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NEWCASTLE SYDNEY CENTRAL COAST

Biodiversity Management Plan

Mulwala Solar Farm - Stage 1b, NSW

Prepared For: European Energy

Prepared By: Anderson Environment and Planning

Date: 19 August 2025

AEP Reference: 5314

Revision: 06

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Document Control

Document Name	Biodiversity Management Plan Mulwala Solar Farm - Stage 1b, Mulwala.
Project Number	5314
Client Name	European Energy
AEP Project Team	Darcy Kilvert Frankie O'Brien Geoff Turner Ben Jones Alana Guest

Revision

Revision	Date	Authors	Reviewed	Approved
01	28 April 2025	Frankie O'Brien	Darcy Kilvert	Darcy Kilvert
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01	28 April 2025	Steffi Fernando	European Energy
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06	19 August 2025	Steffi Fernando	European Energy

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1.0 Introduction

At the request of European Energy, Anderson Environment & Planning (AEP) have developed a Biodiversity Management Plan (BMP) for to satisfy the ecology conditions of consent for SSD 9039 at Mulwala Solar Farm (Stage 1b), Mulwala NSW 2647, covering:

- Lot 5 DP134511; and
- Lot 6 DP134511.

The Project is to be staged as per the staging letter provided to the Department of Planning, Housing and Infrastructure (DPHI) on 7th July 2025. The Project Layout is included as **Appendix D.** Should the subsequent stages proceed in the future, a separate BMP will be updated and revised accordingly and will be submitted to DPHI for approval.

This BMP is only applicable to Stage 1b of the Project, as approved by DPHI on the 8th July 2025. This BMP applies to the following:

- Stage 1b:
  - *Delivery of equipment and minor site establishment works, including installation of internal roads.*
  - *Construction of the northern portion of the solar farm*
  - *Operation of the Mulwala Solar Farm*

Minor site establishment works include:

- Marking out No-go zones, sensitive areas and set downs;
- Clearing and grubbing of the vegetation;
- Setting up water supply tanks for dust suppression;
- Temporary generator connections for the site facilities;
- Construction of site access tracks and entry points;
- Levelling / grading areas for the laydown, switching station, and the specific construction zones;
- Delivery and installation of temporary site offices, amenities; and
- Security lighting and camera set up.

Construction of the intersection and road upgrades as required under Schedule 3 condition 4 of the development consent are the subject of a separate approval under section 138 of the *Roads Act 1993* and are not the subject of this BMP.

The area of land subject to Stage 1b is referred to as the 'BMP Lands', with its location relative to the remainder of the development site shown in **Figure 1**. Future development of the southern portion of the solar farm, as part of Stage 2, will require a separate BMP. While the principles outlined in this report may inform future management in Stage 2, the timing of these works is currently unknown. There is also potential for significant changes to occur, such as the listing of new threatened species, updates to industry standards, or changes in site conditions. As such, a separate BMP will be required to address and guide works associated with Stage 2.

1.1 Conditions of Consent – Biodiversity Management Plan

Biodiversity Management Plan

11. Prior to commencing construction, the Applicant must prepare a Biodiversity Management Plan for the development in consultation with OEH, and to the satisfaction of the Secretary. This plan must:

(a) include a description of the measures that would be implemented for:

- *managing the remnant vegetation and fauna habitat on site;*
- *minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;*
- *minimising the impacts to fauna on site and implementing fauna management protocols;*
- *avoiding the removal of hollow-bearing trees during spring to avoid the main breeding period for hollow-dependent fauna;*
- *rehabilitating and revegetating temporary disturbance areas;*
- *protecting and managing vegetation and fauna habitat outside the approved disturbance areas;*
- *maximising the salvage of vegetative and soil resources within the approved disturbance area for beneficial reuse in the enhancement or the rehabilitation of the site; and*
- *controlling weeds and feral pests; and*

(b) include details of who would be responsible for monitoring, reviewing and implementing the plan, and timeframes for completion of actions.

This BMP schedules ecological mitigation works to satisfy the Consent including: site preparation; tree protection; wildlife management; weeding; and, monitoring of the BMP Lands. Associated targets and criteria are also provided (refer **Table 2**) to guide annual monitoring and reporting for a period of three (3) years.

Table 1: Condition Compliance Table

Term of Consent	Item Addressed
(a) include a description of the measures that would be implemented for:	
• managing the remnant vegetation and fauna habitat on site;	Addressed in **Section 5**
• minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;	Addressed by the Structure Footprint design as depicted in Appendix D. The Structure Plan depicts the retention of five (5) trees which are identified for removal in the BDAR.
• minimising the impacts to fauna on site and implementing fauna management protocols;	Addressed in **Section 5**
• avoiding the removal of hollow-bearing trees during spring to avoid the main breeding period for hollow-dependent fauna;	Addressed in **Section 5.2.2**
• rehabilitating and revegetating temporary disturbance areas;	The only temporary disturbance associated with Stage 1b is the laydown area located within an agricultural paddock. Therefore, this measure is not applicable to this BMP. This measure will be addressed as required for stages with temporary impacts to native vegetation.
• protecting and managing vegetation and fauna habitat outside the approved disturbance areas;	Addressed in **Sections 3, 4, 5 and 6**
• maximising the salvage of vegetative and soil resources within the approved disturbance area for beneficial reuse in the enhancement or the rehabilitation of the site; and	Addressed in **Section 5.2**
• controlling weeds and feral pests; and	Addressed in **Section 6.2** and **Section 6.5**
(b) include details of who would be responsible for monitoring, reviewing and implementing the plan, and timeframes for completion of actions.	Addressed in **Section 1.2** and **Section 6.7**

1.2 Biodiversity Management Plan Objectives

The purpose of this plan is to define and outline the actions required to prepare for and manage the implementation of the BMP. The BMP will comprise an initial 1-3 year establishment period which will encompass the construction of the solar farm and its early operational stages. Beyond this initial period, maintenance and monitoring will be ongoing for the life of the project. Weed control works will be required in perpetuity in accordance with the *Biosecurity Act 2015*. Prior to the commencement of decommissioning works the BMP is to be updated to identify any mitigation measures relevant to the proposed works.

This BMP incorporates best-practices methods, with the aim of achieving the following objectives within the three (3) year implementation period:

- Retain and protect identified trees earmarked for retention and identify “No Go” areas (see **Figures 5a**, **5b** and **5c**);
- Identify and protect Threatened Ecological Communities (TECs);
- Manage impacts to fauna and implement management protocols for their protection; and
- Undertake weed control and facilitate the removal of invasive species from the retained BMP lands.

This BMP also seeks to address elements of the mitigation measures in the approved Biodiversity Development Assessment Report (BDAR) (MJD, 2018), whilst some elements are addressed through the Environmental Management Strategy (EMS) (Urbis, 2025). **Table 1** below identifies how mitigation measures identified within the BDAR are addressed within this BMP or the EMS.

Table 2: Mitigation measures identified within BDAR

Mitigation Measure	Responsibility	Item addressed
Direct Impacts		
Pre-clearance Surveys		
Tree removal works are to occur outside assessed threatened species breeding periods (species known to breed in hollows)	Project Ecologist in consultation with Project Manager	Section 5.2.2
Pre-clearance survey of all trees to be removed	Project Ecologist	Section 5.2
Mark habitat trees	Project Ecologist	Section 5.2
Habitat Tree Removal		
Clear hollow-bearing and habitat trees remaining on site	Contractors	Section 5.2
Felled trees left in situ before stockpiling to allow for any fauna to move on	Contractors	Section 5.2.2
Felling supervised by Ecologist	Project Ecologist	Section 5.2
Indirect Impacts		
Retained Paddock Trees		
Establish Tree Protection Zones (TPZ) around retained paddock trees in development area	Contractor in consultation with Project Ecologist	Section 3.2.2
Noise and Light Impacts		
Limit works to daylight hours to reduce impacts from light and noise	Construction Contractor	Addressed in Section 1.7 of EMS: *As per Condition 12 of Schedule 3, construction, upgrading or decommissioning activities on site can only be undertaken between:* • *7 am to 6 pm Monday to Friday.* • *8 am to 1 pm Saturdays.* • *At no time on Sundays and NSW public holidays.*
All machinery are correctly maintained and operated as per operation manual	Construction Contractor	Addressed in Section 5.2.2 of EMS: *All machinery is to be maintained and be in good working order*
Dust Impacts		

Vehicles/machinery to observe 20km/h speed limit on site	Contractors	Addressed in Section 5.2.2 of EMS: *Heavy Vehicles are to be limited to 20km/h in any unsealed areas.* In addition – all vehicles will adhere to a 20km/h speed limit in unsealed areas.
Usage of water carters in dry periods to limit dust movement	Construction Contractor	Addressed in Section 5.2.2 of EMS: *Water tankers are to be used to control dust during intensive operations.*
Hygiene Protocol		
Equipment and vehicles entering Site are cleaned of foreign soil and seed prior to entering the site	Contractors	Section 4.2
Prescribed Biodiversity Impacts		
Erosion and sediment controls enacted in accordance with Construction Environment Management Plan (CEMP) to limit impacts on retained vegetation or water courses	Construction Contractor	Erosion and Sediment Controls will be provided by a Stormwater Plan to satisfy Conditions 23 and 24 of Schedule 3. All structures, including security fencing and associated APZs, are located outside areas of ecological significance, with the minor overlap within BMP Lands fully protected within Tree Protection Zones (TPZs) as shown in Figures 5a–c.
Pre-clearance of farm shed for fauna species	Project Ecologist	Not applicable to Stage 1b works.
Shed removal supervised by Ecologist	Project Ecologist	Not applicable to Stage 1b works.
Temporary fencing along ephemeral depression to limit access	Construction Contractor	Section 3.2.3
De-watering of dam supervision by ecologist	Project Ecologist	Not applicable to Stage 1b works.

1.3 Document Referencing

For the purposes of referencing, this document should be cited as:

- Anderson Environment & Planning (August 2025) *Biodiversity Management Plan for Mulwala Solar Farm - Stage 1b NSW, Rev 06.* Unpublished report for European Energy.

2.0 Site Context and Existing Condition

2.1 Local context

A solar farm in Mulwala, NSW has been approved by the Minister for Planning (the Minister) on land zoned RU1 – Primary Production. The development includes solar panels and associated ancillary infrastructure.

The site is currently used for agricultural purposes. **Figure 1** shows the site location and the extent of BMP lands, while **Figure 2** illustrates the development layout for Stage 1b. The BMP lands consist of heavily grazed and managed grassland, with large scattered native trees.

2.2 Plant Community Types

The approved BDAR identified three (3) Plant Community Types (PCTs) within the Development Footprint:

- PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes 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 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of the NSW South Western Slopes Bioregion and Riverina Bioregion

While these communities were identified in the BDAR, they were not delineated at a fine scale. A site inspection conducted as part of this BMP confirmed the presence of *Eucalyptus microcarpa* (Grey Box) within the BMP lands and along the eastern boundary of the site. This observation is consistent with the mapped extent of PCT 76. In addition to *Eucalyptus microcarpa*, other characteristic species observed during the assessment included *Allocasuarina luehmannii* and *Callitris glaucophylla*.

PCT 75 was not confirmed to be within the BMP lands however,detailed surveys and mapping of adjacent lands were not undertaken for this BMP. However, given the similarity in management requirements across these communities, a consistent approach to vegetation protection and management will be applied across the BMP area.

Associated Threatened Ecological Communities (TECs), with the PCTs identified in the State Vegetation Type Map (**Figure 3**), are shown in **Figure 4** and summarised below:

- PCT 75 is associated with the following TECs:
    - *Sandhill Pine Woodland in the Riverina, Murray–Darling Depression and NSW South Western Slopes Bioregions (listed as Endangered under the BC Act)*
    - *White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (listed as Critically Endangered under the BC Act). It is noted that Sandhill Pine Woodland is restricted to the NSW South Western Slopes Bioregion and is not expected to occur within the subject bioregion.*
- PCT 76 is associated with:
    - *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (listed under the BC Act)*

Management actions outlined in this BMP aim to avoid impacts to these communities and ensure appropriate protection during the construction and early operational phases of the development.

