



Muswellbrook Solar Farm Biodiversity Management Plan

OX2 Australia Pty Ltd

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Document Tracking

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Abbreviations

Abbreviation	Description
AAMs	Additional and Appropriate Measures
ACR	Annual Compliance Report
AG	Australian Government
BC Act	NSW Biodiversity Conservation Act 2016
BCF	Biodiversity Conservation Fund
BCS	Biodiversity Conservation and Sciences
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BMP	Biodiversity Management Plan
BSA	Biodiversity Stewardship Agreement
CEMP	Construction Environmental Management Plan
CEEC	Critically Endangered Ecological Community
CoA	Conditions of Approval
CoC	Conditions of Consent
CPHR	Conservation Programs Heritage and Regulation
CWD	Coarse Woody Debris
DAWE	Department of Agriculture, Water and the Environment
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DBH	Diameter at Breast Height
DNG	Derived Native Grassland
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
DPHI	Department of Planning, Housing and Infrastructure
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EMS	Environmental Management Strategy
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EWP	Elevated Work Platform
FM Act	NSW Fisheries Management Act 1994
GDA	Geocentric Datum of Australia
ha	hectares
HBT	Hollow Bearing Tree
HTW	High Threat Weed
IBRA	Interim Biogeographic Regionalisation for Australia
IPC	Independent Planning Commission
kV	Kilovolt
LGA	Local Government Area
LLS	Local Land Services
MAP	Management Action Plan
MCC	Muswellbrook Coal Company

Abbreviation	Description
MGA	Map Grid of Australia
MNES	Matters of National Environmental Significance
MSF	Muswellbrook Solar Farm
MW	Megawatt
MZs	Management Zones
NPW Act	NSW National Parks and Wildlife Act 1974
O&M	Operations and Maintenance
OEMP	Operational Environmental Management Plan
PCT	Plant Community Type
POEO Act	NSW Protection of the Environment Operations Act 1997
PV	Photovoltaic
REZ	Renewable Energy Zone
SDS	Safety Data Sheet
SSD	State Significant Development
SWMP	Soil and Water Management Plan
TBDC	Threatened Biodiversity Data Collection
TECs	Threatened Ecological Communities
VMP	Vegetation Management Plan
WoNS	Weeds of National Significance

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1. Introduction

1.1. Context

This Biodiversity Management Plan (BMP) forms part of Environmental Management Strategy (EMS) for the Muswellbrook Solar Farm (MSF, or the Project).

The EMS, as required by Condition of Approval (CoA) C1, provides the overarching framework for the environmental management of the Project, establishing environmental management governance arrangements, roles and responsibilities, statutory approval pathways for secondary approvals, communication and incident response procedures, and compliance mechanisms required under the Conditions of Approval.

This BMP has been prepared to address the requirements of the Conditions of Approval (CoA), the measures listed in the MSF Environmental Impact Statement (EIS) dated July 2023 and the Submissions Report dated February 2024 and all applicable guidelines and legislation.

The Plan implements the EMS at an aspect-specific level by translating the overarching requirements of the EMS into detailed, topic-specific management measures, monitoring, and controls applicable to the management of biodiversity.

1.2. Background

Muswellbrook Solar Farm is a large-scale solar photovoltaic (PV) generation facility in the Hunter Region of NSW, as shown in Figure 1. The project site is on Wonnarua Country and within the localities of Muswellbrook and Muscle Creek in the Muswellbrook Shire Council (MSC) Local Government Area (LGA).

The nearest population centre to the project is the township of Muswellbrook, approximately 2.5 km west of the project. The Proponent is ESCO Solar Farm 9 Pty Ltd (ACN 660 380 110) as trustee for the ESCO Solar Farm 9 Trust (ABN 88 366 226 320) (a wholly owned subsidiary of OX2 Holdings Pty Ltd). From here on the Proponent is referred to as OX2.

The project area is located in the Hunter-Central Coast Renewable Energy Zone (REZ) and has been selected to optimise the future land use of the Muswellbrook Coal Mine buffer lands for the generation of renewable energy. The Project is located adjacent to existing transmission infrastructure, as it is traversed by existing 132 kilovolt (kV) and 330 kV transmission lines. It is an ideal site for increasing generation capacity to the NSW electricity grid with minimal requirements for additional transmission infrastructure.

The Project is a State significant development (SSD) pursuant to section 4.36 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). EP&A Act and section 2.6(1) of State Environmental Planning Policy (Planning Systems) 2021. The Project was referred to the Independent Planning Commission (IPC) in December 2024, and Development Consent was granted by the IPC on the 27th of May 2025 (SSD 46543209).

A referral decision (EPBC 2022/09303) was issued on the 14 October 2022 and the Project was determined a controlled action under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The assessment of environmental impacts for the project has been undertaken under the *Assessment Bilateral Agreement* between the Commonwealth DCCEEW and the NSW DCCEEW.

A notification of approval decision, with controlling provisions, was issued on the 12 August 2025, with the decision made under section 130(1) and 133(1) of the EPBC Act.

This BMP describes how impacts to biodiversity will be managed across the construction and development phases of the project. The BMP identifies and describes hazards, risks and mitigation measures that may occur during work associated with the project and identifies mitigation measures designed to minimise potential risks.

The BMP has been prepared using the New South Wales (NSW) Department of Planning, Industry and Environment (DPIE) Environmental Management Plan Guideline (DPIE 2020) as a guide for best-practise methods of biodiversity management. Additionally, this plan considers legislation, policies and guidelines applicable to biodiversity management.

Additional details of the project relevant to the BMP are summarised in Table 1.

1.3. Approved Project

The Muswellbrook Solar Farm consists of the following key components:

- Southern portion and Northern portion of the Development Footprint (Figure 2)
- a network of solar PV panels and associated mounting infrastructure
- a BESS with a capacity of up to 135 MWac and a storage duration of up to 2 hours
- electrical collection systems (BESS collection station and solar farm collection station), transformer substation, and switchyard
- an operations and maintenance facility, including demountable offices, amenities, equipment sheds, storage and parking areas
- internal access roads
- site access from approved point off Muscle Creek Road and approved point off Sandy Creek Road
- a temporary construction compound/laydown (during construction and decommissioning only)
- electricity transmission line infrastructure connecting to the grid and connecting the north and south areas of the solar farm.

The Project layout is shown in Figure 2.

1.4. Project Staging

Project activities will be delivered in stages in accordance with Condition C3, as approved by the Planning Secretary in a letter dated 27 November 2025. For biodiversity matters the project is staged into a 'Southern portion' and a 'Northern portion' (Figure 2) across eight (8) stages. The project staging is as follows:

- Stage 1A: Construction and commissioning of the southern solar farm, including switchyard and substation, excluding high risk vehicle movements requiring escort
- Stage 1B: Construction and commissioning of the southern solar farm, including switchyard and substation, including high risk vehicle movements requiring escort
- Stage 2: Construction and commissioning of the BESS

- Stage 3: Operation and maintenance on the southern solar farm and BESS
- Stage 4A: Road upgrades and site access upgrades at the Sandy Creek Road intersection, to enable construction of the northern solar farm
- Stage 4B: Construction and commissioning of the northern solar farm, including high-voltage connection to the south
- Stage 5: Operation and maintenance of the northern solar farm and associated infrastructure
- Stage 6: Decommissioning

For the purposes of this BMP, and the retirement of Biodiversity credits as they relate to staging, the 'Southern portion' comprises Stage 1A, 1B and Stage 2 and the 'Northern portion' comprises Stage 4A and 4B. Credits required for 'Southern portion' will be retired prior to Stage 1A. Credits required for the 'Northern portion' will be retired prior to Stage 4A.

An outline of this credit retirement is presented in Table 4 and Table 5 for Ecosystem credits and in Table 6 and

Table 7 for Species credits.

The BMP will be updated prior to the commencement of any works associated with Stage 4A.

1.5. Consultation for this Plan

In accordance with CoA (B11, B12, B13 and B14), this BMP has been prepared in consultation with the following agencies:

- NSW Biodiversity Conservation and Sciences (BCS) Division, now Conservation Programs Heritage and Regulation (CPHR) of the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW)

Upon finalisation of consultation, this plan will be submitted to the Planning Secretary for approval.

Appendix A provides a summary of the consultation undertaken to date for the development of this BMP.

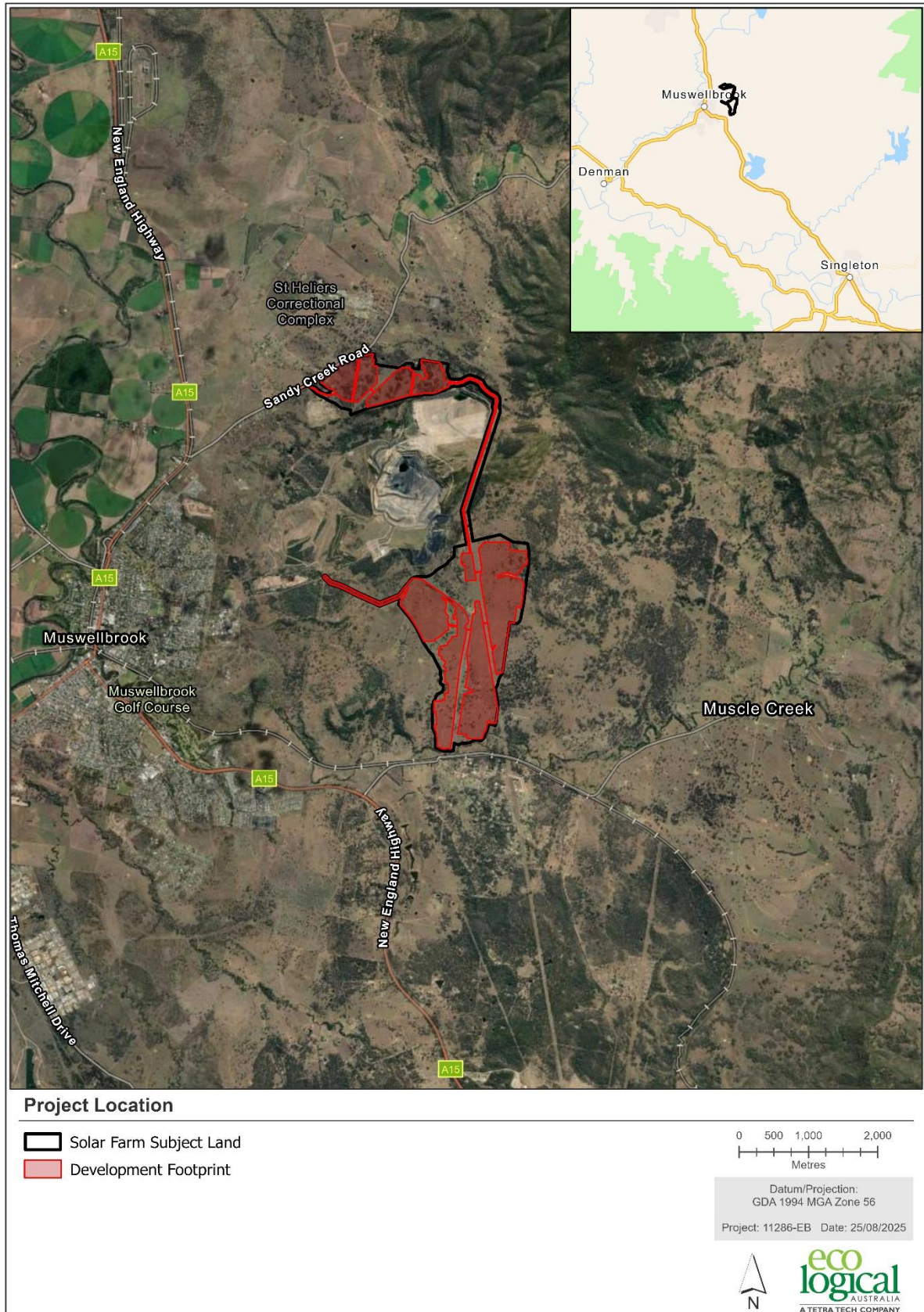


Figure 1: Project location



Figure 2: Project layout and stages

Table 1: Aspects of the project relevant to the BMP

Aspect	Description
Project summary	The project includes: • A Southern portion (Stages 1A, 1B, 2 and 3) and Northern portion (Stages 4A, 4B and 5) of the Development Footprint • Solar panels and associated mounting infrastructure with a generation capacity of 135 MW; • A BESS with a capacity of up to 135 MW and a storage duration of 2 hours; • Electrical collection and conversion systems including inverter and transformer units, switchyard and control room; • An on-site substation with a connection voltage of up to 132 kV; • Underground and above ground cables; • An operational infrastructure area, including demountable offices, amenities, equipment sheds and storage; • Parking and internal access roads; • A temporary construction compound (during construction and decommissioning only); • Electricity transmission line infrastructure connecting to the grid and connecting the north and south areas of the solar farm; and • A diversion channel and berm.
Project area	Total site area: approximately 482 hectares (ha) Development Footprint: approximately 318 ha
Site entry and access route	• The proposed access route is New England Highway and either Muscle Creek Road or Sandy Creek Road. • Access to the northern section of the site would be via Sandy Creek Road and access to the southern portion of the site would be via Muscle Creek Road. • Existing access points for the Muswellbrook Coal Company (MCC) mine site would be utilised for site access.
Construction	• Site establishment is planned to commence in Q1 of 2026 • Construction is planned to commence in Q2 of 2026. • Construction hours would be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm.
Operation	The expected operational life of the infrastructure is approximately 35 years. However, the project may involve infrastructure upgrades that may extend the operational life.
Decommissioning and rehabilitation	The project includes decommissioning at the end of the project life, which would involve removing all infrastructure

2. Purpose and objectives

2.1. Purpose

The purpose of this BMP is to describe how the Project will manage and protect biodiversity during the construction/lifetime of the Project and meet the requirements of the Conditions of Consent and relevant regulatory requirements.

This BMP applies to all employees, contractors and visitors during the construction, operation and decommissioning of the Project, as described in the Development Consent.

The Environmental Management Strategy (EMS) identifies key personnel and the environmental management responsibilities for the Project. Management measures developed for this BMP that will be implemented for construction and operation of the Project are outlined below, and are discussed in detail in Section 6 of this BMP.

2.2. Objectives

The objective of the BMP is to ensure that all avoidance, mitigation and management measures are implemented relevant to the protection of native biodiversity including threatened entities and to ensure all approval and contractual requirements relevant to biodiversity are described, scheduled, and assigned responsibility as referred to in:

- The Independent Planning Commission (IPC) Conditions of Consent (SSD-46543209, approval dated 28th May 2025)
- Muswellbrook Solar Farm Biodiversity Development Report (BDAR) (ELA 2024)
- Notification of approval decision for the Muswellbrook Solar Farm, Muswellbrook, NSW (EPBC 2022/09303, approval dated 12th August 2025) and subject to conditions under the EPBC Act as set out in Annexure A.

2.3. Indicative Project Timeline

The construction and commissioning of Stages 1 and 2 will occur over a period of approximately 2 years with timing on Stage 4 to be determined at a later date. An indicative construction schedule with construction activities broken into phases is included in Table 2.

2.3.1. Early works

The site early works for the Project includes preparatory works which are excluded from the definition of construction as defined in the CoA.

The site early works relevant to biodiversity are proposed to include:

- Installation of permanent fencing and temporary flagging as required and installation of safety and environmental controls
- Installation of nest boxes/carved hollows prior to clearing works
- Installation of tile arrays for *Delma vescolineata* (Hunter Valley Delma) mitigation surveys
- Pre-clearance surveys.

The site establishment phase is currently scheduled to start Q1 and continue into Q2 in 2026. As per Condition B15 of the Development Consent, construction hours will generally be limited to Monday to Friday 7:00 am to 6:00 pm and Saturday 8:00 am to 1:00 pm, with no works on Sundays or Public Holidays.

Some works outside these hours may occur as permitted by Condition B16 of the Development Consent. Any variations to these hours will be in accordance with Condition B17.

2.3.2. Construction works

Construction works comprise a range of activities and are currently scheduled to start Q2 in 2026 through to Q2 2028. The main works construction hours will be consistent with the hours specified above. Some works outside these hours may be required, consistent with early works, and will occur as permitted by Condition B16.

The construction of the Project will commence upon completion of all pre-Construction requirements under the Development Consent, including notification to DPHI in accordance with CoA C7. The construction and commissioning of Stages 1A, 1B and 2 (Southern Solar Farm and BESS) will occur over a period of approximately 2 years. The commencement and duration of construction works associated with Stage 4A and 4B (Sandy Creek Road site entrance intersection upgrade and construction of the Northern Solar Farm) is to be determined at a later date. The EMS and relevant plans would be updated prior to the commencement of Stage 4A works.

An indicative construction schedule for Stages 1A, 1B and 2 with detailed construction activities broken into phases is included in Table 2 below.

Table 2: Indicative construction schedule for Stages 1A, 1B and 2 (Southern Solar Farm and BESS)

Phase	Activities	Indicative timing
Phase 1 (Works to occur as part of Stage 1A)	Establishment of site compounds, including minor earthworks as required Vegetation removal	Q1-Q2 2026
Phase 2 Solar Farm Civil Works (Works to occur as part of Stage 1A)	Earthworks Access road construction Site drainage construction	Q1-Q4 2026
Phase 3 Mechanical Construction (Panel Install) (Works to occur as part of Stage 1A)	Piling Tracker installation Panel installation Drive line and motor installation	Q2 2026 – Q4 2027
Phase 4 Solar Farm Electrical and communications connections (Works to occur as part of Stage 1A)	Trenching, cable install and backfill of cable routes Above ground cable installation Power Conversion Unit (PCU) install Combiner Box install Cable terminations	Q3 2026 - Q3 2027
Phase 5 Substation and switching station works and 132kV transmission line	Civil Works - footings, drainage and fencing Install 33 & 132kv equipment Switching station & control room install Connection to Ausgrid network	Q2 2026 - Q3 2027

Phase	Activities	Indicative timing
(Works to occur as part of Stage 1A and 1B)	Substation install transformers and harmonic filters PV collection station building install BESS collection station building install Commissioning tasks	
Phase 6 BESS civil works (Works to occur as part of Stage 1A and Stage 2)	Earthworks Access road construction Footing construction Fencing construction	Q3 2026 – Q3 2027
Phase 7 BESS battery installation (Works to occur as part of Stage 2)	Skid installation PEMS Battery Installation Power Conversion Unit Installation Battery container installation	Q1 2027 – Q3 2027
Phase 8 BESS Electrical and communications connections (Works to occur as part of Stage 1A and Stage 2)	Trenching, cable install and backfill Cable terminations	Q4 2026 – Q3 2027
Phase 9 Solar Farm commissioning (Works to occur as part of Stage 1B and Stage 2)	Commissioning and testing	Q3 2027 - Q2 2028
Phase 10 BESS commissioning (Works to occur as part of Stage 1B and Stage 2)	Commissioning and testing	Q3 2027 - Q2 2028
Phase 11 Finalisation (Works to occur as part of Stage 1B and Stage 2)	Remove any waste Stabilise exposed surfaces for operation	Q3 2028 - Q2 2028

2.3.3. Operational phase

Operation of the Southern Solar Farm and BESS will occur within Stage 3. Operation of the Southern Solar Farm and BESS will occur within Stage 5. The operational lifespan of the project is expected to be in excess of 35 years, depending on the nature of solar PV technology and the energy market. The EMS and the operational component of the management plans shall apply for the duration of operation.

The key activities likely to be undertaken during operation include:

- Visual inspections, maintenance, and cleaning of solar panels and the substation.
- Vegetation management including:
 - mechanical vegetation maintenance
 - maintaining groundcover vegetation
 - maintenance of landscaping, including the vegetation buffer.

- Site security and operational response.
- Replacement of equipment and infrastructure.
- Weed and pest animal control.

In accordance with CoA B10, OX2 will maintain the agricultural land capability of the site, including:

- Establishing the ground cover of the site within 3 months following completion of any construction or upgrading;
- Properly maintain the ground cover with appropriate perennial species and weed management over the life of the development; and
- Maintaining grazing within the development footprint, where practicable, over the life of the development,

unless the Planning Secretary agrees otherwise.

2.3.4. Decommissioning

Decommissioning of the Muswellbrook Solar Farm will occur during Stage 6. Pre-existing land use to be re-established at decommissioning unless otherwise agreed with the landowner or authorities. Effective land management, rehabilitation, and decommissioning will ensure no permanent negative effects. During decommissioning, activities will include:

- dismantling and removing all infrastructure
- recycling dismantled infrastructure and equipment wherever possible, including steel piles, tracker components, copper conductors, and PV module components (metals, glass, silicon, plastic)
- disposing of non-recyclable materials at appropriately licensed waste facilities
- rehabilitating the site to its pre-existing land use, restoring vegetation and agricultural land where practicable.
- managing waste according to the Waste Classification Guidelines and a project-specific Waste Management Plan in consultation with Muswellbrook Council and DPHI.

Further detail on the timing and activities associated with decommissioning will be included within a revised version of the EMS closer to the date of decommissioning.

3. Statutory Requirements

3.1. Relevant legislation and guidelines

Legislation relevant to the implementation of this BMP and biodiversity management in general, including regulation, guidelines, specifications, and Australian Standards includes:

- Commonwealth EPBC Act
- NSW EP&A Act
- NSW *Biodiversity Conservation Act 2016* (BC Act)
- NSW *National Parks and Wildlife Act 1974* (NPW Act)
- NSW *Protection of the Environment Operations Act 1997* (POEO Act)
- NSW *Fisheries Management Act 1994* (FM Act)
- NSW *Pesticides Act 1999*
- NSW *Biosecurity Act 2015*
- NSW *Water Management Act 2000*.

3.2. Development consent - SSD-46543209

This BMP has been prepared to comply with the relevant conditions within the Development Consent, as well as to meet other applicable statutory requirements and obligations during the construction, operation and decommissioning of the Project.

The Development Consent includes administrative and environmental conditions, as well as environmental management and reporting requirements, that necessitate the preparation of several post-approval management plans and strategies. This BMP has been prepared to meet the requirements of Condition B16 of the Development Consent. It also satisfies Conditions as set out in the Commonwealth Decision Notice under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC).

The Development Consent includes several general Conditions that are relevant to the function of all management plans and Conditions that are relevant to just the specific management aspect. This section of the plan describes where compliance with the Development Consent is addressed in the plan.

In accordance with CoA A1 “In meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction, operation, commissioning upgrading, rehabilitation or decommissioning of the development.” Section 6 of this plan includes management and mitigation measures, including when they are to be implemented, who will implement them, a reference to the source of the requirement (where relevant) and how the project will collate evidence to prove compliance.

In accordance with CoA A2 “The development may only be carried out:

- (a) in compliance with the conditions of this consent;
- (b) in accordance with all written directions of the Planning Secretary;
- (c) generally in accordance with the EIS; and
- (d) generally in accordance with the Development Layout in Appendix 1.”

In accordance with CoA A3 “The Applicant must comply with any requirement/s of the Planning Secretary arising from the Department’s assessment of:

- (e) any strategies, plans or correspondence that are submitted in accordance with this consent;
- (f) any reports, reviews or audits commissioned by the Department regarding compliance with this consent; and
- (g) the implementation of any actions or measures contained in these documents.”

In accordance with CoA A4 “The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document listed in condition A2(c) or A2(d). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in condition A2(c) or A2(d), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict”

This management plan has been prepared to support compliance with the requirements of Condition A2, A3 and A4 and to ensure the development is carried out in accordance with the consent, relevant directions of the Planning Secretary, the EIS, and the approved Development Layout. The Project is committed to complying with any requirement of the Planning Secretary and acknowledge that the CoA and directions of the Planning Secretary prevail over any inconsistency, ambiguity or conflict between them and a document listed in condition A2(c) or A2(d).

