary and an underground or overhead cable is proposed to connect the BESS to the overhead transmission line (**Figure 1**). The property has a long history of agricultural production, including grazing and cropping. At the time of survey, the paddock was sown to oats and cattle were grazing.

The Subject Land lies on Molong Zone geology of Ordovician age, over 450 million years old (Meakin and Morgan (1999). The underlying substrate is basaltic and andesitic rocks of the Oakdale Formation. These have

given rise to the gently undulating Bodangora Soil Landscape (Murphy and Lawrie, 1998) comprising mainly Ferrosols, also known as Euchrozems, which are non-texture contrast dark reddish brown clay loams that have a high free iron content in the B horizon (subsoil).

2.2.1 RIVERS, STREAMS, ESTUARIES AND WETLANDS

There are no rivers or creeks on the site, however the Bell River is approximately 2 km to the west and the Macquarie River is 4.5 km to the north east. The closest significant wetlands to the BESS are the Macquarie Marshes some 250 km north west.

2.2.2 HABITAT CONNECTIVITY

There is native vegetation scattered across the landscape to the east, south and west of the proposed BESS, predominantly isolated paddock trees in an agricultural grazing landscape with a mixture of natural and introduced pasture species (**Figure 2**). There are no native trees on the proposed BESS site, the closest trees being planted trees in a 15 m wide corridor north of the site along the Mitchell Highway.

2.2.3 KARST, CAVES, CREVICES, CLIFFS, ROCKS AND OTHER GEOLOGICAL FEATURES

There are no karst, caves, crevices, cliffs, rocks or other geological features on the site. Wellington Caves are approximately 2 km northwest from the proposed BESS.

2.2.4 AREAS OF OUTSTANDING BIODIVERSITY VALUE

There are no areas of outstanding biodiversity value in the vicinity of the proposed BESS.

2.2.5 NSW BIONET LANDSCAPE

The proposed BESS is on the Wellington – Molong Karst Landscape which has an over-cleared status of 99% cleared.

2.2.6 ADDITIONAL FEATURES

There are no other additional features to consider.

2.3 Native Vegetation Cover





Native vegetation cover was assessed according to Section 4.1 of the BAM, within a 1500 m buffer of the Subject Land. The total area within the buffer is 713 ha and the area with native vegetation was calculated using Geographic Information Systems (GIS) as 215.43 ha (30.21%).

2.4 Patch Size

The patch size was assessed according to Section 4.3.2 of the BAM using GIS. It is over 100 m to the nearest tree from the access point to the proposed BESS, and continuous native grassland extends along the roadside verge between driveway access points, amounting to 1.48 ha (**Figure 2**).

Figure 2 – Native Vegetation Cover and Patch



- Legend**
-  1500m Buffer
 -  Access Point (Subject Land)
 -  Native Vegetation Within 1500m of Subject Land
 -  Patch

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3. NATIVE VEGETATION (BAM CHAPTER 4)

3.1 Plant Community Type

In this section, the most appropriate Plant Community Type (PCT) to represent the vegetation on the Subject Land is identified by undertaking vegetation sampling on and around the Subject Land, interrogating existing vegetation mapping for the locality and by searching for potential PCTs in the BioNet Vegetation Classification System (DPIE, 2021a). The characteristics of each potential PCT are compared in **Table 1** to determine which provides the best fit to the vegetation on the Subject Land.

The original vegetation pre-European settlement is considered most likely to have comprised open grassy woodlands with a sparse shrub midstorey and a densely grassy understory. There are remnants of this open woodland in the surrounding landscape with scattered White Box (*Eucalyptus albens*) on the lower slopes and White Cypress (*Callitris glaucophylla*) on the hilltops.

Field Survey

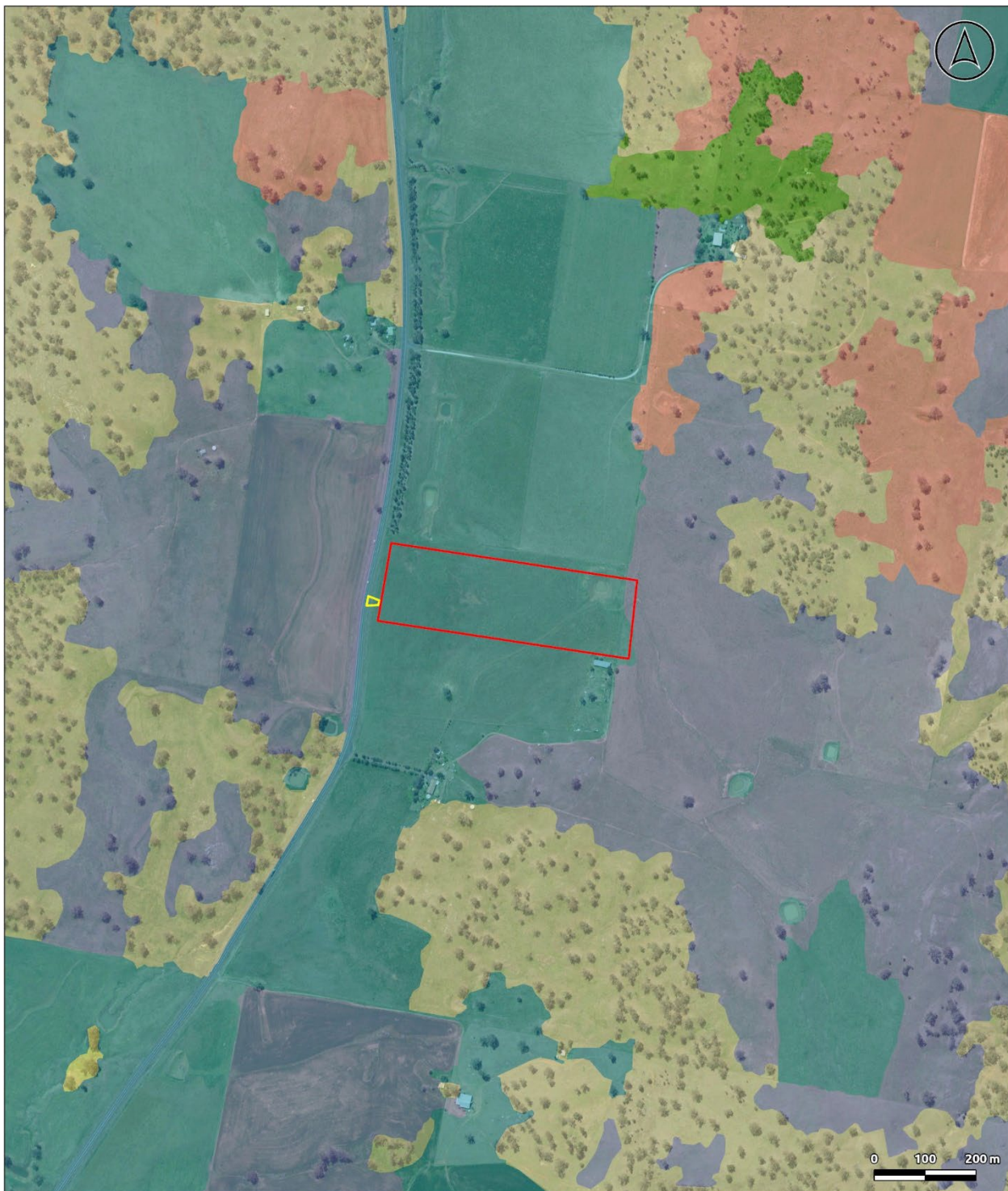
Two BAM quadrats were undertaken on 1 November 2021 to provide floristic and structural data, as well as to calculate the Vegetation Integrity (VI) Score. Rapid Assessment Spot Samples were also undertaken in adjacent areas to describe the floristic diversity in the surrounding landscape (**Figure 4**). BAM quadrat WELG1 was located on Category 1 Land and is not considered further in this BDAR. BAM quadrat WELG2 was located along the Mitchell Highway at the access point to the proposed BESS. Due to the linear nature of the vegetation, a 40 m x 10 m quadrat was undertaken for safety and practical application of the BAM. WELG2 is the representative plot for the Subject Land. WELG2 was dominated by exotic grasses Cocksfoot (*Dactylis glomerata*) and Paspalum (*Paspalum dilatatum*), however native species Queensland Bluegrass (*Dichanthium sericeum*), Red Grass (*Bothriochloa macra*) and Common Couch (*Cynodon dactylon*) were also prevalent. Native Windmill Grass (*Chloris truncata*) was present in small patches. *Oxalis perennans* was the only other native species noted in the 400 m² quadrat. Two High Threat Weeds were recorded at WELG2, Great Brome (*Bromus diandrus*) and Paspalum (*Paspalum dilatatum*) (DPIE, 2021b). A full species list is provided in **Appendix C**.

State Vegetation Type Map (SVTM)

Central West Lachlan V1P4 Raster5m identifies the Subject Land as not supporting native vegetation. Plant Community Types (PCTs) in the vicinity of the proposed BESS identified by the SVTM are shown in **Figure 3** and include:

- PCT 49 – Partly derived windmill grass – copper burr alluvial plains shrubby grassland of Semi-arid Floodplain Grassland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion;
- PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions;
- PCT 201 – Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion;
- PCT266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion (White Box Woodland); and
- PCT796 – Derived Grassland of the NSW South Western Slopes.



Figure 3 – State Vegetation Type Mapping






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Legend

-  Category 1 Exempt Land
-  Access Point (Subject Land)

State Vegetation Type Mapping

-  PCT 0 - Not Native
-  PCT 49 - Partly derived Windmill Grass - copperburr alluvial plains shrubby grassland of Semi-arid Floodplain Grasslands
-  PCT 76 - Western Grey Box tall grassy woodland

-  PCT 201 - Fuzzy Box Woodland on alluvial brown loam soils
-  PCT 266 - White Box grassy woodland
-  PCT 796 - Derived grassland of the NSW South Western Slopes

BioNet Vegetation Classification Query

Vegetation identified on the Subject Land was compared to the vegetation community details and scientific descriptions for all other potentially relevant PCTs using the BioNet Vegetation Classification System (DPIE, 2021a). A list of potential PCTs was developed using filters on the IBRA Subregion and the dominant tree species present in the surrounds, i.e. White Box and White Cypress Pine, which are dominant species in many PCTs throughout the tablelands and western slopes of NSW. PCTs were rejected from consideration in **Table 1** if the PCT is described in the title as being a shrubby woodland, since the vegetation on the Subject Land and surrounds is grass dominated in the understorey. Communities with shrub/grass in the title were accepted for consideration if they were classified in BioNet as part of the Western Slopes Grassy Woodlands vegetation class. PCTs were also excluded if the title refers to a restricted geographical area a long distance from the Subject Land, or the communities are confined to alluvial soils, sandy soils or valleys. The Subject Land is on a relatively flat, low ridgeline on red clay soils. Potential grassland PCTs were also considered as candidates based on the dominant presence of Queensland Bluegrass, Red Grass, Windmill Grass or Common Couch, using the same landscape, substrate and distribution constraints as above.

Three PCTs were considered as possible candidates for the Subject Land, PCT 266, PCT 511 PCT 796 (**Table 1**).

Derived grassland of PCT 266 White Box grassy woodland is considered a potential PCT for the Subject Land based on the geographic location, geology, dominant species present and the State Vegetation Type Map. Due to the presence of White Box on the adjacent hillslope, the Subject Land is likely to have originally supported a White Box community prior to European settlement, and the original vegetation community has been modified by land management practises to its current stable state as a derived grassland. The groundlayer on the Subject Land contained four native grasses and one native forb species at the time of survey, three of which are included in the species ground stratum described in BioNet for PCT 266. In addition, BioNet states that 'sites exposed to continuous grazing, soil disturbance and fertilizer application are dominated by exotic species including *Bromus* spp, *Vulpia* spp, *Avena fatua*, *Echium plantagineum*, *Trifolium* spp and *Plantago lanceolata*' (DPIE, 2021a). The Subject Land contains five of the six exotic species listed.

PCT 511 was considered a possibility due to the high cover (15%) of Queensland Bluegrass on the Subject Land, however Queensland Bluegrass may have spread to this area and become established in its preferred habitat, clay soils in the wetter parts of the landscape (DPI, 2022). PCT 511 is mapped on the State Vegetation Type Map to the west of the Subject Land, along the Macquarie River on alluvial soils lower in the landscape. It is questionable that PCT 511 would occur on the Subject Land as it is endemic to the Nandewar and Brigalow Belt South Bioregions, and it is acknowledged in BioNet that site data requires validation in the Inland Slopes Subregion for this PCT (DPIE, 2021a).