Development Footprint | BMP Lands (Stage 1b) | Cadastre | Hydroarea | Hydroline

Figure 1 - Site Location

0 250 500 m

Scale: 1:15,000

N

AEP

Address: Mulwala Solar Farm, Mulwala NSW 2647.
Client: Essential Energy
AEP Ref: 5314 | Date: 07 August 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

GENERAL LEGEND

- STAGE 1A AREA
- STAGE 1B AREA

PLOT STYLE: URBIS_A1.CTB

PAGE SETUP: ----

PLOTTED BY: ALEX FREEMAN

PLOT DATE: 26.06.2025

PATH: L:\02 Projects\P0055000\P0055075_Mulwala Solar Farm (LA)\03 Documentation\07 CAD\03 Layouts\201-FI Site Plan.dwg

URBIS

PROJECT

MULWALA SOLAR FARM

STAGE 1

255 SAVERNAKE ROAD

MULWALA, NEW SOUTH WALES, 2647

Olderfleet, Level 10, 477 Collins Street | Melbourne VIC 3000 AUSTRALIA | +61 3 8663 4888 | URBIS Ltd | ABN 50 105 256 228

ALL DRAWINGS ARE DESIGNED TO BE PRINTED AND READ IN COLOUR

IT IS THE CONTRACTORS' RESPONSIBILITY TO PRINT DRAWINGS IN COLOUR TO AVOID ANY POTENTIAL DISCREPANCIES IF DRAWINGS ARE PRINTED IN BLACK AND WHITE

REV	DESCRIPTION	DWN	CHK	DATE
A	FOR COORDINATION	AF	PY	26.06.2025

PROJECT DIRECTOR: CLARE BROWN

CLIENT

EUROPEAN ENERGY

DRAWING TITLE

STAGING PLAN - STAGE 1

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ISSUE

FOR COORDINATION

PROJECT NO.

P0055075

SCALE

1:3000 @ A1 1:6000 @ A3

30 60 90 120 150 m

NORTH

DRAWING NO.

205-FI

REVISION

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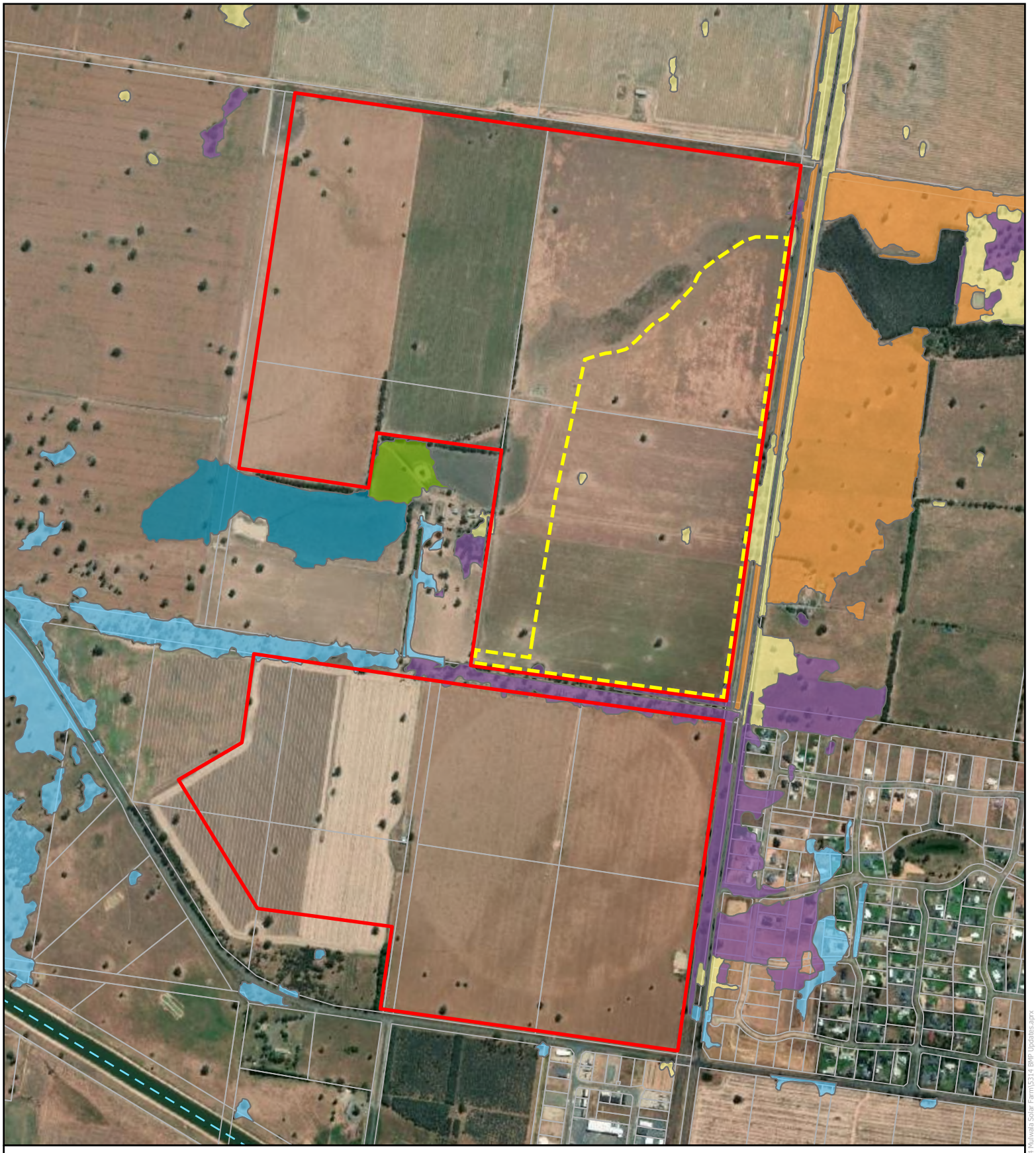

Development Footprint
BMP Lands (Stage 1b)
Cadastre
Hydroline

State Vegetation Type Map

- PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 47 - Swamp grassland wetland of the Riverine Plain
- PCT 75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes 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 80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
- PCT 237 - Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone
- PCT 0 - Not classified

Figure 3 - State Vegetation Type Map (DCCEEW, 2024)

0 250 500 m

Scale: 1:15,000

N

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Address: Mulwala Solar Farm, Mulwala NSW 2647.
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AEP Ref: 5314 | Date: 07 August 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Development Footprint
BMP Lands (Stage 1b)
Cadastre

Threatened Ecological Community

PCT 75 = BC Act CEEC: White Box – Yellow Box – Blakely's Red Gym Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tablelands, Nandewar, Brigalow Belt South, Sydney Basin, Southern Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregion

PCT 76 = BC Act EEC: Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions

Figure 4 - Threatened Ecological Communities

0 120 240 m

Scale: 1:7,000

N

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Address: Mulwala Solar Farm, Mulwala NSW 2647.
Client: Essential Energy
AEP Ref: 5314 | Date: 07 August 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

3.0 Vegetation Management

Areas to be managed under this BMP include areas of remnant native vegetation and fauna habitat (BMP Lands). The 200m^2 area of temporary disturbance (temporary laydown area – Refer **Figure 5**) does not contain any native vegetation; therefore, no specific revegetation is proposed in this area. However, this area will still be considered in line with the controls outlined within this BMP e.g. weed monitoring and maintenance Active regeneration is not proposed within the BMP Lands. Instead, the focus of management will be on targeted weed control beneath retained trees and ensuring that adjacent native vegetation is protected from indirect impacts associated with construction and operation of the solar farm.

Management actions will be limited to the control and suppression of invasive species in accordance with the *Biosecurity Act 2015*. Works will be undertaken in a manner that avoids disturbance to native vegetation, with particular attention to preventing the spread of weeds into adjoining native vegetation communities.

This approach acknowledges the current condition and modified nature of the understorey within the BMP Lands, and aims to maintain the ecological function of the retained trees and adjacent vegetation through minimal disturbance and strategic weed management, rather than attempting full ecological restoration.

3.1 Management Zones

The BMP Lands defines three (3) Zones to achieve the objectives of this BMP. The three Zones are as follows:

- Management Zone 1 (MZ1) – Entire BMP Footprint;
- Tree Protection Zones (TPZs) – Retained trees within and adjacent to the BMP footprint; and
- "No go" Zone – Land outside the perimeter of the BMP Lands within the development footprint.

Figures 5a-c presents the location of the proposed management zones.

3.1.1 MZ1 – Entire BMP Footprint

MZ1 encompasses the entire area of the BMP Lands (and includes overlapping TPZs) and a 2m buffer surrounding the installed security fencing. The aim of this zone is to conduct weed management activities to address the Biosecurity duties outlined by the *Biosecurity Act 2015* and mitigate edge effects to retained vegetation.

Work to be undertaken in MZ1 includes:

- Primary weeding (approach detailed in **Section 6.2.2**);
- Maintenance weeding (approach detailed in **Section 6.2.2)**. Maintenance will decrease and frequency may change overtime based on weed cover and monitoring; and
- Temporary fencing.

Weed Control

It is proposed that staged weeding works in MZ1 are undertaken to allow for the natural regeneration of the remnant vegetation and prevent the re-establishment of invasive species.

- Work will commence along the interface with retained vegetation (i.e. the eastern and southern boundaries of the BMP lands) and continue in the direction of the development site. Any unintentional weed transfer as a result of weed management works would therefore occur in the direction of poorer condition habitats.

- To avoid unintended damage to native vegetation from off target herbicide spray and a reduction in water quality, weed removal techniques are to be restricted to manual removal where practicable.
- Scattered clumps of exotic grasses are to be deseeded and the clump crowned using a gyprock saw (or similar tool). All material will be bagged and disposed of offsite.

In addition, care must be taken not to introduce weeds into this zone via the transport of seeds on clothing, boots and equipment. As such, cleaning protocols must be instated and conducted prior to entering this zone as detailed in **Section 4.2**.

3.1.2 Tree Protection Zones (TPZs)

Tree protection measures shall be implemented for the development to protect retained trees located within and adjacent to the development site. Trees and native vegetation shall be retained and protected unless they have been specifically approved for removal on the approved plans or documentation.

Tree protection measures include:

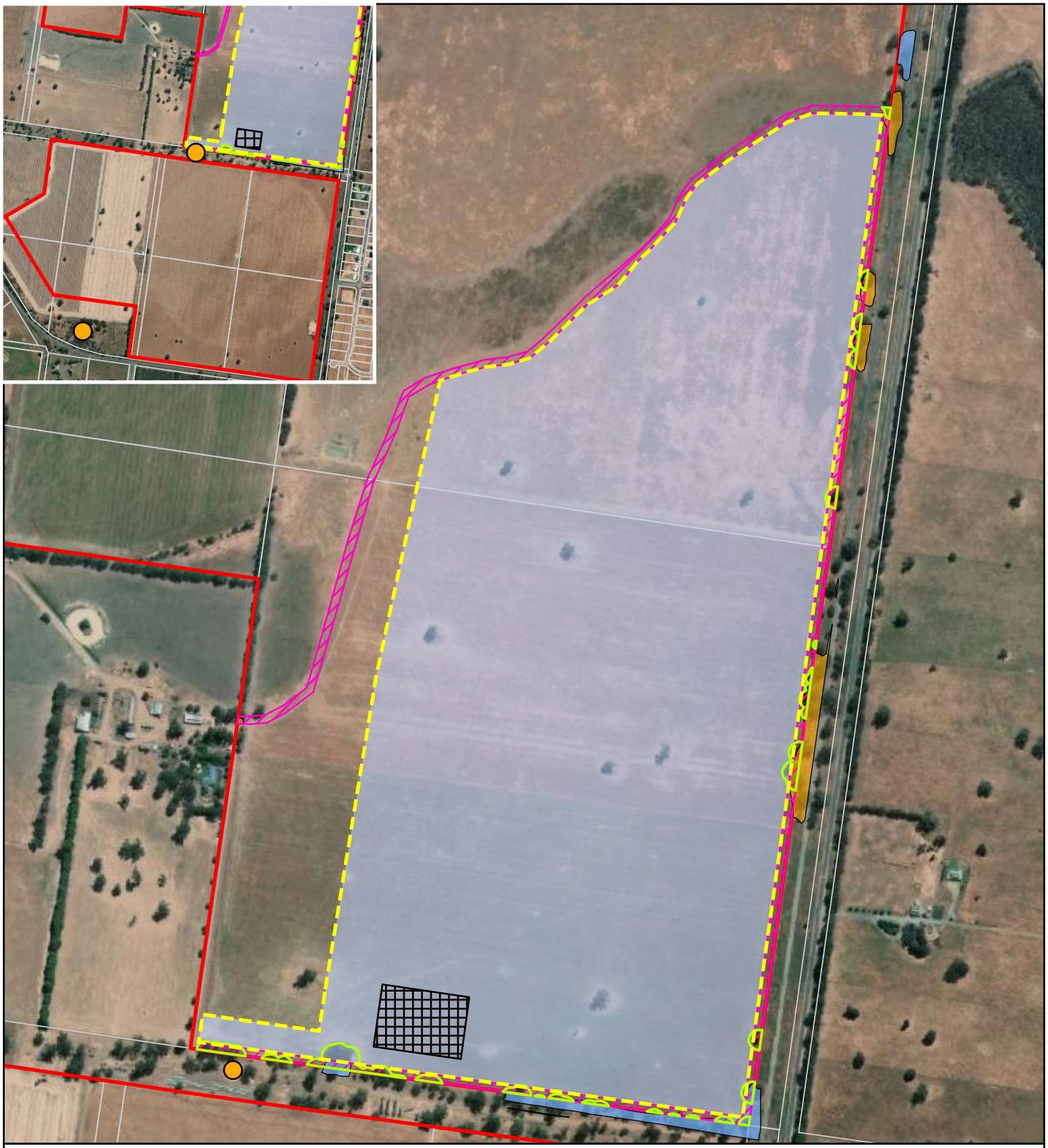
- Tree Protection Zones (TPZs) of a minimum of 12x DBH, in accordance with Australian Standards AS4970-2009, shall be established around all trees identified to be retained within the development site;
- TPZ fencing, with high vis bunting and star pickets, must be placed around trees;
- Any excavation within the vicinity of an identified TPZ shall be carried out by hand, with all care taken not to damage tree roots. If tree roots greater than 30mm are found during works that need to be severed, they shall be cut with a saw (not ripped) under the supervision of a suitably qualified AQF5 arborist or horticulturalist;
- Fences around TPZs shall be sign posted as “No-Go Zone” to warn of its purpose (sign example under AS4970);
- Storage of materials, building waste, excavated spoil, cement or any other harmful materials is not permitted within TPZs; and
- Any pruning of retained trees shall be carried out in accordance with Australian Standard AS4373-2007 – Pruning of Amenity Trees, by a suitably qualified AQF3 arborist or horticulturalist.

3.1.3 “No Go” Zone

The drainage depression located at the northern boundary of the BMP lands and land within the eastern and southern boundaries of the development footprint will be demarcated as a “No Go” Zone as shown by **Figure 5a**. Temporary fencing must be erected at the boundary of the “No Go” zone prior to construction and maintained until the works enter the operational stage. No construction operatives are to enter this zone unless under the supervision of a suitably qualified Ecologist. In addition no storage of materials, parking, or heavy machinery is to occur. The following exclusions apply:

- Security fencing maintenance – to be undertaken on foot with machinery assisting as required from within the BMP lands.
- Landscaping - the appointed landscaping contractor (for the eastern vegetation buffer) may enter the eastern boundary of this zone to carry out landscape works as necessary.
- Weed control – the appointed landscaping contractor (for weed control works) may enter all exclusion zones to undertake weeding works as necessary, adopting suitable controls for works in proximity to aquatic areas.

- Monitoring – the appointed ecologist or environmental representative responsible for monitoring may enter all exclusion zones for the purpose of monitoring.



Development Footprint
BMP Lands (Stage 1b)
Cadastre
Temporary Laydown Area
Indicative Fauna Release Site

Management Zones
Management Zone 1 (68.44ha)
No Go Zone
Tree Protection Zone (TPZ)

Threatened Ecological Community
PCT 75 = BC Act CEEC: White Box – Yellow Box – Blakely's Red Gym Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tablelands, Nandewar, Brigalow Belt South, Sydney Basin, Southern Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions

PCT 76 = BC Act EEC: Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions

Figure 5a - Management Zones

0 120 240 m
Scale: 1:7,000
N

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Address: Mulwala Solar Farm, Mulwala NSW 2647.
Client: Essential Energy
AEP Ref: 5314 | Date: 15 August 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Development Footprint
BMP Lands (Stage 1b)
Cadastre

Management Zones
Management Zone 1 (68.44ha)
No Go Zone
Tree Protection Zone (TPZ)

Threatened Ecological Community
PCT 75 = BC Act CEEC: White Box – Yellow Box – Blakely's Red Gym Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tablelands, Nandewar, Brigalow Belt South, Sydney Basin, Southern Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions

PCT 76 = BC Act EEC: Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions

Figure 5b - Management Zones

0 40 80 m
Scale: 1:2,750

N

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Address: Mulwala Solar Farm, Mulwala NSW 2647.
Client: Essential Energy
AEP Ref: 5314 | Date: 15 August 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

Development Footprint
BMP Lands (Stage 1b)
Cadastre
Temporary Laydown Area
Indicative Fauna Release Site

Management Zones

Management Zone 1 (68.44ha)
No Go Zone
Tree Protection Zone (TPZ)

Threatened Ecological Community

PCT 75 = BC Act CEEC: White Box – Yellow Box – Blakely's Red Gym Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tablelands, Nandewar, Brigalow Belt South, Sydney Basin, Southern Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregio

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Figure 5c - Management Zones

Address: Mulwala Solar Farm, Mulwala NSW 2647
Client: Essential Energy
AEP Ref: 5314 | Date: August 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 55

0 80 160 m

Scale: 1:4,500

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3.2 BMP Targets

The following targets have been designed to be specific, measurable, achievable, reasonable and time bound (SMART), providing qualitative data within the BMP Lands.

Given the current condition of the BMP Lands, the focus is on weed management.

Table 2: BMP Targets

Phase	Target	Measurement	Target	Frequency	Corrective Action
Prior to construction	Compilation of list detailing priority weed species for management and exotic species coverage on site.	Report documenting species	100% of site areas listed	Once, before construction	Report non-compliance and complete measurement within 1-week
	Evidence of implementation of hygiene protocols (i.e wash down stations and hygiene kits) and use of hygiene facilities.	Training records, wash-down station usage logs	100% compliance	Before construction start	Report non-compliance and stop works until evidence of installation and additional workforce briefing undertaken
	Evidence of primary weeding (i.e slashing and treatment of priority weeds and WoNS has commenced).	Slashing/weed treatment logs	All priority weeds and WoNS treated	Once, before construction	Report non-compliance and complete measurement within 1-week
	Evidence of fencing/demarcation of TPZs and “No go” zones.	Site inspection & photos	100% TPZs and no-go zones marked	Before construction	Report non-compliance and stop works until evidence of installation and additional workforce briefing undertaken
	Evidence of pre-clearance checks carried out by Suitably Qualified Ecologist / Fauna Spotter Catcher.	Compliance record signed by qualified ecologist/fauna spotter	All of BMP lands checked by qualified ecologist/fauna spotter	Before construction	Report non-compliance and revert to measurement
	Evidence of installation of sediment fencing around the north, south and western boundaries of the BMP Lands.	As built record and photographs provided	100% fencing installed	Before construction	Report non-compliance and stop works until evidence of installation
	Evidence of continued monitoring (i.e Monitoring Reports and Progress Reports).	Monitoring report	1 monitoring report completed	Before construction	Construction phase not to commence until monitoring has been undertaken
During construction	Evidence of implementation of hygiene protocols (i.e wash down stations and hygiene kits) and use of hygiene facilities.	Weekly inspections of facilities and usage	100% compliance	Weekly	Undertake repairs/ improvement actions and re-brief workforce within 1-week
	Evidence of continued sediment and erosion controls functioning correctly	Inspection & maintenance logs	All controls functioning, no significant fencing damage or sediment buildup	Monthly & as needed	Repair any defects within 48 hours of identification

	Monitoring eastern boundary of BMP lands for any evidence of sediment movement.	Inspection & maintenance logs	No evidence of silt mobilisation at eastern boundary.	Monthly & as needed	If sediment mobilisation identified to east of BMP lands, install temporary silt fencing within 24 hours and seek stormwater engineer advice within 48 hours. Permanent solution to be enacted within 2 weeks (subject to any necessary approvals)
	Topsoils and landscape materials introduced to the site are free of weeds / weed seeds.	Delivery inspection & supplier certification	All landscape materials to be supplier certified and checked on entry	Each delivery	If non-compliance identified before use of materials, quarantine materials and remove from site. If materials have been used, report non-compliance and revert to measurement. Ecologist advice to be sought regarding any increased weed inspection frequency required.
	Evidence of maintenance weeding (i.e continued slashing, mechanical and manual weed removal as well as provision of quarterly Summary of Works by the Land Management Contractor).	Contractor work logs	All areas treated quarterly	Quarterly	Report non-compliance and revert to measurement. Ecologist advice to be sought and implemented regarding any increased weed inspection and maintenance frequency required.
	New weeds identified are treated within one (1) week.	Monitoring log	Within 1 week of detection	As needed	Report non-compliance and revert to measurement. Ecologist advice to be sought regarding any increased weed inspection and maintenance frequency required.
	Achieve <5% presence / cover of Priority weeds and WoNS.	Site inspections & reports	<5% cover	Monthly	Ecologist advice to be sought and implemented regarding any increased weed inspection and maintenance frequency required.
	Evidence of continued monitoring (i.e Monitoring Reports and Progress Reports).	Monitoring and progress reports	100% reports submitted	Monthly	Report non-compliance and revert to measurement.
	Evidence of clearance supervision by Suitably Qualified Ecologist / Fauna Spotter Catcher.	Activity logs	All clearance activities supervised	Ongoing	Report non-compliance and revert to measurement.
	Evidence of supervision by a suitably qualified AQF5 arborist or horticulturalist of excavation or pruning works carried out within TPZs.	Activity logs	All excavation/pruning within TPZs supervised	Ongoing	Report non-compliance and revert to measurement. Arborist to inspect and advise upon any non-conformances.
Post Construction	Evidence of compliance with the BMP (i.e Compliance Report).	Compliance report	Submitted within 1 month	Once, post-construction	Any remaining actions to be identified by the compliance report and actioned accordingly.

	Maintain or improve on weed cover target from previous phase.	Site inspection	≤5% Priority weeds/WoNS	Within 3 months of construction completion	Ecologist advice to be sought and implemented regarding any increased weed inspection and maintenance frequency required.
	Ongoing weeding control works are to be undertaken in perpetuity by individual landholder in accordance with the *Biosecurity Act 2015*.	Annual compliance check	Perpetual adherence to Biosecurity Act 2015 & ≤5% Priority weeds/WoNS	Annually	Ecologist advice to be sought and implemented regarding any increased weed inspection and maintenance frequency required.

4.0 Site Preparation

Prior to the commencement of regeneration, the BMP Lands must be prepared. The following works will assist in site preparation.

4.1 Site induction

Induction for all personnel entering/working onsite will highlight the sensitive nature of TPZs, "No Go" Zones and Threatened Ecological Communities that occur within road easements surrounding the site as well as the obligation of General Biosecurity Duty as determined by the *Biosecurity Act 2015*. The importance of avoiding all impacts including the following activities are also to be discussed:

- Clearing of vegetation;
- Storage of vehicles or machinery;
- Stockpiling, materials storage;
- Erosion and Sediment Control;
- Unauthorised access; and
- Dumping of rubbish or building waste.