In accordance with CoA A12 “The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development”. Section 10 of the plan describes how the Project will train employees, contractors (and their sub-contractors) in the requirements of the conditions of consent, including those relevant to the implementation of this plan

A table showing where the relevant NSW Conditions of Consent have been addressed in this document is included in Table 3 and Table 8.

3.2.1. NSW Conditions of Consent

Table 3: Conditions of consent relevant to the BMP.

Condition	Description	Addressed in this BMP
B10.	The Applicant must maintain the agricultural land capability of the site, including: a) Establishing the ground cover of the site within 3 months following completion of any construction or upgrading; b) Properly maintain the ground cover with appropriate perennial species and weed management over the life of the development; and c) Maintaining grazing within the development footprint, where practicable, over the life of the development, unless the Planning Secretary agrees otherwise.	Yes – refer to Section 2.3.3.
B11.	The Applicant must not clear any native vegetation or fauna habitat located outside the approved disturbance areas described in the EIS.	There will be no clearance outside the approved disturbance areas as described in the EIS. Yes – refer to Section 6.3 for vegetation clearance procedure.
B12.	Prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset, the Applicant must	Yes

Condition	Description	Addressed in this BMP
	retire biodiversity credits of a number and class specified in Table 4 and Table 6. The retirement of these credits must be carried out in accordance with the NSW Biodiversity Offsets Scheme and can be achieved by:	The ecosystem credit requirement relevant to this condition is presented in Table 4, Table 5 and Table 22 and Table 23.
	a) Acquiring or retiring 'biodiversity credits' within the meaning of the <i>Biodiversity Conservation Act 2016</i> (BC Act);	The species credit requirement relevant to this condition is presented in Table 6,
	b) Making payments into an offset fund that has been development by the NSW Government; and/or	Table 7 and Table 24 and Table 25.
	c) Funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the biodiversity offset scheme.	The Applicant will provide evidence of credit retirement in a separate document, prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset.
B13.	Prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset, the Applicant must provide evidence to the Planning Secretary that biodiversity credits have been retired.	Not applicable – the Applicant will provide evidence of credit retirement in a separate document, prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset.
B14.	Prior to carrying out any development that could directly or indirectly impact biodiversity values, the Applicant must prepare a Biodiversity Management Plan for the development in consultation with BCS, and to the satisfaction of the Planning Secretary. This plan must:	
	(a) be prepared in accordance with the Biodiversity Development Assessment Report (dated 16 February 2024);	Yes – refer to Table 8 for how this BMP addresses recommended mitigation and management measures outlined in the BDAR (ELA 2024).
	(b) include a description of the measures that would be implemented for:	
	(i) protecting vegetation and fauna habitat outside the approved disturbance areas	Yes – refer to Section 6.3 for vegetation clearance procedure.
	(ii) managing and enhancing the remnant vegetation and fauna habitat on site;	Yes – refer to: Yes – refer to Section 6.3 for vegetation clearance procedure. Section 6.4 for vegetation clearance works Section 6.7 for fauna habitat relocation Section 6.11 for ground disturbance procedure – Hunter Valley Delma Section 6.11 weed and pathogen management procedure Section 6.12 pest animal procedure Section 6.13 noise, light and dust management

Condition	Description	Addressed in this BMP
		Section 6.14 for remnant vegetation management procedure
	(iii) maintaining and improving the condition and extent of PCT 281 (provided all relevant approvals are in place), including regular reporting on the effectiveness of these measures to BCS, in accordance with the applicant's letter dated 25 June 2024;	Yes – refer to: Section 6.14 for Remnant vegetation management procedure The Additional and Appropriate Measures (AAMs) Restoration Plan will be developed as a separate document, however, some aspects of management will overlap with the required actions proposed in this BMP.
	(iv) minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;	Yes – refer to Section 6.3 for vegetation clearance procedure.
	(v) minimising the impacts to fauna on site and implementing fauna management protocols;	Yes – refer to: Section 6.3 for vegetation clearance procedure. Section 6.4 for vegetation clearance works Section 6.7 for fauna habitat relocation Section 6.11 for ground disturbance procedure – Hunter Valley Delma
	(vi) protection of downstream aquatic habitat including key fish habitat through exclusion zones and revegetation;	Yes – refer to Section 6.3.2 for exclusion zones and Section 6.14.4 Creek morphology works
	(vii) rehabilitating and revegetating temporary disturbance areas with native species that are appropriate to the site's ecology and conditions, including PCT 281;	Yes – refer to: Section 6.14 for Remnant vegetation management procedure
	(viii) 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	Yes – refer to: Section 6.4 for vegetation clearance works Section 6.7 for fauna habitat relocation Section 6.14 for remnant vegetation management procedure
	(ix) controlling weeds, feral pests and pathogens;	Yes – refer to: Section 6.11 weed and pathogen management procedure Section 6.12 pest animal procedure
	(c) include a program to monitor and report on the effectiveness of mitigation measures and report to BCS following each annual reporting window;	Yes – refer to Section 7.1 for monitoring procedures and reporting requirements.

Condition	Description	Addressed in this BMP
	(d) include an incidental threatened species finds protocol to identify the avoid and/or minimise options to be implemented if additional threatened species are discovered on site; and	Yes – refer to Section 6.10 for incidental threatened species finds procedure
	(e) include details of who would be responsible for monitoring, reviewing and implementing the plan.	Yes – refer to Section 6.1 and 9.1 for roles and responsibilities
C2	The Applicant must: (a) update the strategies, plan or programs required under this consent to the satisfaction of the Planning Secretary prior to carrying out any upgrading or decommissioning activities on site; and (b) review, and if necessary, revise the strategies, plans or programs required under this consent to the satisfaction of the Planning Secretary within 1 month of the: i) submission of an incident report under condition C10 of Schedule 2; ii) submission of an audit report under condition C13 of Schedule 2; or iii) any modification to the conditions of this consent	Yes – refer to Section 11
C10	The Applicant must notify the Department within 24 hours of becoming aware of an incident. The notification must be made via the NSW planning portal (Major Projects) and address details of the incident including: (a) date, time and location; (b) a brief description of what occurred and why it has been classified as an incident; (c) a description of what immediate steps were taken in relation to the incident; and (d) identifying a contact person for further communication regarding the incident.	Yes – refer to Section 12.2
C11	The Applicant must provide the Department with a subsequent incident report in accordance with Appendix 6 (Incident Notification and Reporting Requirements).	Yes – refer to Section 12.2
C12	Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing and must be submitted via the NSW planning portal (Major Projects). The notification must identify the development (including the development application number and name), set out the condition of this consent that the development in non-compliance with, why it does not comply, the reasons for the non-compliance (if known), and what actions have been undertaken, or will be undertaken, and when, to address the non-compliance. Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	Yes – refer to Section 12.4
C14	The Applicant must: make the following information publicly available on its website as relevant to the stage of the development:	Yes – refer to Section 11.1

Condition	Description	Addressed in this BMP
	(a) approved strategies, plans or programs required under the condition of this consent (other than the Fire Safety Study and Emergency Plan)	

Following the Planning Secretary's approval, the Applicant must implement the Biodiversity Management Plan.

Table 4: Ecosystem credit requirements

Vegetation community	PCT ID	Credits required
Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	281	754
Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	1691	232
Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter	1603	622
Blakely's Red Gum - Narrow-leaved Ironbark - Rough-barked Apple shrubby woodland of the upper Hunter	1607	21
Total		1,629

Table 5: Ecosystem credit requirements – Staged Southern and Northern

Vegetation community	PCT ID	Credits required
Southern		
Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	281	754
Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	1691	232
Total (Southern)		986
Northern		
Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter	1603	622
Blakely's Red Gum - Narrow-leaved Ironbark - Rough-barked Apple shrubby woodland of the upper Hunter	1607	21
Total (Northern)		643
Combined Total		1,629

Table 6: Species credits requirements

Species	Common Name	Credits required
<i>Cymbidium canaliculatum</i> - endangered population	<i>Cymbidium canaliculatum</i> population in the Hunter Catchment	2
<i>Chalinolobus dwyeri</i>	Large-eared pied bat	111
<i>Phascogale tapaotafa</i>	Brush-tailed Phascogale	452
<i>Petaurus norfolcensis</i>	Squirrel Glider	829
<i>(Delma impar)</i> *	Striped Legless Lizard	656
<i>Diuris tricolor</i> - endangered population	Pine Donkey Orchid population in the Muswellbrook local government area	278
<i>Myotis macropus</i>	Southern Myotis	159
Total		2,487

* The *Delma impar* species credit requirement may be met by credits generated from the broader *Delma impar* species complex, inclusive of *Delma vescolineata* (Hunter Valley Delma).

Table 7: Species credits requirements – Staged Southern and Northern

Species	Common Name	Credits required
Southern		
<i>Cymbidium canaliculatum</i> - endangered population	<i>Cymbidium canaliculatum</i> population in the Hunter Catchment	2
<i>Chalinolobus dwyeri</i>	Large-eared pied bat	45
<i>Myotis macropus</i>	Southern Myotis	78
<i>Phascogale tapaotafa</i>	Brush-tailed Phascogale	452
<i>Petaurus norfolcensis</i>	Squirrel Glider	183
<i>(Delma impar)</i> *	Striped Legless Lizard	648
Total (Southern)		1,408
Northern		
<i>Diuris tricolor</i> - endangered population	Pine Donkey Orchid population in the Muswellbrook local government area	278
<i>Chalinolobus dwyeri</i>	Large-eared pied bat	66
<i>Myotis macropus</i>	Southern Myotis	81
<i>Petaurus norfolcensis</i>	Squirrel Glider	646
<i>Delma impar</i> *	Striped Legless Lizard	8
Total (Northern)		1,079
Combined Total		2,487

* The *Delma impar* species credit requirement may be met by credits generated from the broader *Delma impar* species complex, inclusive of *Delma vescolineata* (Hunter Valley Delma).

3.2.2. BDAR - Mitigation and management measures

The Muswellbrook Solar Farm Biodiversity Development Assessment Report (BDAR) was prepared and finalised by ELA in February 2024 (ELA 2024) and includes measures to mitigate and manage impacts associated with construction of the project. Condition of consent item B14 requires that the BMP is prepared in accordance with the BDAR (ELA 2024).

Mitigation and management measures identified by ELA (2024) are provided in Table 8 with details of how each measure has been addressed in this BMP.

Table 8: Measures proposed to mitigate and manage impacts taken from Table 46 of ELA BDAR (2024).

Measure	Action	Section addressed in this BMP
Timing works to avoid critical life cycle events such as breeding or nursing	Undertake reasonable steps to avoid, where possible, clearing during the seasonal breeding and torpor seasons for candidate fauna species known to inhabit the locality i.e. Squirrel Glider, Brush-tailed Phascogale and Southern Myotis. A comprehensive pre-clearance survey plan will be developed to avoid impacts to threatened and non-threatened fauna. A qualified ecologist/licenced wildlife handler will supervise tree removal and an unexpected finds procedure will also be developed to address this risk of failure.	Yes – refer to Section 6.4.1 for timing of vegetation clearing
Instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecological or licensed wildlife handler during clearing events	A comprehensive pre-clearance survey plan will be developed that outlines step by step guidance on best practise clearing protocols for the welfare of all species identified.	Yes – refer to Section 6.3 for vegetation clearance procedure.
Relocate habitat features (fallen timber, hollow logs) from within the Development Footprint	- A procedure will be developed for the relocation of habitat features (e.g. fallen timber, hollow logs) to adjacent retained habitat. - Existing hollows within hollow-bearing trees removed during construction will be relocated. Reuse of relocated hollows will be prioritised where it is possible to do so. If this is not possible, alternative solutions can be utilised including the use of HollowHog (a unique wood carving tool that has been specifically designed to create habitat for hollow dependent wildlife) or through erection of nesting boxes such as those designed by Hollow Log Homes. The proponent will provide suitable offsite locations for the relocated hollows and/or nest boxes to BCD prior to the commencement of works. - A plan and report should be provided to BCD to demonstrate the maintenance and monitoring of the relocated hollows and nest boxes.	Yes – refer to: Section 6.7 for fauna habitat relocation procedure Section 7.1.1 for replacement hollow monitoring
Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chain-saw, rather than heavy machinery, is preferable in situations where partial clearing is proposed	- Clearing protocols will be developed that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance (e.g. removal of native vegetation by chainsaw instead of heavy machinery where only partial clearing is proposed). - Fencing (or other barriers as required) and signage will be placed around those areas of vegetation to be retained to prevent any accidental construction damage and provide a permanent barrier between the Development Footprint and retained areas. - The type of fencing or barrier utilised during construction may be of a temporary nature and scale that is robust enough to withstand damage during this stage of work.	Yes – refer to Section 6.3 for vegetation clearance procedure.

Measure	Action	Section addressed in this BMP
	Use of appropriate machinery and procedures for vegetation removal adjacent to retained areas.	
Sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment	- Appropriate controls will be implemented to manage exposed soil surfaces and stockpiles to prevent sediment discharge into waterways. - All works within proximity to the drainage lines will have adequate sediment and erosion controls (e.g. sediment barriers, sedimentation ponds). - Where required, revegetation will commence as soon as is practicable to minimise risks of erosion. - Suitable species will be used as ground cover species in any revegetation areas.	Yes – refer to: Section 6.3 for vegetation clearance procedure Section 6.14 for remnant vegetation management procedure
Noise barriers or daily/seasonal timing of construction and operational activities to reduce impacts of noise	- Construction works will predominately be undertaken during daylight hours. - Noise impacts to be managed.	Yes – refer to: Section 6.13 noise, light and dust management Section 6.4.1 for timing of vegetation clearing
Light shields or daily/seasonal timing of construction and operational activities to reduce impacts of light spill	- Construction works will generally be undertaken during daylight hours. - Lights associated with operation will be directional to avoid unnecessarily shining light into adjacent retained vegetation where possible.	Yes – refer to: Section 6.13 noise, light and dust management Section 6.4.1 for timing of vegetation clearing
Adaptive dust monitoring programs to control air quality	- Dust suppression measures will be implemented to limit dust on site. - Revegetation will also be commenced as soon as practicable to minimise areas likely to create dust. Suitable species will be used as ground cover species in any revegetation areas.	Yes – refer to: Section 6.13 noise, light and dust management
Temporary fencing to protect significant environmental features such as riparian zones	- Temporary fencing to be erected around sensitive riparian zone, being the 4th order creekline located in the southern portion of the Development Footprint, adjacent to the western boundary. This area forms part of the Additional and Appropriate Measures (AAMs) area, and will be managed as per the AAMs Restoration Plan. - Threatened flora to have a 10 m exclusion zone around known locations. Temporary fencing is also required to demarcate the exact easement of the transmission line during construction.	Yes – refer to Section 6.3 for vegetation clearance procedure and Figure 11
Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	Machinery associated with excavations and ground disturbance activities will be cleaned prior to entering and exiting the construction site to minimise the transport of weeds to vegetated areas to be retained. Weeds that are present within the Subject land that are listed under the NSW Biosecurity Act 2015 will be managed in accordance with a weed management plan.	Yes – refer to: Section 6.11.6 for vehicle hygiene guidelines

Measure	Action	Section addressed in this BMP
Staff training and site briefing to communicate environmental features to be protected and measures to be implemented	• All personnel working on the project will undertake an environmental induction as part of their site familiarisation. This will include: • site environmental procedures (vegetation management, sediment and erosion control, exclusion fencing and noxious weeds) • what to do in case of environmental emergency (e.g. chemical spills, fire, injured fauna) • key contacts in the case of an environmental emergency.	Yes – refer to Section 6.1 and 9.1 for roles and responsibilities
Translocation – <i>Diuris tricolor</i> (Pine Donkey Orchid) Measures to mitigate direct and indirect impacts on Pine Donkey Orchid, including translocation for the individuals impacted and ongoing fencing to exclude livestock grazing from the remaining individuals.	• Undertake a review of previous translocation projects involving <i>D. tricolor</i> • Develop a translocation plan for the individuals impacted. This plan is to include management measures to exclude livestock grazing from the remaining individuals and translocated individuals.	A <i>D. tricolor</i> Translocation Plan will be developed as part of works proposed for the Northern portion of the Project. This plan will be provided to BCS for review and comment and implemented prior to any works commencing for the Northern portion of the Project.

3.2.3. Commonwealth conditions of consent

The Project is a controlled action under the EPBC Act and was assessed under the bilateral agreement between the NSW and Australian Governments (AG). Relevant conditions of the EPBC Approval 2022/09303 are provided in Table 9.

Table 9: Relevant EPBC Approval Conditions

No.	Condition	Section addressed in the BMP
1	The approval holder must not: • clear outside of the Development Footprint • construct outside of the Development Footprint	Yes – refer to: Section 6.3 for vegetation clearance procedure
2	The approval holder must comply with conditions B11, B12, B13 and B14 of the NSW Approval, to the extent that they relate to protected matters.	Yes- refer to: Table 3 Conditions of consent relevant to the BMP for how conditions B11, B12, B13 and B14 of the NSW Approval have been addressed within this BMP.
3	The approval holder must notify the department in writing of any proposed change to the NSW approval that may relate to protected matters within 2 business days of formally proposing such a change and within 5 business days of becoming aware of any proposed change.	Yes- refer to: Section 13.1 EPBC Act notification requirements
4	The approval holder must notify the department in writing of any change to the NSW approval conditions that may relate to protected matters, within 5 business days of such a change to conditions coming into effect. Such notification must include a copy of the changed NSW approval conditions showing what changes have been made.	Yes- refer to: Section 13.1 EPBC Act notification requirements
5	The approval holder must notify the department electronically of the date of commencement of the Action, within 5 business days following commencement of the Action.	Yes- refer to: Section 13.1 EPBC Act notification requirements
6	The approval holder must not commence the Action later than 5 years after the date of this approval decision.	Noted by the Site Manager.
7	The approval holder must notify the department electronically of the date of commencement of clearing, within 5 business days following commencement of clearing.	Yes- refer to: Section 13.1 EPBC Act notification requirements Section 6.3 vegetation clearance procedure
8	The approval holder must maintain accurate and complete compliance records and document the procedure for recording and storing compliance records.	Yes- refer to: Section 13.2 for EPBC Act Annual Compliance Report Guidelines.

No.	Condition	Section addressed in the BMP
9	If the department makes a request in writing, the approval holder must provide electronic copies of compliance records to the department within the timeframe specified in the request.	Yes- refer to: Section 13.2 for EPBC Act Annual Compliance Report Guidelines.
10	The approval holder must ensure that any monitoring data, surveys, maps, and other spatial and metadata required under the conditions of this approval are prepared in accordance with the Guidelines for biological survey and mapped data, Commonwealth of Australia 2018, or as otherwise specified by the Minister in writing.	Yes- refer to: Section 13.4 and 13.4.1 for provision of monitoring data
11	The approval holder must ensure that any monitoring data, surveys, maps, and other spatial and metadata required under the conditions of this approval are prepared in accordance with the Guide to providing maps and boundary data for EPBC Act projects, Commonwealth of Australia 2021, or as otherwise specified by the Minister in writing.	Yes- refer to: Section 13.4.2 for a guide to providing maps and boundary data for EPBC Act projects
12	The approval holder must submit all monitoring data, surveys, maps, other spatial and metadata and all species occurrence record data (sightings and evidence of presence) electronically to the department within 20 business days of the next anniversary of the date of this approval decision except where otherwise specified in a plan.	Yes- refer to: Section 13.4 for monitoring report specifications
13	The approval holder must prepare a compliance report for each Annual Compliance Report period (ACR period).	Noted by the Proponent. Refer to: Section 13.2 for EPBC Act Annual Compliance Report Guidelines.
14	The approval holder must ensure each compliance report includes: a) accurate and complete details of compliance and any non-compliance with: i. each condition imposed under the NSW Approval, if a condition attached to this approval decision requires compliance with that NSW Approval condition, ii. each condition attached to this approval decision, and iii. all commitments made in each plan, b) a schedule of all plans in effect in relation to these conditions during the ACR period, c) accurate and complete details of how each plan was implemented during the ACR period, and d) if any incident occurred, accurate and complete details of each incident.	Yes- refer to: Section 13.2 for EPBC Act Annual Compliance Report Guidelines.
15	The approval holder must ensure each compliance report is completed to the satisfaction of the Minister and is consistent with the Annual Compliance Report Guidelines, Commonwealth of Australia 2023.	Yes- refer to:

No.	Condition	Section addressed in the BMP
		Section 13.2 for EPBC Act Annual Compliance Report Guidelines.
16	The approval holder must, within 20 business days following the end of each ACR period, in a format that is easily accessible and downloadable, publish on the website: a) each compliance report, and b) a shapefile showing all clearing of protected matters, and their habitat, undertaken within the ACR period.	Yes- refer to: Section 13.2 for EPBC Act Annual Compliance Report Guidelines.
17	The approval holder must: i. Exclude or redact sensitive biodiversity data from each compliance report and shapefile published on the website or otherwise provided to a member of the public. ii. If sensitive biodiversity data is excluded or redacted from a version of a compliance report published or otherwise provided to a member of the public, submit the full compliance report to the department within 5 business days of its publication on the website and notify the department in writing what exclusions and redactions have been made in the version published on the website or otherwise provided to a member of the public. iii. If sensitive biodiversity data is excluded or redacted from a version of a shapefile published or otherwise provided to a member of the public, submit the full shapefile to the department within 5 business days of its publication on the website and notify the department in writing what exclusions and redactions have been made in the version published on the website or otherwise provided to a member of the public.	Yes- refer to: Section 13.2 for EPBC Act Annual Compliance Report Guidelines.
18	The approval holder must notify the department electronically, within 5 business days of each date of publication that the compliance report has been published on the website. In this notification, the approval holder must provide the department with the web address for where the compliance report and related shapefile are published on the website.	Yes- refer to: Section 13.2 for EPBC Act Annual Compliance Report Guidelines.
19	The approval holder must keep each compliance report and related shapefile published on the website from the first date which that compliance report must be published and until the expiry date of this approval.	Yes- refer to: Section 13.2 for EPBC Act Annual Compliance Report Guidelines.
20	The approval holder must notify the department electronically, within 2 business days of becoming aware of any incident. The approval holder must specify in each notification: i. any condition or commitment made in a plan which has not been, or may have not been, complied with, ii. a short description of the incident, and iii. the location (if applicable, including co-ordinates), date and time of the incident.	Yes- refer to: Section 13.2.1 for Non-conformance reporting

No.	Condition	Section addressed in the BMP
21	The approval holder must provide to the department in writing, within 12 business days of becoming aware of an incident, the details of that incident. The approval holder must specify: a) all corrective measures and investigations which the approval holder has already taken in respect of the incident, b) the potential impacts of the incident, c) the method and timing of any corrective measures that the approval holder proposes to undertake to address the incident, and d) any variation of these conditions or revision of a plan that will be required to prevent recurrence of the incident and/or to address its consequences.	Yes- refer to: Section 13.2.1 for Non-conformance reporting
22-30	INDEPENDENT AUDIT - The approval holder must ensure that an independent audit of compliance with the conditions is conducted for every audit period. Audit period means at least each subsequent five-year period following the commencement of the Action until the expiry date of this approval unless otherwise specified in writing by the Minister. Refer to Decision Notice for full details on independent audit requirements.	Yes- refer to: Section 13.3 for independent audit
31	Within 20 business days after the completion of the Action, and, in any event, at least 20 business days prior to the expiry date of this approval, the approval holder must notify the department electronically of the date of completion of the Action and provide completion data. The approval holder must submit any spatial data that comprises completion data as a shapefile.	Noted by the Proponent.
32	The approval holder must notify the department electronically at least 60, but not more than 70, business days prior to the expiry date of this approval, that the approval is due to expire.	Noted by the Proponent.

4. Existing Environment

4.1. Landscape and vegetation

The project is located in the Sydney Basin IBRA region and Hunter IBRA subregion. Land within the site is generally flat to gently undulating and has been predominantly cleared.