PCT 796 was considered a possibility for the Subject Land because it is mapped in the vicinity of the site on the State Vegetation Type Map (**Figure 3**). PCT 796 is a very general derived grassland PCT and only two of the four species are described in BioNet (DPIE, 2021a). Therefore, it is not suitable to describe the remnant vegetation on the Subject Land. Section 4.2 of the BAM states that an assessor is required to select the most likely original PCT rather than use a 'Derived PCT' (DPIE, 2020b).

On the balance of the analysis above, it was concluded that derived grassland of PCT 266 is the most suitable PCT for the Subject Land.

PCT266 is associated with the *White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland* Critically Endangered Ecological Community, listed on both the BC Act and EPBC Acts.

Figure 4 – Vegetation Survey Locations







- Legend**
-  Access Point (Subject Land)
 -  Development Area
 -  Spot Samples
 -  BAM Quadrats

Table 1 - Characteristics of Potential Grassland / Derived Grassland PCTs in the Inland Slopes Subregion

PCT	Dubbo LGA (formerly Wellington)?	Veg Formation	Veg Class	Dominant Tree Species	Typical Soil Types	Landscape Position	Comment	Assessment	Likelihood of former occurrence
Grassy Woodlands									
266	✓	Grassy Woodlands	Western Slopes Grassy Woodlands	<i>Eucalyptus albens</i> (White Box), <i>Brachychiton populneus</i> , (Kurrajong), <i>Eucalyptus blakelyi</i> (Blakely's Red Gum), <i>Eucalyptus bridgesiana</i> (Apple Box), <i>Eucalyptus melliodora</i> (Yellow Box)	Wide range of moderately fertile soil types	Hills, including crests, flats and valleys	Often occurs as a virtual White Box monoculture. Blakely's Red Gum and Yellow Box only occur as minor components. Sparse shrub layer of Acacias and dense groundcover of grasses and forbs. Includes two grasses found on the Subject Land, Redleg Grass (<i>Bothriochloa macra</i>) and Windmill Grass (<i>Chloris truncata</i>) and one forb <i>Oxalis perennans</i> .	PCT266 matches the remnant vegetation in the surrounds of the Subject Land which is dominated by stands comprised almost solely of White Box. The soils are fertile being derived from igneous rocks. In addition, PCT 266 has been mapped for the surrounds on the State Vegetation Type Map.	Very High
267	✓			<i>E. albens</i> , <i>C. glaucophylla</i> , <i>Eucalyptus microcarpa</i> (Inland Grey Box), <i>Callitris endlicheri</i> <i>Allocasuarina luehmannii</i> (Buloke), <i>E. melliodora</i>	Red-brown earths, loamy sands and parna soils.	Rises, low rises, including footslopes and hillslopes.	PCT267 is distributed mainly on the lower slopes to the west of the Subject Land. Includes two grasses found on the Subject Land, Redleg Grass (<i>B. macra</i>) and Windmill Grass (<i>C. truncata</i>).	The soils preferred by this community contrast with those of the Subject Land. Red brown earths are duplex soils with sharply contrasting A1 and A2 horizons, while the subject land comprises Ferrosols with similar A1 and A2 horizons. Nor are the soils on the Subject Land sandy or parna soils.	Nil
268	✓			<i>E. albens</i> , <i>E. blakelyi</i> , <i>Eucalyptus macrorhyncha</i> (Red Stringybark) <i>Eucalyptus goniocalyx</i> (Bundy Box) <i>Eucalyptus polyanthemus</i> (Red Box)	Clay loam soils derived from sandstone, granite or shale	Hills, low hills, mainly lower slopes, footslopes and gullies adjacent to major creeks.	Sparse but diverse shrub layer and a mid-dense ground layer. There is no overlap in the grasses in this community with those on the Subject Land.	The soils preferred by this community do not match the Subject Land. The diversity of trees in PCT268 differs markedly from the surrounds of the Subject Land.	Nil
274	✓			<i>E. albens</i> , <i>Angophora floribunda</i> (Rough-barked Apple), <i>E. macrorhyncha</i> , <i>E. blakelyi</i>	Clays derived from shale.	Valleys, streambanks, lower hillslopes, gullies	White Box and Rough-barked Apple are diagnostic species. Shrub cover is sparse and ground cover dense. No overlap in grasses with the Subject Land.	A community associated principally with Sydney Basin geology, which occurs well to the east of the Subject Land. Rough-barked Apple is a diagnostic species of PCT274 and is	Nil

								absent in the surrounds of the Subject Land.	
282	X			<i>E. blakelyi</i> , <i>E. albens</i> , <i>E. melliodora</i> , <i>C. endlicheri</i> , <i>E. bridgesiana</i> , <i>E. macrorhyncha</i>	Shallow clay loams derived from granite, granodiorite, tuff, fine-grained sediments, rhyolite	Hills, low hills, including crests, midslopes and footslopes.	White Box and Blakely's Red Gum co-dominate this community, often with Yellow Box and Apple Box. Sparse shrub layer and dense grass-dominated ground layer. There is only one grass in common with the Subject Land, Redleg Grass (<i>Bothriochloa macra</i>).	Not recorded in the Wellington area or Dubbo LGA. PCT282 occurs mainly further south and at higher altitudes than the Subject Land. Soils may be similar to those on the Subject Land.	Nil
426	✓			<i>E. polyanthemus</i> , <i>E. albens</i> , <i>B. populneus</i> , <i>E. macrorhyncha</i> , <i>Eucalyptus sideroxylon</i> (Mugga Ironbark)	Shallow loam to clay soils derived from shale and phyllite.	Hills, low hills, including hillslopes	Dominated by Red Box, often with White Box and Red Stringybark. Sparse low shrub layer and sparse ground cover with abundant leaf litter.	Red Box and Red Stringybark are missing from the surrounds of the Subject Land. Soils for this PCT are poor and do not match those of the Subject Land.	Nil
434	✓			<i>E. albens</i> , <i>B. populneus</i> , <i>Alectryon oleifolius</i> (Rosewood) <i>C. endlicheri</i>	Fine-grained sediments, clays and loams, including duplex soils derived from basalt, fine-grained metamorphic and sedimentary substrates.	Hills and low hills, footslopes, hillslopes and crests.	Dominated by White Box with Kurrajong prominent. Sparse shrub layer and dense grassy groundcover. Shrubs denser on steep slopes and where grazing is limited.	This community is characteristic of the southern half of the Brigalow Belt South Bioregion. Apart from White Box, the other dominants in this community are not found in the surrounds of the Subject Land.	Nil
Grasslands									
250	✓	Grasslands	Western Slopes Grasslands	<i>A. oleifolius</i> , <i>B. populneus</i> , <i>C. glaucophylla</i> , <i>Eucalyptus dwyeri</i> (Dwyer's Red Gum) <i>E. microcarpa</i> , <i>Eucalyptus populnea</i> (Poplar Box)	Loams and clays derived from colluvial sediments, metamorphic and sedimentary rocks.	Low hills, rises including crests, midslopes, footslopes and plains	Grasslands derived from a wide range of PCTs including Box-Gum Woodlands. Includes two grass species found on the Subject Land, Redleg Grass (<i>B. macra</i>) and Queensland Bluegrass (<i>Dichanthium sericeum</i>).	This community is predominantly in the western areas of the Central West in the Cobar Peneplain, Lachlan Plains, Lower Slopes and Nymagee subregions. This community was selected as potentially occurring because Queensland Bluegrass is a dominant as on the Subject Land. However, none of the former overstorey species of PCT250 are present in the surrounds of the Subject Land.	Nil

796	None listed			No trees listed	All lithologies	Crests, upper slopes, midslopes, footslopes	Grasslands derived from the clearing of grassy woodlands and dry open forests. Includes two grasses found on the subject Land, Redleg Grass (<i>B. macra</i>) and Windmill Grass (<i>C. truncata</i>). Said to be principally a community of the NSW South West Slopes on upper and lower hill slopes.	PCT796 is poorly defined in BioNet and has a very low classification confidence level. It is mapped as potentially occurring in the surrounds of the Subject Land by the SVTM. Examples of PCT796 are likely to have been derived from PCT266 in the surrounds of the Subject Land.	Possible
511	✓	Grassy Woodlands	Western Slopes Grassy Woodlands	<i>E. albens</i> , <i>C. glaucophylla</i> , <i>Acacia pendula</i> (Weeping Myall), <i>Eucalyptus melanophloia</i> (Silver-leaf Ironbark), <i>Atalaya hemiglauca</i> (Whitewood)	Fertile soils derived from siltstone, colluvial sediments, breccia, shale, basalt	Hills, low hills, plains including crests, midslopes, footslopes, valley flats, gullies	Derived grasslands principally of the Nandewar Bioregion extending into parts of the Brigalow Belt South Bioregion. Includes three grasses recorded on the Subject Land, Queensland Bluegrass (<i>D. sericeum</i>), Redleg Grass (<i>B. macra</i>) and Windmill Grass (<i>C. truncata</i>).	PCT 511 was initially considered as the best fit for the derived grassland on the Subject Land due to the presence of four of the five native ground cover species (3 grasses and <i>Oxalis perennans</i>). PCT 511 is mapped to the west of the Subject Land along the Macquarie River (beyond the extent of Figure 3).	Possible

Figure 5 – Subject Land looking south



Figure 6 – Subject Land looking north



3.2 Vegetation Integrity Scores

The Subject Land is 0.03 ha and one BAM Plot (WELQ2) was undertaken to determine the Vegetation Integrity (VI) Score of that vegetation. Plot data collected on 1 November 2021 was inserted into BAM-C to determine the VI for the Subject Land (**Table 2** – BAM Quadrat Data). The current vegetation integrity score is 6.9. The proposal to clear this area will result in a future vegetation integrity score of 0.

Table 2 – BAM Quadrat Data

BAM attribute (400m2)	No. Sp	% Cover
Trees	0	0
Shrubs	0	0
Grasses/grass-like	4	27.2
Forbs	1	0.1
Ferns	0	0
Other	0	0
High Threat Weeds	2	10.1
Litter cover	6.4	
Length of logs	0	
Patch Size	1.43	

4. THREATENED SPECIES (BAM CHAPTER 5)

4.1 Predicted Species (Ecosystem and Species Credit Species)

Habitat suitability for threatened species was evaluated during the vegetation surveys conducted on 1 November 2021. Examples of features noted during site investigations were the presence or absence of mistletoe, nectar sources, roosting sites and caves, fallen logs, shrubs, ground litter, dead tree branches and grass and acacia seeds, rushes and sedges and shallow water.

The Subject Land contains roadside vegetation which is not considered quality habitat for any flora or fauna species due to the absence of trees or shrubs, presence of weeds, and proximity to a major road, the Mitchell Highway. The Subject Land is also an isolated fragment of native vegetation, with bitumen along the western side, a barbed wire fence and cropping land to the east, planted native trees to the north and a driveway to the south.

The BAM recognises two categories of threatened species (DPIE, 2020):

- ecosystem credit species (i.e. species predicted to be present based on the PCTs present on the Subject Land); and/or
- species credit species (i.e. species that cannot be reliably predicted by PCTs).

The biodiversity credit class of individual species are pre-determined in the BAM Credit Calculator and BioNet Threatened Biodiversity Data Collection (TBDC) (DPIE, 2021c). Species that are identified as both ecosystem and species credit species are known as dual credit species. Thirty-eight threatened species were predicted to occur on the Subject Land from BAM-C, including three plants, one insect, 26 birds and five mammals. **Table 3** provides justification for inclusion or exclusion from consideration in the BAM-C based on habitat constraints, geographic limitations or survey effort as per Step 2 Section 5.2.2 of the BAM (DPIE, 2020).