4.2 Weed / Pathogens / Disease Control

Diseases which could affect the BMP Lands include the root-rot fungus (*Phytophthora cinnamomi*) and Myrtle rust (*Puccinia psidii*), affecting Myrtaceous plants including the Eucalyptus species present onsite as well as Amphibian Chytrid fungus disease, Chytridiomycosis, caused by Chytrid fungus (*Batrachochytrium dendrobatidis*). Additionally, the dispersal of weed seeds in and out of BMP Lands could occur as a result of contaminated clothing, equipment and shoes.

To minimise the potential for any such introductions, weed, pathogen and disease control will be conducted in accordance with the Department's *Hygiene guidelines: protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants* (DPIE, 2020). **Plates 1 – 3** below highlight the appropriate hygiene measures for personnel, clothing, footwear, tools, equipment, vehicles and heavy machinery. **Plate 1** provides the hygiene measures for sites which are:

- Not frequented by the public;
- Have no/unknown Phytophthora or Myrtle Rust infestation; and
- Have average annual rainfall <500mm.

Table 1 Basic hygiene protocol for personnel, clothing, footwear, tools and equipment

Step	Description
1. Check	• Check personnel, clothing, footwear, backpacks and equipment for soil, plant material/propagules and other debris.
2. Clean	• Remove all soil, plant material and other debris using a hard brush and (if required) clean water. • If dirty, wash hands with soap and water[1]. • Remove seeds from clothing, footwear, tools and equipment by hand. Seeds that are difficult to remove can sometimes be scraped off clothing with a sharp implement (e.g. a knife), but use caution. Where possible, have a co-worker double-check that you have removed all seeds.
3. Dry	• Where practical, ensure hands, clothing, footwear, and equipment are dry before proceeding.

Plate 1: Basic Hygiene Measures (NSW Hygiene Guidelines)

Table 4 Hygiene protocol for vehicles and heavy machinery

Step	Description
1. Check	• Check the exterior and interior of vehicles and machinery for soil, plant material and other debris. Use Figure 2 as a guide for where to focus your attention.
2. Clean	• Remove large clods of dirt and soil using a stiff brush or crowbar. • Remove all soil, plant material and other debris from the interior using a vacuum or dustpan and brush. Focus on the cabin floor, floor mats and pedals. Place debris in a bag and dispose of in a commercial waste bin. • *If returning from a potentially-contaminated area*, wash vehicle and/or machinery as soon as possible (e.g. at a commercial carwash) before heading back to base. If a carwash facility is not available, spray tyres thoroughly with a disinfectant (Table 7). • *If leaving a potentially-contaminated area and travelling to a new site*, reassess your hygiene requirements using Decision tree 1 for Phytophthora and myrtle rust.
3. Dry	• Where practical, allow vehicle or machinery to dry before proceeding.

Plate 2: Hygiene Measures for Vehicles and Heavy Machinery Driven Off-road (NSW Hygiene Guidelines)

Table 6 Strict hygiene protocols for undertaking amphibian fieldwork

Project planning

Step	Description
1. Select	• Where practical, select clothing, footwear, tools and equipment that are easy to clean (e.g. non-absorbent). • Where practical, when visiting multiple sites, pack separate sets of equipment (including shoes) for use at each site.

Before arriving at a site and on leaving a site

Step	Description
1. Check	• Thoroughly check all personnel, clothing, footwear and equipment for soil, water, organic material or other debris. Where possible, have a co-worker double-check for you.
2. Clean	• Remove all soil, water, organic material or other debris using a hard brush and clean water.
3. Disinfect	• Spray or soak potentially-contaminated materials with disinfectant (Table 7). Leave for 30 seconds before proceeding. Where practical, rinse with clean water.
4. Dry	• Where practical, ensure all clothing, footwear, tools and equipment are dry before proceeding.

Plate 3: hygiene measures for undertaking works in proximity to amphibian habitat (NSW Hygiene Guidelines)

Appropriate hygiene controls must be employed and hygiene stations supplied by the Construction and Landscaping contractors prior to arrival of staff and equipment on site.

4.3 Rubbish Removal

Rubbish and waste are to be removed from BMP Lands. The need to remove such material will be assessed on a case-by-case basis as in some instances the material is inert, such as concrete, rocks timber posts, etc. Such material may inadvertently provide geomorphic stability and suitable shelter and habitat for native fauna.

5.0 Wildlife Management Strategy

The Wildlife Management Strategy (WMS) aims to identify the best management practices to mitigate impacts from the loss of habitat features including, Hollow-bearing Trees (HBTs), as a result of the vegetation clearing for the development. Clearing must be undertaken in a direction which guides impacted fauna towards retained native vegetation.

The WMS describes methods of pre-clearance surveys and felling methods for HBTs marked in pre-clearing site surveys and clearing procedures.

The BMP lands comprise solely agricultural lands dominated by exotic species with native scattered trees present. Due to the agricultural nature of the site, no soil re-use is proposed for Stage 1b. Potential for soil re-use will be considered for future works stages, where applicable. All suitable habitat features including large rocks, timber and any man-made features providing suitable habitat, identified on site will be assessed for re-use by the Suitably Qualified Ecologist. The Suitably Qualified Ecologist will advise on, supervise and record the relocation of any such habitat features. The re-use of timber is detailed in **Section 5.2**.

5.1 Fencing & Signage

At the commencement of works, temporary fencing and “No go” sigange will be installed at the interface between the construction zone and retained native vegetation. Temporary fencing and “No go” signage will also be constructed along the northern boundary of the development site, forming “No Go” Zone which buffers the security fencing and the ephemeral depression to the north and northwest.

5.2 Vegetation Clearing - Habitat Tree Protocol

Clearing of vegetation on site must follow the procedure below to ensure safety of utilising the site and the best environmental outcomes. All clearing works are to be undertaken under the supervision of a suitably qualified ecologist and an AQF3 arborist;

- Prior to clearing:
    - Conduct pre-clearance diurnal and nocturnal surveys to identify native fauna and habitat. All habitat features must be clearly marked with flagging tape. This is to occur at a maximum of 48 hours before clearing is to commence;
    - Contact with local wildlife services or veterinarians must be made in order to ascertain resource availability for any injured fauna; and
    - Retained trees are to be clearly demarcated with the appropriate TPZ fencing and “No-Go Zone” signage.
- In addition, prior to, and following clearing of any vegetation, a suitably qualified ecologist will inspect the area for any signs of resident fauna requiring attention;
- Where such is identified, appropriate strategies are to be developed and instigated to minimise impacts;
- Fallen timber and hollow logs identified to be retained are to be relocated into areas of retained native vegetation within the development lands; and
- Civil Construction staff to be inducted into pre-clearing and clearing protocols, and to identify environmental features for protection.

5.2.1 Phase 1 Clearing Works: Felling of Trees Not Identified as Habitat Features

Phase 1 works include the clearing, felling and windrowing of all non-habitat trees. The following protocols will apply:

- Phase 1 works are to be undertaken under the supervision of a suitably qualified ecologist;
- All trees must be lowered in the most gradual manner possible;
- Soft-felling techniques are also to be conducted on all trees with DBH >300mm;
- All cleared vegetation will be mulched on site and spread to help stabilise any exposed soil and minimise offsite movement of biomass;
- Fallen timber and hollow logs identified to be retained within areas of retained native vegetation located within the Development Footprint, where practicable;
- Unexpected fauna encounters will be dealt with on a case-by-case basis by the Suitably qualified ecologist. Habitat features thought to be occupied will be avoided as far as practicable during Phase 1 works and the Project Ecologist may postpone felling these features until Phase 2 clearing works;

- Fauna encountered will be captured and relocated to a retained adjacent vegetation area after clearance has ceased for the day, after dark if suitable for the species; and
- Fauna harmed by the clearance will be transported to a nearby vet or wildlife rescue.

5.2.2 Phase 2 Clearing Works: Hollow Bearing Trees and Other Habitat Features

Phase 2 works include the clearing, felling and windrowing of HBTs and other habitat features, occurring after Phase 1 (felling of trees not identified as habitat features). The following protocols will apply:

- Phase 2 works are to be undertaken under the supervision of a suitably qualified ecologist;
- Directly prior to any clearing (i.e. in the same diurnal period) in any area containing vegetation within the BMP Lands, the Suitably qualified ecologist must make sure:
    - All accessible hollows and other habitat features (i.e. bird nests, dreys, burrows, etc.) are to be visually inspected, and hollows blocked with rags or similar material if found to be occupied by resident fauna or if occupation cannot be ruled out;
- Unexpected occupied nests, dreys or burrows shall be dealt with on a case-by-case basis by the Suitably qualified ecologist. Potentially occupied habitat features will be avoided as far as practicable during Phase 2 works. Where clearing of habitat features is required as part of Phase 2 clearing works, wildlife carers will be contacted to confirm availability and fauna handling procedures.
- Felling of habitat trees is to be undertaken by tree climbers, inspecting hollows and other habitat features for fauna;
- After inspection, stick nests and dreys will be carefully removed and hollows sectionally dismantled and safely lowered using ropes;
- The suitably qualified ecologist will inspect lowered hollows and manage fauna found through relocation of fauna to retained adjacent bushland or to a wildlife carer. Any fauna harmed by the clearance will be transported to a nearby vet or wildlife rescue;
- Felled Phase 2 vegetation is to be left in-situ for a minimum of 36 hours (two overnights) prior to being windrowed, processed or removed from site;
- Salvageable hollows and hollow logs will be assessed by the arborist, and, where practical, taken from site to be remanufactured for reuse. Hollows suitable for relocation will be dismantled in manageable sections, placed in the clearance supervisor's vehicle and driven into the BMP Lands for relocation;
- To augment ground habitat for native fauna, where practical, hollows and habitat features not suitable for salvage but suitable for ground habitat will be relocated to BMP Lands;
- Sectional dismantling will be done carefully by shining a torch through the hollow first, to estimate depth and assert occupancy status. If fauna present is deemed possible to remove without injuring, the hollow limb will be carefully sectioned until the individual is reachable by the spotter-catcher;
- If dismantling the hollow limb is deemed too dangerous for the resident fauna, it will be set aside till dusk and monitored to ensure the fauna self-relocate;
- Fauna will be encouraged to self-relocate by tapping the hollow limb in situ;
- The supervising ecologist will have the power to stop work at any time if situation is deemed dangerous for native fauna and/or contravene native wildlife code of ethics/scientific license conditions;

- Once hollows containing or potentially containing fauna are sectionally dismantled, they are to be relocated to BMP areas, or adjacent native vegetation, where tree hollows have been identified. Where practicable, the felled hollows will be placed at the base of trees containing hollows to allow displaced fauna to migrate to the new habitat; and
- Vegetation clearing is to occur outside spring to avoid impacts to hollow dependent fauna.

5.2.3 Fauna Encounters

As stated above, to reduce the risk of harm to any animals or to the safety of personnel, the Project Ecologist will manage responses to fauna encountered at any stage of works.

5.2.3.1 Wildlife Handling

Prior to works commencing, communication with local rescue agencies, wildlife carers and veterinarians must be undertaken by the Project Ecologist to confirm availability of resources for any captured/injured fauna that are unable to be relocated.

Handling of fauna will be conducted by the Suitably qualified ecologist. Fauna will either be caught and relocated safely at a suitable time in retained adjacent bushland or allowed to naturally disperse into surrounding retained adjacent vegetation.

Gloves are to be worn by the suitably qualified ecologist to reduce the risk of injury. Wildlife will be caught by hand and placed in an appropriate box or breathable bag. All animals to be kept in a safe, quiet, cool, ventilated and dark location away from noisy construction activities prior to relocation.

Relocation of wildlife to retained native vegetation will be undertaken where possible and will be recorded and reported. If the animal is not injured or stressed, it may be released nearby in accordance with the following procedures:

- Sites identified as suitable release points by the suitably qualified ecologist or wildlife rescuer will be determined on a case-by-case basis however, indicative locations are provided within **Figure 5**;
- Hollow dependant fauna are to be released into BMP Lands, or adjacent native vegetation areas, where hollows have been identified;
- Nocturnal fauna will be held until dusk for release after dusk;
- Release site will contain similar habitat from which it was found;
- Release would generally not be undertaken during periods of heavy rainfall;
- Hollow-dependant species, particularly birds with dependant young that will be unable to disperse, and where chances of relocation success are low are to be referred to a wildlife rescue group; and
- If unfeathered young are noted in nests, the nests are to be retained as far as practical and the nests monitored for activity thereafter.