The Subject land covers approximately 482 ha and is roughly divided into two distinct areas (southern and northern). The southern area is characterised by varying levels of degraded native grasslands and modified pastures with widely scattered remnant paddock trees with dominant species including *Eucalyptus crebra* (Narrow-leaved Ironbark), *Eucalyptus moluccana* (Grey Box), *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus blakelyi* (Blakely's Red Gum) and *Eucalyptus melliodora* (Yellow Box).

The northern area predominantly comprises regenerating even-aged regrowth *E. crebra* with occasional remnant trees, sparsely scattered shrubs and degraded native grasslands. A small portion of the northern area, to the north-east and within the eastern transmission line comprises *E. blakleyi* and *Angophora floribunda* (Rough-barked Apple).

4.1.1. Plant community types

Four Plant Community Types (PCTs) and associated vegetation zones were recorded in the Development Footprint totalling 316 ha including:

Southern portion:

- 281 Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley; flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion (Low, DNG regeneration, DNG Low)
- 1691 Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter (Moderate, Low, Degraded native pasture).

Northern Portion:

- 1603 Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter (Moderate, Degraded native pasture)
- 1607 Blakely's Red Gum - Narrow-leaved Ironbark - Rough-barked Apple shrubby woodland of the upper Hunter (Moderate).

A description of each of the associated vegetation zones for each PCT is outlined in Table 10 and PCT and vegetation zones are presented in Figure 3.

Table 10: Vegetation zones described within the BDAR (ELA 2024)

Vegetation zone	PCT	Condition	Area (ha)	Description
Southern portion				
1	1691	Moderate	1	Occurs on gentle slopes at a slightly higher landscape position adjacent to the valley flats. This area is mapped as 'Moderate' and is dominated by <i>E. crebra</i> in the canopy, and shrub species including <i>Brachychiton populneus</i> subsp. <i>populneus</i> (Kurrajong), <i>Bursaria spinosa</i> subsp. <i>spinosa</i> (Blackthorn) and <i>Notelaea microcarpa</i> var. <i>microcarpa</i> (Native Olive). The groundlayer is in relatively good condition, comprising of native species including <i>Themeda triandra</i> (Kangaroo grass), <i>Cymbopogon refractus</i> (Barbed Wire grass), <i>Lomandra multiflora</i> subsp. <i>multiflora</i> (Many-flowered Mat-rush), <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> (Poison rock fern) and <i>Einadia polygonoides</i> (Dock Saltbush).
2	1691	Low	9.7	Occurs on gentle slopes at a slightly higher landscape position adjacent to the valley flats. <i>E. crebra</i> and <i>E. moluccana</i> dominating as scattered remnant paddock trees.
3	1691	Degraded native pasture	114.5	Primarily used for cattle grazing and is dominated by <i>Sporobolus creber</i> (Rat's Tail grass), <i>Aristida ramosa</i> (Purple Wiregrass), <i>Panicum effusum</i> (Hairy Panic), <i>Dichondra repens</i> (Kidney weed), <i>Calotis lappulacea</i> (Yellow Burr-daisy), <i>Grona varians</i> (Slender Tick-trefoil) with an absent shrub layer
4	281	Low	7.5	Co-dominant canopy species throughout this community include <i>Eucalyptus blakelyi</i> , <i>Angophora floribunda</i> , <i>Eucalyptus melliodora</i> and <i>Eucalyptus tereticornis</i> . Grazing and camping under the trees by cattle has resulted in the groundcover under the trees often in poorer condition than the surrounding DNG and is often dominated by <i>Galenia pubescens</i> (Galenia), <i>Sida rhombifolia</i> (Paddy's Lucerne), <i>Senecio madagascariensis</i> (Fireweed), <i>Verbena bonariensis</i> (Tall Verbena) or bare ground.
5	281	DNG regeneration	– 48.5	As per 281 'Low', however lacks canopy trees and shrubs. This zone contains natural recruitment of <i>Eucalyptus</i> trees which are currently 0.5 – 2 m in height.
6	281	DNG – low	57	As per 281 'DNG - regeneration', however lacks tree regeneration.
Northern portion				
7	1603	Moderate	24.3	Predominantly comprising of regenerating even-aged regrowth and occasional remnant <i>Eucalyptus crebra</i> . Minimal scattered shrubs were present, including <i>N. microcarpa</i> var. <i>macrocarpa</i> , <i>Allocasuarina luehmannii</i> (Bulloak) and <i>B. populneus</i> subsp. <i>populneus</i> .
8	1603	Degraded native grassland	47	Dominant groundlayer species throughout include <i>Cymbopogon refractus</i> (Barbed wire grass), <i>Panicum effusum</i> (Hairy Panic), <i>Sporobolus creber</i> (Rat's Tail grass), <i>Eragrostis leptostachya</i> (Paddock Lovegrass) and <i>C. sieberi</i> subsp. <i>sieberi</i> . Large areas of this zone, particularly along the southern boundary adjacent to the gravel access track, were of lower condition and comprised a higher percentage of exotic grasses such as <i>Paspalum dilatatum</i> (Paspalum) and <i>Setaria pumila</i> (Pale Pigeon Grass), with a higher cover of weeds such as <i>Verbena bonariensis</i> (Tall Verbena) and <i>Galenia pubescens</i> (Galenia).

Vegetation zone	PCT	Condition	Area (ha)	Description
9	1607	Moderate	1.1	PCT 1607 occurs on flat to gently sloping land in the northern area of the northern portion of the Development Footprint and within the eastern power easement, comprising of regenerating and mature <i>Eucalyptus blakleyi</i> , <i>Angophora floribunda</i> and <i>Eucalyptus crebra</i> with scattered shrubs including <i>Notelaea microcarpa</i> var. <i>microcarpa</i> (Native Olive) and <i>Breynia oblongifolia</i> . Dominant groundlayer species throughout include <i>Cymbopogon refractus</i> (Barbed Wire grass), <i>Aristida ramosa</i> (Purple Wiregrass), <i>Panicum effusum</i> (Hairy Panic), <i>Eragrostis brownii</i> (Browns Lovegrass), <i>Chrysocephalum apiculatum</i> (Yellow Buttons) and <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> (Poison rock fern).

4.1.2. Threatened Ecological Communities

PCT 281 conforms to *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions* listed as a Critically Endangered Ecological Community (CEEC) under the BC Act and portions of this PCT conform to *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* listed as a CEEC under the EPBC Act.

PCT 1691 'Moderate' and 'Low' is consistent with *Central Hunter Grey Box – Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregion* listed as an Endangered Ecological Community (EEC) under the BC Act. PCT 1691 'Moderate' is consistent with *Central Hunter Valley eucalypt forest and woodland* listed as a CEEC under the EPBC Act and portions of 'Low' condition are consistent with this CEEC listing.

PCT 1603 'Moderate' and PCT 1607 'Moderate' are consistent with *Central Hunter Grey Box – Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregion* EEC (BC Act) and *Central Hunter Valley eucalypt forest and woodland* CEEC (EPBC Act).

An outline of the Threatened Ecological Communities (TECs) associated with the recorded PCTs and conditions zones is outlined in Table 11. Locations of BC Act and EPB Act TECs are shown on Figure 4.

4.1.3. Offset Obligation for Plant Community Types

A summary of the PCTs and their extent in the Development Footprint is provided in Table 11 below. The distributions of PCTs are shown in Figure 3. An outline of the Threatened Ecological Communities (TECs) associated with the recorded PCTs and conditions zones is outlined in Table 11. Locations of BC Act and EPB Act TECs are shown on Figure 4.

The retirement of these credits is being undertaken in accordance with the NSW Biodiversity Offset Scheme (refer to Section 8).

Table 11: PCTs and TECs within the Development Footprint

PCT number and name	Condition	NSW BC Act	Commonwealth EPBC Act	Direct impact (ha)	Credits required
PCT 1691: Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Moderate	EEC	CEEC	1	25
	Low	EEC	CEEC (in part)	9.7	207
	Degraded Native Pasture	Not listed	Not listed	114.5	0
PCT 281: Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	Low	CEEC	CEEC (in part)	7.5	275
	DNG-regeneration	CEEC	CEEC (in part)	48.5	479
	DNG-low	CEEC	Not listed	57	0
PCT 1603: Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter	Moderate	EEC	CEEC (in part)	24.3	622
	Degraded Native Grassland	Not listed	Not listed	47	0

PCT number and name	Condition	NSW BC Act	Commonwealth EPBC Act	Direct impact (ha)	Credits required
PCT 1607: Blakely's Red Gum - Narrow-leaved Ironbark - Rough-barked Apple shrubby woodland of the upper Hunter	Moderate	CEEC	CEEC	1.1	21

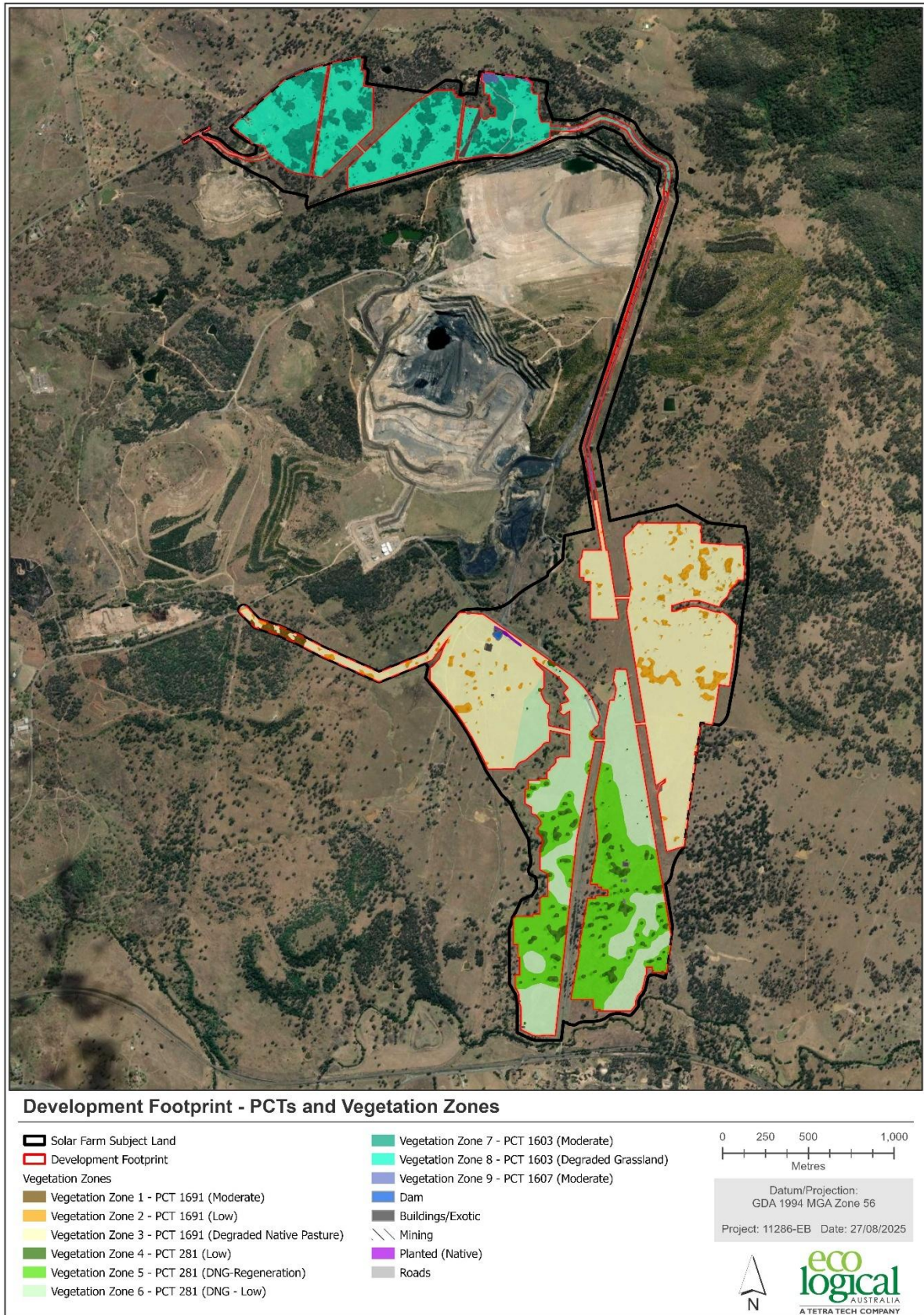


Figure 3: Development Footprint - PCTs and Vegetation zones

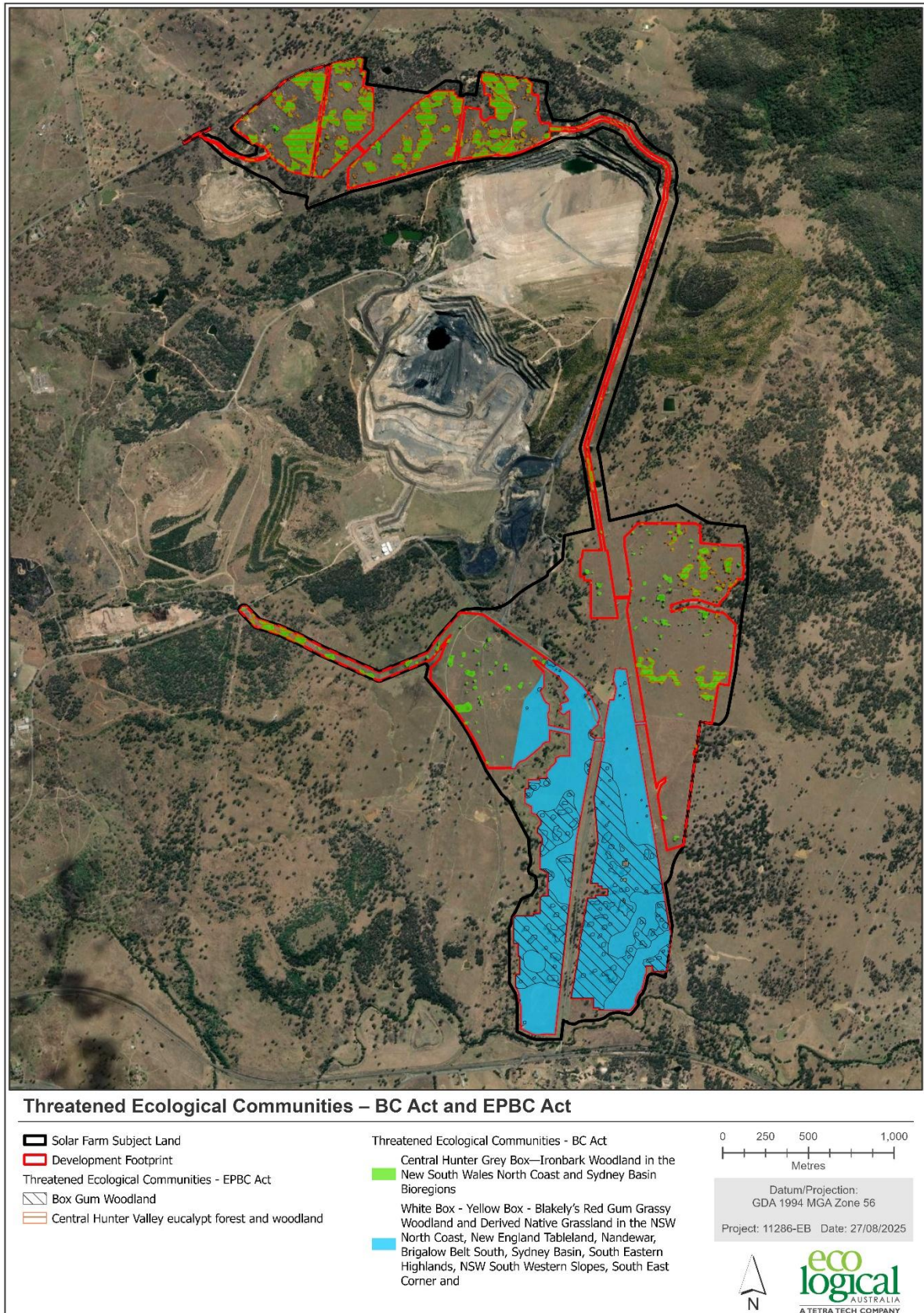


Figure 4: Threatened ecological communities – NSW BC Act and EPBC Act

4.2. Threatened Flora and Fauna

4.2.1. Threatened Species on the Solar Farm

The following threatened fauna Species credit species have been identified as occurring within the Development Footprint of the Project:

- *Diuris tricolor* (Pine Donkey Orchid)
- *Diuris tricolor* - endangered population
- *Cymbidium canaliculatum* - endangered population
- Large-eared Pied Bat (*Chalinolobus dwyeri*) (foraging habitat only)
- Southern Myotis (*Myotis macropus*)
- Brush-tailed Phascogale (*Phascogale tapoatafa*)
- Squirrel Glider (*Petaurus norfolcensis*)
- Hunter Valley Delma (*Delma vescolineata*)

The following threatened Ecosystem credit species and one migratory species have been identified within the Development Footprint of the Project:

- Grey-headed Flying-fox (*Pteropus poliocephalus*) (foraging habitat only)
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*)
- Speckled Warbler (*Chthonicola sagittata*)
- Grey-crowned Babbler (eastern subspecies) (*Psephotus haematonotus*)
- Diamond Firetail (*Stagonopleura guttata*)
- Varied Sittella (*Daphoenositta chrysoptera*)
- Rufous Fantail (*Rhipidura rufifrons*)

An outline of the identified habitat features recorded within the Development Footprint and the species known to utilise these features is outlined in Table 12.

Table 12: Fauna habitat features

Habitat feature	Description	Species
Hollow bearing trees	146 HBTs have been identified across the Development Footprint, this comprises 126 in the Southern portion of the Development Footprint and 20 in the Northern portion of the Development Footprint (Figure 6). Within the Subject land 90 HBTs have been identified and will be retained. There are likely additional HBTs that have not been recorded across the Subject land. A complete HBT assessment has not been completed for each of the proposed BSA sites (Figure 9), however, HBTs have been identified across these sites.	Southern Myotis Brush-tailed Phascogale Squirrel Glider Eastern False Pipistrelle
Grassland	The grassland within the Development footprint contains habitat for Hunter Valley Delma and Pine Donkey Orchid. The majority of grassland within the Development Footprint is associated with Hunter Valley Delma and Pine Donkey Orchid grassland habitat is more limited and	<i>Diuris tricolor</i> <i>Diuris tricolor</i> - endangered population

Habitat feature	Description	Species
	only occurs within the northern portion of the Development Footprint (Figure 5). Once solar panel arrays are installed, it is expected that native grasslands in between the solar panel may have the capacity to support habitat for native grassland species.	Diamond Firetail Grey-crowned Babbler Speckled Warbler Hunter Valley Delma
Surface rock	Habitat assessment found that the southern portion of the Development Footprint had no rocky areas present except for a very small area in the southern electricity transmission infrastructure footprint. Minimal rocky habitat occurred within the northern portion of the Development Footprint typically consisting of exposed surface rock with some small scattered loose rock and scattered loose rocks within man-made depressions lined with rock fill, which may provide shelter to small reptiles within the Development Footprint.	Hunter Valley Delma
Stick nests	During habitat assessments, seven small stick nests were identified within the Subject land and five within the Development Footprint. All stick nests were less than 40 cm diameter and on two occasions, Australian Ravens (<i>Corvus coronoides</i>) were observed leaving the nests. These small stick nests may provide breeding habitat to Corvid species and small raptors such as Nankeen Kestrel (<i>Falco cenchroides</i>) or Brown Falcon (<i>Falco berigora</i>) which were frequently observed within the Development Footprint, however, generally, of the nest observed most were poorly developed, with little depth or firm structure of them. The locations of all stick nests are shown in Figure 6.	Brown Falcon Nankeen Kestrel Australian Ravens
Fallen timber, woody debris, man-made rubbish stacks	Fallen, timber, woody debris and man-made rubbish stacks may provide shelter habitat for Hunter Valley Delma. Hunter Valley Delma has also been detected under discarded rubbish including building rubble, metal, organic waste and dried cow pats.	Hunter Valley Delma
Man-made structures	Within the Development Footprint, there are a number of abandoned farm sheds. Man-made structures, such as farm sheds have potential to provide roosting habitat to microchiropteran bat species. All farm sheds within the Development Footprint were inspected to determine the presence of microbats or evidence of historic occupation (i.e., guano or urine staining). Farm sheds within the Development Footprint consist of open, corrugated iron structures with timber beams. During the inspection cracks and crevices were investigated using a torch. There were minimal cracks and crevices that were suitable for microbat roosting present. No microbats or evidence of microbats were detected during the inspections of sheds. The abandoned dwelling was also inspected for any obvious signs of use by microbats. The locations of all farm sheds inspected during the habitat assessment are provided in Figure 6.	Large-eared Pied Bat Southern Myotis Eastern False Pipistrelle Large Bent-winged Bat
Dams	Numerous farm dams of various sizes are found within the Development Footprint. All farm dams occur within grassland areas and have been accessible to livestock. The majority of farm dams are considered to provide minimal habitat, with fringing vegetation either absent or comprising a mixture of exotic and native grass species with little to no emergent aquatic vegetation. A number of the smaller farm dams are not permanent, and during drier periods, are much reduced in size or completely dry. There are two dams in the north-west, that during peak rainfall periods, have decent water present and provide a	Southern Myotis Diamond Firetail

Habitat feature	Description	Species
	more permanent water source, and have therefore been mapped as suitable habitat.	
	Farm dams may provide fauna with a water source and may provide habitat to some waterbirds, turtles and fish species, however, most dams are considered to provide a fairly low quality water resource. Within the eastern transmission corridor, a modified drainage line with a lined rock bed is present. This drainage line is dominated by <i>Typha orientalis</i> (Bullrush). The modified drainage line and emergent aquatic vegetation may provide habitat to Amphibians and small species of bird.	

4.2.2. Offset Obligation for Threatened Species

As a result of the direct impacts to Species credit species, the following species credits are required to be offset by the Project, as presented in Table 13.

The retirement of species credits is being undertaken in accordance with the NSW Biodiversity Offset Scheme (refer to Section 8).