Table 3 – Predicted Threatened Species

Species name	Common Name	Biodiversity Credit Class	BC Act	EPBC Act	SAII	Habitat Constraints, Geographic Limitations or species vagrant, Surveyed
PLANTS						
<i>Euphrasia arguta</i>		Species	Critically Endangered	Critically Endangered	Yes	Habitat degraded, not present.
<i>Grevillea wilkinsonii</i>	Tumut Grevillea	Species	Critically Endangered	Endangered	Yes	Habitat degraded, not present.
<i>Prasophyllum sp. Wybong</i>	Prasophyllum sp. Wybong	Species	-	Critically Endangered	Yes	Habitat degraded, not present.
INSECTS						
<i>Synemon plana</i>	Golden Sun Moth	Species	Endangered	Critically Endangered	Yes	Habitat constraints absent. No Wallaby Grass, Chilean needlegrass or Serrated Tussock present.
BIRDS						
<i>Anthochaera phrygia</i>	Regent Honeyeater	Dual	Critically Endangered	Critically Endangered	Yes	Habitat constraints absent. Not within Important Mapped Area (DPIE, 2022).
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	Ecosystem	Vulnerable	-	No	Habitat constraints absent. No Allocasuarina or Casuarina trees present on site.
<i>Chthonicola sagittata</i>	Speckled Warbler	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Circus assimilis</i>	Spotted Harrier	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	Ecosystem	Vulnerable	-	No	Included in BAM-C

Species name	Common Name	Biodiversity Credit Class	BC Act	EPBC Act	SAII	Habitat Constraints, Geographic Limitations or species vagrant, Surveyed
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Falco subniger</i>	Black Falcon	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Glossopsitta pusilla</i>	Little Lorikeet	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Grantiella picta</i>	Painted Honeyeater	Ecosystem	Vulnerable	Vulnerable	No	Habitat constraints absent. No mistletoe present.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Ecosystem	Vulnerable	-	No	Habitat degraded – no waterbodies or trees on Subject Land
<i>Hieraaetus morphnoides</i>	Little Eagle	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Hirundapus caudacutus</i>	White-throated Needletail	Ecosystem	-	Vulnerable	No	Included in BAM-C
<i>Lathamus discolor</i>	Swift Parrot	Dual	Endangered	Critically Endangered	Yes	Habitat constraints absent. Not within Important Mapped Area (DPIE, 2022).
<i>Lophoictinia isura</i>	Square-tailed Kite	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Melanodryas cucullate cucullata</i>	Hooded Robin (south-eastern form)	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Neophema pulchella</i>	Turquoise Parrot	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Ninox connivens</i>	Barking Owl	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Petroica boodang</i>	Scarlet Robin	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Petroica phoenicea</i>	Flame Robin	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Polytelis swainsonii</i>	Superb Parrot	Ecosystem	Vulnerable	Vulnerable	No	Included in BAM-C
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Ecosystem	Vulnerable	-	No	Included in BAM-C
<i>Stagonopleura guttata</i>	Diamond Firetail	Ecosystem	Vulnerable	-	No	Included in BAM-C

Species name	Common Name	Biodiversity Credit Class	BC Act	EPBC Act	SAII	Habitat Constraints, Geographic Limitations or species vagrant, Surveyed
<i>Tyto novaehollandiae</i>	Masked Owl	Ecosystem	Vulnerable	-	No	Habitat constraints – no hollow bearing trees on Subject Land
MAMMALS						
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Ecosystem	Vulnerable	Endangered	No	Included in BAM-C
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Dual	Vulnerable	-	Yes	Habitat constraints absent. No caves, tunnels, mines or culverts on Subject Land.
<i>Phascolarctos cinereus</i>	Koala	Ecosystem	Vulnerable	Endangered	No	Habitat degraded – no trees on Subject Land.
<i>Pteropus poliocephalus</i>	Grey-headed Flying fox	Ecosystem	Vulnerable	Vulnerable	No	Habitat constraints – no breeding camps on Subject Land
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	Ecosystem	Vulnerable	-	No	Included in BAM-C

4.2 Threatened species survey effort

Survey for threatened species and threatened species habitat was undertaken on 1 November 2021 by qualified and experienced Premise ecologists. A full floristic survey was undertaken in a 10m by 40m quadrat on the Subject Land. All species in the 400m² quadrat were identified to species level using diagnostic features with reference to PlantNet (RBG, 2021).

4.3 Threatened flora

Threatened flora species identified by BAM-C as potentially occurring on the Subject Land included *Euphrasia arguta*, Tumut Grevillea (*Grevillea wilkinsonii*) and *Prasophyllum* sp. Wybong. Seasonal conditions were favourable for flora surveys given higher than average rainfall in preceding months, and the spring survey timing was appropriate for all species except *Prasophyllum*, which is recommended to be surveyed in September or October.

Queensland Bluegrass was recorded on the site and samples were collected for microscopic examination to discern whether it was the widespread *Dichanthium sericeum* or the Critically Endangered *Dichanthium setosum*. *D. sericeum* was confirmed as present on site as the specimens were bluish with white hairs, had more than 3 racemes and the lowest pairs of spikelets were sterile.

Euphrasia arguta is an erect annual herb from 20-35 cm believed to be extinct, but, rediscovered in the Nundle area in 2008 (OEH, 2022). It is generally confined to the higher altitude areas in moist grassy forests in the Central and Northern Tablelands. This species was not detected during vegetation surveys and is very unlikely to occur, given it is outside its geographic range and the disturbed nature of the Subject Land.

Tumut Grevillea (*Grevillea wilkinsonii*) is a large spreading shrub to 2.5 m tall and 2 m wide. This species is only known to occur within a 6 km stretch of the Goobarragandra River, approximately 20 km east of Tumut. It was not recorded on the Subject Land and is not considered likely to occur.

Prasophyllum sp. Wybong is a terrestrial orchid that grows to approximately 30cm high. Although the flowering period for this species was finished at the time of survey, the fruiting stage would have been underway, and detection would be possible by the presence of seed capsules on the flower stem. It is concluded that *Prasophyllum* would have been detected had it been present, despite being surveyed just outside of the specified survey period. *Prasophyllum* sp. Wybong was not recorded on the Subject Land and is not considered likely to occur.

No threatened flora species were detected on the Subject Land, and none are considered likely to occur.

4.4 Threatened fauna

Threatened fauna species identified by BAM-C as potentially occurring on the Subject Land include one insect, 26 birds and five mammals. The Subject Land contains minimal habitat value as it is an isolated patch of roadside vegetation which has been subject to a long history of disturbance with agricultural land use and road construction, contains no shrubs or trees, no water bodies, rocks or culverts. No threatened species were recorded on the Subject Land at the time of survey and none are considered likely to occur.

Many of the threatened fauna species were eliminated from consideration due to the absence of suitable habitat constraints from the Subject Land. Golden Sun Moth require Wallaby Grass to be present or other tufted perennial grasses like Serrated Tussock or Chilean Needle Grass. These grasses are not present and the insect is not considered further. Similarly, the Large Bent-winged Bat requires caves, tunnels or culverts for roosting. As these features are absent from the Subject Land this species is not considered further. The

Regent Honeyeater and Swift Parrot are associated with particular habitat which has been identified by DPIE as Important Mapped Areas. The Subject Land does not contain Important Mapped Areas and these species are not considered likely to occur. Glossy Black Cockatoos require Casuarina or Allocasuarina trees to be present, Painted Honeyeater requires a high density of mistletoe, and the White-bellied Sea-Eagle requires living or dead mature trees, all of which are absent from the Subject Land. As a result these threatened fauna are not considered further in the BDAR.

Twenty-seven ecosystem species were retained in the BAM-C as they do not have specific habitat constraints. It is very unlikely that any of these species occur on the Subject Land due to the lack of trees or shrubs for shelter, rocks or logs for refuge, and the constant disturbance of passing Highway traffic.

4.5 Threatened Ecological Communities

PCT 266 is associated with *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* (Box Gum Grassy Woodland), a Critically Endangered Ecological Community (CEEC) under both the BC Act and EPBC Act. The Subject Land contains four native grass and one forb species, three of which are listed on the assemblage of species for Box Gum Grassy Woodland as defined by the NSW Threatened Species Scientific Committee (Scientific Committee, 2021). The Subject Land meets the broad definition of Box Gum Grassy Woodland under the BC Act.

The Definition of Box Gum Grassy Woodland under the EPBC Act requires the site to have a predominantly native understorey, be at least 0.1 ha or greater in size, and include at least one 'important' species listed on the determination (DEH, 2006). The Subject land is 0.03 ha, is dominated by exotic species and does not contain any 'important' species, therefore does not meet the definition of Box Gum Grassy Woodland under the EPBC Act.

4.6 Serious and Irreversible Impacts (SAII)

Threatened entities at risk of Serious and Irreversible Impacts (SAII) are those that are most at risk of extinction from potential development and are identified in the TBDC (DPIE, 2021c). Seven species identified as potentially occurring by BAM-C are considered at risk of SAI (Table 3). Three plants; *Euphrasia arguta*, *Prasophyllum sp. Wybong*, Tumut Grevillea (*Grevillea wilkinsonii*); one insect, Golden Sun Moth (*Synemon plana*); two birds, Regent Honeyeater (*Anthochaera phrygia*), Swift Parrot (*Lathamus disolor*) and one mammal, Large Bent-winged Bat (*Miniopterus orianae oceanensis*).

The *Guidance to assist a decision maker to determine a serious and irreversible impact* (DPIE, 2019) requires assessors to report on the factors influencing the extinction risk of each entity in terms of four principles:

- Rapid decline (Principle One);
- Small population size (Principle Two);
- Limited geographic distribution (Principle Three);
- Species being unlikely to respond to management (Principle Four).

The three SAI plant species are *Euphrasia arguta*, Tumut Grevillea and *Prasophyllum sp. Wybong*, all listed under Principle Three, limited geographic range. *Euphrasia arguta* is limited to high altitude areas in moist grassy forests and grasslands in the Central and Northern Tablelands (DPIE, 2021c). *Prasophyllum sp. Wybong* has been recorded in two distinct populations near Merriwa and Gunnedah (DPIE, 2021c), and Tumut Grevillea is only known from east of Tumut along the reaches Goobarragandra River (DPIE, 2021c).

The proposed BESS near Wellington is not in the vicinity of any of these species' natural distribution and will not increase the SAII for any of these plants.

Golden Sun Moth (*Synemon plana*) also has a limited geographic distribution (Principle Three), recorded almost exclusively between Boorowa and Canberra in southern NSW (DPIE, 2021c). It is known to feed on the roots of tussock grasses, predominantly Wallaby Grass, and occasionally Chilean needlegrass and Serrated Tussock (DPIE, 2021c). These plant species are not present on the Subject Land and the Golden Sun Moth is not considered likely to occur on the subject Land as it is outside of its geographic range. The proposed BESS will not contribute to SAII for this species.

The Regent Honeyeater (*Anthochaera Phrygia*) and Swift Parrot (*Lathamus discolor*) are both experiencing rapid population decline (Principle One) and the Regent Honeyeater is at risk of SAII due to its small population size (Principle Two). The Subject Land is not within the Mapped Important Areas for either of these species and the site does not contain any habitat for breeding or foraging as there are no trees or shrubs present. The proposed BESS access point is not likely to contribute to the SAII for these two bird species.

The Large Bent-winged Bat (*Miniopterus orianae oceanensis*) is very sensitive to habitat loss, including caves, tunnels, mines, culverts or other structures known or suspected to be used for breeding (DPIE, 2021c). The Subject Land is within this species' known distribution, however lacks any of the relevant habitat features and the proposed BESS will not contribute to the SAII.

None of the entities occur on the Subject Land, nor are their habitats present. There is no risk of SAII as a result of the proposed clearing for the access point to the BESS.

Grassy White Box Woodland is a CEEC at risk of SAII. The principles for assessing the extinction risk for TECs include:

- Reduction in geographic extent;
- Environmental degradation or disruption of biotic processes;
- Restricted geographic distribution.

The removal of grassland derived from the Box Gum Woodland CEEC to provide a safe entry point from the Mitchell Highway to the proposed BESS potentially represents a SAII on the CEEC. Additional information to support decision makers is provided in accordance with Subsections 10.2.2 and 10.2.3 of the BAM:

- a) The turning bay was planned to avoid the need to remove native trees or shrubs and to require the smallest possible area of vegetation removal to allow traffic to turn off the Mitchell Highway and enter the site
- b) The minimum area necessary to facilitate safe movement of traffic was applied (0.03 ha). The CEEC is in very poor condition, with a VI of 6.9.
- c) The Subject Land has a VI of 6.9 which is below the threshold of 15 for an offset to be required for a CEEC.
- d) The extent of potential CEEC within an area of 1000 ha and 10,000 ha of the Subject Land was calculated using GIS. PCTs mapped on the State Vegetation Type Map that are associated with Grassy Box Gum Woodland within 1000 ha of the Subject Land amount to 746.60 ha, and 6061.64 ha within the 10,000 ha buffer. The condition of vegetation varies across the landscape and between properties, however aerial photography and general knowledge of landscape suggest that the majority of the Grassy Box Gum Woodland that is mapped as a PCT comprises scattered trees with a

mixture of native and introduced species in the understorey. The Subject Land contains very low quality CEEC compared to the surrounding landscape.