5.2.3.2 Particular Fauna Handling

Whilst some animals require particular handling, all fauna must be handled only by appropriately qualified personnel i.e. Suitably Qualified Ecologist, suitably qualified ecologist or Fauna Rescue. The Suitably qualified ecologist will manage particular fauna requirements, including:

- If handling bats, the handler must be vaccinated against the Australian Bat Lyssavirus (a form of rabies).

Frog handling will be undertaken in accordance with the *Hygiene Protocol for the Control of Disease in Frogs* (DECC 2008). This protocol recommends on Site hygiene precautions be undertaken to minimise the transfer of disease between and within wild frog populations. Measures recommended include:

- Cleaning/disinfecting hands between collecting samples/frogs (preference would be given to using bags and/or gloves, not bare hands to handle frogs);
- Limiting one frog to a bag; and
- Bags are not be reused.

Venomous reptiles, raptors and large birds require particular capture and restraint if the animal cannot be handled (i.e. venomous reptiles), the following methods will apply;

- Exclude all personnel from the vicinity with flagging and/or signage; and
- Record the exact location of the animal/s and provide to the Project Ecologist or Fauna Rescue representative.

In the event the rescue service and/or local veterinary service cannot be contacted, the injured animal will be managed by the Suitably qualified ecologist and delivered to the relevant agency as soon as practically possible.

All fauna encounters and outcomes will be reported in a final Clearance Compliance Report to the Consent Authority.

5.2.3.3 Threatened Species

If breeding threatened species with dependent young are identified during clearing, works in the immediately vicinity of the site will cease and advice from the Project Ecologist will be obtained. Where required, further advice will be sought from Department of Climate Change, Energy, the Environment and Water. If no dependent young are identified the individual/s will be encouraged to move on into retained adjacent vegetation. Methods may include capture, removal of branches away from hollow and further shaking of the tree to encourage the animal to vacate the area.

If a threatened species is identified on site during construction, all work is to cease. The Project Ecologist is to notify the Consent Authority's Biodiversity Officers / Ecologist to provide a plan of action to then re-commence works.

6.0 Implementation of the BMP

Monitoring will inform the evaluation of management effectiveness, allowing for adaptive management to meet the targets of the BMP.

Reporting will detail the progress of the works and include any recommended additional actions or modifications to management and advise on the achievement of BMP targets and weed management success.

6.1 Baseline Data Collection

Baseline data will be collected to ascertain the condition of the BMP Lands prior to weed management and is to occur prior to construction. Baseline data forms the reference point to which comparisons are made when identifying changes in the condition of the BMP Lands. Data can be collected to:

- Assess overall vegetation condition;
- Confirm priority weed species present on site; and
- Note coverage of native flora species and weeds.

Baseline data will be collated into a baseline data report.

6.2 Weed Management

Weeds have significant impact on structural integrity of the vegetation present and can suffocate and outcompete native flora species. Due to site conditions, this BMP is focused primarily on weed management. Weed Management will be undertaken throughout MZ1 and will also include land within two (2) metres of the security fencing. Following initial establishment, weed monitoring will be undertaken on an annual basis.

6.2.1 Priority Weeds for Onsite Management

Weed species identified as priority weeds under the *Biosecurity Act 2015* were identified on site, including:

- *Nasella trichotoma* (Serrated Tussock); and
- *Marrubium vulgare* (Horehound).

The aforementioned exotic species will be the focus of weed management activities, based on legal requirement to control the species listed as Priority Weeds for the Riverina and Murray Region under the *Biosecurity Act 2015*, as well as other species occurring in high density onsite that have the potential to further colonise the BMP Lands and undermine regeneration efforts.

A list of all weed species identified onsite is provided in **Appendix A.**

6.2.2 Sequential Weed Control

Weed Control works are to be undertaken by the appointed Landscaping Contractor, to industry standards. Any reproductive material of weeds, including weeds which can spread vegetatively, or seeds, must be taken off site to be disposed of at an appropriate local waste management centre. No weed material with the potential of spreading must be stockpiled within the development site or BMP Lands.

1. **Primary Weeding** – First six (6) months. This is where most problematic weeds are removed from MZs.

2. **Consolidation (Secondary and tertiary weeding)** – Six (6) months following the completion of primary weeding. MZs will require monthly visits to remove weeds that are regenerating and / or have grown in response to the disturbance. These visits are European, otherwise the weeds will recolonise and inhibit native regeneration.
3. **Maintenance Weeding** – Starts six (6) months to a year post-secondary or tertiary weeding and will continue on a monthly basis for the following year. Maintenance will decrease overtime based on weed cover of MZs. Changes to frequency will be outlined in annual reports.

This interval will be evaluated based on site condition during each monitoring period. Weed monitoring and control will continue in perpetuity in accordance with the Biosecurity Act (2015).

As outlined in Section 6.2 weed management will be undertaken throughout MZ1 and will also include land within two (2) metres of the security fencing. Any locations where priority weeds are identified as occurring within the BMP lands and spreading off-site will be subject to targeted weed control works in line with the above protocol. Weed control works will be commenced within one (1) month of such an issue being identified. Weed monitoring will revert to annual checks once the above protocol has been enacted and the weed cover has been reduced to <5% in line with Table 2.

6.2.3 Herbicides

Where herbicide usage is proposed, the following factors are to be taken into consideration when selecting the herbicide:

- The safety of the particular herbicide to users and use near waterways, desirable plants, soil micro-organisms, amphibians, birds and mammals;
- The potential indirect impacts to adjacent vegetation, including threatened ecological communities; and
- The economics and time constraints of using herbicides over other methods of weed control.

Directions must be strictly followed and all precautions followed over time. For example, Glyphosate herbicides are systemic and non-selective. All staff spraying herbicide must possess an AQF3 Chemical Accreditation.

6.3 Managing impacts to TECs

Impacts to TECs will primarily be avoided and minimised through the implementation of TPZs and associated controls (refer **Section 3.1.2**), hygiene protocols (refer **Section 4.2**) and weed management (refer **Section 6.2**). Indirect impacts from dust and Erosion/Sedimentation are to be addressed by separate management documentation as detailed in **Table 1**. It is recommended that the species composition for the landscape buffer will reflect the adjacent vegetation composition as far as practicable.

6.4 Planting of Native Vegetation

Replanting of native vegetation is not proposed in this BMP as areas of temporary disturbance do not contain native vegetation.

A buffer of native vegetation will be established in the east of the Parent Lot under the *Landscape Plan for Mulwala Solar Farm – Stage 1b* (Urbis 2025). The following species should be preferentially chosen as they are components of the PCTs 74, 75 and 80:

- *Acacia salicina* Broughton Willow;
- *Allocasuarina luehmannii* Bull Oak;
- *Santalum acuminatum* Quandong;

- *Acacia oswaldii* Umbrella Wattle;
- *Eremophila longifolia* Weeping Emu Bush;
- *Acacia acinacea* Gold-dust Wattle;
- *Acacia hakeoides* Hakea Wattle; and
- *Dodonaea viscosa subsp. cuneata* Wedge-leaf Hop Bush.

Incorporation of these species will support the protection of the retained vegetation (including the adjacent TEC): both through physical separation of the works from the retained vegetation; and, through contribution of complementary species and subsequent contributions to the seedbank. This will provide increased resilience in response to adverse events (e.g. as depicted by **Table 3**).

6.5 Pest Species

Given the nature of the proposals, management of the land will not be altered such that the presence or persistence of pest species is likely to be significantly altered. Therefore, no specific pest control strategies are warranted at the outset of this BMP. The presence of pests will be considered in future monitoring, with the intervention steps detailed in **Table 3** to be followed if significant pest presence and/or impacts are identified within the site.

6.6 Project Management

The BMP applies to all areas where impacts to all areas where biodiversity requires management., A suitably qualified person must be appointed to assume responsibility for the monitoring of BMP lands.

An official handover of the BMP to the Landscaping Contractor will be conducted by the Project Ecologist at the time of baseline monitoring and data collection (See **Section 7.1**). This will be undertaken via a site walkover and provide the opportunity to discuss BMP actions, targets, methodologies, requirements of sediment and erosion control, pest management and zone-specific management issues.

6.7 Monitoring and Reporting

Monitoring will occur at commencement of and for the duration of the BMP on an annual basis and will occur within the BMP Lands, including the temporary laydown area, and “No Go” Zone. Monitoring will assess the condition of retained vegetation and weed cover whilst considering indirect impacts to vegetation on the road reserve. The Project Ecologist will be responsible for the collection of baseline data. Monitoring will inform the evaluation of management effectiveness and allow for adaptive management, until the Regeneration Targets are met.

Reporting will advise on the achievement of overall targets, weed management, and regeneration approach success. Progress reports are to be submitted to the Consent Authority annually for the duration of the BMP following issue of the construction certificate. Reports are to detail the progress of the works and any recommended additional actions, with a final report certifying completion of the BMP at the end of the implementation period, or once the specific objectives of the plan have been met. Any recommended additional actions must be completed to the satisfaction of the Consent Authority prior to lodgement of the final report.

Once in a state of Natural Regeneration following completion of the BMP period, management of the site will be undertaken in accordance with the *Biosecurity Act 2015* & *Biosecurity Regulations 2017.*

6.7.1 Quarterly Summary of Work

The Landscaping Contractor will provide a quarterly summary of works undertaken which will be reviewed by the Project Ecologist and added to the annual report. If any issues arise these will be

outlined in the monthly summaries and the Landscaping Contractor and Project Ecologist will determine action required to meet the set targets. If such determination requires significant change to the management outlined in the BMP, the Project Ecologist will contact the Consent Authority to inform them of the changes.

6.7.2 Annual Monitoring

This is to occur once a year, (spring or autumn preferably) for the duration of the BMP. Monitoring is to include the same metrics as the baseline data and targets outlined in **Table 2** but is also to include information such as:

- Effectiveness of weed control methods;
- State of fencing and erosion and sedimentation measures.

6.7.3 Clearing Compliance Reporting

Each fauna rescue event is to be recorded and included in the final clearing report to be provided to the Consent Authority within one (1) month of the clearing completion to confirm compliance of the clearing works with the WMS. Information to be included includes:

- Date and time fauna was located;
- Location on Site (habitat and GPS coordinates);
- Fauna type (e.g. possum, bird, snake etc.); and
- Species (if known).

If the fauna was injured the following details are to be recorded:

- Time that the fauna specialist was called;
- Time that the fauna specialist arrived;
- Fauna specialist name and contact; and
- What the outcome was of calling the fauna specialist.

If the fauna was not injured the following detailed are to be recorded:

- Where was the fauna relocated? NB only a qualified wildlife handler or Project Ecologist is to relocate fauna;
- Name and qualification of fauna handler; and
- Any other comments.

The Report will also provide details of habitat relocated and numbers and types of hollows salvaged for remanufacture.

6.8 Interventions

With all regeneration plans, objectives and targets are set based on good conditions, however, this may not always be the case. The following table has been prepared for an immediate and concise action plan to be generated to ensure targets can be achieved.