Table 13: Species credit summary

Species	Common Name	Direct impact number of individuals / habitat (ha)	Credits required
<i>Petaurus norfolcensis</i>	Squirrel Glider	33.1 ha	829
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	18.2 ha	452
<i>Myotis macropus</i>	Southern Myotis	8.3 ha of foraging habitat associated with buffers	159
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	0 ha of breeding habitats 3.2 ha of foraging habitat associated with buffers	111
<i>Delma impar</i>	Striped Legless Lizard	267 ha	656
<i>Diuris tricolor</i> Endangered population	Pine Donkey Orchid population in the Muswellbrook local government area	23.2 ha	278
<i>Cymbidium canaliculatum</i> endangered population	<i>Cymbidium canaliculatum</i> population in the Hunter Catchment	1 individual	2

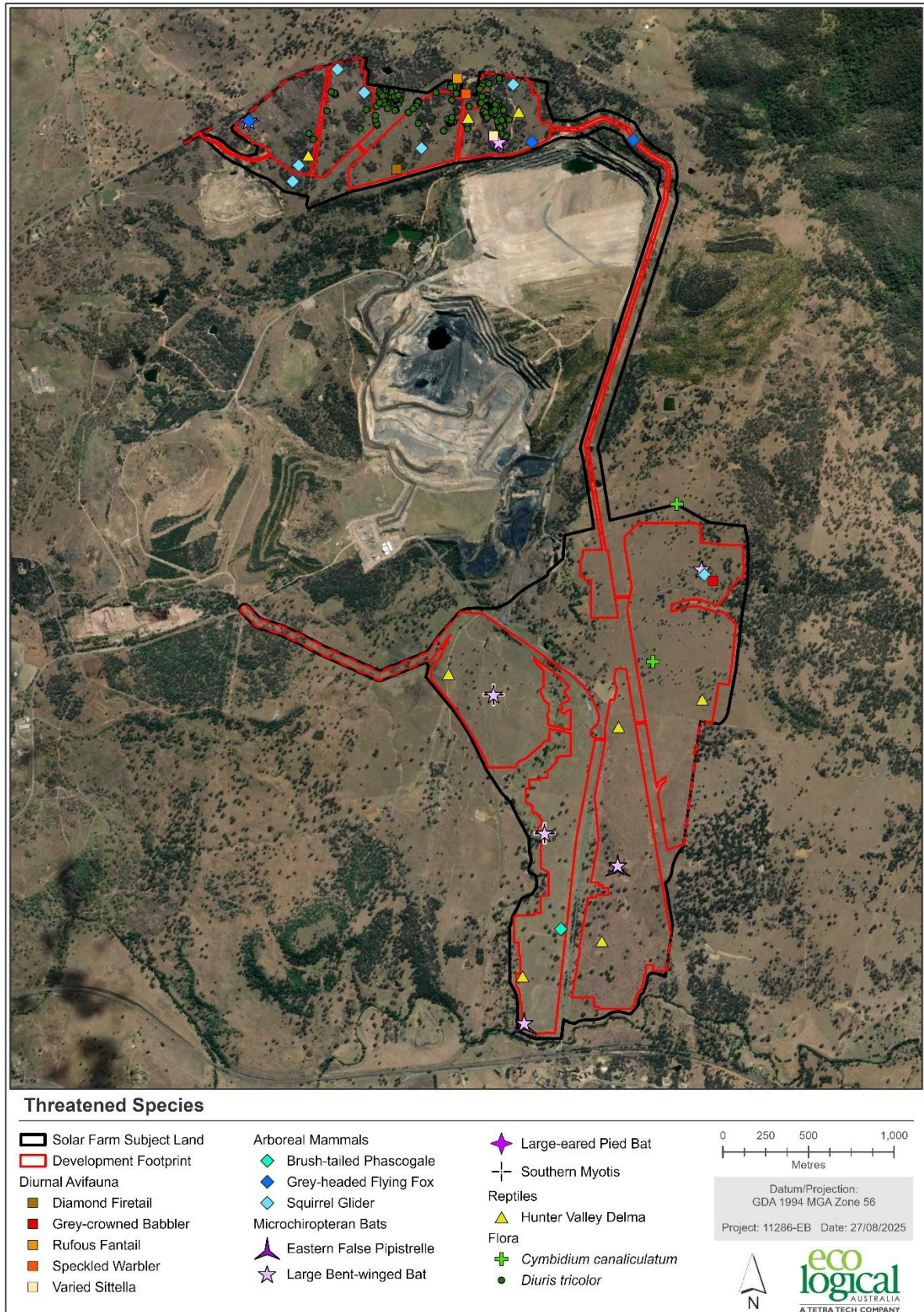


Figure 5: Threatened species recorded in the Development Footprint and Subject land

4.3. Aquatic habitat

The Development Footprint, and broader Subject land comprises numerous 1st, 2nd and 3rd order streams, comprising ephemeral grassy depressions within paddocks and present little habitat for threatened aquatic species. One waterway within the Subject land (ephemeral 4th order stream) has been identified as potential Key Fish Habitat for threatened species (Figure 7).

4.4. Weed and pest species

4.4.1. Weed species

Fifty-two exotic plant species were recorded within the subject land during the BDAR assessment, and a further three are considered to potentially occur presently or in the future. Of these fifty-five species, 13 are considered to be high threat weeds (As per the Biodiversity Assessment Method 2020), four weeds of national significance (WoNS) and four species are considered priority weeds for the Hunter region and have a specific biosecurity duty, as outlined in Table 14.

4.4.2. Pest species

Minimal signs of pest animals were identified during field surveys as part of the BDAR, however, European Rabbit (*Oryctolagus cuniculus*) scats were identified at scattered locations across the Subject land, particularly around the lower flats of the riparian areas. This species, along with the following species which are likely to occur in the surrounding landscape, will be controlled and are included in the BMP:

- Red Fox (*Vulpes vulpes*)
- Feral Cat (*Felix catus*)
- Feral Dogs (*Canis lupus familiaris*)

Table 14: Weed species recorded in the subject land

Scientific name	Common name	High threat weed	Hunter weed status	WoNS
<i>Amaranthus viridis</i>	Green Amaranth	--	--	--
<i>Aster subulatus</i>	Wild Aster	--	--	--
<i>Bidens subalternans</i>	Greater Beggar's Ticks	✓	--	--
<i>Briza minor</i>	Shivery Grass	--	--	--
<i>Carthamus lanatus</i>	Saffron Thistle	✓	--	--
<i>Centaurium tenuiflorum</i>	Branched Centaury, Slender centaury	--	--	--
<i>Chamaesyce prostrata</i>	Red Caustic Weed	--	--	--
<i>Cirsium vulgare</i>	Spear Thistle	--	--	--
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	--	--	--
<i>Conyza sumatrensis</i>	Tall fleabane	--	--	--
<i>Ehrharta spp.</i>	Veldtgrass	--	--	--
<i>Eleusine indica</i>	Crowsfoot Grass	--	--	--
<i>Eragrostis cilianensis</i>	Stinkgrass	--	--	--
<i>Eragrostis curvula</i>	African Lovegrass	✓	Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--

Scientific name	Common name	High threat weed	Hunter weed status	WoNS
<i>Facelis retusa</i>	Annual Trampweed	--	--	--
<i>Galenia pubescens</i>	Galenia	✓	Regional Recommended Measure An exclusion zone is established for all land in the region, except the core infestation which includes parts of: Lake Macquarie Local Government Area, Maitland Local Government Area, Muswellbrook Local Government Area, Newcastle Local Government Area, Singleton Local Government Area, Upper Hunter Local Government Area. Entire Hunter Local Land Services region: Land managers should mitigate the risk of the plant being introduced to their land. Exclusion zone: Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Core infestation: Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--
<i>Gamochaeta calviceps</i>	Cudweed	--	--	--
<i>Gomphocarpus fruticosus</i>	Narrow-leaved Cotton Bush	--	--	--
<i>Heliotropium amplexicaule</i>	Blue Heliotrope	✓	--	--
<i>Hyparrhenia hirta</i>	Coolatai Grass	✓	Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--
<i>Hypochoeris radicata</i>	Catsear	--	--	--
<i>Kickxia elatine</i> subsp. <i>crinita</i>	Twining Toadflax	--	--	--
<i>Lepidium africanum</i>	Common Peppergrass	--	--	--
<i>Lolium rigidum</i>	Wimmera Ryegrass	--	--	--

Scientific name	Common name	High threat weed	Hunter weed status	WoNS
<i>Lycium ferocissimum</i>	African Boxthorn	✓	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale. Regional Recommended Measure An exclusion zone is established for all land in the region, except the core infestation which includes parts of: Muswellbrook Local Government Area, Upper Hunter Local Government Area. Entire Hunter Local Land Services region: Land managers should mitigate the risk of the plant being introduced to their land. Exclusion zone: Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Core infestation: Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	✓
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	--	--	--
<i>Marrubium vulgare</i>	White Horehound	--	--	--
<i>Medicago</i> spp.	A Medic	--	--	--
<i>Melinis repens</i>	Red Natal Grass	--	--	--
<i>Modiola caroliniana</i>	Red-flowered Mallow	--	--	--
<i>Opuntia aurantiaca</i>	Tiger Pear	✓	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale. For all <i>Opuntia</i> species except for <i>Opuntia ficus-indica</i> (Indian fig). Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social	✓

Scientific name	Common name	High threat weed	Hunter weed status	WoNS
value. This Regional Recommended Measure applies to all species of Opuntia except for Opuntia ficus-indica. (Indian fig).				
<i>Opuntia stricta</i> var. <i>stricta</i>	Common Prickly Pear	✓	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale. For all Opuntia species except for Opuntia ficus-indica (Indian fig). Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. This Regional Recommended Measure applies to all species of Opuntia except for Opuntia ficus-indica. (Indian fig).	✓
<i>Paspalum dilatatum</i>	Paspalum	✓	--	--
<i>Pelargonium asperum</i>	Rose Geranium	--	--	--
<i>Petrorhagia dubia</i>	Velvet pink	--	--	--
<i>Phytolacca octandra</i>	Inkweed	--	--	--
<i>Plantago lanceolata</i>	Lamb's Tongues	--	--	--
<i>Richardia stellaris</i>	Field Madder	--	--	--
<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	✓	--	--
<i>Senecio madagascariensis</i>	Fireweed	✓	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale.	✓
<i>Setaria parviflora</i>	Slender Pigeon Grass	--	--	--
<i>Setaria pumila</i>	Pale Pigeon Grass	--	--	--
<i>Sida rhombifolia</i>	Paddy's Lucerne	--	--	--
<i>Sida spinosa</i>	Spiny Sida	--	--	--

Scientific name	Common name	High threat weed	Hunter weed status	WoNS
<i>Solanum nigrum</i>	Black-berry Nightshade	--	--	--
<i>Soliva sessilis</i>	Bindyi	--	--	--
<i>Sonchus oleraceus</i>	Common Sowthistle	--	--	--
<i>Stellaria media</i>	Common Chickweed	--	--	--
<i>Tagetes minuta</i>	Stinking Roger	--	--	--
<i>Trifolium repens</i>	White Clover	--	--	--
<i>Verbena bonariensis</i>	Purpletop	--	--	--
<i>Verbena rigida</i> var. <i>rigida</i>	Veined Verbena	--	--	--
<i>Juncus acutus</i> *	Spiny rush	--	Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--
<i>Hypericum perforatum</i> *	St. John's wort	--	Regional Recommended Measure An exclusion zone is established for all land in the region, except parts of: MidCoast Local Government Area, Muswellbrook Local Government Area, Upper Hunter Local Government Area. Entire Hunter Local Land Services region: Land managers should mitigate the risk of the plant being introduced to their land. Exclusion zone: Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Core infestation: Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--

Scientific name	Common name	High threat weed	Hunter weed status	WoNS
<i>Solanum elaeagnifolium</i> *	Silver Nightshade, Silver-leaved Nightshade	✓	Regional Recommended Measure Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant.	--

*Asterisk denotes species which have not been recorded in the subject land, however, have been recorded on adjoining properties, or are considered to potentially occur in the future.

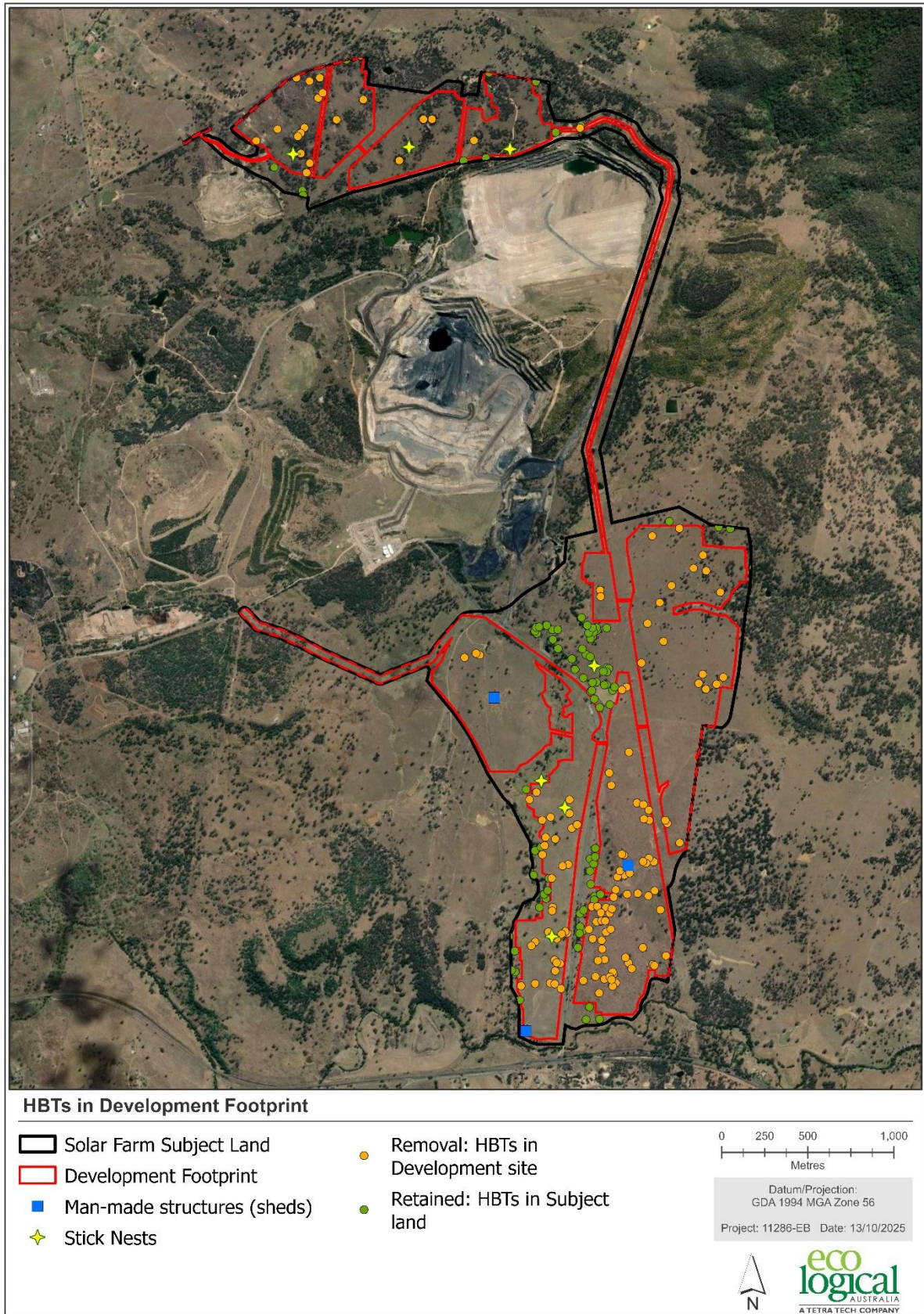


Figure 6: Hollow-bearing trees, stick nests and sheds

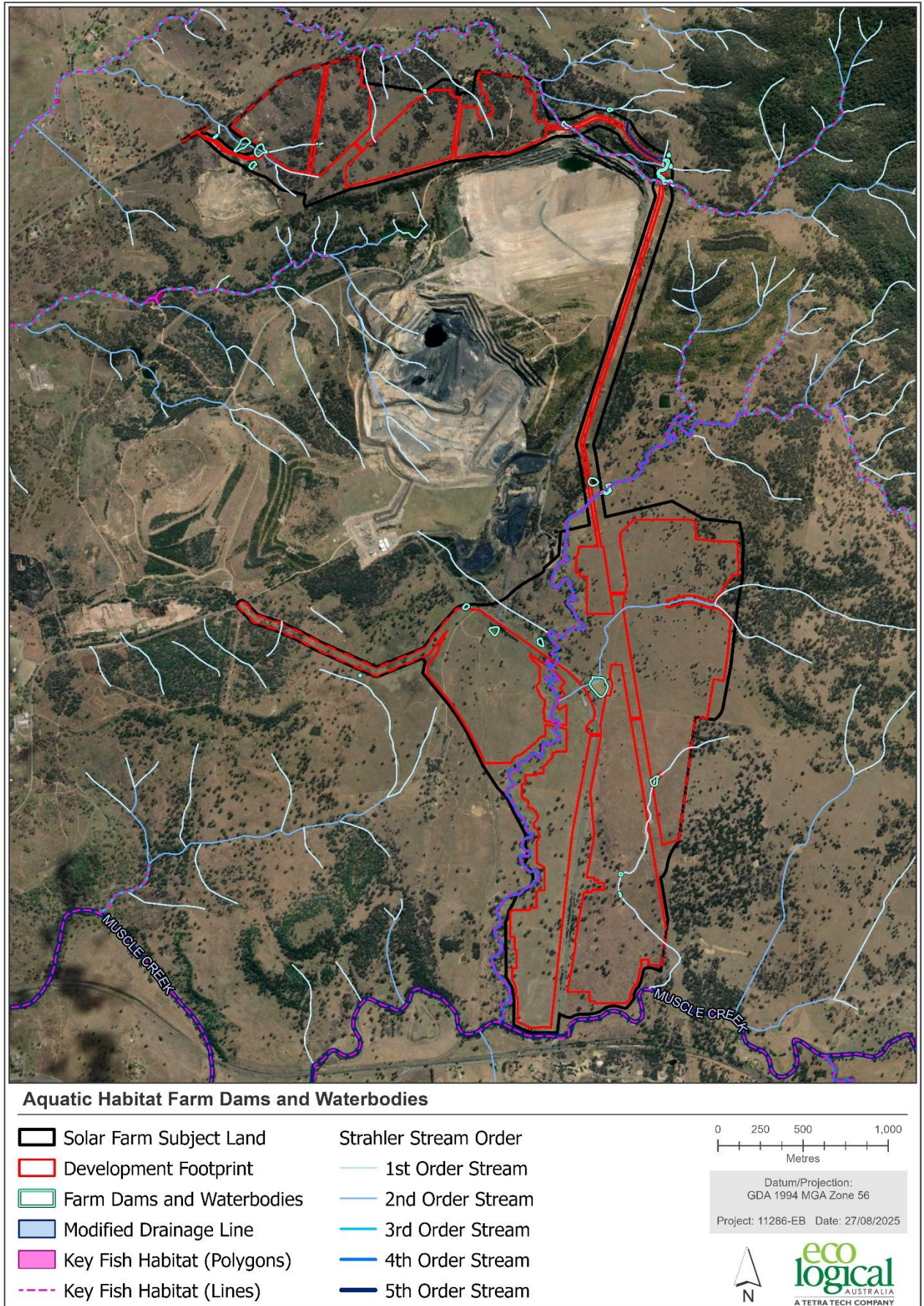


Figure 7: Aquatic habitat, farm dams and waterbodies

4.5. Project layout and associated biodiversity footprints

4.5.1. Subject land and Development Footprint

The Subject land associated with the Project is approximately 482 ha in size, and as discussed in Section 4.1, is comprised of two sections, a Southern portion and Northern Portion. The Development Footprint is contained within the Subject land and comprises approximately 316 ha of native woodlands and degraded native grasslands.

The Southern portion of the Development Footprint would hold a large solar array area (~181 ha), as well as the BESS, switchyard and the proposed transmission connection and would be accessed via Muscle Creek Road to the south. The Northern portion of the Development Footprint is proposed to hold a solar array area (~48ha), located to the north of the existing Muswellbrook Coal Company (MCC) open cut mine, and would be accessed via Sandy Creek Road.

These two areas would be connected via an overhead line, running adjacent to an existing transmission line (Figure 8).

4.5.2. Proposed Idemitsu Biodiversity Stewardship Agreement sites

In tandem with the Muswellbrook Solar Farm Project, Idemitsu Renewable Developments Australia (Idemitsu) requested a review of their owned lands for suitable areas for potential Biodiversity Stewardship Agreement (BSA) sites. As part of this review, two parcels of land, adjacent to the Southern portion and Northern portion of the Development Footprint, were identified. These two proposed BSA sites are presented in Figure 8.

Since 2022, these two sites have been surveyed extensively and are in the final stages of review.

Muscle Creek BSA site is approximately 278 ha and occurs directly to the west of the Development Footprint. Bells Mountain BSA site is approximately 388 ha and located to the north and north-east of the Development Footprint.

Both sites comprise a similar suite of PCTs to that found within the Development Footprint, with a high proportion of these PCTs conforming to the EEC Central Hunter Grey Box – Ironbark Woodland. A small proportion of Muscle Creek BSA site conforms to the CEEC Box Gum Woodland.

Comprehensive fauna surveys completed have identified a similar suite of Species credit species as that identified by the Project, including Squirrel Glider, Brush-tailed Phascogale, Southern Myotis, Large-eared Pied Bat and the Hunter Valley Delma.

Both sites comprise similar habitat features to that identified across the Development Footprint, including hollow-bearing trees, logs, rocks, grass tussocks, dams and waterways.

4.5.3. Additional and Appropriate Measures site

The proposed Additional and Appropriate Measures (AAMs) area (hereafter referred to as the AAMs area) is presented in Figure 8. The AAMs area is located north of Muscle Creek Road in Muswellbrook and is currently owned by Idemitsu.

This AAMs area is 33 ha in size and encompasses portions of the 4th Order Strahler Stream that runs adjacent to the Project and the proposed Idemitsu Muscle Creek Biodiversity Stewardship Agreement (BSA) Site.

This AAMs area has been set aside in order to meet Condition B14 “maintaining and improving the condition and extent of PCT 281 (provided all relevant approvals are in place), including regular

reporting on the effectiveness of these measures to BCS, in accordance with the applicant's letter dated 25 June 2024".

A separate AAMs Restoration Plan will be developed specifically relating to the biodiversity values present within this AAMs area and the requirements of "maintaining and improving the condition and extent of PCT 281". This Plan will be appended to this BMP.

Whilst it is considered likely that management of the surrounding lands within the Subject land and Development Footprint will overlap with this area, the management and intensity of actions proposed, and to be developed in the AAMs Restoration Plan, for this area will be more intensive than that proposed elsewhere.

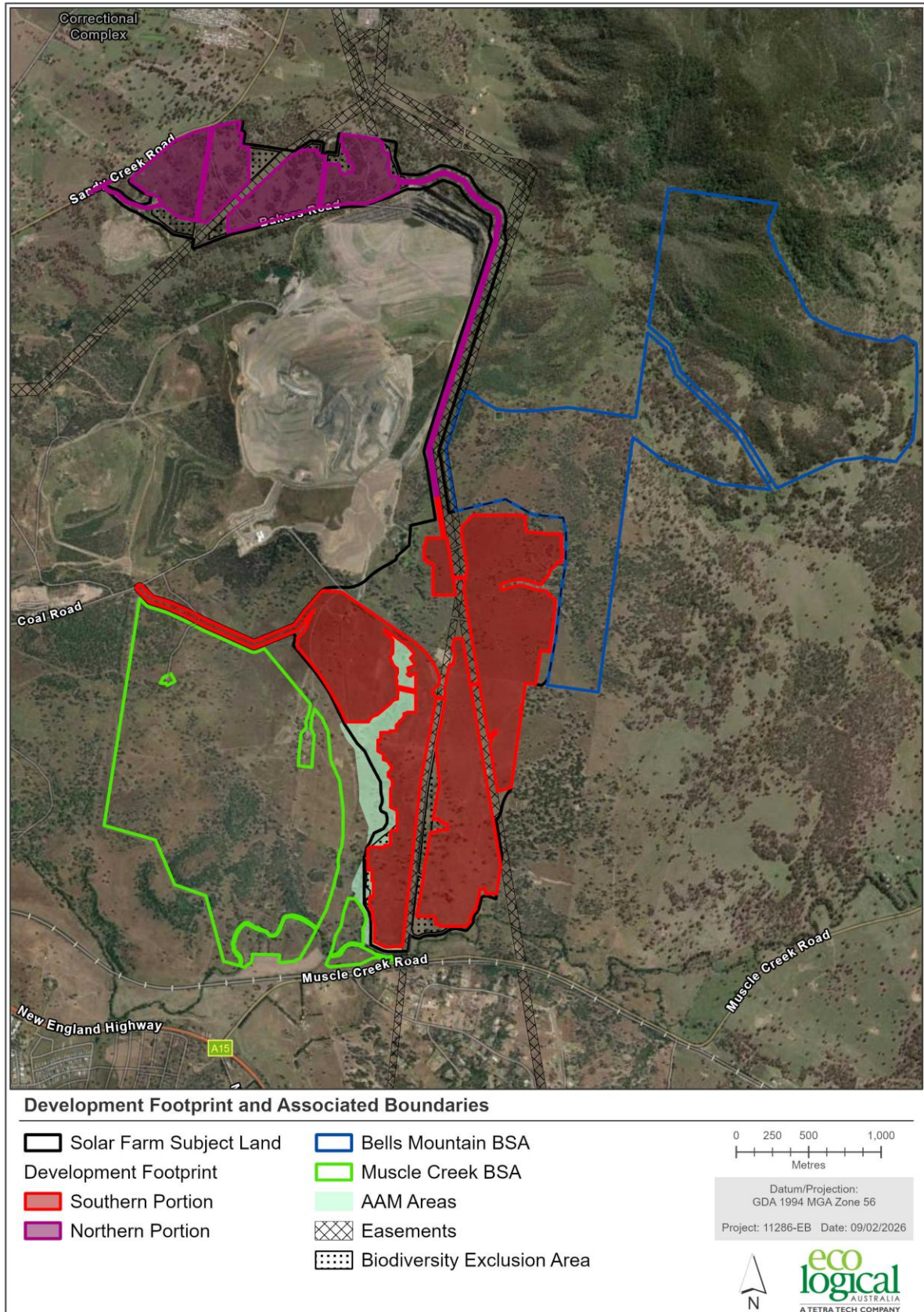


Figure 8: Development footprint and associated boundaries

4.6. Management Zones and relocation sites

Biodiversity 'Management Zones' (MZs) have been identified within the Subject land, with the goal of maintaining and enhancing the remnant vegetation within these areas and utilising these areas to provide habitat and species relocation opportunities for local flora and fauna displaced by the construction and operation of the Solar Farm.