- e) GIS was used to calculate the area on the State Vegetation Type Map identified as PCTs associated with Grassy Box Gum Woodland within the South Western Slopes IBRA Bioregion and the Inland Slopes Subregion. The South Western Slopes Bioregion is 8,681,126 ha (DPIE, 2021) and the CEEC is estimated to cover 391,191 ha. The Inland Slopes Subregion is 4,074,110 ha and CEEC is estimated to cover 258,738 ha. The Subject Land contains very poor condition CEEC, which at the time of survey comprised five native groundcover species. No trees or shrubs are present on the Subject Land. Areas identified as PCTs on the State Vegetation Type Map mostly contain trees and are therefore in better condition than the Subject Land. The loss of 0.03 ha of very poor quality CEEC will not contribute to the SAI on Grassy Box Gum Woodland.
- f) Conservation tenures in the South Western Slopes Bioregion cover approximately 184,739 ha, this includes National Parks and Crown Reserves (NSW National Parks and Wildlife Service, 2003). It is very difficult to estimate how much of this is CEEC from the available literature, however it is very unlikely that the loss of 0.03 ha will be significant.
- g) There will be no abiotic factors impacting the CEEC as a result of the proposed BESS. No changes to groundwater levels or fire regime, chemical use or weed introduction.
- h) The loss of 0.03 ha of degraded and isolated CEEC will not affect the overall potential recovery of the CEEC.
- i) Ongoing site management will continue to manage weeds on the proposed BESS site and no increase is likely. No evidence of feral animals existed on the site at the time of survey, however pest animals will also be managed as part of the proposed development and no increase in pest animal numbers is likely as a result.

5. AVOIDING AND MINIMISING IMPACTS ON BIODIVERSITY (BAM CHAPTER 7)

5.1 Location

The access to the proposed BESS from the Mitchell Highway has been located on a straight section of road to maximise safety for road users. The access was also located to avoid the need to remove native trees or shrubs to minimise any potential impacts on biodiversity.

6. IMPACT OF THE PROPOSAL ON BIODIVERSITY VALUES (BAM CHAPTER 8)

6.1 Direct impacts

The direct impact of the proposed BESS access point is the removal of 0.03 ha of derived grassland which contains 27% native cover. The current Vegetation Integrity Score of the Subject Land is 6.9 and the future Vegetation Integrity Score is 0.

6.2 Indirect impacts on biodiversity values

The Subject Land is roadside vegetation along a major road. Any indirect impacts associated with construction of the access point such as dust, noise, introduction of weeds or pathogens, rubbish dumping are negligible in the site context, as these impacts are prevalent along road corridors with passing traffic.

6.3 Prescribed impacts

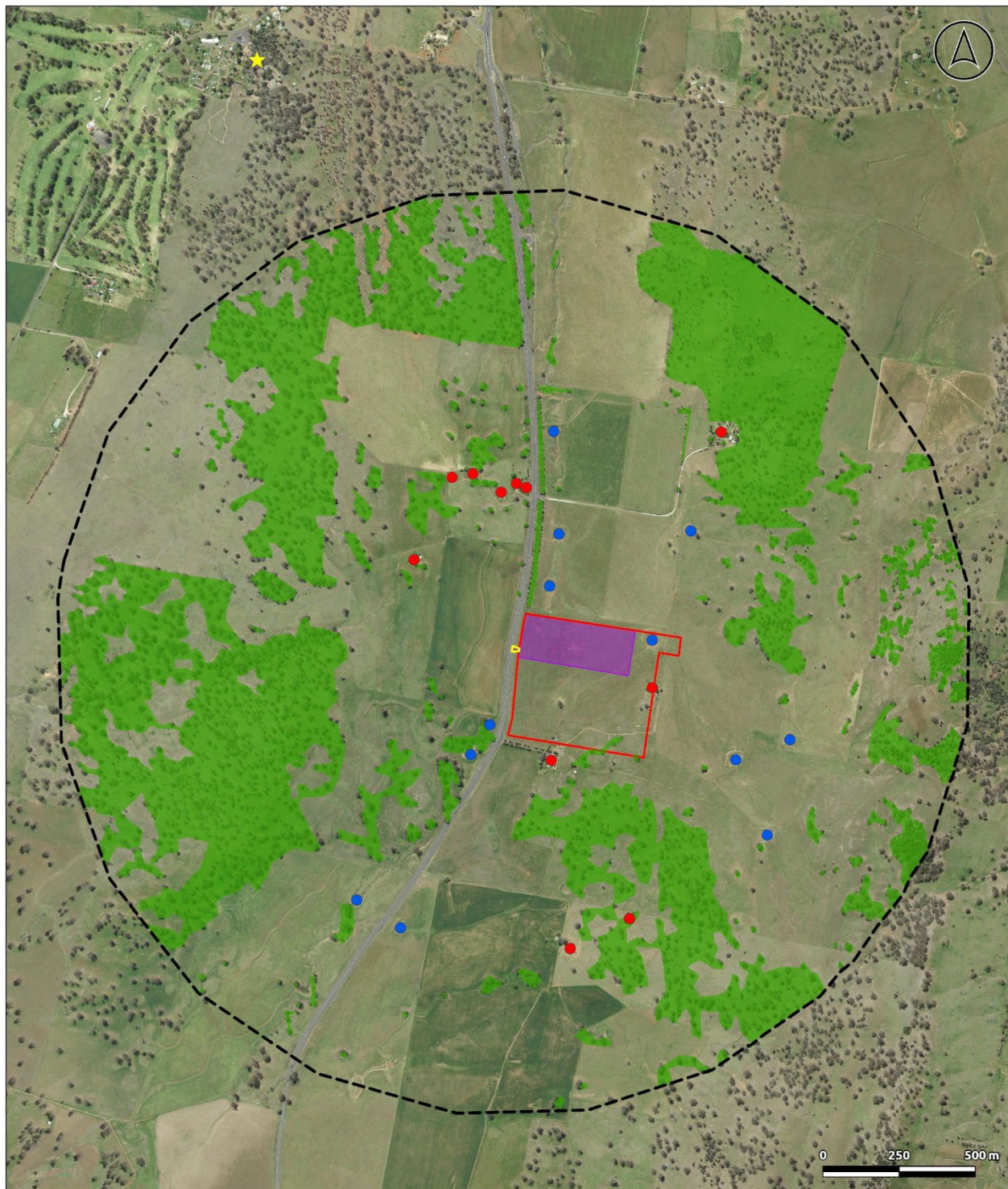
Prescribed biodiversity impacts, including assessment of the nature, extent and duration of impacts on the habitat of threatened species or ecological communities over the whole proposed BESS site are outlined in **Table 4** and illustrated in **Figure 7**.

Table 4 – Prescribed Impacts on the proposed BESS site

Prescribed Impact	Description on proposed BESS site	Conclusion
Karst, caves, crevices, cliffs, rocks and other geological features of significance.	Not present on proposed BESS site. Wellington Caves is 2.1 km north west of the site (see Figure 7). Microchiropteran bats may utilise the caves and crevices found around the Wellington Caves site, however none will be affected by the proposal.	No direct or indirect impacts. No management required.
Occurrences of human-made structures and non-native vegetation.	No human-made structures on the proposed BESS site. There is a woolshed to the south east of the Category 1 Land that will not be affected by the proposal (Figure 7). Some of the Microchiropteran bats may roost in old sheds or disused farm houses, however none will be affected by the proposal. Non-native vegetation will be disturbed during construction. The non-native vegetation is part of an agricultural production system which comprises annual cropping, including chemical herbicide use, sowing using tined implements, and livestock grazing. The cereal crops do not have any habitat value for threatened species due to the regular disturbance. The only fauna species that may forage over the cereal cropping area would be raptors or owls (Spotted Harrier, Black Falcon, Little Eagle, Masked Owl) seeking mice and small mammals. The loss of 7.6 ha of foraging area in the context of the surrounding landscape is negligible.	No direct or indirect impacts. No management required.
Corridors or other areas of connectivity linking habitat for threatened entities.	No trees or shrubs will be removed for construction or operation of the proposed BESS. Connectivity will not be affected by the proposal.	No direct or indirect impacts. No management required.
Water bodies or any hydrological processes that sustain threatened entities.	There is one farm dam in the north east corner of the proposed BESS site (Figure 7). Birds and mammals living in the landscape would utilise farm dams for water and the fringing vegetation as shelter. The dam on the proposed BESS site will not be affected during construction or operation of the BESS and there are numerous farm dams in the surrounding landscape to provide the important water resources for fauna species.	No direct or indirect impacts. No management required.

Prescribed Impact	Description on proposed BESS site	Conclusion
Protected animals that may use the proposed wind farm development site as a flyway or migration route.	N/A	N/A
Where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community.	There is no threatened species habitat at the access point on the Mitchell Highway or in the cereal crop on the proposed BESS site. Raptors feeding on carrion on the side of the road are subject to vehicle strike. Although traffic movements will increase on the site during construction and operation, the lack of suitable habitat renders the likelihood of increased vehicle strike highly unlikely.	No direct or indirect impacts. No management required.
Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	None of the threatened species identified in Table 3 are likely to depend on the habitat features associated with any of the prescribed impacts. Three raptors, the Spotted Harrier, Black Falcon and Little Eagle may forage over the cropped land for mice and small mammals. Similarly, the Masked Owl could potentially forage over this area at night. Indirect impacts such as noise, dust and light spill would be insignificant in the context of the proximity to a busy Highway and cropping paddock subject to regular disturbance.	Direct impact is the loss of 7.6 ha of foraging habitat. No indirect impacts. Ongoing site management (weed and feral pest control) will improve foraging habitat for any threatened species that may be transient visitors.
Describe the importance of habitat features to the species including, where relevant, impacts on life-cycle or movement patterns.	The loss of 7.6 ha of foraging habitat will not significantly impact on the life-cycle of any of the raptors or owl species that may utilise the site. Raptors and owls are highly mobile species with large home ranges. The loss of 7.6 ha of foraging habitat is insignificant in the context of the surrounding landscape (Figure 7). As mobile species, movement patterns for these species would be unaffected by the proposal.	Direct impact is the loss of 7.6 ha of foraging habitat. No indirect impacts. Ongoing site management (weed and feral pest control) will improve foraging habitat for any threatened species that may be transient visitors.

Figure 7 – Prescribed Impacts on the proposed BESS site



Legend

-  Site (Category 1 Land)
-  Access Point (Subject Land)
-  Disturbed Area
-  Native Vegetation Cover
-  Wellington Caves
-  Human-made Structures
-  Water Bodies

Sources: © State of NSW, Department of Customer Service, Spatial Services 2021
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7. THRESHOLDS FOR ASSESSING AND OFFSETTING THE IMPACTS (BAM CHAPTER 9)

7.1 Threatened Ecological Communities

A very small area (0.03 ha) of degraded grassland derived from the Box Gum Woodland CEEC will be removed to provide a safe entry point from the Mitchell Highway to the proposed BESS. This loss potentially represents a Serious and Irreversible Impact (SAII) on the CEEC. Information in Section 4.6 provides detailed information on the risk of SAII for the Grassy Box Gum Woodland. The conclusion is that there is no risk of SAII as a result of the proposed BESS.

7.2 Threatened Species

Three plants, one insect, twenty-six birds and five mammals were identified by BAM-C as potentially occurring on the Subject Land. These species have not been recorded on the Subject Land and are not considered likely to occur based on the poor condition of the available habitat. Seven species and one TEC were identified as at risk of SAII. Information in Section 4.6 provides detailed information on the risk of SAII with the conclusion that there is no risk of SAII as a result of the proposed BESS.

8. NO NET LOSS STANDARD (BAM CHAPTER 10)

Section 9.2 of the BAM requires an assessor to determine an offset for all impacts of a proposal on PCTs that are associated with a vegetation zone that has a vegetation integrity score of:

- Greater to or equal to 15 where the PCT is representative of an EEC or CEEC;
- Greater to or equal to 17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community;
- Greater to or equal to 20 where the PCT does not represent a TEC and is not associated with threatened species habitat.