Table 3: Intervention Steps

Element Change	Step 1	Step 2	Step 3	Step 4	Step 5
Fire	Landscaping Contractor to notify Project Ecologist and arrange a joint site inspection.	Assess impact to BMP Lands.	Prepare regeneration plan	Submission of notification and modified Plan to the Consent Authority.	Implement approved Plan
Flood					
Drought					
Other weather event					
Pest Species damage					
Introduction of pathogen					
Vandalism					
Theft					

Table 4: Proposed Works Schedule

Activity	Specific Action	Year 1				Year 2				Year 3				Ongoing
		2025		2026				2027				2028		
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
BMP Lands Preparation	Installation of temporary construction fencing/bunting and signage	Installed at the beginning of Year 1 and removed once construction is finished.												
	Establish Tree Protection Zones (TPZ)	Installed at the beginning of Year 1												
	Installation of permanent security fencing	Installed following installation of temporary fencing/bunting and signage.												
	Implementation of pathogen and disease controls	To be implemented throughout the duration of the BMP.												
	Installation of sediment and erosion control	Installed at the beginning of Year 1 and monitored throughout the duration of the BMP.												
	Rubbish removal													
Vegetation Clearance	Pre-clearance vegetation/habitat checks													
	Clearance of habitat trees													
	Clearance of other habitat features and non-habitat trees													
Weed Control	Primary weeding all MZs (Monthly)													
	Maintenance Weeding - Frequency to be adjusting according to monitoring findings													
Project Management	Collect baseline data													
	Annual monitoring													
	Summary of works	To be submitted quarterly for the duration of the BMP.												
	Reporting (to be submitted to the Consent Authority within 2 weeks of annual monitoring)													
	Certification report (One-off on completion of the project)													

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Standards Reference Group SERA (2021). *National Standards for the Practice of Ecological Restoration in Australia. Edition 2.2. Society for Ecological Restoration Australasia*. Available from URL: http://www.seraustralasia.com/standards/home.html

Appendix A – Priority Weed List

Priority Weeds for Murray and Riverina Region	
Weed	**Biosecurity Duty**
All plants	*General Biosecurity Duty* All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.
Serrated Tussock *Nasella trichotoma*	*Eradication* Must not be imported into the state, sold, bartered, exchanged or offered for sale.
Horehound *Marrubium vulgare*	Species of Concern

Non-native Species Present on Site	
Scientific Name	**Common Name**
Ambrosia artemisiifolia	Annual Ragweed
Arcotheca calendula	Capeweed
Avenua fatua	Wild Oats
Cirsium vulgare	Spear Thistle
Cyperus eragrostis	Umbrella Sedge
Heliotropium europaeum	Potato Weed
Lepidium africanum	-
Lolium perenne	Perennial Ryegrass
Marrubium vulgare	Horehound
Nassella trichotoma	Serrated tussock
Oxalis bowiei	-
Paspalum dilatatum	Paspalum
Polygonum aviculare	Wireweed
Rumex crispus	Curled Dock
Sonchus oleraceus	Common Sowthistle
Stenotaphrum secundatum	Buffalo Grass, St Augustine's Grass
Triticum aestivum	Common Wheat

Appendix B – BMP Lands Signage

NO UNAUTHORISED ENTRY

This is a No-go Zone

- **NO DUMPING or WASTE DISPOSAL**
- **NO ANIMALS, VEHICLES OR MACHINERY**

- **For information - contact the Site Manager**

AEP VMP Signage – waterproof sign minimum size A3 installed and maintained at key access points for the life of the VMP

Appendix C – CVs

The fieldwork, data analysis and reporting for the BMP was undertaken by:

Staff	Title/Qualification	Tasks
Darcy Kilvert	Senior Ecologist BSc (Bio)	Project Management and fieldwork
Frankie O'Brien	Senior Ecologist BEnv LLB GDLP MEL BAAS: 20013	Project Management and reporting
Ben Jones	Senior Ecologist BSc (Zoo)	Project Management and reporting
Geoff Turner	Ecologist BSC (EnvSci)	GIS

Ben Jones

Senior Ecologist - Project Manager

Profile Summary

Ben is an Ecologist and Project Manager with Anderson Environmental & Planning. He began his career as an Ecologist in 2015, working in the United Kingdom across a range of sectors including nationally significant infrastructure, minerals extraction, coastal defence and residential and mixed-use developments (urban and rural). Ben has worked in private consultancy and as an Ecology Manager on behalf of client organisations. He is also a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Ben joined Anderson Environmental & Planning in April 2024, having relocated to Sydney from the United Kingdom. His early career involved conducting terrestrial field surveys for a wide range of flora and fauna, with particular skills gained with regards to herptiles, microbats and small mammals. As he progressed within the ecology field, Ben gained experience undertaking a wide range of assessments, producing reports and applications to undertake licensed ecological work. For the four years prior to joining AEP, Ben's roles have been more focussed towards technical review of contractor reports, documentation and licence applications in addition to management of ecological programmes of work for Tier 1 contractors.

Academic Qualifications

- Bachelor of Science (Zoology) Honours – Cardiff University, 2014

Training, Licences and Professional Memberships

- Full Member - Chartered Institute of Ecology and Environmental Management
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)
- 4 x4 Vehicle Capability

Professional Experience

Senior Ecologist - Project Manager — 2024– Present
Anderson Environment & Planning
Sydney NSW

Ecology Manager — 2022 - 2023
EKFB Joint Venture
Aylesbury, UK

Senior Ecologist — 2020 - 2022
Fusion Joint Venture
Aylesbury, UK

Director — 2020 - Present
Jones Ecology Ltd
London, UK

Ecologist 2017 - 2020
Ricardo Energy and Environment

Ecologist 2015 - 2017
Wardell Armstrong

Relevant Project Experience

Ecological Surveys

- Experience undertaking a large number of surveys for microbats, including roost assessments and monitoring as well as activity surveys and assessment
- Experience undertaking a large number of surveys for amphibians, reptiles and mammals for the purpose of assessing presence or absence as well as population monitoring
- Botanical surveys including BAM plots: Pleasure Point, Homebush, Cattai, Terrey Hills, Belrose, Bulli and Austral
- Threatened flora surveys: Pleasure Point, Ingleside, Bulli, Belrose, Homebush
- Nocturnal fauna surveys Pleasure Point, Cattai, Ingleside, Oxford Falls, Bulli and Somersby
- Spot Analysis Technique (SAT) surveys: Pleasure Point, Ingleside and Cattai
- Microbat Survey of multiple sites in Sydney

Ecological Assessment

- Experience in undertaking a wide range of ecological assessments in the UK including: Preliminary Ecological Appraisals; Protected Species assessments; BREAAM; Biodiversity Net Gain; Ecological Impact Assessment; and, Habitat Regulations Assessment
- Experience undertaking and reviewing a range of Ecological Assessments within NSW including:
  - BDAR: Greendale, Pleasure Point and Wadalba
  - BDAR Waiver: Strathfield, Revesby, Mount Druitt and Belmore
  - EAR: Woolwich, Terrey Hills, Lower Boro and Goulburn
  - EA: Auburn, Cowan and Eastwood
  - Biocertification: Oakville, Leppington, Bradfield and Schofields
  - BMPs: Empire Bay, Wadalba and Bundanoon
  - BARs: Managed delivery of 15 Biodiversity Assessment Reports for a series of sites throughout Greater Sydney

DARCY KILVERT

Senior Ecologist & Sydney Office Manager

Profile Summary

Darcy works with AEP in the role of Senior Ecologist / Sydney Office Manager, overseeing the Sydney Office since its establishment in 2023. With a comprehensive grasp of environmental legislation and approval processes, he possesses extensive expertise in implementing the Biodiversity Assessment Method. Having worked in the Natural Resource Management sector since 2015, Darcy has developed skills in Botany, Report Writing, Project Management, and GIS. His areas of special interest include Botany and Ecological Community identification, with a particular focus on the Greater Sydney Region.

Academic Qualifications

- Bachelor of Science (Biology), The University of Newcastle, completed in September 2021

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)
- Working at Heights
- Chemcert and EPA ground applicator licence

Professional Experience

Senior Ecologist / Sydney Office Manager — 2023 - Present
Anderson Environment & Planning
Newcastle NSW

Ecologist / Project Lead — 2022 - 2023
Anderson Environment & Planning
Newcastle NSW

Ecologist — 2021 - 2022
Anderson Environment & Planning
Newcastle NSW

Senior Field Supervisor — 2018 - 2021
Traditional Aussie Gardens
Newcastle

Field Worker — 2015 - 2017
Newcastle City Council
Newcastle

Relevant Project Experience

Ecological Survey examples

- Botanical surveys including BAM plots: Bermagui, Greendale, Waringah, Gosford, Lake Macquarie, Singleton, Quirindi, Lake Cathie, Dilkoon and Tweed Heads.
- Threatened flora surveys: Carrai, Blueys Beach, Dilkoon, and South West Rocks.
- Targeted Koala Nocturnal searches: Upper Rouchel, Greendale, South West Rocks, and Bundanoon.
- Spot Analysis Techniques surveys: Newcastle, Maitland, Hawkesbury, Camden, and Penrith.

Ecological Assessment examples

- Biodiversity Development Assessment Report project management: Greendale, Empire Bay, Hawkesbury, Pleasure Point, South West Rocks
- Ecological Assessment Reports: Carramar, Lake Macquarie, Gosford, and Woolwich.
- Biocertification Assessments: West Wilton, Strathfield, Schofields, and Rouse Hill
- Part-5 Ecological Assessments: Liverpool, Wollongong, and Homebush.
- BDAR Waivers: Revesby, Strathfield and Schofields.

Ecological Monitoring

- Biodiversity Stewardship Agreements including Blueys Beach and South West Rocks;
- Vegetation Monitoring Plots: Pheasants Nest and Warriewood.

FRANCES O'BRIEN

Project Manager

Profile Summary

Frances is a Senior Ecologist and Lead Botanist with Anderson Environment and Planning, being an Accredited Assessor with over 12 years-experience in environmental impact assessment, environmental education, conservation land management, bush regeneration, wildlife rescue and rehabilitation, environmental sustainability, and environmental law. Frances has a particular interest in native edible and medicinal plants, and often runs educational tours and workshops on this topic.

Academic Qualifications

- Master of Environmental Law (University of Sydney NSW)
- Graduate Diploma of Legal Practice (Australian National University ACT)
- Bachelor of Environment (Climate Science) with Bachelor of Laws (Macquarie University NSW)
- Biodiversity Accredited Assessor Scheme no. 20013

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)
- Advanced Plant Identification (University of New South Wales NSW)
- Ecological Consultants Association of NSW member
- Australian Plants Society NSW member
- Australian Association of Bush Regenerators NSW member
- Hunter Wildlife Rescue rescuer and Carer (past)
- Sydney Wildlife Rescuer and Carer (past)
- Hunter Intrepid Landcare – Group Coordinator (past)
- Wahroonga Waterways Landcare - Group Coordinator (past)
- Lane Cove National Park Bushcare volunteer (past)
- Ku-ring-gai Municipal Council Bushcare volunteer (past)

Professional Experience

Senior Ecologist (Lead Botanist) 2021 – Present
Anderson Environment & Planning
Sydney, NSW

Ecologist / Senior Ecologist 2018 - 2021
Anderson Environmental & Planning
Newcastle

Senior Scientist - Ecology 2021
Ecology Team, Sustainability, Ecology and Climate Change Division, SMEC
Newcastle

Senior Conservation Planning Officer 2021
North-west Planning Team, Biodiversity Conservation Division, Department of Planning and Environment
Dubbo

Environmental Officer 2014 - 2017
Projects Team, Seventh-day Adventist Aged Care
Greater Sydney, Wahroonga

Relevant Project Experience

Ecological Survey examples

Ecological Communities

- Critically Endangered Ecological Community identification and mapping for Department of Planning and Environment, Northern Tablelands
- Plant Community Type determination through Biodiversity Assessment Method: Sutton Forest, Bundanoon, Tarago, Galambine, Gilgandra, Peak Hill, Goulburn, Wagga Wagga, Cooma, Jindabyne, Pambula, Meroo Meadow, Dunmore, Culcairn, Blueys Beach, South West Rocks, New Italy, Wadalba, Lochinvar, Mt Malumla, Scone, Wahroonga, Rouse Hill, Box Hill, Thornton, Kanwal

Flora

- Targeted surveys for Rhodamnia rubescens: Blueys Beach, Wallsend, Ourimbah
- Targeted surveys for Eucalyptus benthami at Eastern Creek
- Targeted surveys for Rhodomyrtus psidioides at Charlotte Bay
- Targeted surveys for Eucalyptus glaucina at Pokolbin
- Targeted surveys for Hibbertia procumbens at Somersby
- Targeted surveys for Leucochrysum albicans subsp. tricolor at Cooma
- Targeted surveys for Acacia bynoeana and Grevillea parviflora subsp. parviflora at Ellalong