Supplementary relocation sites have been identified, being two proposed Idemitsu BSA sites and the AAMs area. Whilst these are not MZs for the purposes of this BMP, they are identified and discussed, where relevant throughout this BMP for their potential use as relocation sites for both displaced fauna and fauna habitat.

The management objective for each MZ and associated supplementary relocation sites are outlined in Table 15 and presented in Figure 9.

Table 15: Management Zones, AAMs area and proposed Idemitsu BSA sites

MZ	Location	Management items	Management objective	Management Actions	Monitoring
Development Footprint					
1	Development Footprint – Southern Portion	- Weeds - Erosion and sediment control - Pest species	To manage and retain biodiversity values within the operational solar farm	Clear vegetation as necessary for placement of infrastructure (solar panel installation, access roads and associated infrastructure).	Annual inspections conducted to evaluate the effectiveness of management measures.
2	Development Footprint – Northern Portion	- Weeds - Erosion and sediment control - Pest species - Translocated <i>Diuris tricolor</i>	To manage and retain biodiversity values within the operational solar farm	Clear vegetation as necessary for placement of infrastructure (solar panel installation, access roads and associated infrastructure). Develop a <i>Diuris tricolor</i> translocation plan prior to commencement of the Northern portion of the Project.	Annual inspections conducted to evaluate the effectiveness of management measures.
Subject land					
3a	Northern Perimeter areas	- Weeds - Pest species - Replacement hollows <i>Diuris tricolor</i> translocation receiving areas	To manage biodiversity values within the Subject land	Weed management (refer to Section 6.11). Removal of pests (refer to Section 6.12). Fauna habitat relocation (refer to Section 6.7) Management and monitoring of translocation areas in accordance with a <i>Diuris tricolor</i> translocation plan, to be developed prior to commencement of the Northern portion of the Project.	Monitoring of pests and weeds as per Section 7.1 Monitoring of replacement hollows as per Section 7.1.1 Monitoring of translocation areas in accordance with a <i>Diuris tricolor</i> translocation plan, to be developed prior to commencement of the Northern portion of the Project.
3b	Southern Perimeter areas surrounding panel arrays and easements	- Weeds - Pest species - Replacement hollows	To manage biodiversity values within the Subject land	Weed management (refer to Section 6.11). Removal of pests (refer to Section 6.12). Fauna habitat relocation (refer to Section 6.7)	Monitoring of pests and weeds as per Section 7.1 Monitoring of replacement hollows as per Section 7.1.1

MZ	Location	Management items	Management objective	Management Actions	Monitoring
3c	Southern triangle	- Weeds - Pest species - Replacement hollows	To manage biodiversity values within the Subject land	Weed management (refer to Section 6.11). Removal of pests (refer to Section 6.12). Fauna habitat relocation (refer to Section 6.7)	Monitoring of pests and weeds as per Section 7.1 Monitoring of replacement hollows as per Section 7.1.1
Supplementary proposed relocation sites					
N/A	AAMs area	- Weeds - Erosion and sediment control - Pest species - Exclusion of stock at all times - Replacement hollows - Restoration plantings in line with species associated with PCT 281	To improve biodiversity values with specific objectives being the enhancement of Box Gum Woodland in accordance with the AAMs objectives and COA B14.	To be developed as part of the AAMs Restoration Plan.	To be developed as part of the AAMs Restoration Plan. Likely to include similar monitoring requirements as per the MZs including: Monitoring of pests and weeds as per Section 7.1 Monitoring of replacement hollows as per Section 7.1.1
N/A	Idemitsu proposed Muscle Creek BSA site	N/A	To improve biodiversity values as per the requirements of a BSA.	Completed as part of the Management Action Plan (MAP) developed for the BSA site.	Monitoring completed as part of the Management Action Plan (MAP) developed for the BSA site. Monitoring of replacement hollows as per Section 7.1.1
N/A	Idemitsu proposed Bells Mountain BSA site	N/A	To improve biodiversity values as per the requirements of a BSA.	Completed as part of the Management Action Plan (MAP) developed for the BSA site.	Monitoring completed as part of the Management Action Plan (MAP) developed for the BSA site. Monitoring of replacement hollows as per Section 7.1.1

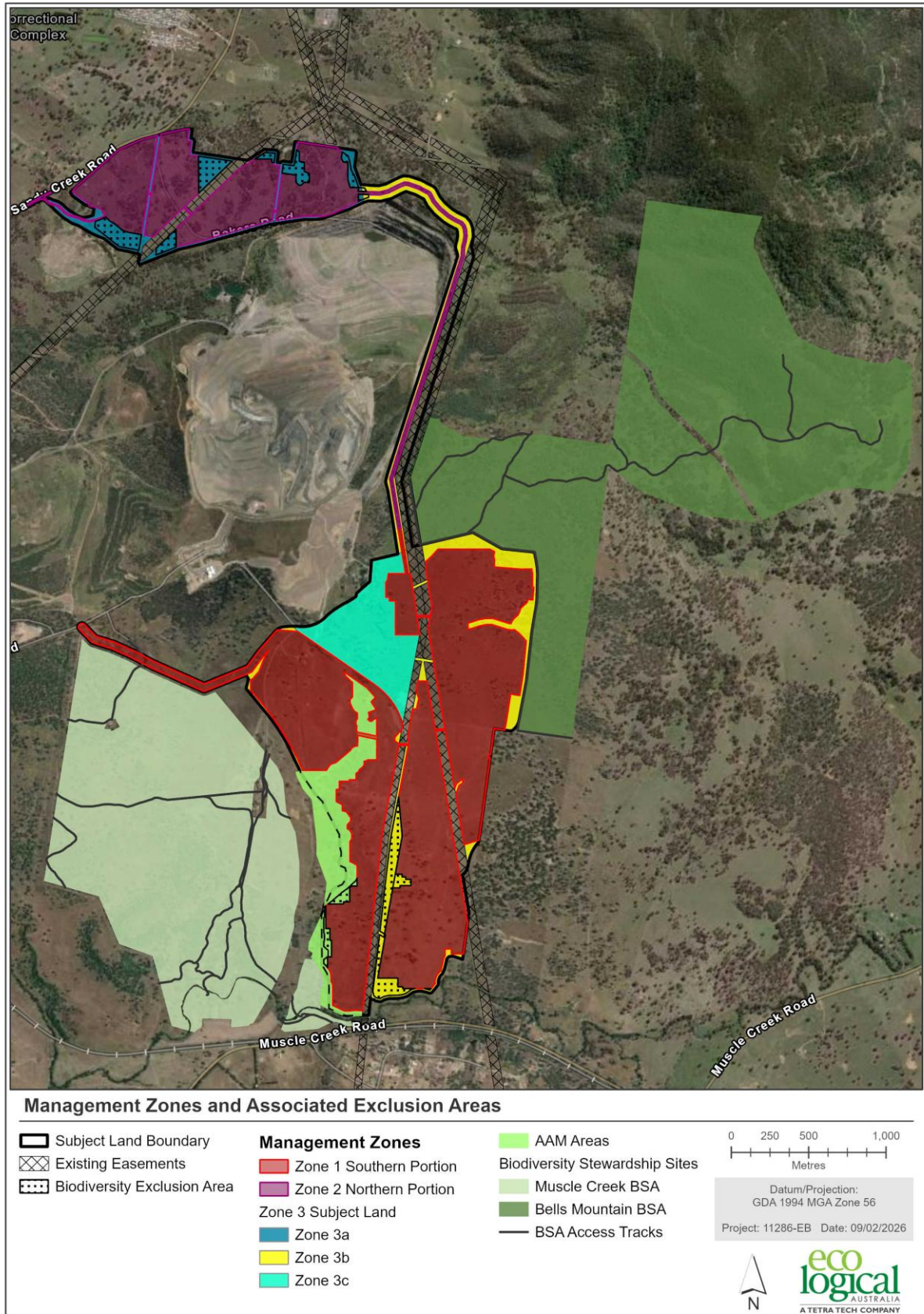


Figure 9: Management Zones, Exclusion zones, AAMs Area and proposed Idemitsu BSA sites

5. Environmental Aspects and Impacts

5.1. Project Activities

The construction and operational phases of the Project have the potential to impact biodiversity values within the Development footprint which cannot be avoided. This would occur through direct and indirect impacts. Direct impacts to biodiversity values include clearing of native vegetation, clearing of suitable habitat for threatened and protected flora and fauna species, and the installation of infrastructure.

Indirect impacts to biodiversity values include soil and water contamination, creation of barriers to fauna movement or the generation of excessive dust, light or noise upon the surrounding environment i.e. offsite.

Table 16 details the type, frequency, intensity, duration, and consequence of the direct and indirect impacts to biodiversity values that may occur due to the Project.

Table 16: Direct and Indirect Impacts to biodiversity values due to the Project

Nature of Impact	Extent	Frequency	Duration and Timing	Potential Consequence
Direct Impacts				
Habitat clearance for permanent and temporary construction facilities	318 ha – Solar Farm Development Footprint	One-off	Construction Phase: Longterm	• Direct loss of native flora and fauna habitat. • Potential over-clearing of habitat outside the Development Footprint. • Injury and mortality of fauna during clearing of fauna habitat and habitat trees • Disturbance to stags, fallen timber, grassland and bush rock.
Displacement of resident fauna	Unknown	Irregular	Construction and Operational Phases: Longterm	• Direct loss of native fauna. • Decline in local fauna populations.
Injury or death of fauna	Unknown	One-off	Site establishment and Construction Phase: Short term	• Direct loss of native fauna. • Decline in local fauna populations.
Removal of habitat features e.g. hollow-bearing trees (HBTs)	Unknown	One-off	Site establishment and Construction Phase: Longterm	• Direct loss of native fauna habitat. • Injury and mortality of fauna during clearing of habitat features.
Bush rock removal and disturbance	Surface rock within Development Footprint (Northern portion of site only)	One-off	Site establishment and Construction Phase: Longterm	• Direct loss of native fauna habitat. • Injury and mortality of fauna during clearing of habitat features.
Shading by solar infrastructure	Refer to Figure 2	On-going	Operational Phase: Longterm.	• Modification of native fauna and flora habitat.
Existence of permanent solar infrastructure	Refer to Figure 2	On-going	Operational Phase: Longterm	• Modification of native fauna and flora habitat. • potential for reduced fauna movements across landscape.
Indirect Impacts				
Inadvertent impacts on adjacent habitat or vegetation	Unknown	Rare	Construction Phase: Short term	• Direct loss of native flora and fauna habitat. • Injury and mortality of fauna during clearing of fauna habitat and habitat trees. • Disturbance to stags, fallen timber, and bush rock. • Increased edge effects.
Reduced viability of adjacent	Unknown	Constant	Operational Phase: Longterm	• Degradation of native vegetation including TEC areas

Nature of Impact	Extent	Frequency	Duration and Timing	Potential Consequence
habitat due to edge effects				• Loss of native flora and fauna habitat.
Reduced viability of adjacent habitat due to noise, dust or light spill	Unknown	Rare	Construction Phase: Short term	• Loss of foraging habitat.
Transport of weeds and pathogens from the Development Footprint to adjacent vegetation	Unknown	Irregular	Construction and Operational Phases: Longterm	• Degradation of native vegetation including TEC areas • Loss of native flora and fauna habitat.
Increased risk of starvation, exposure and loss of shade or shelter	Unknown	Constant	Construction and Operational Phases: Longterm	• Loss of foraging habitat.
Loss of breeding habitats	Unknown	Constant	Construction Phase: Longterm	• Loss of breeding habitat.
Increased soil salinity	Unknown	Irregular	Construction Phase: Longterm	• Degradation of native vegetation including TEC areas

6. Management and Mitigation Measures

6.1. Overview

Specific measures and requirements to meet the objectives of this BMP and to address impacts on biodiversity are outlined in Table 17. This table outlines the biodiversity mitigation and management measures for the Project with each aspect of the table given a definition as per the below.

- The 'Source': where the biodiversity mitigation and/or management measure has been recommended for the Project.
- The 'ID': a unique identifier for each mitigation strategy identified in this BMP.
- The 'Aspect': a high-level summary of what biodiversity matter is being mitigated.
- The 'Mitigation / Management Measure': the actions that will be undertaken to reduce the biodiversity impacts of the Project, including a summary of any proposed techniques that will be used to implement the biodiversity mitigation and/or management measures.
- The 'Project Phase': identifies what part of the Project phase the biodiversity mitigation and/or management measure will apply. A biodiversity mitigation and/or management measure can apply to multiple Project phases.
- The 'Responsible Party': identifies which group is responsible for implementing the applicable biodiversity mitigation and/or management measure. Numbers 1–7 have been used to represent which Party is responsible, as follows:
 1. Site Manager
 2. Environmental Manager
 3. Construction Manager (or delegate)
 4. Operation Manager
 5. Operation Supervisor
 6. Contract Ecologist (included in 'Personnel Responsible' column: Table 17)
 7. Employees and Contractors (included in 'Personnel Responsible' column: Table 17)

Note: for some mitigation measures, there is more than one 'Responsible Party' and 'Personnel Responsible'.

- The 'Timing/Frequency': describes when a biodiversity mitigation and/or management measure is to be implemented.
- The 'Implementation Action': describes the procedures that show how the proposed techniques for the biodiversity mitigation and/or management measures are practically being done within the Development Footprint. These procedures are described within Section 6.3 through to 6.14.
- The 'Compliance Record': identifies the record that will be used to maintain compliance with the applicable biodiversity mitigation and/or management measure.

Table 17: Biodiversity Mitigation and Management Measures for the Project

Source	ID	Aspect	Mitigation / Management Measure	Project Phase				Responsible Party							Timing/ Frequency
				Early Works Construction	Main Works Construction	Operational	Decommissioning	Site Manager (1)	Environment Manager (2)	Construction Manager (3)	Operation Manager (4)	Operation Supervisor (5)	Contract Ecologist (6)	Employees & Contractors (7)	
SSD 46543209 Development Consent	BMP-01	Biodiversity (general)	Prepare a BMP in accordance with Condition B14.	✓	✓	✓	✓	✓							Prior to any development which could have direct or indirect impacts on biodiversity values
SSD 46543209 Development Consent	BMP-02	Biodiversity (general)	Implement this BMP in accordance with Condition B14.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Prior to any development which could have direct or indirect impacts on biodiversity values
BDAR (ELA 2024)	BMP-03	Biodiversity (fauna)	Timing works to avoid critical life cycle events such as breeding or nursing	✓	✓			✓	✓	✓					During clearing works
BDAR (ELA 2024)	BMP-04	Biodiversity (fauna)	Instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecological or licensed wildlife handler during clearing events	✓	✓			✓	✓	✓			✓		During clearing works
BDAR (ELA 2024)	BMP-05	Biodiversity (fauna)	Relocate habitat features (fallen timber, hollow logs) from within the Development Footprint	✓	✓								✓		During and following clearing works
BDAR (ELA 2024)	BMP-06	Biodiversity (general)	Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance	✓	✓				✓	✓			✓		Prior to and during construction works
BDAR (ELA 2024)	BMP-07	Biodiversity (general)	Sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment	✓	✓				✓	✓					During clearing and construction
BDAR (ELA 2024)	BMP-08	Biodiversity (fauna)	Noise barriers or daily/seasonal timing of construction and operational activities to reduce impacts of noise	✓	✓	✓	✓			✓	✓	✓			During clearing, construction and decommissioning
BDAR (ELA 2024)	BMP-09	Biodiversity (fauna)	Light shields or daily/seasonal timing of construction and operational activities to reduce impacts of light spill	✓	✓	✓	✓			✓	✓	✓			During clearing, construction and decommissioning
BDAR (ELA 2024)	BMP-10	Biodiversity (general)	Adaptive dust monitoring programs to control air quality	✓	✓	✓	✓			✓	✓	✓			During clearing, construction and decommissioning
BDAR (ELA 2024)	BMP-11	Biodiversity (general)	Temporary fencing to protect significant environmental features such as riparian zones	✓	✓		✓		✓	✓	✓	✓	✓		During clearing, construction and decommissioning
BDAR (ELA 2024)	BMP-12	Biodiversity (flora)	Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	✓	✓	✓	✓		✓	✓	✓	✓			During clearing, construction and decommissioning
BDAR (ELA 2024)	BMP-13	Biodiversity (general)	Staff training and site briefing to communicate environmental features to be protected and measures to be implemented	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	During all stages of the Project
BDAR (ELA 2024)	BMP-14	Biodiversity (flora)	Translocation – <i>Diuris tricolor</i> Measures to mitigate direct and indirect impacts on pine donkey orchid, including translocation for the individuals impacted and ongoing fencing to exclude livestock grazing from the remaining individuals.	✓					✓	✓			✓		Prior to construction of the Northern portion of the Project.

6.2. Environmental Management Procedures

The construction and operational phases of the Project have the potential to impact biodiversity values within the Development Footprint which cannot be avoided. This would occur through direct and indirect impacts.

Direct impacts to biodiversity values include clearing of native vegetation; clearing of suitable habitat for threatened and protected flora and fauna species; and the installation of infrastructure. Indirect impacts to biodiversity values include soil and water contamination; creation of barriers to fauna movement; or the generation of excessive dust, light or noise upon the surrounding environment (i.e. off-site).

This section summarises the environmental management procedures that will be implemented to manage, and where possible further minimise, the biodiversity impacts of the Project during the construction, operation and decommissioning phases. The specific procedures associated with each phase are summarised in Figure 10 and outlined in detail in Sections 6.3 to 6.14 below.

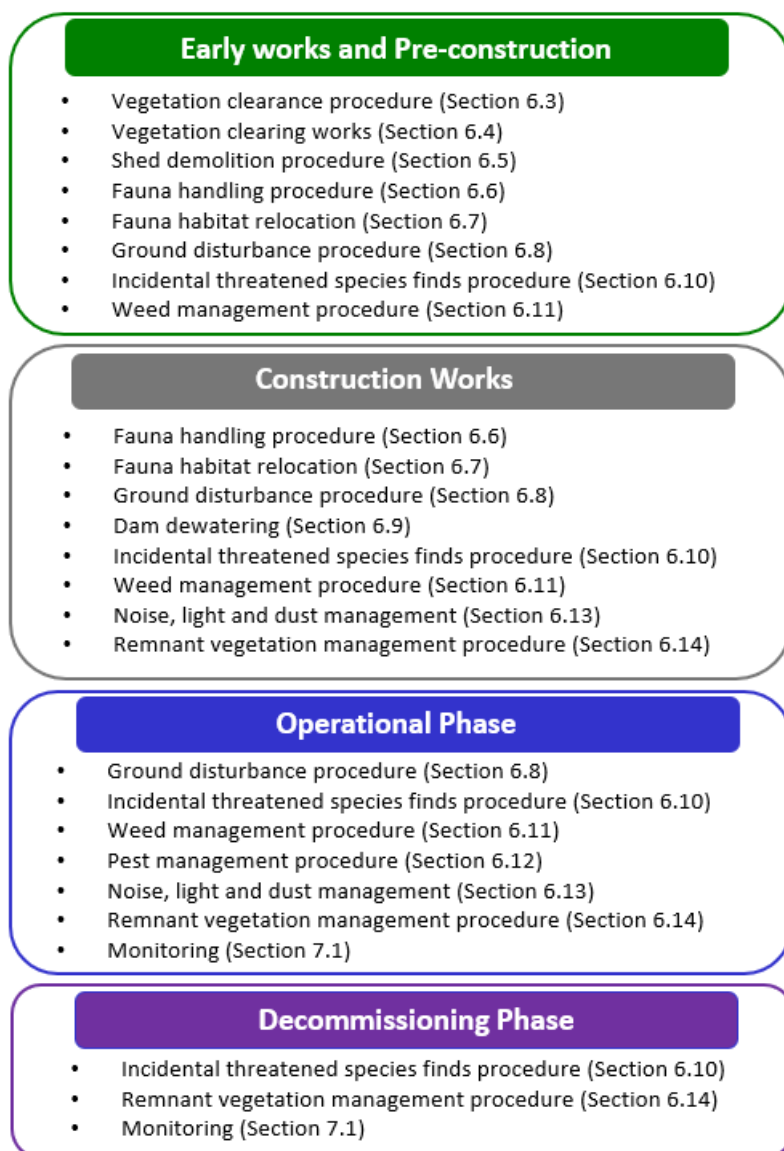


Figure 10: Environmental management procedures

6.3. Vegetation Clearance Procedure

All vegetation clearance procedures and activities will be managed and implemented by the Construction Manager in collaboration with the Contract Ecologist during the early works and main work construction phases of the Project. For the purposes of this BMP, vegetation encompasses both Woodland (trees) and Grassland within the Subject land.

In accordance with Condition B11 of the Development Consent and Condition A1 (a) and (b) of the EPBC Approval, no native vegetation or fauna habitat located outside the approved disturbance areas described in the EIS will be cleared.

In accordance with the EPBC Act Condition 7, the approval holder must notify the department electronically of the date of commencement of clearing, within 5 business days following commencement of clearing.

6.3.1. Project clearing footprint

Vegetation clearance will only be undertaken in the areas identified within the Development Footprint in the BDAR (ELA 2024) and EIS (2023). Table 18 specifies the total amount of clearance that is permitted by the Project.

Prior to any vegetation clearing, the Construction Manager will identify clearance boundaries for the Development Footprint. Clearance boundaries will be clearly demarcated, either by permanent boundary fencing or temporary construction flagging to ensure that all areas are visibly marked and easily identifiable (Figure 11). A survey team will be deployed to conduct an assessment of the Development Footprint boundaries (utilising an accurate GIS), and GIS to both inform the clearing process and accurately record the boundaries.

Table 18: Clearing limits permitted by the Development Consent

PCT number and name	Condition	Clearing Limits (ha)
PCT 1691: Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	Moderate	1
	Low	9.7
	Degraded Native Pasture	114.5
PCT 281: Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	Low	7.5
	DNG-regeneration	48.5
	DNG-low	57
PCT 1603: Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter	Moderate	24.3
	Degraded Native Grassland	47
PCT 1607: Blakely's Red Gum - Narrow-leaved Ironbark - Rough-barked Apple shrubby woodland of the upper Hunter	Moderate	1.1

6.3.2. Exclusion zones

An exclusion zone is a designated 'no-go' area that is clearly identified to prevent damage to native vegetation and fauna habitats; minimise the distribution of weeds and disease; and reduce the likelihood of fauna entering the construction areas.