The Vegetation Integrity Score of the roadside vegetation on the Subject Land for this BDAR is 6.9 which is below the threshold of 15 and an offset is not required.

8.1 Ecosystem credits

There are no ecosystem credits generated by the proposed BESS.

8.2 Species credits

There are no species credits generated by the proposed BESS.

8.3 Credit classes

Not applicable.

9. CONCLUSION

The proposed BESS at 9010 Mitchell Highway, Apsley, NSW will result in the loss of 0.03 ha of native vegetation to provide safe access to the site from the highway. The native vegetation does not provide habitat for any threatened flora or fauna and does not require offsetting under the Biodiversity Offsets Scheme.

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APPENDIX A

LAND CATEGORY REPORT



Premise

ACENERGY PTY LTD

APSLEY BATTERY ENERGY STORAGE SITE

LAND CATEGORY REPORT




Report No: 221284_LAND_CAT_001

Rev: C

10 August 2022

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DOCUMENT AUTHORISATION					
Revision	Revision Date	Report Details			
A	29/11/21	Land Category Report – Final			
B	20/05/2022	Updates to mapping to reflect developed design			
C	10/08/2022	Minor updates to figures for consistency			
Prepared By		Reviewed By		Authorised By	
Sally Kirby		David Walker		Colin Bower	

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APPENDICES

APPENDIX A CURRICULUM VITAE
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1. INTRODUCTION TO THE PROPOSAL AND ASSESSMENT TEAM

Premise Australia Pty Ltd (Premise) is engaged to prepare an Environmental Impact Statement (EIS) to assess the impacts associated with a proposed Battery Energy Storage System (BESS) to be located at 9010 Mitchell Highway, Apsley, NSW. The proposed BESS and transmission line traverse cleared agricultural land and will not result in the loss of any native trees or shrubs. The capital value of the proposed BESS exceeds \$30 million therefore the project is State Significant Development and the Biodiversity Offset Scheme is triggered under the *Biodiversity Conservation Act 2016* (BC Act). A Biodiversity Development Assessment Report (BDAR) is required to assess the biodiversity values of the site and identify potential impacts of the proposal on threatened entities and their habitat.

Premise Australia Pty Ltd (Premise) ecologists have undertaken a site inspection and identified the majority of the subject land to be consistent with Category 1 – exempt land under Section 60H of the *Local Land Services Act 2013* (LLS Act). This report provides justification for the Category 1 land for review and endorsement by the Biodiversity, Conservation and Science Directorate of the Department of Planning, Industry and Environment. Category 1 land does not require assessment under the Biodiversity Assessment Method as the land can lawfully be cleared under the LLS Act. Any part of the subject land that is not classified as Category 1 land will be the subject of a BDAR.

2. PROJECT DETAILS

2.1 Administration

The proponent for the proposed solar farm is ACEnergy Pty Ltd, located at Suite 502, 689 Burke Road Camberwell, Victoria 3124 Australia. The contact name is Danny Wilkinson danny.w@acenergy.com.au.

The Project Identification for Premise Pty Ltd is 221284 and the State Significant Development Project reference is PDA-28968048.

Senior Ecologists, Sally Kirby and Isobel Colson at Premise Pty Ltd undertook the site inspection and prepared the land category assessment, under the supervision of Principle Ecologist, Dr Colin Bower. Curricular vitae are provided in **Appendix A**.

2.2 Site Details

The proposed Battery Energy Storage System (BESS) is to be located at 9010 Mitchell Highway, Apsley NSW on Lot 3 DP1012686 (**Figure 1**). The project will include the BESS and temporary laydown areas within lot 3 DP1012686, an aboveground or underground connection to an existing overhead transmission line to the east which crosses over a Crown road reserve into Lot 107 DP756920, and an access treatment to the site that falls within the Mitchell Highway road reserve (**Figure 2**). Lot 3 DP1012686, Lot 107 DP756920 and the Crown road reserve are zoned Primary Production (RU1) as per the *Wellington Local Environmental Plan 2012* and the *Local Land Services Act 2013* (LLS Act) applies. The Mitchell Highway is zoned SP2 – Infrastructure (Classified Road) and the LLS Act does not apply.

The subject land for this Land Category Report is only land that the LLS applies to, which includes the BESS infrastructure contained within Lot 3 DP1012686 and the aboveground or underground connection to the overhead transmission line crossing the Crown road reserve and into Lot 107 DP756920 (**Figure 3**). The

access treatment on land zoned SP2 will be assessed according to the requirements of the BC Act and is not discussed further in this Land Category Report.

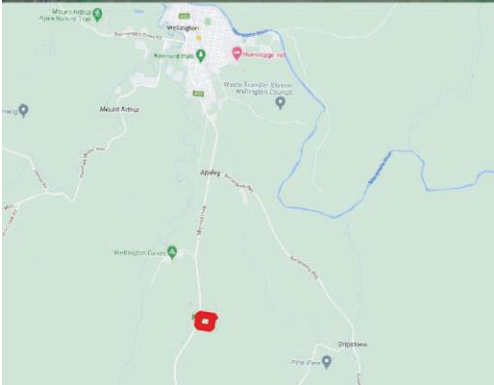
The subject land is located in the Dubbo Regional Local Government Area (LGA), and is part of the NSW South Western Slopes Region and Inland Slopes Subregion according to the Interim Biogeographic Regionalisation of Australia (IBRA) (Thackway and Cresswell, 1995). The site lies on the Wellington – Molong Karst Mitchell Landscape (NSW Government, 2021).

The subject land is bounded by the Mitchell Highway to the west and cleared agricultural land to the north, east and south. The Wallerwang-Dubbo 132 kV electricity transmission line is located to the east of the site and is located within a 45 metre wide cleared easement running in a north-south direction. The site is relatively flat, lying between 366 m and 370 m AHD (Australian Height Datum) from north to south and 368 to 371 m east to west. There is a farm dam in the east of the site, and native trees and shrubs have been planted along the Mitchell Highway to the north. The development site is rectangular in shape, with infrastructure proposed in bays covering an area approximately 300 metres by 150 metres (5.8 ha).

The property has a long history of agricultural production, including grazing and cropping. At the time of survey the paddock was sown to oats and cattle were grazing.

There are scattered remnant trees in an otherwise cleared agricultural landscape in the land immediately surrounding the BESS site, and much larger remnant woodlands on hilltops and in nearby reserves including the Wellington Caves Reserve, Mount Arthur Reserve and Catombal Ranges to the west, and Lake Burrendong State Recreation Area to the east. The Bell River is approximately 5 km west of the subject land and the Macquarie River 15 km to the east (**Figure 4**).

Figure 1 – Location Map



LEGEND
 Lot 3 DP1012686

Figure 2 – Concept Site Layout



Legend














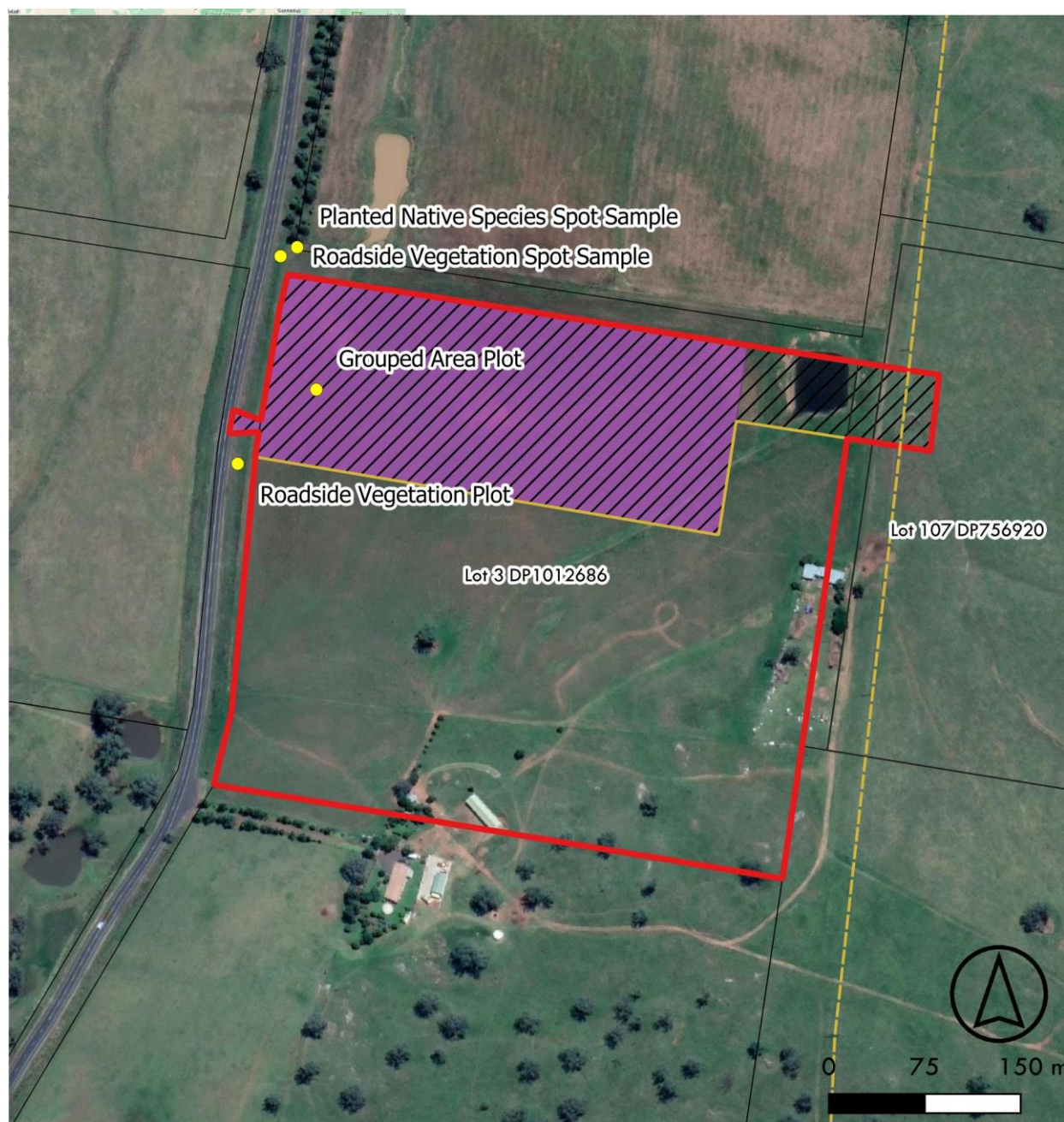
- | | | | |
|---|------------------------|---|---|
|  | Site |  | Electricity Easement (By Survey) |
|  | Development Area |  | Electricity Transmission Line (By Survey) |
|  | Disturbed Area |  | Natural Contours (2m Interval) |
|  | Cadastral | Residential Receivers | |
|  | Crown Enclosure Permit |  | Associated Receiver |
|  | Crown Land | | |
|  | Road | | |
|  | Water Body | | |
|  | Watercourse | | |

Figure 3 – Subject Land and vegetation survey



LEGEND

- | | |
|---|---|
|  Subject Land |  Lot boundaries |
|  Proposed Disturbed Area |  Vegetation survey locations |
|  Proposed Development Area |  Electricity Transmission Line |

Figure 4 - Regional Setting



LEGEND

-  Subject Site
-  BESS Disturbance Area

3. LAND CATEGORIES ON THE SUBJECT LAND

Native vegetation on rural land in NSW is managed under the Land Management Framework according to categories determined by Section 60H of the LLS Act. Where the LLS Act applies, land can be classified as:

- Category 1 – exempt land, land that is devoid of native vegetation, or is native vegetation that has regenerated on land that was lawfully cleared prior to 1990;
- Category 2 – regulated land, native vegetation that may be cleared with authorisation from Local Land Services;
- Category 2 – vulnerable regulated land, applies to steep or erodible land, riparian areas or special category land; and
- Category 2 – sensitive regulated land, for environmentally sensitive areas.

The subject land for this Land Category Report is 7.65 ha and zoned and in use for primary production. It has a long history of cropping and grazing, and at the time of survey in November 2021 was in an oats crop with cattle grazing. The decision matrix shown in **Table 1** outlines the data sources and steps taken in assessing the subject land to determine whether it meets the Category 1 exempt land criteria within the meaning of the LLS Act. This decision matrix was developed in consultation with the Biodiversity, Conservation and Science Directorate of the Department of Planning, Industry and Environment. Proposed development impact on Category 1 land is not required to be assessed under the Biodiversity Assessment Method, however it is important to note that any prescribed impacts of the proposal will still be considered in a BDAR to be prepared following endorsement of this Land Category Report.