Fauna

- Koala Spot Analysis Technique Surveys: Mount Victoria, Sutton Forest, Bundanoon, Bermagui, Medowie
- Targeted nocturnal surveys for Greater Glider at Mittagong
- Targeted surveys for Wallum Froglet at Doyalson
- Targeted surveys for Green and Golden Bell Frog at Kooragang

Riparian and Aquatic Assessment

- Hydroline assessment: Galambine, Bundanoon
- Aquatic assessment: Sutton Forest, South West Rocks

Ecological Assessment examples

- Accredited Assessor for Biodiversity Development Assessment Reports for:
- Boomerang Drive, Blueys Beach
- Newell Highway Service Station, Gilgandra
- Yallakool Rd, Cooma
- Annangrove Road, Rouse Hill
- Terrigal Rd, Morisset
- Weakleys Dr, Beresfield
- Jensen Rd, Wadalba
- Supporting assessor on Biodiversity Development Assessment Report for New Italy, including early examination of 'Guideline for applying the Biodiversity Assessment Method at severely burnt sites'

Ecological Monitoring examples

- Biodiversity Management Plan monitoring and reporting for:
- Wahroonga Estate, Wahroonga
- Ampol Service Station, Pheasants Nest
- Hue Hue Road, Wyee
- Fal Brook Wildlife Refuge, Mount Royal
- Nelson Road, Nelson
- Various Sydney Water assets, western Blue Mountains region
- Eucalyptus cryptica (previously sp. Catti) health monitoring at Rouse Hill
- Epacris purpurascens, Callistemon linearifolius and Persoonia bargoensis health monitoing at Pheasants Nest
- Powerful Owl roost tree monitoring at Wahroonga

Publications

- O'Brien, Frances (2018) Waterway. ISBN 978-0-244-13152-4. Lulu Publishing.
- Roddis, Marc, O'Brien, Frances (2008) 'Aspects of the biology and behaviour of Ligia exotica - the wharf 'louse''. Metamorphosis Australia 51. December 2008.

GEOFF TURNER
Ecologist / GIS Officer

Profile Summary

Geoff is a junior Ecologist and GIS Officer with Anderson Environmental & Planning. Having recently completed an undergraduate degree in environmental science where he garnered experience in environmental science and undertaking ecological fieldwork such as targeted flora and fauna surveys, he has begun to broaden his skills by commencing a Master of Geographic Information Science at the University of Queensland. During his time working as an Ecologist / GIS Officer he has furthered his ecology skills in conducting ecological assessments and surveys, in addition to performing the accompanying geospatial work that both informs the fieldwork and concisely communicates the data. His work with Anderson Environment & Planning has helped consolidate report writing skills first honed as a requirement of his bachelor's degree.

Academic Qualifications

- Master of Geographic Information Science - University of Queensland, Current
- Bachelor of Science (Environmental Science) – University of Sydney, 2023

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)

Professional Experience

Ecologist / GIS Officer — 2024 – Present
Anderson Environment & Planning
Newcastle NSW

Technician (Espresso machines) — 2023 - 2024
Buccheri Group
Melbourne VIC

Farm Hand — 2020 - 2021
Pocket City Farms
Sydney NSW

Relevant Project Experience

Ecological Surveys

- Diurnal bird surveys (Various sites, 2024-onwards).
- Frog surveys for threatened species (Oxford Falls, April 2024).
- Habitat surveys, including tree hollow identification (Various sites, 2024-onwards).
- Nocturnal surveys for nocturnal avian fauna, including stagwatching, spotlighting, quiet listening and call playback (Wyee, 2024).

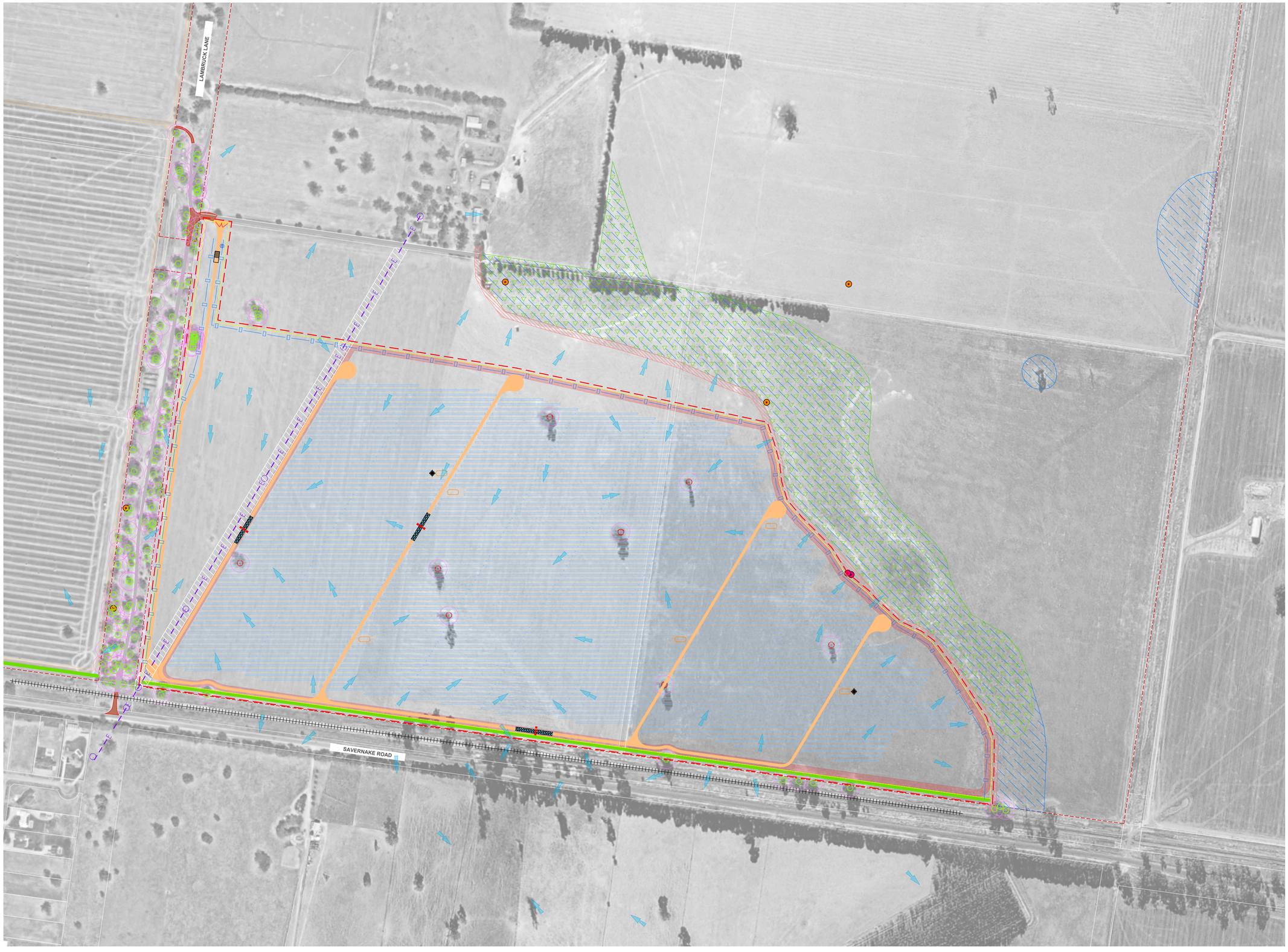
Ecological Assessment

- Biodiversity assessment methodology (BAM) plots, under supervision of BAM accredited assessor Joelan Sawyer (Narellan, May 2024).
- Bushfire vegetation inspection and assessment in accordance with PBP 2019 (Clarendon, April 2024).

Geospatial Analysis

- Perform Geospatial analysis according to guidelines and legislation for various reports such as Ecological Assessments and Biodiversity Management Plans.
- Design and present complex spatial data for government and industry.

Appendix D – Project Layout



INDICATIVE PROJECT DETAILS	
SECURE FENCED AREA	68.4ha
SECURITY FENCING LENGTH	3,997m
GATES	1
DC CAPACITY	TBC
AC CAPACITY	TBC
2-STRING TRACKER TABLES	22
3-STRING TRACKER TABLES	35
4-STRING TRACKER TABLES	420
PV PANELS	51,212
PITCH	7.7m

GENERAL LEGEND

- STAGE 1B PROJECT BOUNDARY - 68ha
- PROPERTY AREA - COMBINED 420ha
- FENCING - SECURITY
- FENCING - SEDIMENT CONTROL
- AREAS SUBJECT TO INUNDATION - TO BE AVOIDED WITH 10M OFFSET
- AREAS OF ECOLOGICAL VALUE - TO BE AVOIDED WITH 10M OFFSET
- NO-GO ZONE - INCLUSIVE OF OFFSET REQUIREMENTS
- 10M ASSETT PROTECTION ZONE - TO BE MAINTAINED WITH 10M CLEARING
- 4M INTERNAL ACCESS ROADS - REFER TO ENGINEERING DRAWINGS
- EXTERNAL ACCESS UPGRADES - REFER TO ENGINEERING DRAWINGS
- EXTERNAL ACCESS ROADS - TO BE UTILISED
- WATER CROSSING - REFER TO ENGINEERING DRAWINGS
- SHAKER GRID & WASH - REFER TO ENGINEERING DRAWINGS
- INVERTERS - REFER TO ENGINEERING DRAWINGS
- EXISTING TRANSMISSION LINE TOWERS - TO BE AVOIDED
- EXISTING TRANSMISSION LINE - TO BE AVOIDED
- 5M VEGETATED SCREENING - REFER TO LANDSCAPE STRATEGY
- EXISTING NATIVE TREES (MARKED EXTENTS INCLUDE TPZ) - TO BE RETAINED AND PROTECTED
- EXISTING TREES - TO BE REMOVED AT STAGE 1
- GATE
- 45,0000L WATER TANK & HARDSTAND AREA
- POTENTIAL ABORIGINAL ARTEFACT - TO BE SALVAGED PRIOR TO WORKS
- POTENTIAL ABORIGINAL ARTEFACT - TO BE AVOIDED DURING WORKS
- MET STATION - REFER TO ENGINEERING DRAWINGS
- SURFACE WATER FLOW - DIRECTION AS INDICATED

2-STRING TRACKER TABLES (22) - 56 PANELS PER TABLE

3-STRING TRACKER TABLES (35) - 84 PANELS PER TABLE

4-STRING TRACKER TABLES (420) - 112 PANELS PER TABLE

PLOT STYLE: URBIS_A1.CTB
PAGE SETUP: ----
PLOTTED BY: ALEX FREEMAN
PLOT DATE: 11.08.2025
PATH: L:\02 Projects\P0050000\P0055075_Mulwala Solar Farm (LA)\03 Documentation\01 CAD\03 Layouts\201-FI Site Plan.dwg

URBIS

PROJECT

MULWALA SOLAR FARM

STAGE 1B

255 SAVERNAKE ROAD

MULWALA, NEW SOUTH WALES, 2647

Olderfleet, Level 10, 477 Collins Street | Melbourne VIC 3000 AUSTRALIA | +61 3 8663 4888 | URBIS Ltd | ABN 50 105 256 228

ALL DRAWINGS ARE DESIGNED TO BE PRINTED AND READ IN COLOUR

IT IS THE CONTRACTORS' RESPONSIBILITY TO PRINT DRAWINGS IN COLOUR TO AVOID ANY POTENTIAL DISCREPANCIES IF DRAWINGS ARE PRINTED IN BLACK AND WHITE

REV	DESCRIPTION	DWN	CHK	DATE
H	FOR REVIEW	AF	PY	11.08.2025
G	FOR REVIEW	AF	PY	05.08.2025
F	FOR REVIEW	AF	PY	23.07.2025
E	FOR REVIEW	AF	PY	09.04.2025
D	FOR REVIEW	AF	PY	17.03.2025
C	FOR REVIEW	AF	PY	27.02.2025
B	FOR REVIEW	AF	PY	13.02.2025
A	FOR REVIEW	AF	SD	10.02.2025
-	FOR REVIEW	AF	-	04.02.2025

PROJECT DIRECTOR: CLARE BROWN

CLIENT
EUROPEAN ENERGY

DRAWING TITLE
SITE PLAN - STAGE 1B
.