To protect vegetation and fauna habitat that is outside of the approved disturbance areas, including any vegetation in the Subject land and beyond the Subject land, suitable fencing i.e. security fencing, boundary fencing etc will be erected around the perimeter of the Development Footprint as indicated in Figure 9, and signage will be used to safeguard areas outside of this area designated for avoidance. The management zones presented in Figure 9 all occur outside of the established clearing boundaries of the Development Footprint and are not to be impacted.

The following best practise procedures will be implemented:

- best practice 'construction' fencing will be used in conjunction with 'No Go Zone' signage at the interface between the development footprint and all retained exclusion zone areas,
- construction flagging will be used internally in some areas, e.g. roads and existing easements, and include 'No Go Zone' signage where appropriate,
- all fencing will be checked regularly for damage and maintained for the duration of the project.

Vegetation clearance will only be undertaken in approved areas. The locations and importance of these 'Exclusion Zones' will be communicated to construction and operational site staff (including equipment operators) through site inductions, toolbox talks and targeted training prior to any work in the area.

Prior to the commencement of the Northern portion of the Project, areas in which *Diuris tricolor* occur within the Subject land will be clearly demarcated prior to any translocation disturbance works, and specifically communicated to construction and operational site staff (including equipment operators).

The exact fencing type will be determined based on the activity being undertaken, however, it is anticipated that permanent fencing will be established at the interface of the Development Footprint and the retained land to prevent ongoing impacts to these areas during the operational stage of the development.

Best practise temporary construction flagging will be used along internal Development Footprint boundaries (Figure 11) to ensure clearing limits are enforced during clearing activities and to prevent entry into the adjacent biodiversity exclusion areas, access tracks and easements (Figure 9).

Regular checks of boundary fencing and temporary flagging will be undertaken by Construction Manager (or delegate) to ensure that it is appropriately maintained at all times.

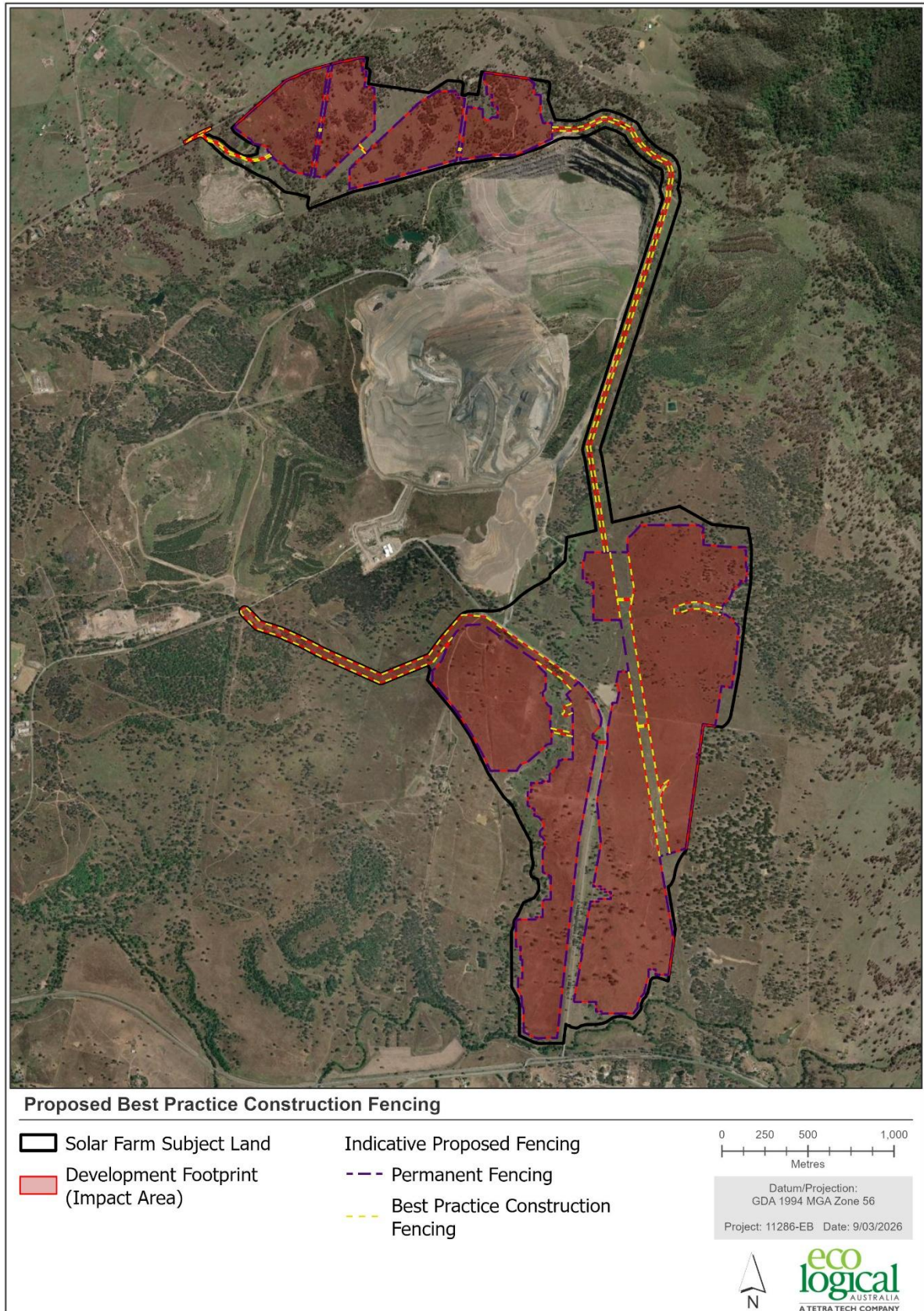


Figure 11: Proposed best practise fencing of the Development Footprint

6.3.3. Vegetation Disturbance Procedure

Prior to vegetation clearing occurring a Vegetation Disturbance procedure is to be developed by the Construction Manager in consultation with the Contract Ecologist. The Vegetation Disturbance procedure and the associated clearance survey procedures are designed to:

- Provide a hold-point to ensure the Project is being undertaken in accordance with the approved clearance limits for the Development Footprint.
- Mitigate the impact of the Project on TECs, flora, fauna, and their habitat by reducing impacts to native vegetation from clearing activities.

The following is to be completed as part of this process:

- Identify the location that is planned for clearing.
- Confirm that the clearing activities are within the approved clearance boundaries for the Project i.e. the Development Footprint.
- To identify timing constraints relevant to threatened species when undertaking this work refer to Section 6.4.1). The procedures presented in Section 6.4.2 through to Section 6.4.8, and Section 6.4 and Section 6.6 and Section 6.8 are to be understood and implemented by those undertaking clearing activities.

Where vegetation is to be cleared, the Construction Manager, in consultation with the Contract Ecologist, is responsible for ensuring the following measures are implemented:

- The Vegetation Disturbance procedure described above has been implemented.
- The procedures presented in Section 6.4.2 through to Section 6.4.8, and Section 6.4 and Section 6.6 and Section 6.8 have been communicated to those undertaking clearing activities and are being implemented.
- Photos, as-built records, and inspection records which documents the above are held for the life of the Project.

6.4. Vegetation clearance works

To minimise risk of injury and death to native fauna, works involving clearing of woodland (treed) vegetation must follow the procedure outlined below. The removal of any habitat trees is to be supervised by two (2) ecologists and two (2) climbing arborists at all times.

For works involving clearing of grassland vegetation please refer to Section 6.8 Ground Disturbance procedure.

6.4.1. Timing of vegetation clearing

Existing remnant native vegetation, including hollow bearing trees, are important habitat features for a variety of native fauna, including threatened species identified as occurring within the Development Footprint.

As per BMP-03 (Table 17), where possible, undertake clearing works outside of known seasonal breeding events for threatened fauna species known to inhabit the locality including Squirrel Glider, Brush-tailed Phascogale, Southern Myotis and Hunter Valley Delma. The following information is relevant to these threatened fauna species.

The main breeding season for Squirrel Glider and Brush-tailed Phascogale are dependent on foraging resources, however, Squirrel Glider breeding generally occurs from early Winter through to Spring, and Brush-tailed Phascogale is generally the winter period, therefore the months of June through to October should be avoided.

In NSW, Southern Myotis females are considered to have one young each year usually in November or December (TBDC 2025).

Updated information for the relatively newly listed Hunter Valley Delma (*Delma vescolineata*) from the TBDC (2025) states:

“Adult females in other Delma species are thought to lay up to two eggs annually in December–January under rocks and in soil cavities. It is likely that Delma vescolineata displays similar behaviour”.

Therefore, breeding for this species is considered to occur between December – January.

Across each of these species, the key months to be avoided, where possible, for both hollow-dependent fauna and grassland dependent fauna are June through to January as outlined in Table 19.

Table 19: Seasonal breeding and torpor

Scientific name	Common name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Southern Myotis	<i>Myotis macropus</i>												
Hunter Valley Delma	<i>Delma vescolineata</i>												
Squirrel Glider	<i>Petaurus norfolcensis</i>												
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>												

* Grey cells indicate the seasonal breeding and torpor seasons to avoid, where possible.

6.4.2. Pre-clearance surveys

All vegetation on site should be surveyed prior to clearance to identify potential habitat features. Habitat features may include hollow bearing trees and stags, nests and dreys, trees with decorticated bark, and fallen logs.

A site walk-over will be required to confirm the locations of biodiversity features identified in the BDAR (ELA 2024) and recording any additional features/relevant observations. This includes identifying any significant weed infestation areas, with this information used to inform the preparation of a weed management plan as per Section 6.11.2.

Pre-clearance surveys should be undertaken a minimum of three weeks, and ideally 4-5 weeks prior to proposed clearing activities.

All habitat features identified are to be marked spatially using a handheld GPS (accuracy of ± 5 m) and a pink spray painted 'H' and flagging tape on the habitat feature.

For each habitat feature, the following should be recorded:

- Type of habitat feature (tree with hollow, tree with nest, log, log pile or rock pile)
- Location using a handheld GPS
- Tree species, approximate height and Diameter at Breast height (DBH) (useful for re-identifying trees)
- Type of hollows (e.g. branch, limb, trunk), number of each hollow type, height of hollow above ground level and estimated diameter of hollow entrance (<5 cm, 5 – 10 cm, 10 – 20 cm, 20 – 30 and >30 cm)
- Suitability for retention and relocation purposes
- Fauna observed, or signs of use
- Potential hazards (e.g. bee hive).

6.4.3. Pre-clearance survey report

A pre-clearance survey report will be prepared by the Project Ecologist and submitted to the Environment Manager and Construction Manager prior to the commencement of clearing. The pre-clearance survey report will contain the following:

- All of the relevant information recorded during the pre-clearance survey.
- Recommendations to reduce impacts on fauna including staged habitat removal, sequencing, timing or clearing methods may be included (if relevant and feasible).
- Record any identified usage (species presence) or signs of usage of HBTs will be included in the report, which will be used by Arborists as a guide to what species may be encountered, when they come to assessing each tree prior to clearing.
- Confirm the location(s) of pre-determined locations identified for the release of any displaced fauna encountered on site (refer to Section 6.7)

6.4.4. Final pre-clearing checks

Final pre-clearing checks should be undertaken 24 hours (and no more than 48 hours) prior to clearing commencing. As this Project will require multiple days of clearing, pre-clearing checks should ideally be conducted daily so that checks are undertaken as close as possible to clearing.

Surveys should be repeated should clearing be delayed for longer than one week (e.g. due to rain).

6.4.5. Two-stage vegetation / tree clearing guidelines

Tree clearing will not be conducted in temperatures above 35 degrees Celsius in the interests of animal welfare. Clearing will be conducted sequentially and directionally towards areas of refuge to prevent creating vegetation islands.

6.4.6. Stage 1: Clearance of non-habitat features

Once a pre-clearance survey has been undertaken and all habitat features have been spatially and physically marked, treed vegetation not identified during pre-clearance surveys as potential fauna habitat can be cleared. This may be done without supervision by a qualified ecologist or fauna spotter-catcher, however, should be verbally agreed with the Contract Ecologist prior to commencing. Initial clearance of trees not comprising habitat features acts to isolate habitat features, promoting any inhabiting fauna to self-relocate before clearance of habitat features.

Operators should take care when clearing all vegetation as there is always a small likelihood that fauna may occur in habitat not marked. If fauna is observed during this stage, operators should stop operations and disturbance in the area, allowing fauna to self-relocate. If fauna will not or cannot self-relocate e.g. is injured, the Contract Ecologist (or on-site environmental manager) should be called immediately who will advise on the appropriate person (wildlife carer, ecologist or veterinarian) to attend to the fauna.

6.4.7. Stage 2: Clearance of habitat features

All habitat features identified and marked during the pre-clearance survey should be removed under the supervision of qualified Contract Ecologists (proposed x2 Ecologists). Prior to clearance (at least 24 hours prior), a local wildlife organisation should be notified that injured animals may be captured and that these animals may need care.

All personnel working on site during vegetation clearing should be briefed about the possible fauna present at the time of clearing, and what procedures should be undertaken in the event of an animal being injured or disturbed. Machinery operators and the supervising ecologist should maintain contact throughout clearance works via a handheld UHF radio.

Two tree clearing methods have been outlined here and may be appropriate based on the specifications of the habitat tree to be felled. The method chosen, or a suitable combination of each method can be used, based on the size and type/number of habitat features identified within each habitat tree (where it is safe to do so) and at the discretion of the Contract Ecologist and Arborist/clearing contractor.

A suitably trained and experienced climbing Arborist(s) will be required on-site as part of the tree felling process, to ensure the safety of fauna to the greatest extent possible.

6.4.7.1. Method 1: entire tree felled

- The operator will be asked to tap gently on each tree twice with the bucket of the excavator, with approximately a minute between each tap. Tapping and shaking the tree can help to create disturbance and encourage species to relocate.
- Where possible, the tree should be felled in the direction opposite to the side on which the hollow or nest occurs, to attempt to minimise the impact of the fall, and avoid entrapment of fauna.

- Once an additional minute has passed and no animals are observed on or near the tree, it should be felled using an excavator using the 'slow drop method'. This method involves the excavator slowly pushing the tree, slowing the fall of the tree with the excavator bucket.
- Once the tree is felled, it should be inspected on the ground for presence of fauna. Features such as large rocks or logs displaced by the fall should slowly be lifted and moved by an excavator, with the area around and under the habitat feature being inspected once moved.
- If the tree to be felled is of moderate size i.e. DBH 50cm (max) and height between 15-20m they can be cut at the base and lowered to the ground using excavators with log grapples (grabs) and chainsaw attachment. This method may not be possible for trees greater than 20m or significantly sized DBH.
- After felling, trees should be checked immediately for any potential presence of fauna in and around the tree, and if considered required, remain undisturbed on site for a period of 24 hours to allow small arboreal mammals and microbats to relocate. This should be done regardless of whether an animal is identified within the tree or not, as animals can occur in deep hollows that cannot be seen from the exterior of the tree.
- Once the 24-hour period has occurred, Arborist(s) can inspection hollows and cut suitably intact hollows into segments for salvage / relocation purposes (Section 6.7).
- The number and type of hollows is to be recorded, once each tree has been safely felled (refer to Section 6.4.8).
- Any fauna present must be transported immediately to relocation areas, or following the procedure outlined in Section 6.7.4.

Personnel and Equipment required for this method may include:

- Climbing Arborist(s)
- Ecologist(s)
- Excavator and operator
- Excavator with Grapple/chainsaw attachment and operator

6.4.7.2. Method 2: Hollows removed prior to felling

This method can be used for suitably sized trees, where hollows are removed prior to felling to retain the greatest number of hollows for salvage purposes.

- The operator will be asked to tap gently on each tree twice with the bucket of the excavator, with approximately a minute between each tap. Tapping and shaking the tree can help to create disturbance and encourage species to relocate.
- Arborist climbs trees and assesses hollows for occupation/usage
- If fauna are identified as present within the hollow, can they be safely removed by the Arborist, or can hollow be blocked and the hollow cut and lowered to the ground safely.
- After hollows have been cut and lowered to the ground, the remaining tree can be felled as per method 1 above.
- The number and type of hollows is to be recorded, once each tree has been safely felled (refer to 6.4.8).

- Any fauna present must be transported immediately to relocation areas, or following the procedure outlined in Section 6.7.4.

Personnel and Equipment required for this method may include:

- Climbing arborists
- Ecologist(s)
- Excavator and operator
- Excavator with Grapple/chainsaw attachment and operator
- Crane and operator
- An elevated work platform (EWP) / cherry picker

6.4.8. Post-clearance survey report

A post-clearance survey report will be prepared by the Contract Ecologist and submitted to the Construction Manager detailing the results of clearing works. It is suggested a draft interim post-clearance report be provided midway through the clearing works, and a final at the conclusion of clearing works.

The post-clearance survey report will contain the following:

- All of the relevant information recorded during the clearance surveys.
- Type of habitat feature (tree with hollow, tree with nest, log, log pile or rock pile)
- Location and HBT number (from the pre clearance survey plan developed in Section 6.4.2)
- Tree species, approximate height and Diameter at Breast height (DBH) (useful for re-identifying trees)
- Type of hollows (e.g. branch, limb, trunk), and number of each hollow type recorded within each HBT.
- Details of each hollow/tree and whether it is suitable for relocation purposes.
- Proposed relocation site based on MZs identified in Section 4.6.
- Provides evidence confirming that clearing was only undertaken within the approved disturbance areas as described in the EIS.

Retained hollows should be moved as soon as possible, ideally within 48 hours, from the construction area to an identified stockpile area or preferably directly to relocation areas, as identified in Section 6.7).

Regular checks of boundary fencing and temporary flagging will be undertaken by Construction Manager (or delegate) to ensure that it is appropriately maintained at all times.

6.5. Shed demolition procedure

Targeted microbat surveys have been undertaken on sheds within the Development Footprint as part of field surveys by ELA (2024) with no microbats detected within sheds. It is not expected that microbats currently roost or breed within sheds, however, pre-clearing inspections and clearing supervision will be undertaken to minimise risk of injury or death to microbats, if present.

6.5.1. Pre-clearing inspection and supervision

Pre-clearing inspections and clearing supervision is required by the Project Ecologist for demolition of sheds due to the potential presence of threatened and non-threatened microbat species.

A search of the shed to be demolished is undertaken by looking for bats or signs of bats during the daytime (bat signs include urine stains, droppings, remains, and bat fly casings, audible sounds of bat calls 'squeaking', and musty animal smells). All roost searches should use a handheld torch, headtorch and/or thermal camera. to inspect holes, cracks and crevices, and carry a handheld bat detector to locate (and identify) bats that may call.

The pre-clearing search must occur within 5 days of demolition. An additional pre-clearing search must be undertaken immediately prior to demolition.

The Project Ecologist may assess the structure for any opportunities to implement the fauna habitat relocation plan to salvage corrugated iron and timber if appropriate (specifically for Hunter Valley Delma).

6.5.2. Microbat management

If found, an assessment for the appropriate course of action will be undertaken by the Project Ecologist on a case-by-case basis. As a first preference, microbat individuals will be captured by the ecologist by hand, and released at the pre-determined fauna relocation site. If microbat individuals cannot be safely captured by hand, the ecologist may determine the appropriate course of action based on the following considerations:

- Number of microbats
- Species of microbats (if able to be determined)
- Location of microbats within the structure
- Type of structure to be demolished
- Methods of demolition that are available to be undertaken
- Feasibility or need to undertake microbat exclusion measures
- If there is high risk or uncertainty, implement incidental finds procedure (Section 6.10) and prepare a microbat management plan.

6.6. Fauna handling procedure

6.6.1. General site procedure

Should fauna be observed within the Development Footprint during vegetation clearing, construction and there is a potential risk to the animal's safety or to site personnel, the following actions should be undertaken:

- Stop all work in the vicinity of the fauna and immediately notify the Construction Manager or the Contract Ecologist.
- If the animal is identified as a threatened species, then refer to the 'Incidental Threatened Species Finds Procedure' in Section 6.10.
- If possible, allow fauna to leave the area without intervention.
- If fauna cannot or will not leave the area without intervention, the fauna are to be removed by a suitably qualified and experienced ecologist or wildlife carer with specific animal handling experience using the following method:
 - Cover larger animals with a towel or blanket and place it in a cardboard box and/or canvas bag.
 - Place smaller animals in a cotton bag, tied at the top.
 - Keep the animal in a quiet, cool, ventilated and dark location away from noisy construction activities until it can be relocated.

6.6.2. Injured Fauna procedure

Should any fauna be injured as a result of the construction activities, the following actions should be undertaken:

- Remove any threat to the animal that could cause or exacerbate an injury.
- Call the appropriate veterinary service or rescue agency (Hunter Wildlife Rescue in the Hunter region - 0418 628 483 - affiliated with WIRES – 1300 094 737) immediately and follow any advice provided by the agency.
- Once the veterinary service or rescue agency arrives at the site, they are responsible for the animal. Any decisions regarding the care of the animal will be made by the rescue agency.
- In the event the rescue agency and/or local veterinary service cannot be contacted, the injured animal will be delivered to the relevant agency as soon as practicably possible.
- At the time this BMP was prepared, the closest veterinary surgery/vet hospital was Upper Hunter Vet located at 14 Aberdeen Street Muswellbrook NSW 2333. Phone: (02) 6541 1555, Website at: <https://www.petmedical.com.au/contact-pet-medical/>
- Contain the injured fauna in order to minimise stress using towels to cover them. Gently place the animal in a holding box specifically designed for holding the species (i.e., cotton bag for microbats, mesh cage for large mammals e.g. possums, soft lined enclosure for birds or hard cage for parrots).
- Cotton pillowslips may be used to cover mammals, or mammals may be placed inside them. Pillowslips or boxes will be readily available onsite. It will be the Contractor Ecologist or Construction Manager's responsibility to place box in a quiet, safe, dark location (not in a

vehicle unless temperature is constantly monitored). Do not give the animal food or water. If there are dependent young separated from their parents, make sure they are kept warm.

- Any injuries or deaths of threatened fauna species must be reported immediately to the Construction Manager and treated as an environmental incident.

6.6.3. Fauna Handling Information

It is important to consider the following when handling fauna:

- Some animals require particular handling (e.g., venomous reptiles, raptors) and would only be handled by appropriately qualified personnel i.e., an appropriately qualified and experienced ecologist or Hunter Wildlife Rescue / WIRES representative(s).
- Any female marsupials that are identified as deceased will have pouches checked for young.
- If handling bats, the handler must be vaccinated against the Australian Bat Lyssavirus (a form of rabies).
- There are no specific handling requirements for Delma species, however, good hygiene procedures include washing of hands between handling events to minimise the potential for any transmission of disease between animals or to the handlers, using an alcohol based disinfectant that will evaporate off and will not impact the animals in any way.
- Any frog handling, if required will be carried out in accordance with the Hygiene Protocols for the Control of Diseases in Australian Frogs (DSEWPC 2011). This protocol recommends onsite hygiene precautions be carried out to minimise the transfer of disease between and within wild frog populations. Measures recommended include:
 - Thoroughly cleaning/disinfecting footwear and equipment when moving from one site to another.
 - Cleaning/disinfecting hands between collecting samples/frogs (preference would be given to using bags, rather than bare hands to handle frogs). Limiting one frog or tadpole to a bag. Bags should not be reused.

6.6.4. Vehicle interactions and strike risk

Fauna can be struck by vehicles while attempting to cross roads, resulting in injury and sometimes death. While fauna can often be unpredictable when on or near a road, the Project would undertake steps to reduce the odds of colliding with fauna while driving within the Development Footprint and travelling to and from the Project. This is particularly relevant when driving on Muscle Creek Road in the Southern portion of the Project and along the local Sandy Creek Road in the Northern portion of the Project. If wildlife is observed on or adjacent to the road, steps include:

- Reduce speed.
- Stay alert.
- Brake safely.
- Don't swerve.
- Vehicle strike risk will be managed through:
 - Education and awareness raising via site inductions and toolbox talks.
 - Enforceable speed limits within the Development Footprint (20 km/hr).