Table 1 – Land Categorization Decision Matrix

Data Source	Result	Priority Given	Land Category	Reason
Transitional Native Vegetation Regulatory Map	Category 2 - vulnerable regulated or Category 2 sensitive regulated land	1	2	CI 108(4) LLS Reg: An area of the State to which Part 5A of the Act applies is, during the period from the commencement of that Part until the area has been designated on a native vegetation regulatory map, taken to be category 2-sensitive regulated land if the land is so designated on a transitional native vegetation regulatory map published by the Environment Agency Head.
Local Land Services, Client, Biodiversity Conservation Trust, DPIE, Local Council	Land part of a TSR, consent or conservation agreement, biodiversity certification, an offset under a PVP, a 'set-aside', subject to a remedial action or publicly funded.	1	2	S60I(2) LLS Act: Land is to be designated as category 2-regulated land if the Environment Agency Head reasonably believes that the land contains native vegetation that was grown or preserved with the assistance of public funds (other than forestry purposes), is subject to a private land conservation agreement, a set aside or offset under the NV Act or biodiversity certified under the BC Act.
				CI113(1) LLS Reg:(1) Land is also to be designated as category 2-regulated land if the Environment Agency Head reasonably believes that the land is (or was previously) subject to a private native forestry plan, property vegetation plan or an incentive property vegetation plan (being land that was required to be conserved or in respect of which public funding was provided to improve biodiversity), Nature Conservation Trust Act 2001, or proposed plantation under the Plantations and

				Reafforestation Act 1999, to be set aside for nature conservation, for re-vegetation of native vegetation or as a native vegetation offset, or the land is a travelling stock reserve (unless the land is located in the Western Division of the State).
Koala Plan of Management	Land is identified as core koala habitat under a Plan of Management approved under State Environmental Planning Policy (Koala Habitat Protection) 2020	1	2	S601(2)(j) LLS Act and CI111 LLS Reg - land that in the opinion of the Environment Agency Head is core koala habitat . (Koala Habitat Protection SEPP 2020 which applies to RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry zones)
Existing approvals for lawful clearing eg development consents, consent authority approved operational plans etc	Existing approval for clearing of native vegetation can be unambiguously demonstrated AND is NOT overridden by any of the other specific agreements noted below (Where no definitive evidence, precautionary approach must be applied (i.e. Cat 2 assumed))	2	1	Existing clearing which was previously authorised under other legislation as set out in S60O LLS Act S60H(1) LLS Act: land is to be designated as category 1-exempt land if the Environment Agency head reasonably believes that (a) the land was cleared of native vegetation at 1 January 1990 or b) lawfully cleared between that date and the commencement of Part 5A of the LLS Act (25 August 2017)
Best available aerial photography (including Six Viewer and Google Earth Pro)	Woody vegetation (native) present at or before 1 January 1990.	3	2	S60I(1) LLS Act: land is to be designated as category 2-regulated land if the Environment Agency head reasonably believes that the land was (a) not cleared of native vegetation at 1 January 1990 OR the land was unlawfully cleared of native vegetation after 1 January 1990. CI113(1)(g) LLS Reg: Land is to be designated as category 2 if the Environment Agency Head reasonably believes that the land contains low conservation grasslands beneath the canopy or dripline of woody vegetation (being woody

				vegetation that satisfied the criteria for classification of the land as Cat 2. (Scattered Trees)
Premise groundtruthed vegetation mapping	Native vegetation, remnant woodlands, grasslands	3	2	S60I(1)(a) LLS Act: land is to be designated as category 2-regulated land if the Environment Agency head reasonably believes that the land was not cleared of native vegetation at 1 January 1990 and is not 'low conservation value' grasslands or groundcover.
Floristic data (BAM or IGGAM Transects)	Scientifically robust method - appropriate number of plots, qualified persons, right time of year for maximum native species representation	4	1	S60H(2)(a) LLS Act: land is to be designated as category 1-exempt land if the Environment Agency head reasonably believes that the land contains low conservation value grasslands in accordance with the relevant requirements of the LLS Act and Regulations. S60I(2)(e) requires land to be designated as category 2 - regulated if the Environment Agency Head reasonably believes that the land contains grasslands that are not low conservation value grasslands). See also CI 109 LLS Reg (low conservation value ground cover) and S60F(3) LLS Act.
	Exotic perennial cover greater than native cover OR Vegetation Integrity Score greater than or equal to 15 where PCT representative of EEC or CEEC, greater than or equal to 17 where PCT associated with threatened species habitat or represents a vulnerable EC, or greater than or equal to 20 where the PCT does not represent a TEC and is not associated with threatened species habitat.			The Interim Grasslands and other Groundcover Assessment Method is a DPIE endorsed method for determining low conservation value grasslands/groundcover

Best available aerial photography (including Six Viewer and Google Earth Pro, landholder records)	Spatial imagery indicates vegetation has been 'significantly disturbed' or 'modified' within the meaning of the LLS Act and in accordance with the LLS Regulations	5	1	S60J(2) LLS Act allows native vegetation that comprises grasslands or other non-woody vegetation to be taken to have been cleared if the native vegetation was significantly disturbed or modified (see cl. 114(1) and(2) LLS Reg).
Best available aerial photography (including Six Viewer and Google Earth Pro, landholder records)	Pre 1990 non-vegetated areas such as public roads, farm tracks and roads and other infrastructure	5	1	S60H(1)(a) LLS Act: land is to be designated as category 1-exempt land if the Environment Agency head reasonably believes that the land was cleared of native vegetation at 1 January 1990.
NSW Land Use2017 v1.2	1.2.0 Managed Resource:	5	2	As per Figure 7 of the Native Vegetation Regulation (NVR) map method statement - Australian Land Use Mapping (ALUM) classification assigned to the NVR map category 2
	1.2.1 Biodiversity			
	1.2.2 Surface Water supply			
	1.2.3 groundwater			
	1.2.4 Landscape			
	1.2.5 Traditional indigenous use			
	1.3.0 Other Minimal use:			
	1.3.1 Defence land - natural areas			
	1.3.2 Stockroute			
	1.3.3 Residual native cover,			
	1.3.4 Rehabilitation			
	5. Intensive Uses			
	5.4.3 Rural residential without agriculture			
	5.7.0 Transport and Communication:			
	5.7.1 Airport/aerodrome			

	5.7.2 Roads,			
	5.7.3 Railways			
	5.7.4 Ports and water transport			
	5.7.5 Navigation and communication			
	6. Water			
	6.1.1 Lake - conservation			
	6.1.4 Lake - saline			
	6.3.1 River - conservation			
	6.5.1 Marsh/wetland - conservation			
	6.5.4 Marsh/wetland - saline			
	6.6.1 Estuary/Coastal water - conservation			
NSW Land Use2017 v1.2	All other Land Use Categories (other than those specifically listed above)	6	1	As per Figure 7 of the Native Vegetation Regulation (NVR) map method statement - Australian Land Use Mapping (ALUM) classification assigned to the NVR map category 1

3.1 Datasets and Resources

The following datasets and resources were used to inform the process of identifying, mapping and justifying Category 1 on the subject land:

- NSW Land Use Mapping 2017 v1.2 (DPIE, 2019)
https://geo.seed.nsw.gov.au/Public_View/index.html?viewer=Public_View&locale=en-AU&runWorkflow=AppendLayerCatalog&CatalogLayer=SEED_Catalog.281 (**Figure 5**);
- NSW Six Maps Imagery 2014 <https://maps.six.nsw.gov.au/>; Satellite Imagery Google Earth Pro 2018 (**Figure 1**);
- Premise Vegetation Survey Results. Field Surveys conducted by qualified and experienced ecologists on the subject land in November 2021 (**Figure 3**);
- NSW Native Vegetation Extent 5 m Raster v1.2 (OEH, 2017b)
https://geo.seed.nsw.gov.au/Public_View/index.html?viewer=Public_View&locale=en-AU&runWorkflow=AppendLayerCatalog&CatalogLayer=SEED_Catalog.237.Koala%20Habitat%20Information%20Base%20-%20NSW%20Vegetation%20Extent%20v1.2 **Figure 5**);
- Native Vegetation Regulatory Map Viewer
(<https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=NVRMap>) (**Figure 7**);

3.2 Results

The subject land is considered to be Category 1 land according to the steps outlined in the Decision Matrix, summarised in Table 2.

Table 2 – Application of the Decision Matrix

Source	Justification	Evidence
Land Use Layer	Land use categories include Grazing Modified Pasture, Residential and Farm Infrastructure and Cropping. These land use categories are all consistent with Category 1 land according to NVR Map Method Statement (OEH, 2017a).	Figure 5
Aerial imagery, six maps	No woody vegetation on the subject land evident on aerial photography and satellite imagery and confirmed during on ground site investigation in November 2021 discussed in Section 3.2.1 .	Figure 1
NSW Native Vegetation Extent	No woody vegetation on the subject land. The underground connection to the existing transmission line will avoid all woody native vegetation.	Figure 6
Transitional NVR Regulatory Map	Not mapped on the transitional Native Vegetation Regulatory Map as Category 2 land.	Figure 7
Client and landholder advice	Not part of a Koala Plan of Management or part of a conservation agreement or prior approval.	