ISSUE
FOR REVIEW

PROJECT NO.
P0055075

SCALE
1:3000 @ A1 1:6000 @ A3
30 60 90 120 150m

NORTH

DRAWING NO.
201-FI

REVISION
H

Department of Climate Change, Energy, the Environment and Water

Our ref: DOC25/559425
Your ref: SSD-9039-PA-4

Ben Jones
Senior Ecologist
Anderson Environment & Planning

Via email: benj@andersonep.com.au

Dear Ben

Subject: Mulwala Solar Farm Project (SSD-9039) – revised Biodiversity Management Plan

Thank you for your email dated 7 July 2025 seeking advice from the Regional Delivery (RD) of the NSW Department of Climate Change, Energy, the Environment and Water on the Biodiversity Management Plan (BMP).

RD has reviewed the revised BMP (Rev02) dated 3 July 2025, with consideration of the requirements set out in Schedule 3 Condition 11 of the Development Consent, the Biodiversity Development Assessment Report (BDAR) version 2, and RD advice about the draft BMP provided via email on 7 May 2025.

We have also reviewed the revised BMP Rev03 submitted via the Major Projects Planning Portal on 18 July and Rev04 provided by email with the Environmental Management Strategy (EMS) and Stormwater Plan on 23 July.

RD considers that further work is required on the BMP to meet requirements of the development consent. 17 further actions are recommended in **Attachment A** to address these remaining issues.

RD also received a request on 31 July to endorse a stand-alone protocol for clearing habitat trees prior to spring, a commitment that was made in the BDAR to mitigate impacts to hollow-dependent threatened fauna. The protocol submitted for endorsement included most of the BMP including several sections that RD do not endorse. RD would endorse the implementation of only Section 5.2 of the BMP Rev04 but only after Actions 6, 7 and 8 in Attachment A have been resolved. Notwithstanding, RD require the remaining actions to be resolved in the BMP to satisfy the requirements set out in Schedule 3 Condition 11 of the Development Consent.

To be confident that the BMP will be effective in managing biodiversity impacts of the development, we would appreciate the opportunity to review a final version before acceptance by the NSW Planning Group.

If you have any questions about this advice, please contact Miranda Kerr, Senior Biodiversity Conservation Officer, via planning.southwest@environment.nsw.gov.au or 02 6022 0607.

Yours sincerely

Simon Maffei
1 August 2025

A/Senior Team Leader – Planning, South West
Regional Delivery
Conservation Programs, Heritage and Regulation Group
NSW Department of Climate Change, Energy, the Environment and Water

ATTACHMENT A – RD recommendations for the Mulwala Solar Farm revised Biodiversity Management Plan (SSD-9039-PA-4)

ATTACHMENT A RD recommendations for the Mulwala Solar Farm revised Biodiversity Management Plan (SSD 9039-PA-4)

Detailed feedback about the revised BMP is provided in the table below.

- Item numbers correspond to Attachment A and B in the RD advice about the revised BMP (Rev02) dated 3 July 2025 submitted by email on 7 July 2025, revised BMP Rev03 submitted via the Major Projects Planning Portal on 18 July and Rev04 provided by email on 23 July.
- Issues that are not listed below are considered by RD to be resolved.

List of acronyms and terms used in this response:

APZ	Asset protection zone
BC Act	NSW *Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
BMP	Biodiversity Management Plan
CEEC	Critically endangered ecological community
CoA	Condition of Approval, as per Schedule 3 of the Development Consent
Development footprint	Area within the site on which the components of the project will be constructed (Appendix 1 of development consent)
EEC	Endangered ecological community
EIS	Environmental Impact Statement for Mulwala Solar Farm dated May 2018 and the associated response to submissions dated October 2018
EMS	Mulwala Solar Farm – Stage 1b Environmental Management Strategy V3, dated 15 July 2025
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
PCT	Plant community type
SEARs	(DPHI) Secretary's environmental assessment requirements
SMART	Specific, measurable, achievable, realistic, time-bound
TEC	Threatened ecological community (includes EEC and CEECs)
TPZ	Tree protection zones

Item	RD Recommend	AEP Response / Action	RD Response 4/8/2025	RD Further Actions
1.1	Provide, or reference, publicly available documents that detail project staging.	Section 1.0 has been updated to refer to the staging approval (this is available on the major projects portal at the following address: https://www.planningportal.nsw.gov.au/major-projects/projects/mulwala-solar-farm).	Unresolved REV04 - the project layout in Appendix D does not include the design details provided in other plans. For example, the *Stormwater Drainage, Erosion and Sediment Control Design Report* (version C01) includes design features such as that are not included S.1.0 items listed as 'minor works' are construction impacts. It's unclear why vegetation clearing, track construction soil disturbance such as grading are designated as 'minor' for the BMP.	1. Provide the finalised detailed designs in the BMP
1.2	Update the BMP to apply to the entire development site and any areas where impacts to biodiversity require avoidance, management or mitigation, within the identified stages.	Section 1.0 has been updated to define the stages to which this BMP applies i.e. the BMP Lands. Figures 5a,b,c depict the areas of avoidance (no go zones and TPZs) and mitigation (i.e. MZ1).	Unresolved Figure 5a does not include TPZ or a 'no-go zone' for the vegetation along the eastern and southern border of the BMP Lands (Stage 1b and 1c) (as listed in the BMP). Impacts to this vegetation have not been offset, so there must be adequate protections to avoid harm.	2. Include no-go-zones along the eastern and southern borders of the development footprint, adjoining the road reserve.
1.4	Provide clear maps, spatial data and a table showing the area (hectares) of each management zone	The mapping has been updated to provide further clarity including provision of larger scale maps to show greater detail for management zones, no-go zones and TPZs (Figures 5a,b,c).	Figure 5a states Management Zone 1 (MZ1) is 68.44ha. S3.1 says that MZ1 is entire BMP footprint. Fencing Plan stage 1 (last map) needs to be underlain with aerial imagery and be at a finer scale to show the location of structures in the context of site biodiversity values, and include any asset protection zones. Also include the	3. Provide a map showing locations of structures (including security fencing and associated APZ) and biodiversity values. Include all structures shown on the Stormwater Plan.

Item	RD Recommend	AEP Response / Action	RD Response 4/8/2025	RD Further Actions
			structures shown on detailed design in Stormwater Plan	
3.1	Update the BMP to detail implementation of any commitments to avoid, minimise or mitigate biodiversity impacts in the BDAR, including all measures in Table 11 and addressing the identified impacts in BDAR Tables 8 – 10.	Table 11 from the BDAR has been partially replicated as Table 1, within the BMP. This table identifies the mitigation measures identified, responsibility and where each mitigation measure has been addressed (i.e. within BMP, EMS or Stormwater Plan).	It is unclear why the BMP will only be implemented for a 3-year period. Further information should be provided to explain how the requirements of the consent conditions will be fully achieved in three years i.e. how will weeds and pests be fully eradicated within three years? Indirect impact from dust - Table 1 only addresses heavy vehicles however Section 4.1 of the Traffic Impact Assessment report for the EIS predicts a peak of 39 additional movements per day during construction, consisting of 13 heavy vehicles and 26 light vehicles. *Note: further actions 6, 7 and 8 are to be resolved before RD will endorse the stand-alone vegetation clearance protocol.	4. Amend Section 1.2 to provide-evidence based justification to support the 3-year BMP timeframe or remove the 3-year timeframe. 5. Amend Table 1 (and the EMS) to include light vehicle speed restrictions appropriate for minimising dust. 6. *Amend S4.2 to state that weed, pathogen and disease control will be conducted in accordance with the Department's Hygiene guidelines:* Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants. 7. *Amend S5.2 to state that pre-clearance surveys will occur within 48 hours of clearing commencing. A week is too much time* to *allow fauna to move into areas that have been checked. The section should also be amended to state 'under the supervision of a qualified ecologist' not just an arborist.* 8. *Amend s.6.6 to require a suitably qualified* person *to carry out monitoring, and that works apply to all areas where impacts to biodiversity require management, not just paddock trees.*

Item	RD Recommend	AEP Response / Action	RD Response 4/8/2025	RD Further Actions
4.1	Identify TECs associated with PCT 75 and include on all site maps	The TEC associations have been briefly described in Section 2.2. In addition, a TEC map has been provided as Figure 4.		9. Map TECs on Figure 5a, b and c, and included as 'No Go Zones'.
4.2	Detail measures to avoid and minimise direct and indirect impacts to identified TECs, including impacts associated with construction and operation of security fencing.	Section 6.3 contains a summary of the measures implemented to manage impacts to TECs.	S6.3 refers to implementation of TPZs, hygiene protocols and weed management. Not all areas identified as TEC in Figure 4 are in TPZs or 'no-go' zones (See issue 4.1above). TPZs are not adequate protection for grassland components of woodland TECs. Table 9 of the BDAR identifies vegetation damage and unauthorised storage of materials on road reserves as a potential impact, so no-go zones will be necessary along the eastern and southern boundaries. Specific measures are needed to address elements of the project detailed design. For example, temporary waterway crossings are shown on drawing 81001 of the Erosion and Sediment Control Plan. The crossings include captured runoff that is directed via a pipe towards the boundary of the solar farm. There appears to be one adjacent the largest mapped patch of Inland Grey Box Woodland EEC (PCT 76) along Savernake Rd and another adjacent the boundary with White Box - Yellow Box -	10. Include all areas of PCT 76 to the east and the PCT 75 to the south of the development footprint as 'no-go' zones. 11. Update Section 4.1 to require project induction material to include awareness of threatened ecological communities protected by NSW and Commonwealth legislation that occur within road easements surrounding the site, and the consequence for harming TECs (including through sedimentation and weed infestation). Both TECs can be present in areas with no trees. 12. Amend the BMP to identify potential water and sediment flows from temporary waterway crossings and include SMART mitigation measures to address possible impacts.

Item	RD Recommend	AEP Response / Action	RD Response 4/8/2025	RD Further Actions
			Blakely's Red Gum grassy woodland and derived native grassland CEEC (PCT 75) in Lambruck Lane.	
9.1	Detail measures following SMART principles for preventing, identifying, recording, managing pest species on site.	Section 6.5 specifies the approach to pest management.	Unresolved. The consent condition requires pest species to be managed. The approach in BMP S6.5 does not meet CoA 11. Section 6.0 needs to be specific to the site. It should address impacts of weed germination and spread into adjacent native vegetation (indirect impacts), including TECs on adjoining road reserves. The monitoring locations provided in Figures 5a, b and c, (and EMS Figure 5) are unlikely to successfully identify new weed infestations. Table 2 targets for weed cover of <5% does not specify the area to which the 5% cover applies.	13. Update section 6 to provide SMART measures for identifying locations where weeds are spreading from the footprint into the roadside reserves and avoided area on north-western boundary of the development footprint
10.2	Remove any non-committal language used in the BMP and amend the BMP to clearly demonstrate how each measure proposed in the BMP will satisfy Condition 11 of Schedule 3.	Non-committal language such as 'should' has been replaced throughout the BMP with terms such as 'must' and 'will'.	This action is unresolved. Non-committal language remains throughout the document. For example, S5.2.2, 'Where possible, the felled hollows should be placed at the base of trees containing hollows to allow displaced fauna to migrate to the new habitat' S.3.1.1 states "cleaning protocols should be instated". This wording must be amended to state that cleaning protocols will be instated, as this is required by the consent.	14. Remove any non-committal language used in the BMP and amend the BMP to clearly demonstrate how each measure proposed in the BMP will satisfy Condition 11 of Schedule 3

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NEW			Monitoring for success of measures to protect adjacent TECs has not been provided, and should include (but not be limited to) regular (at least weekly during construction) and episodic (triggered) monitoring of adjacent vegetation to ensure controls are successful. Health of retained individual trees within the footprint could be assessed and repeated using standardised canopy health methods (e.g. photo point monitoring) to determine if root damage has occurred within or outside TPZs.	15. Update the BMP to include monitoring for success of measures to protect TECs in adjacent roadside reserves 16. Include monitoring of tree health for individual retained trees