- Native fauna encountered along access tracks during construction and operation would be avoided and vehicles will not continue until the fauna has safely moved out of the path and is no longer within any potential line of danger.
- Reporting any fauna strikes from a vehicle (either within the Development Footprint or on public roads along the vehicle route) to the Construction Manager.
- If an animal has been injured by the vehicle strike, the appropriate rescue agency (Hunter Wildlife Rescue - 0418 628 483 / WIRES – 1300 094 737) or Upper Hunter Vet ((02) 6541 1555) will be contacted. If the animal hasn't survived, it will be moved to the side of the road. If fauna is identified as a kangaroo, koala, wombat or possum, their pouches would be checked for young.

6.7. Fauna Habitat Relocation

In accordance with BMP-05 (Table 17), existing hollows within HBTs removed during tree felling are to be stockpiled for relocation. Salvaged and relocated hollows will be given priority for use where it is possible to do so.

Dead wood and dead trees provide essential habitat for a wide range of native fauna and are important to the functioning of many ecosystems. Woody debris should be re-used and relocated to designated relocation areas identified within Figure 9 and as per Section 6.7.2.

As outlined in Section 4.6, the following MZs, AAMs area and proposed Idemitsu BSA areas have been identified as potential sites for the relocation of natural hollows and/or installation of nest boxes/carved hollows and CWD.

Retained hollows from the Southern portion of the Development Footprint may be relocated to:

- MZ 2b: Southern portion of the Subject land - Perimeter areas
- MZ 3c: Southern portion of the Subject land - Southern triangle
- AAMs area
- Idemitsu proposed Muscle Creek BSA site
- Idemitsu proposed Bells Mountain BSA site

Retained hollows from the Northern portion of the Development Footprint may be relocated to:

- MZ 3a: Northern portion of the Subject land
- Idemitsu proposed Bells Mountain BSA site

Positive identification of tree hollows from ground level can be very difficult, even for experienced ecologists. Hollows that were identified during pre-clearance surveys at ground level as having potential hollows, but are assessed as not containing fauna habitat (e.g. formed hollow) once inspected from the ground, are not required to be retained.

Potential hollows that are not suitable for relocation should be documented with photographs and provided in the post-clearing report.

6.7.1. Alternative hollow offsets

As discussed above, relocated hollows will be used as a preference where it is possible to do so. The type of hollow for reuse will depend on the condition and size of the limb in which the hollow occurs. Due to the structural integrity/age of hollows within large old trees, there is potential that natural

hollows may not be easily removed for relocation. It also may not be feasible for climbing arborists to manoeuvre very large hollows, with significant weight into existing host trees. Where relocated hollows are not feasible, alternative solutions can be utilised including the use of HollowHog (a unique wood carving tool that has been specifically designed to create habitat for hollow dependent wildlife) or through erection of high-quality nesting boxes (such as those designed by Hollow Log Homes).

A total of 146 HBTs have been identified across the Development Footprint, this comprises 126 in the Southern portion of the Development Footprint and 20 in the Northern portion of the Development Footprint. It is estimated that on average HBTs comprise 3 hollows per tree. Based on this estimation, approximately 378 replacement hollows will be required in the Southern portion and 60 replacement hollows will be required in the Northern portion. The number of actual hollows per tree may vary, and the process for documenting the actual number will be completed as per the procedure outlined in Section 6.4.8.

Prior to commencement of pre-clearance associated with the Southern portion of the Development Footprint, approximately half of the predicted replacement hollows should be installed in suitable relocation sites as per the above MZs. Approximately 190 replacement hollows should be sourced, with input from the Contract Ecologist regarding either next box specifications, to allow for a range of hollow opportunities to be available to the species considered likely to require habitat due to displacement, or the use of HollowHog, or a combination of the these two options.

Installation of alternative hollows may occur within the following areas:

- MZ 3a: Northern portion of the Subject land
- MZ 3b: Southern portion of the Subject land - Perimeter areas and easements
- MZ 3c: Southern portion of the Subject land - Southern triangle
- AAMs area
- Idemitsu proposed Muscle Creek BSA site
- Idemitsu proposed Bells Mountain BSA site.

6.7.2. Relocation of coarse woody debris

Coarse Woody Debris (CWD) can be used to enhance habitat values to areas of derived native grassland and existing scattered woodlands. The MZs identified in Figure 9, including all areas within the Subject land (MZ 3a, 3b and 3c); the AAMs area, and in close proximity to access tracks within the proposed Idemitsu BSA sites.

CWD can provide:

- Habitat for micro-invertebrates.
- Habitat for macro-invertebrates.
- Habitat for vertebrates using fallen timber for shelter, for example, skinks, geckoes and Hunter Valley Delma.
- Habitat for vertebrates using fallen timber for foraging, for example, treecreepers, robins.
- A source of nutrients and microorganisms for native vegetation.

Habitat features suitable for salvage will be identified and marked in the field as part of pre-clearance surveys (refer to Section 6.4.2 for further detail).

The Construction Manager should seek advice from the Contract Ecologist for the implementation of best practice measures when relocating and re-using CWD:

- Removal, stockpiling, transportation and relocation of woody debris is carried out in a manner that minimises disturbance to native vegetation (including the canopy, shrubs, dead trees, fallen timber and groundcover species).
- Relocation of CWD from the Development Footprint should be via a light vehicle ute or small truck and with small machinery, as that impacts on the receiving relocation sites are negligible.
- The spread of any weeds or pathogens that may be in the soil is avoided when relocating woody debris from stockpiles. Appropriate weed, disease and pest assessment needs to be undertaken prior to clearing.
- Topsoil disturbance is kept to a minimum and is not heaped up against woody debris because of the potential to provide habitat for rabbits.

The material should be scattered or randomly placed in small 'habitat stacks'. This is particularly beneficial for areas with a paucity of similar habitat structures, such as derived native grassland. Larger pieces of timber should be prioritised as these take longer to decay and therefore would provide longer lasting habitat and source of nutrients.

Relocation of habitat material should aim to reflect a density consistent with that of the surrounding moderate to good condition woodland zones. The Contractor Ecologist should consider the benchmark density for logs in the receiving PCT. Excessive material could have a detrimental impact on biodiversity values.

6.7.3. Salvaged hollows

Salvaged hollows are re-used natural hollows from felled trees that are placed vertically or horizontally, or attached to a host tree, often with modifications to close the hollow ends or create/modify an entrance hole.

The exact method of salvage and installation of hollows will depend on characteristics of each tree including tree growth form and health, height of hollow, aspect, tree species.

The pre-clearing survey (Section 6.4.2) will be undertaken to identify each hollow bearing tree to be removed and determine the most suitable course of action for each tree and availability of suitable locations for installation. Salvaged hollows can be reused utilising a variety of methods, including:

- Sections with hollows are cut out with a chainsaw and installed within a tree, or placed vertically against an existing tree
- Once felled, excess tree branches can be trimmed and the section of tree containing the hollow is leaned against a suitably stable tree and attached securely
- Excess tree branches can be trimmed, section of tree with hollows is 'planted' upright into a pre-dug hole in the ground and stabilised by backfilling the hole
- Excess tree branches trimmed, section of tree with hollows is installed as a log on the ground in a suitable area.

6.7.4. Relocation of displaced fauna

Relocation of fauna (e.g., mammals, reptiles, raptors) from within the Development Footprint is to be carried out by the Contract Ecologist or wildlife rescuer and is to be recorded as part of the

preclearance reporting obligations. If the animal is not injured or stressed, it may be released into suitable relocation sites (identified Management zones as outlined in Section 6.7) in accordance with the following procedures:

- Site identified as a suitable release point by an appropriately qualified and experienced ecologist or wildlife rescuer.
- Release site is to contain similar habitat (the same vegetation formation if possible) and occur as close to the original capture location as possible without placing the animal in danger from the continuing constructing works.
- If the species is nocturnal, release is to be carried out at dusk.
- Release would generally not be carried out during periods of heavy rainfall.
- Details of fauna captured and relocated will be recorded in the internal fauna find register.

6.8. Ground disturbance procedure – Hunter Valley Delma

Ground disturbance is only permitted in the areas identified in the BDAR (ELA 2024). Due to presence of Hunter Valley Delma, works involving ground cover disturbance must follow the procedure outlined below.

Ground vegetation disturbance works that requires pre-disturbance surveys and disturbance supervision includes, but is not limited to:

- Removal of groundcover vegetation and soil for construction of new tracks and infrastructure, including permanent fencing;
- Clearance of grassland and natural (woody) regeneration
- Removal of Hunter Valley Delma habitat features (e.g. rocks, logs, debris piles) for construction of new tracks and infrastructure;

Minor works that do not require pre-disturbance surveys and disturbance supervision includes, but is not limited to:

- Slashing as part of regular rural land management activities and maintenance of existing tracks;
- Construction of temporary fencing.

6.8.1. Ground surface site preparation

As part of preparing the Development Footprint for construction activities, it is proposed to undertake slashing to provide suitable visibility of the ground surface to allow safe access across the site and prepare for works associated with pre-clearance and construction of temporary and permanent access tracks.

The height of slashing of the ground surface will be approximately 10cm to 30cm, where possible, to minimise any impacts to Hunter Valley Delma and to retain suitable vegetative coverage and minimise risk of injury to the species, prior to pre-clearance surveys outlined below.

6.8.2. Pre-clearance surveys for mitigation measures to the Hunter Valley Delma

6.8.2.1. Artificial shelter sites grassland areas

In accordance with the Threatened Biodiversity Data Collection (TBDC) it is proposed to complete Pre-clearance surveys using artificial shelter sites within the grassland areas of the Development Footprint to mitigate the impacts of construction activities on Delma present in the Development Footprint. The following methods are proposed:

1. Based on current advice (CPHR November 2025) for best practice mitigation survey effort, placement of 12 tile arrays is proposed within the Southern portion of the Development Footprint. These tile arrays will consist of 50 pale-coloured roof tiles or roof tiles installed pale side up, with 5 m spacing between tiles, arranged in an array of 10 x 5 tiles. Predicted locations for tile arrays can be seen in Figure 12 (pre-clearance grid sites). Timing for this will occur between January and February 2026, to enable tiles to bed down for at least 1 month prior to mitigation surveys commencing.
2. Artificial tile arrays will then be checked once per week, for 10 weeks, when ambient temperature is 15–25°C. Individuals identified and captured will be relocated to appropriate identified release locations as identified in Figure 12. It is proposed for this to occur from March through to mid-May 2026 with captured lizards being dispersed evenly into the identified release locations to minimise over-crowding and territorial interactions.
3. Any individuals captured will be relocated to the identified relocation sites (Figure 12), at the completion of the tile grid array surveys.

This level of effort will provide a broad coverage of the Development Footprint to allow relocation of resident Hunter Valley Delma and so mitigate impacts to the local population. As an additional mitigation measure, Pre-clearance walk over surveys are also proposed as per the below.

6.8.2.2. Pre-clearance walk over surveys

Tree clearing works are proposed to occur within the months of February through to May (where possible). Pre-clearance walk over surveys will be used as an additional measure during this period, in conjunction with the tile grid arrays proposed.

The construction of temporary or permanent access tracks may commence during this period to enable site vehicles to get around the site easily and may assist in minimising vehicular traffic across broader grassland areas, prior to the completion of the artificial shelter site surveys and relocation of Delma.

These surveys will consist of two suitably qualified ecologists traversing the proposed clearing zone, either within the tree clearance zone proposed for the day, or immediately preceding (i.e. within 2hrs of disturbance) construction of temporary or permanent access tracks, in which grassland will be removed and the soil surface disturbed. Surveys will be focused on identifying suitable habitat that Delma may be sheltering under; including rocks, dried cow pats, logs, farm rubbish, or large suitable grass tussocks.

Any Hunter Valley Delma identified within the pre-clearance zone will be removed and relocated as per the below.

6.8.2.3. Relocation sites

A number of options have been provided for the relocation of displaced Hunter Valley Delma. Permanent tile grid array sites are set up across the two proposed Idemitsu BSA sites (Figure 12), a

number of which have previously identified Hunter Valley Delma present; hence they are considered suitable relocation sites for any Hunter Valley Delma identified during pre-clearance surveys. Suitable relocation sites have also been proposed at locations across MZ 2d and the AAMs area (Figure 12). These sites have been selected as they comprise a similar suite of habitat to that of the Project site.

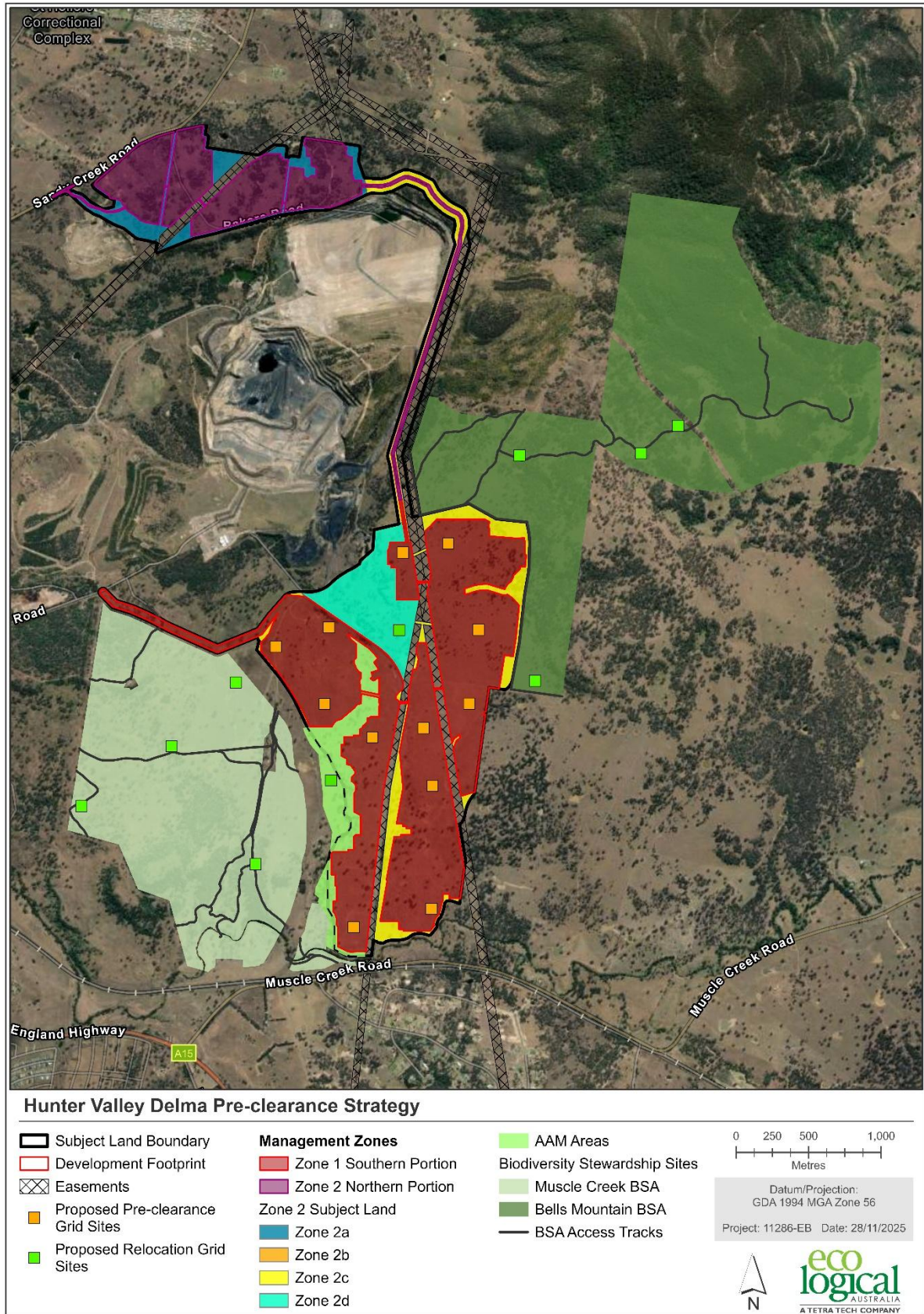


Figure 12: Hunter Valley Delma – proposed grid sites

6.9. Dam dewatering

Where dams are proposed to be removed or filled as part of the works a dewatering procedure (under the NSW *Fisheries Management Act 1991*) is to be implemented to reduce the potential impacts to aquatic species such as fish, eels, turtles, etc.

Dam dewatering should be undertaken in a manner that prevents erosion, and where practical directed to areas of low condition grassland.

6.10. Incidental threatened species finds procedure

CoA B14 (d) requires that OX2 Australia prepares an incidental threatened species finds procedure to identify the avoid and/or minimise options to be implemented if additional threatened species are discovered on site.

The incidental threatened species finds protocol outlines the actions to be taken when a threatened species is unexpectedly encountered on site following project approval/determination and this impact has not been assessed as part of the environmental impact assessment undertaken for the project. The incidental threatened species finds protocol is shown in Figure 13.

Specific avoid and/or minimise options to be implemented will be highly specific to each individual occurrence. Specific avoid and/or minimise options would be developed and implemented at stage 4. If an impact is still likely to occur following the implementation of specific avoid and/or minimise options (or if no options are feasible) relevant regulators will be consulted as per Figure 13.

Should threatened fauna, or suspected threatened fauna, be encountered, the procedure outlined below will be followed. If capture is required, the 'Fauna Handling Procedure' in Section 6.7.4 will be used.

- If native flora or fauna is found, stop work in the vicinity.
- If the native flora or fauna that has been found is a threatened species, or it cannot be identified, notify the Construction Manager who will then notify the Contract Ecologist and the Environment Manager of the find.
- The Construction Manager will arrange for the Contract Ecologist to assess the occupied habitat within the Development Footprint, assess the likely impact and develop management options.
- If the Contract Ecologist identifies that an impact is not likely to occur to the threatened species, then recommence works and maintain regular inspections of the area where the threatened species was found. The Construction Manager will notify workers of the threatened species find via toolbox talks.
- Where the Contractor Ecologist identifies that an impact is likely to occur to the threatened species, the Site Manager, CPHR and DPHI will be notified and consulted, as required.
- In accordance with Condition A3 of the EPBC Approval, the Site Manager must notify the Commonwealth DCCEE in writing of the presence and likely extent of any protected matter, or the habitat of any protected matter not previously reported to the department within 10 business days of detecting the presence of any protected matter or the habitat of any protected matter not previously reported to the department.
- Recommence works once advice has been sought and implemented and the necessary approvals (if required) have been obtained.

- All personnel are to be inducted on the unexpected threatened species finds procedure. This procedure is applicable to all activities that have the potential to unexpectedly impact upon threatened biodiversity entities.

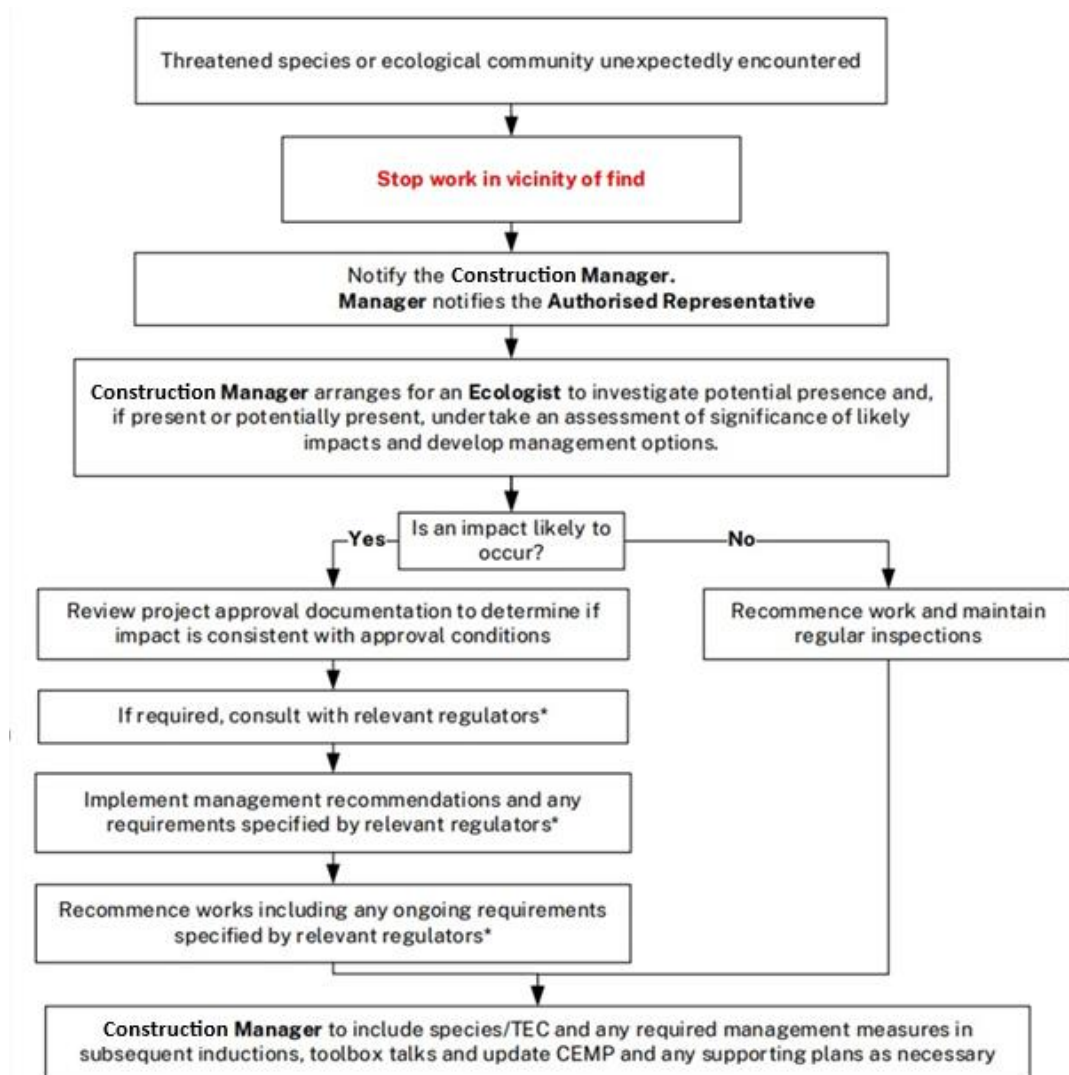


Figure 13: Incidental threatened species finds procedure

6.11. Weed and pathogen management procedure

Weeds in this BMP are defined as non-native flora species. The Project occurs across a historically disturbed agricultural landscape and comprises significant areas of degraded grasslands with an array of common agricultural weeds. An outline of the weeds identified to date across the project site is outlined in Section 4.4.1. Preventing the spread of weeds onto or across the Project site will significantly reduce ongoing treatment costs. However, completely avoiding weed spread is challenging, and active management, including removal, will be required – especially during the construction phase when disturbance activities are at their peak, increasing the risk of spread.

Disturbance activities may contribute to the spread of pathogens if not properly managed. No signs of pathogens have been observed to date and the Project is not expected to contribute significantly to the spread of pathogens, however, management is required to minimise any potential risk of spread.

Prior to the commencement of clearing, the location of weeds and evidence of pathogens (if present) within the Project site will be surveyed and mapped prior to or as part of pre-clearance surveys. The Contract Ecologist will use the survey as a basis to provide / confirm applicable weed (primary and secondary) and pathogen control methods. Weeds targeted as part of this BMP include Priority Weeds, WoNS and High Threat Weeds as per Table 14.

The Project has the potential to spread weeds and pathogens through the movements of heavy machinery and light vehicles during the construction, operation, and decommissioning phases of the Project. Weeds and pathogens will be controlled through:

- Hygiene controls such as vehicle and plant washdown as detailed within Section 6.11.6
- Primary, secondary, and maintenance weed control via appropriate weed removal techniques, including direct removal of individual plants, and herbicide application.