Figure 5 – NSW Land Use Layer




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
 Subject Land

NSW Landuse 2017 v1p2

 2.1.0 Grazing native vegetation

 3.2.0 Grazing modified pastures

 3.3.0 Cropping

 5.4.0 Residential and farm infrastructure


 5.7.0 Transport and communication

Figure 6 – NSW Woody Extent

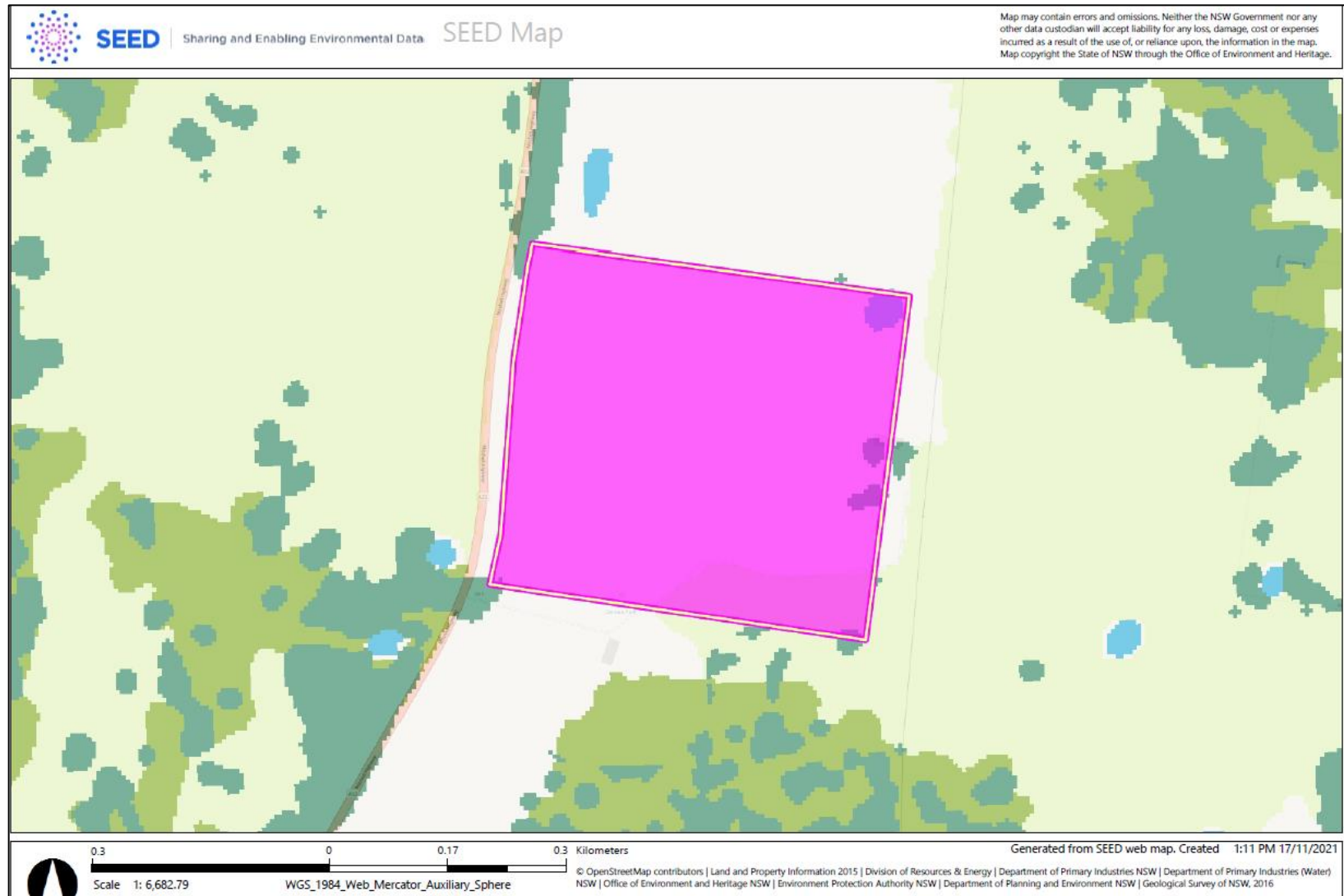
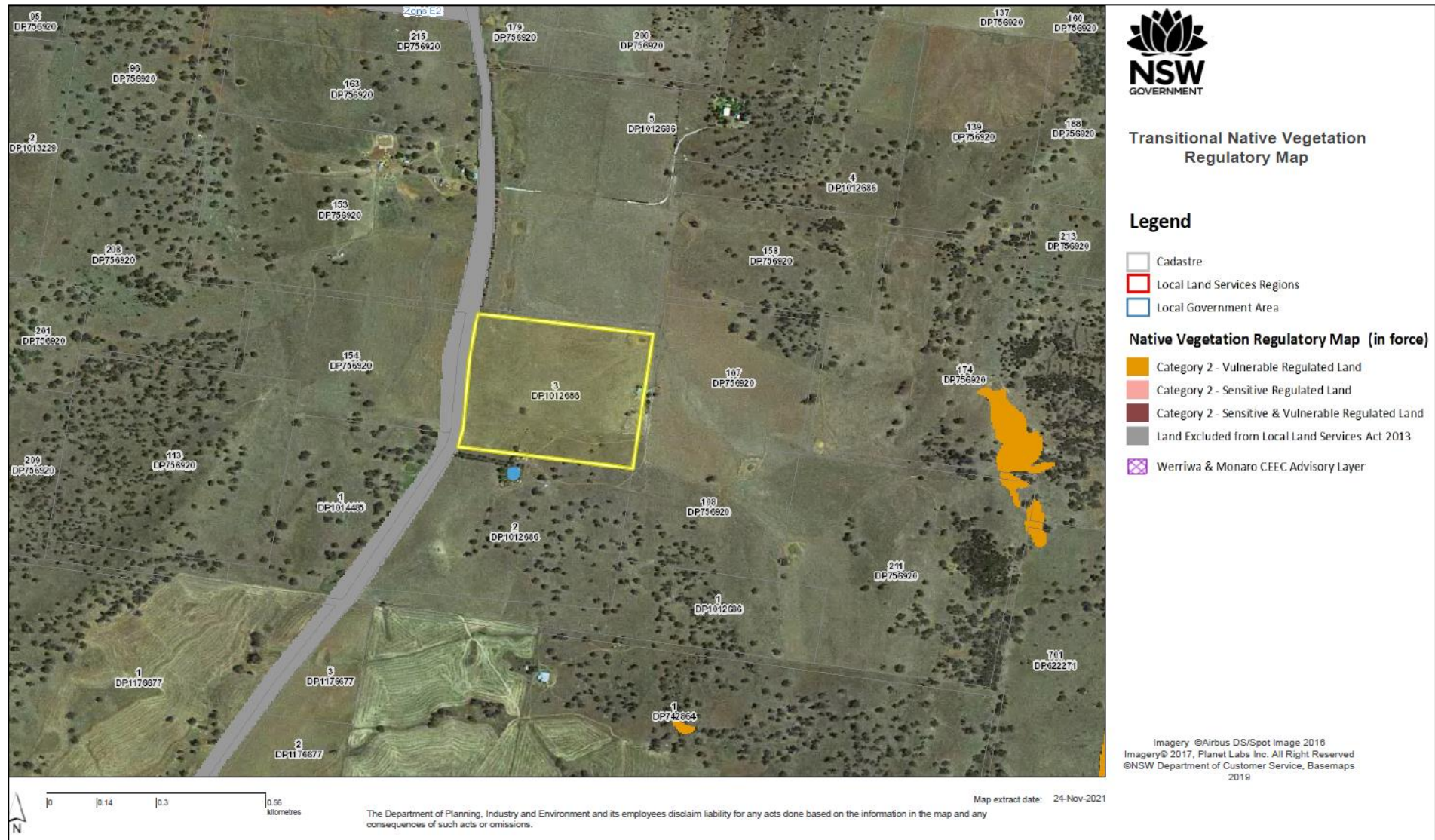


Figure 7 – Transitional Native Vegetation Regulatory Map



3.2.1 VEGETATION SURVEY

A vegetation survey was undertaken on the subject land on 1 November 2021 at survey locations indicated on **Figure 3**. One BAM plot was conducted on the subject land to obtain floristic and structural data to adequately describe the vegetation. The dominant species on the site was Oats (*Avena sativa*) covering 80% of the 20 x 20 m plot. Other common species included introduced Wireweed (*Polygonum aviculare*), Haresfoot clover (*Trifolium arvense*), Common Sowthistle (*Sonchus oleraceus*), Hop Clover (*Trifolium campestre*) and Ryegrass (*Lolium rigidum*). Four native species were recorded, Australian Stonecrop (*Crassula sieberiana*), Sprawling Bluebell (*Wahlenbergia gracilis*), Star Cudweed (*Euchiton sphaericus*) and *Oxalis Perennans*, amounting to 0.5% of the vegetation cover in the 400m² plot. There were no trees or shrubs on the subject land. The full species list, cover and distribution for each species is provided in Appendix A.

Photos taken at the plot location are shown in **Figure 8** and **Figure 9**.

Figure 8 – Plot location looking north



Figure 9 – Plot location looking east



4. CONCLUSION

The subject land shown in **Figure 3** is considered Category 1 exempt land. Vegetation removal required for the construction and operation of the Apsley BESS will not require assessment under the Biodiversity Assessment Method (DPIE, 2020). Prescribed impacts will be assessed and included in a Biodiversity Development Assessment Report to be prepared for land not considered to be Category 1 land once the Land Category Report has been endorsed by the Biodiversity Conservation, Science Directorate.

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APPENDIX A

CURRICULUM VITAE

Sally Kirby and Isobel Colson



SALLY KIRBY

SENIOR ECOLOGIST

Sally is a Senior Ecologist with over 20 years' experience in natural resource management, environmental impact assessment and community engagement. Sally has specialist skills in terrestrial and aquatic ecological processes, habitat assessments, water quality investigations, environmental monitoring and management plans.

QUALIFICATIONS + ACCREDITATIONS

- Bachelor of Science Marine Ecology / Psychology Sydney University (1994)
- Master of Environmental Studies Macquarie University (2000)
- Diploma community co-ordination and facilitation (2017)
- Certificate IV Training and Assessment (2013)
- Certificate of Attainment Management Systems Auditing; Environmental Management Systems (2009)
- Biodiversity Assessment Method Accreditation (application pending 2021)

AWARDS

- Environmental Citizen of the Year Cabonne Shire 2019

WORK HISTORY

Premise | Senior Ecologist
(2019 - present)

Career and Experience Overview

Sally has worked in NSW, QLD and the NT in environmental impact assessment roles as an ecologist, natural resource management advisory services, and community organisations in facilitation, community engagement and capacity building. Sally also has experience in the agricultural sector and natural capital accounting.

Relevant EXPERIENCE

Senior Ecologist | Biodiversity Assessments | Development Approvals, Subdivisions, Local Government Infrastructure Works

Cadia Valley Operations, Cabonne Council, Orange City Council, Blayney Shire Council, Walcha Council NSW | 2019, 2020, 2021

Vegetation survey design and assessment, biodiversity values and impact assessment, threatened species survey and habitat assessment, reporting, project management and facilitation.

Senior Ecologist | Community Engagement and Aquatic Assessment

Orange City Council | Orange, NSW | 2020

Co-ordinated community engagement process to inform design of an off-stream wetland as part of Orange City Council's stormwater harvesting scheme. Conducted vegetation surveys and aquatic and terrestrial habitat assessments for the biodiversity impact assessment of the project. Community consultation with stakeholder reference group.

Senior Ecologist | Biodiversity Assessment, Renewable Energy Projects

Central Tablelands Landcare |
Co-ordinator (2009 - 2019)

TAFE Western | Teacher NRM
(2006 - 2015)

**Primary Industries & Natural
Resources, NT** | Water Advisory
Officer (2002 - 2005)

SMEC | Environmental
Scientist/Ecologist (1999 – 2002)

Dames and Moore |
Environmental Scientist (1995 –
1997)

Condobolin, Mogriguy, Marulan, Gunnedah, Wellington, Dubbo
and Orange | 2019, 2020, 2021

Terrestrial ecology surveys and assessment for proposed solar
farms in various locations around NSW. Vegetation surveys using
BAM, habitat assessment, mapping, threatened species impact
assessment and mitigation measures.

**Co-ordinator | Grassy Whitebox Woodland Revegetation
Projects**

NSW Government Environmental Trust | NSW | 2012-2019
Co-ordinated revegetation projects with landholders in the Central
Tablelands, funding applications, community engagement, site
assessments, advice on species selection, site preparation and
ongoing management including feral animal control and weed
management. Project management, monitoring and reporting.

**Co-ordinator | Pest Animal Co-ordinator Central Tablelands
Landcare**

CT Local Land Services | Orange | 2018

Co-ordinated educational workshops and assisted with the
establishment and management of Pest Animal Management
Groups in the Central Tablelands NSW.

Relevant EXPERIENCE CONT.

Co-ordinator | Dung Beetle Monitoring Citizen Science Project

Dung Beetle Solutions Australia | Orange and Bathurst | 2016-2019

Co-ordinated educational workshops, dung beetle breeding and monitoring programs with schools and
Landholders in Orange and Molong, NSW.

Co-ordinator | Whole Farm Planning and Aboriginal Reference Groups

TAFE Western | Orange | 2006-2015

Co-ordinated whole farm planning course, taught water quality, GPS, facilitated program including mapping,
soil health, water quality, native vegetation, business, strategic planning. Taught Aboriginal Reference Groups
how to use GPS, computer and administration skills to collect data for Aboriginal Heritage Information
Management System (AHIMS).

**Water Advisory Officer | Implementing water licences, bore inspections, groundwater/surface water
interactions**

Northern Territory Government | Katherine, NT | 2001-2004

Customer service, technical advice, planning approvals, implementing water licenses in the Northern
Territory, consulting with landholders about installing water monitoring technology and reporting on water
use, investigations into groundwater and surface water interactions, collated reports on Roper River, Daly
River and Victoria River Health Projects, Streamwatch Activities with Aboriginal Groups and School Groups
throughout NT.



APSLEY BATTERY ENERGY STORAGE SITE ECOLOGIST

Isobel takes pride in providing accurate assessments and thorough advice to clients to inform environmental management and protection. Isobel has exceptional skill in native plant identification and geographic information systems and a personal interest in fungi.

QUALIFICATIONS + ACCREDITATIONS

- Bachelor of Environmental Science and Management, Charles Sturt University Thurgoona
- Masters Plant and Fungal Taxonomy, Diversity and Conservation, Queen Mary University London
- Certificate IV Conservation and Land Management: National Environment Centre, Thurgoona NSW
- Certificate II Conservation and Land Management: 'Know and Grow Australian Native Plants': TAFE NSW, Orange Agricultural Campus
- Biodiversity Assessment Method Accreditation (application pending 2021)

WORK HISTORY

Premise | Ecologist
(2018 - present)

Kew Gardens | Ecologist
(2018 – 2019)

Career and Experience Overview

ISOBEL IS A SENIOR ECOLOGIST WITH OVER 6 YEARS OF EXPERIENCE WORKING IN NATURAL RESOURCE MANAGEMENT IN WESTERN NSW IN EXTENSION, PROJECT MANAGEMENT AND PLANNING ROLES. SHE HAS EXPERIENCE IN GIS, VEGETATION ASSESSMENT, PROJECT MANAGEMENT AND EVALUATION. HER SPECIAL INTERESTS INCLUDE AUSTRALIAN NATIVE GRASSES AND FUNGI.

Relevant EXPERIENCE

Ecologist | Biodiversity Assessments | Development Approvals, Subdivisions, Local Government Infrastructure Works

Cadia Valley Operations, Cabonne Council, Orange City Council, Blayney Shire Council, Walcha Council NSW | 2019, 2020, 2021

Vegetation survey design and assessment, biodiversity values and impact assessment, threatened species survey and habitat assessment, reporting, project management and facilitation

Senior Ecologist | Biodiversity Assessment, Renewable Energy Projects

Condobolin, Mogriguy, Marulan, Gunnedah, Wellington, Dubbo and Orange | 2019, 2020, 2021

Terrestrial ecology surveys and assessment for proposed solar farms in various locations around NSW. Vegetation surveys using BAM, habitat assessment, mapping, threatened species impact assessment and mitigation measures.

Western Local Land Services |

Monitoring and Evaluation
(2016 – 2018)

Western Local Land Services |

Land Services Officer
(2014-2016)

Ecologist | Bovaca Bio Project

Govt. of Colombia & Kew Gardens | 2018 - 2019

Carried out an assessment of macrofungal diversity in high-altitude forests in Boyacá, Colombia. Involved DNA barcoding, species identification and analysis of species diversity using R statistical software

Project Management | Riparian Restoration Project

Involved working with graziers to develop project plans, contract management, GIS and environmental monitoring.

Project Management | Groundcover Management Project

2014 - 2016

Planning and project management for 30 grazing management projects in Western NSW . Mapping, management of contract milestones, groundcover monitoring and project support to applicants.

Project Management | National Landcare Program Bid 2018

National Landcare | 2018

Developed program logics and environmental monitoring guidelines for successful organisational funding bid for 4 years of National Landcare Program funding from 2019.



APPENDIX B

PLANT SPECIES LIST

Quadrat 1	N: 682822					WELGQ1	WELGQ1
GDA94 Zone 55	E: 6387125						
Common Name	Scientific Name	Native	Exotic	High Threat Weed	BAM Growth Form Group	Cover	Abundance
Oats	<i>Avena sativa</i>		YES			80	1000
Wireweed	<i>Polygonum aviculare</i>		YES			3	500
Haresfoot Clover	<i>Trifolium arvense</i>		YES			2	100
Common Sowthistle	<i>Sonchus oleraceus</i>		YES			1	50
Hop Clover	<i>Trifolium campestre</i>		YES			1	500
Wheat	<i>Triticum aestivum</i>		YES			1	30
Clustered Clover	<i>Trifolium glomeratum</i>		YES			0.5	200
Wimmera Ryegrass	<i>Lolium rigidum</i>		YES			0.5	100
Buchan Weed	<i>Hirschfeldia incana</i>		YES			0.5	10
Australian Stonecrop	<i>Crassula sieberiana</i>	YES			Forb (FG)	0.2	1000
Prickly Lettuce	<i>Lactuca serriola</i>		YES			0.2	30
Scarlet Pimpernel	<i>Lysimachia arvensis</i>		YES			0.2	100
Patterson's Curse	<i>Echium plantagineum</i>		YES			0.2	20
Sprawling Bluebell	<i>Wahlenbergia gracilis</i>	YES			Forb (FG)	0.1	5

Star Cudweed	<i>Euchiton sphaericus</i>	YES			Forb (FG)	0.1	20
	<i>Oxalis perennans</i>	YES			Forb (FG)	0.1	2
Toad Rush	<i>Juncus bufonius</i>		YES			0.1	50
Four-leaved Allseed	<i>Polycarpon tetraphyllum</i>		YES			0.1	30
Shepherd's Purse	<i>Capsella bursa-pastoris</i>		YES			0.1	10
Common Peppergrass	<i>Lepidium africanum</i>		YES			0.1	5
Flaxleaf Fleabane	<i>Conyza bonariensis</i>		YES			0.1	10
Rough Poppy	<i>Papaver hybridum</i>		YES			0.1	20
Pointed Toadflax	<i>Kickxia elatine</i>		YES			0.1	1
St Barnabys Thistle	<i>Centaurea solstitialis</i>		YES			0.1	15
Cudweed	<i>Gamochaeta calviceps</i>		YES			0.1	10
White Clover	<i>Trifolium repens</i>		YES			0.1	10
Sandspurry	<i>Spergularia rubra</i>		YES			0.1	3
Saffron Thistle	<i>Carthamus lanatus</i>		YES	YES		0.1	1
Mouse-ear Chickweed	<i>Cerastium glomeratum</i>		YES			0.1	2
Variegated Thistle	<i>Silybum marianum</i>		YES			0.1	1



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APPENDIX B

BIODIVERSITY CONSERVATION DIVISION LETTER OF ENDORSEMENT



Our ref: DOC21/1135020

Your ref: 221284_LAND_CAT_001

Sally Kirby
Senior Ecologist
Premise Pty Ltd
sally.kirby@premise.com.au

Dear Sally,

Wellington Battery Energy Storage Site – Land Category Assessment

Thank you for your e-mail dated 8 December 2021 to the Biodiversity, Conservation and Science Directorate (BCS) of the Department of Planning, Industry and Environment inviting comments on the land categorisation assessment report for the proposed Wellington Battery Energy Storage Site.

BCS is happy to endorse the land categorisation assessment outcomes displayed on Figure 3 of the submitted report, which identifies Category 1 – Exempt Land within the boundary of the area labelled “Subject Land”.

BCS notes that this does not include the development component labelled “Road Entry” displayed in Figure 3, which is located outside of the Subject Land boundary and within Excluded Land on the Transitional Native Vegetation Regulatory Map.

Section 3 of the land categorisation assessment states:

“Category 1 land is not required to be assessed under the Biodiversity Assessment Method, however it is important to note that any prescribed impacts of the proposal will still be considered in a BDAR to be prepared following endorsement of this Land Category Report”.

It should be noted that an assessment of biodiversity values within the site must also consider threatened entities identified under other legislation where relevant. As an example, potential impacts to Matters of National Environmental Significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* on Category 1 – exempt land must be considered.

If you require any further information regarding this matter, please contact Ben Ellis, Principal Project Officer, via ben.ellis@environment.nsw.gov.au or (02) 8275 1838.

Yours sincerely

Samantha Wynn
Senior Team Leader Planning North West
Biodiversity, Conservation and Science Directorate

22 December 2021





APPENDIX C

SPECIES LIST

Exotic	Common Name	Scientific Name	Native	Exotic	High Threat Weed	BAM Growth Form Group	Cover WELGQ 1	Abundance WELGQ1	Cover WELGQ 2	Abundance WELGQ2	SS 1	SS 2
	Western Silver Wattle	<i>Acacia decora</i>	YES			Shrub (SG)					U	
	Hickory Wattle	<i>Acacia implexa</i>	YES			Shrub (SG)					U	
	Red Grass	<i>Bothriochloa macra</i>	YES			Grass & grasslike (GG)			10	300		
	Kurrajong	<i>Brachychiton populneus</i>	YES			Tree (TG)					O	
	River Bottlebrush	<i>Callistemon sieberi</i>	YES			Shrub (SG)					C	
	River Oak	<i>Casuarina cunninghamiana</i>	YES			Tree (TG)					O	
	Windmill Grass	<i>Chloris truncata</i>	YES			Grass & grasslike (GG)			0.2	5		
	Australian Stonecrop	<i>Crassula sieberiana</i>	YES			Forb (FG)	0.2	1000				
	Common Couch	<i>Cynodon dactylon</i>	YES			Grass & grasslike (GG)			2	20		
	Queensland Bluegrass	<i>Dichanthium sericeum</i>	YES			Grass & grasslike (GG)			15	100		
	White Box	<i>Eucalyptus albens</i>	YES			Tree (TG)					O	
	Yellow Box	<i>Eucalyptus melliodora</i>	YES			Tree (TG)					A	
	Star Cudweed	<i>Euchiton sphaericus</i>	YES			Forb (FG)	0.1	20				
		<i>Oxalis perennans</i>	YES			Forb (FG)	0.1	2	0.1	1	O	
	Swamp Dock	<i>Rumex brownii</i>	YES			Forb (FG)						U
	Small-flowered Wallaby-grass	<i>Rytidosperma setaceum</i>	YES			Grass & grasslike (GG)					O	
	Sprawling Bluebell	<i>Wahlenbergia gracilis</i>	YES			Forb (FG)	0.1	5				
*	Oats	<i>Avena fatua</i>		YES			70	1000	0.1	2	U	C
*	Prairie Grass	<i>Bromus catharticus</i>		YES					0.2	10		C
*	Great Brome	<i>Bromus diandrus</i>		YES	YES				0.1	5	U	O
*	Soft Brome	<i>Bromus hordeaceus</i>		YES					0.1	20		
*	Shepherd's Purse	<i>Capsella bursa-pastoris</i>		YES			0.1	10				
*	Saffron Thistle	<i>Carthamus lanatus</i>		YES	YES		0.1	1				R
*	St Barnabys Thistle	<i>Centaurea solstitialis</i>		YES			0.1	15	0.2	10	R	
*	Mouse-ear Chickweed	<i>Cerastium glomeratum</i>		YES			0.1	2				

*	Spear Thistle	<i>Cirsium vulgare</i>	YES					0.5	20		U
*	Flaxleaf Fleabane	<i>Conyza bonariensis</i>	YES			0.1	10				
*	Cocksfoot	<i>Dactylis glomerata</i>	YES					40	300		R
*	Patterson's Curse	<i>Echium plantagineum</i>	YES			0.2	20	0.1	3		
*	Tall Fescue	<i>Festuca arundinacea</i>	YES					0.5	20		
*	Cudweed	<i>Gamochaeta calviceps</i>	YES			0.1	10				
*	Buchan Weed	<i>Hirschfeldia incana</i>	YES			0.5	10	2	50	O	C
*	Toad Rush	<i>Juncus bufonius</i>	YES			0.1	50				
*	Pointed Toadflax	<i>Kickxia elatine</i>	YES			0.1	1				
*	Prickly Lettuce	<i>Lactuca serriola</i>	YES			0.2	30	0.2	20		C
*	Common Peppergrass	<i>Lepidium africanum</i>	YES			0.1	5				
*	Wimmera Ryegrass	<i>Lolium rigidum</i>	YES			0.5	100			C	
*	Scarlet Pimpernel	<i>Lysimachia arvensis</i>	YES			0.2	100				
*	Burr Medic	<i>Medicago polymorpha</i>	YES							U	
*	Red-flowered Mallow	<i>Modiola caroliniana</i>	YES					0.1	1		
*	Rough Poppy	<i>Papaver hybridum</i>	YES			0.1	20				
*	Opium Poppy	<i>Papaver somniferum</i>	YES								C
*	Paspalum	<i>Paspalum dilatatum</i>	YES	YES				10	50		A
*	Phalaris	<i>Phalaris aquatica</i>	YES					5	20	U	A
*	Lamb's Tongues	<i>Plantago lanceolata</i>	YES					3	100	A	R
*	Four-leaved Allseed	<i>Polycarpon tetraphyllum</i>	YES			0.1	30				
*	Wireweed	<i>Polygonum aviculare</i>	YES			3	500				
*	Curled Dock	<i>Rumex crispus</i>	YES					0.1	1		
*	Vervain	<i>Salvia verbenaca</i>	YES							A	
*	Variegated Thistle	<i>Silybum marianum</i>	YES			0.1	1			R	R
*	Common Sowthistle	<i>Sonchus oleraceus</i>	YES			1	50	0.1	5		O
*	Sandspurry	<i>Spergularia rubra</i>	YES			0.1	3				
*	Salsify	<i>Tragopogon porrifolius</i>	YES					2	200		
*	Haresfoot Clover	<i>Trifolium arvense</i>	YES			2	100	0.1	10		U

*	Hop Clover	<i>Trifolium campestre</i>		YES			1	500	1	100	C	
*	Clustered Clover	<i>Trifolium glomeratum</i>		YES			0.5	200	0.1	5		
*	White Clover	<i>Trifolium repens</i>		YES			0.1	10				
*	Wheat	<i>Triticum aestivum</i>		YES			1	30				
*	Twiggy Mullein	<i>Verbascum virgatum</i>		YES								R
*	Purpletop	<i>Verbena bonariensis</i>		YES					0.1	1		
*	Common vetch	<i>Vicia sativa</i>		YES					0.5	50	O	C



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