6.11.1. Weeds and pathogen inspection

Measures to control the introduction or spread of weeds and pathogens will include:

- Prior to vegetation clearing, significant infestations of Priority Weeds or evidence of pathogens will be identified by the Contract Ecologist as part of pre-clearance surveys (Section 6.4.2).
- Established and new infestations of invasive weeds will be mapped with GPS, including noting the species and degree of infestation, and capturing an image for monitoring purposes. Data collected from inspections will be used as a basis for implementing seasonal targeted weed control measures.
- Advice would be sought from the Contract Ecologist, Hunter Local Land Services (LLS) or from the WeedWise website (<http://weeds.dpi.nsw.gov.au/>) in relation to treating new weed infestations.
- Implement weed management protocols for plant and mobile machinery to reduce the spread of weed propagules as per 'Arrive Clean, Leave Clean' (DoE 2015).
- Any occurrences of pathogens i.e. Myrtle Rust and unexplained dieback would be monitored and reported.

6.11.2. Weed management plan

A weed management plan should be developed for the site based on the identification of weeds from the pre-clearance inspections (Section 6.4.2). The requirements of the weed management plan would

be incorporated into relevant plans for the Project (e.g. Construction Environmental Management Plan (CEMP) or work method statements).

The detail of the weed management plan should include:

- Description of weed species present
- Weed density mapping
- Weed management priorities and objectives
- Sensitive environmental areas within or adjacent to the site
- Mechanical weed control methods such as slashing or mowing, as well as a range of herbicides to avoid the development of herbicide resistance
- Timing and frequency of weed treatments to achieve effective control
- Measures to prevent the spread of weeds
- A weed inspection program which will be used to update the weed treatment plan
- Any specific regulatory requirements relating to individual weed species requiring control.

6.11.3. Weed treatment

During all phases of the Project, weed control will be based on data collected from survey and inspections of the Development Footprint and Subject land. Targeted weed control measures will be applied for any significant infestations of Priority Weeds with the objective of no overall increase in the presence of weeds which were occurring prior to the Project. Treatments will be conducted in accordance with the NSW Weedwise website for the Hunter Local Land Services Region which may include mechanical removal, slashing, application of approved herbicides and biological control, by accredited personnel, according to product labels as applicable to the weed being treated.

The introduction and spread of weeds via vehicles and plant will be controlled by the Vehicle Hygiene Procedure provided in Section 6.11.6.

6.11.4. Herbicide Application Record

Herbicide application will only be carried out by personnel that hold an herbicide application credential in accordance with SafeWork requirements. Herbicides will only be applied in accordance with the Safety Data Sheet (SDS) for that product. An Herbicide Application Record prepared by the Construction Manager will be completed, and public notifications made in accordance with relevant legislation, where herbicides are to be used in areas that could be accessed by members of the public. Only herbicides registered for use near water may be used near any waterways. This includes all waterways within the Development Footprint as shown in Figure 7, including ephemeral creek lines.

The Construction Manager will ensure that a follow-up inspection is undertaken for identified weed infestation sites to ensure treatment was successful.

6.11.5. Management and disposal of weed-contaminated material

Weed-contaminated material (including removed vegetation) is considered waste and must be treated and/or disposed.

Prior to mulching any vegetation, assess the presence of weeds. Determine the species of weeds present and document in the appropriate plan/report.

Dispose of weed-contaminated material offsite at a suitably licenced landfill facility. The following general measures apply:

- Place waste containing seed and vegetative material in bags or on plastic sheeting during weed removal, where practical.
- Remove all weed-contaminated plant material from the site, preferably on the same day.
- Offsite topsoil disposal should be avoided wherever possible.

6.11.6. Vehicle hygiene guidelines

The project is located in predominantly agricultural land and is not considered to be overly sensitive to the risk of weed introduction by vehicles. However, vehicle plant and equipment hygiene procedures will be implemented for any vehicle that enters the Development Footprint during construction. A vehicle inspection checklist would be completed for vehicles upon arrival which are likely to come into contact with the natural ground or weeds.

The procedure includes:

- Inspection upon arrival at site access laydown area.
- Removal of dirt and/or plant matter from newly arrived vehicles at a designated rumble grid.
- Where the rumble grid is ineffective:
 - washing and inspection prior to vehicles being given approval to enter the Development Footprint
 - inspection and washing prior to entering the Development Footprint

The following guidelines are provided in order to ensure that OX2 meets the general biosecurity duty under the NSW Biosecurity Act 2015. The general biosecurity duty states the following:

“All pest 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.”

6.12. Pest animal procedure

Minimal signs of pest animals were identified during field surveys as part of the BDAR (ELA 2024), however four vertebrate pest animals were identified or signs of these species were identified (Section 4.4.2). Additional pest species may also be present within the Development Footprint.

Monitoring of animal pests and signs of their activity will occur as part of routine inspections conducted by either the Contract Ecologist, Construction Manager, Operations Supervisor during construction (fortnightly) and operation (6 monthly).

The following data would be recorded in a Pest Management Register and used to determine the need for and required intensity of pest animal control measures:

- Number seen and location.
- Sighting type (track / scat / den).
- Age (young / adult).
- Whether the level of pest activity is:

- Minimal: rarely seen, less than 5 sightings recorded over two consecutive monitoring rounds).
- Moderate: occasional to regular occurrence. Sightings are between 5 and 10 over two consecutive monitoring rounds.
- High: Constant occurrence. Sightings are greater than 10 over two consecutive monitoring rounds.
- If activity is identified as Moderate-High appropriate management actions listed by the Department of Primary Industries (DPI) at <https://www.dpi.nsw.gov.au/biosecurity/vertebratepests/pest-animals-in-nsw> will be implemented and records of works undertaken will be retained by OX2
- Pest management may also consider the actions outlined in relevant Commonwealth threat abatement plans to determine the best approach.

6.12.1. Pesticide Application Record

As with herbicide applications, pesticides will only be administered in accordance with the label instructions and by personnel that hold a pesticide application credential in accordance with SafeWork requirements. A Pesticide Application Record will be completed, and public notifications made in accordance with relevant legislation, where pesticides are to be used in areas that could be accessed by members of the public. Only pesticides registered for use near water may be used near any waterways. This includes all waterways within the Development Footprint as shown in Figure 7, including ephemeral creek lines.

6.13. Noise, light and dust management

Construction hours will generally be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm in accordance with the Conditions of Consent. Works are not permitted Sundays and NSW Public Holidays. Night works are not anticipated, however, if required, lights will be directed away from vegetation.

Adaptive dust monitoring programs to control air quality will be documented in the EMS. Revegetation of any exposed areas should commence as soon as is practicable to minimise risks of dust.

6.14. Remnant vegetation management procedure

This procedure aims to:

- Manage and enhance remnant vegetation (comprising of grasslands only within the Development Footprint) and fauna habitat retained within the Subject land, noting that no retained woodland habitat is proposed within the Development Footprint.
- Rehabilitate temporary disturbance grassland areas within the Development Footprint with native species appropriate to the site's ecology and conditions, including groundlayer species associated with PCT 281 (Section 4.1.1; Table 10) to assist in the improvement of PCT 281.
- Maximise the salvage and reuse of vegetative and soil resources from within the Development Footprint to rehabilitate areas within the Development Footprint.

6.14.1. Rehabilitation of temporarily disturbed areas

Areas that are temporarily disturbed within Development Footprint will be rehabilitated as soon as practicable using native groundcover species that are locally indigenous species to the area and suitable for livestock grazing.

Temporarily disturbed areas for the Development Footprint may include:

- Temporary access tracks that are utilised before permanent site access tracks have been completed.
- Construction laydown areas including, but not limited to, construction vehicle parking areas, wheel washing facilities and demountable amenity buildings.
- Cable trenches.
- Disturbed watercourse crossings.

The aim of the rehabilitation of temporarily disturbed areas is to minimise the extent of disturbed areas onsite and return them to a condition representative of the surrounding areas.

The Contract Ecologist (refer Table 26 for responsibilities) will be consulted before rehabilitation takes place. The Construction Manager will be responsible for identifying areas that are available for rehabilitation at intervals not exceeding six months and coordinating the program of rehabilitation works.

The rehabilitation of areas of temporary disturbance not required for operation will require the following management actions to ensure native vegetation is re-established across the site:

- Weed control (refer to Section 6.11).
- Salvage of habitat features (refer to Section 6.7).
- Land preparation.
- Seed selection, including groundlayer species associated with PCT 281 (Section 4.1.1; Table 10) to assist in the improvement of PCT 281)
- Creek morphology works (in channel works subject to monitoring identifying the need for bank stabilisation works).
- Ongoing weed control (maintenance).

6.14.2. Site preparation

Surface preparation for rehabilitation and restoration should begin within 60 days following the completion of construction activities.

Areas that remain cleared for ongoing operations and maintenance (such as access tracks) or that will be exposed for extended periods may be equipped with cut-off drains or swales as needed to manage erosion, if considered required. The Soil and Water Management Plan (SWMP) prepared for the Project will detail the requirements relevant to erosion control and soil amelioration to promote successful germination of rehabilitated areas.

6.14.3. Seed bank stockpiling and management

Where ground disturbance earthworks are required, the topsoil containing the seed bank would be separated, stockpiled, and re-spread within rehabilitation areas. The seed bank of the grassland is therefore anticipated to be retained within the Development Footprint, as it would be rehabilitated

shortly following ground disturbance activities. The seed bank and regeneration capacity of native species currently present are considered to be robust, given the present extent of native species from respective vegetation communities across paddocks which have been consistently grazed and cropped for decades.

The rehabilitation seed mixes developed for the Project will be informed by the following:

- Baseline vegetation assessment surrounding natural environment and landscape position.
- The availability of seed in the natural environment or via purchase.
- The shelf life of the seed.

As part of the seed mix development, priority for use in the seed mix, purpose of the seed and dispersal method will also be determined.

6.14.4. Creek morphology works

The Development Footprint, and broader Subject land comprises numerous 1st, 2nd and 3rd order streams, comprising ephemeral grassy depressions within paddocks and present little habitat for threatened aquatic species. One waterway within the Subject land (ephemeral 4th order stream) has been identified as potential Key Fish Habitat for threatened species (Figure 7). Transmission lines will span this waterway at three locations. During construction of the transmission lines, disturbance will be avoided within the watercourse itself, therefore limited to no impacts are proposed within the riparian corridor of the aquatic habitats.

A drainage diversion structure with flood protection bund will be required upstream of the proposed BESS. This diversion structure will reinstate the existing mapped watercourse. The drainage diversion will interface to the 4th order stream. There may be some minor instream works including completion of some earthwork interfaces and erosion management (such as placed rock).

The diversion channel will be designed and constructed in accordance with the Guidelines for Controlled Activities on Waterfront Land.

Detailed design will be required in the post-approval phase to optimise the design with reference to the Guidelines for *Controlled Activities on Waterfront Land – instream works, outlet structures and riparian corridors*. OX2 will commit to engaging with DCCEW's Water Group during the detailed design of the channel and bund, including providing up to 20m of riparian corridor either side of the channel bank / bund, and designing for channel stability. In accordance with the above guidelines a Vegetation Management Plan (VMP) will be developed which specifies the requirements for riparian corridor revegetation.

Measures for the reinstatement of creek morphology and the restoration of riparian vegetation will be detailed in the VMP, but is considered to include the following:

- Rip Rap Scour Protection – Where high-velocity water is causing significant erosion, rip rap scour protection will be implemented to reinforce creek banks.
- Erosion Control Using Cut Timber and Branches – Minor erosion slumps or areas at risk of soil loss will be stabilized with cut timber and branches sourced from woody weed biomass, ensuring that these materials are seed-free at the time of installation.
- Soil Stabilisation with Jute Mesh – For highly erodible areas, jute mesh will be used to enhance soil stability and prevent further erosion.

- Revegetation with locally indigenous species to the area, specifically species associated with PCT 281 (Section 4.1.1; Table 10) to assist in the improvement of PCT 281).

It is unlikely that extensive bank stabilisation works are required, however, periodic stabilisation may be required to address any areas of active erosion as/if they occur.

Bank stability monitoring will be conducted by the Construction Manager to ensure that the integrity of creek banks are maintained throughout construction. Monitoring areas focusing on bank stability will be incorporated into the Weekly Site Environmental Inspection Record, with areas being monitored as required throughout construction and operation. Any signs of instability or degradation will be promptly addressed through corrective actions and will be reported through the Rehabilitation Monitoring Program (refer to Section 7.2).

7. Operational phase

7.1. Monitoring

Throughout the lifecycle of the Project, monitoring will be required to ensure that the biodiversity values of the Project site, both within the Subject land and Development Footprint are being managed appropriately. An outline of the specific biodiversity monitoring requirements are presented below.

7.1.1. Replacement hollow monitoring

Approximately 190 replacement hollows (nest boxes/carved hollows) or a combination of the these are to be installed prior to commencement of pre-clearance works associated with the Southern, portion of the Development Footprint, to provide habitat for displaced fauna during clearing works.

At the completion of the post-clearance survey report, the full quantum of required replacement hollows will be better understood, and alternate hollows can be installed.

A replacement hollow monitoring program is to be developed by the Contract Ecologist in consultation with the Environment Manager and Construction Manager, at the completion of clearing works and once all required replacement hollows have been installed. This plan should detail the following:

- Number and type (mammal/microbat/bird etc) of replacement hollow installed, including nest box, carved hollow, or re-used natural hollow.
- Location of replacement hollow installed
- Target species
- Development of monitoring/inspection frequency and duration
- Development of success indicators:
 - signs of use (e.g. nesting material, scats, scratches/chew marks)
 - signs of breeding (e.g. nesting material, eggs)
 - uptake by target species (if not target species, is the species native or exotic).

7.1.2. Weed monitoring

The preparation of the weed management plan will outline all species identified for control, however, based on data gathered during the BDAR surveys, the weed species outlined in Table 20 be targeted for control.

It is anticipated that the following weed monitoring methods should be completed as part of managing weeds across the Project site:

- Installation of photo points to monitor progress of weed control works and identify any significant regrowth or additional weed incursions that require additional management.
- Set up weed monitoring plots 20m x 20m within the Subject land to track change over time and progress of weed control for any significant infestation areas.
- Develop targets based on cover % of priority weeds and WoNs. Estimated targets have been developed (Table 20), however, these may need to be revised once more recent on-ground surveys have been completed for the pre-clearance inspections (Section 6.4.2).

7.1.3. Grassland and regrowth procedure

During the operational phase of the project, vegetation management activities will include mowing, removal or slashing of regenerating woody vegetation in the vicinity of solar infrastructure and weed control. Grass should be kept mown and leaves and vegetation debris should be removed to appropriately reduce fuel loads.

The height of vegetation under and around the solar infrastructure should be maintained at approximately 10cm to 30cm, where possible, to retain suitable vegetative groundcover for the persistence of Hunter Valley Delma (refer to Section 6.8). The height of groundcover may vary at different times of year due to operational constraints and to meet bushfire management requirements.

7.1.4. Monitoring for rehabilitation of disturbed areas

Areas disturbed during construction will be stabilised progressively during and following construction. Areas to be revegetated to achieve equivalent groundcover to surrounding areas not disturbed by the Project. Before and after records are required for areas requiring treatment, including reporting on the % cover of vegetation (native/non-native) and weed species identified and photograph records of each area rehabilitated. Rehabilitation objectives (i.e. stabilisation, revegetation) will differ depending on site characteristics.

Generally, the objective will be to:

- Stabilise areas with limited topsoil and vegetation cover and reach equivalent groundcover to surrounding areas.
- Restore groundcover through a mixture of natural and assisted regeneration, utilising groundlayer species associated with PCT 281 (Section 4.1.1; Table 10) to assist in the improvement of PCT 281).

7.1.5. AAMs area

As part of maintaining and improving the condition and extent of PCT 281 within the AAMs area, a monitoring program will be developed as part of the AAMs Restoration Plan. This plan will include a measure that regular reporting on the effectiveness of these measures will be provided to BCS, in accordance with the applicant's letter dated 25 June 2024.

Table 20: Priority weed species percent foliage cover (PFC) and estimate targets

Scientific name	Common name	High threat weed	Hunter weed status	WoNS	Average weed cover (%)	Timeframe/ estimate targets		
						At 1 year	At 5 years	At 10 years
<i>Eragrostis curvula</i>	African Lovegrass	✓	Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--	North: 0% South: 0.07%	North: <1% South: <1%	North: <1% South: <1%	North: <1% South: <1%
<i>Galenia pubescens</i>	Galenia	✓	Regional Recommended Measure An exclusion zone is established for all land in the region, except the core infestation which includes parts of Muswellbrook Local Government Area Entire Hunter Local Land Services region: Land managers should mitigate the risk of the plant being introduced to their land. Exclusion zone: Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Core infestation: Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--	North: 5.42% South: 9.44%	North: <5% South: <9%	North: <2% South: <5%	North: <1% South: <2%
<i>Hyparrhenia hirta</i>	Coolatai Grass	✓	Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of	--	North: 1.25% South: 0%	North: <1% South: <1%	North: <1% South: <1%	North: <1% South: <1%

Scientific name	Common name	High threat weed	Hunter weed status	WoNS	Average weed cover (%)	Timeframe/ estimate targets		
						At 1 year	At 5 years	At 10 years
			the plant on assets of high economic, environmental and/or social value.					
<i>Lycium ferocissimum</i>	African Boxthorn	✓	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale. Regional Recommended Measure An exclusion zone is established for all land in the region, except the core infestation which includes parts of: Muswellbrook Local Government Area, Upper Hunter Local Government Area. Entire Hunter Local Land Services region: Land managers should mitigate the risk of the plant being introduced to their land. Exclusion zone: Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Core infestation: Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	✓	North: 0% South: 0.09%	North: 0% South: <0.1%	North: 0% South: 0%	North: 0% South: 0% 0% foliage cover in all strata as per a manageable HTW
<i>Opuntia aurantiaca</i>	Tiger Pear	✓	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale. For all Opuntia species except for Opuntia ficus-indica (Indian fig). Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not	✓	North: 0% South: 0.01%	North: 0% South: 0%	North: 0% South: 0%	North: 0% South: 0%

Scientific name	Common name	High threat weed	Hunter weed status	WoNS	Average weed cover (%)	Timeframe/ estimate targets		
						At 1 year	At 5 years	At 10 years
			buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. This Regional Recommended Measure applies to all species of Opuntia except for Opuntia ficus-indica. (Indian fig).					
<i>Opuntia stricta</i> var. <i>stricta</i>	Common Prickly Pear	✓	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale. For all Opuntia species except for Opuntia ficus-indica (Indian fig). Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. This Regional Recommended Measure applies to all species of Opuntia except for Opuntia ficus-indica. (Indian fig).	✓	North: 0.12% South: 0.07%	North: <0.1% South: <0.1%	North: <0.1% South: <0.1%	North: <0.1% South: <0.1% 0% foliage cover in all strata as per a manageable HTW
<i>Senecio madagascariensis</i>	Fireweed	✓	Prohibition on certain dealings Must not be imported into the state, sold, bartered, exchanged or offered for sale.	✓	North: 1.17% South: 0.84%	North: <1% South: <1%	North: <1% South: <1%	North: <1% South: <1%
<i>Juncus acutus</i> *	Spiny Rush	✓	Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--	N/A	N/A	N/A	Target to be set if recorded during routine monitoring

Scientific name	Common name	High threat weed	Hunter weed status	WoNS	Average weed cover (%)	Timeframe/ estimate targets		
						At 1 year	At 5 years	At 10 years
<i>Hypericum perforatum</i> *	St. John's Wort	✓	Regional Recommended Measure An exclusion zone is established for all land in the region, except parts of: MidCoast Local Government Area, Muswellbrook Local Government Area, Upper Hunter Local Government Area. Entire Hunter Local Land Services region: Land managers should mitigate the risk of the plant being introduced to their land. Exclusion zone: Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Core infestation: Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.	--	N/A	N/A	N/A	Target to be set if recorded during routine monitoring
<i>Solanum elaeagnifolium</i> *	Silver Nightshade, Silver-leaved Nightshade	✓	Regional Recommended Measure Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant.	--	N/A	N/A	N/A	Target to be set if recorded during routine monitoring

*Asterisk denotes species which have not been recorded in the subject land, however, have been recorded on adjoining properties, or are considered to potentially occur in the future.

7.2. Monitoring targets and reporting

Monitoring of the biodiversity mitigation and management measures for the Project will be undertaken to ensure that each measure is being implemented. Table 21 below shows the program to monitor and report on the effectiveness of the biodiversity mitigation and management measures for the Project.

The following targets have been established for the management of biodiversity impacts during the project and include the following:

- Ensure full compliance with the relevant legislative and consent requirements.
- All staff (including contractors) appropriately inducted.
- All pre-clearing surveys including vegetation clearance (Section 6.3 and 6.4) shed demolition (Section 6.5) and ground disturbance (Section 6.8) conducted within the required timeframes to the appropriate procedure.
- All incidental threatened species finds addressed in accordance with Section 6.10.
- All terrestrial fauna handled by qualified persons in accordance with procedures outlined in Section 6.6
- Fauna habitat relocated appropriately, to designated relocation areas in accordance with procedures outlined in Section 6.7
- Fauna species relocated appropriately, to designated relocation sites in accordance with procedures outlined in Section 6.7.4
- Weed management plan and weed site assessment conducted as per the procedure outlined in Section 6.11 and priority and WoNS managed to targets outlined in Table 20
- No transfer of plant diseases or pathogens to/from the project work areas as per Section 6.11
- Pest animals controlled as per routine land management and to the procedure presented in Section 6.12
- Remnant vegetation restored in line with the procedure outlined in Section 6.14 and successful rehabilitation of cleared areas achieve equivalent groundcover to surrounding areas after 12 months.
- Bank stability monitoring will be conducted by the Construction Manager to ensure that the integrity of creek banks are maintained throughout construction. Monitoring areas focusing on bank stability will be incorporated into the Weekly Site Environmental Inspection Record, with areas being monitored as required throughout construction and operation. Any signs of instability or degradation will be promptly addressed through corrective actions and any signs of bank instability or degradation to be managed through corrective actions.

Table 21: Monitoring program

Relevant mitigation and management measure	Procedure within BMP	location	Parameters for monitoring	Monitoring method	Location within Project site	Reporting timing	Responsibility
Timing works to avoid critical life cycle events such as breeding or nursing	Refer to Section 6.4.1 for timing of vegetation clearance.		Timing of vegetation clearing. Pre-clearance vegetation surveys.	Observation of pre-clearance surveys being undertaken.	Areas where vegetation clearing will be undertaken during critical life cycle events for fauna.	As part of the preparation of the pre-clearance and post-clearance survey plans	Contract Ecologist Construction Manager
Instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecological or licensed wildlife handler during clearing events	Refer to Section 6.3 for vegetation clearance procedure.		Pre-clearing report. Two-stage vegetation / tree clearing guidelines followed.	Observation of pre-clearing procedure implemented.	Areas where vegetation clearing will be undertaken.	As part of the preparation of the pre-clearance and post-clearance survey plans	Contract Ecologist Construction Manager
Relocate habitat features (fallen timber, hollow logs) from within the Development Footprint	Refer to Section 6.7 for fauna habitat relocation		Tree-clearing procedure including relocation of habitat features to relocation sites for habitat enhancement.	Records of where relocated habitat features have been placed within relocation sites.	Designated relocation sites.	As part of the preparation of the post-clearance survey plans	Contract Ecologist Construction Manager
Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chain-saw, rather than heavy machinery, is preferable in situations where partial clearing is proposed	Refer to Section 6.3 for vegetation clearance procedure. Refer to Section 6.4 for vegetation clearance works		Approved clearing limits to be clearly delineated with temporary fencing or similar prior to construction commencing.	Clearing limits are upright, clearly visible and in the correct place.	Throughout the Development Footprint.	Weekly Site Environmental Inspection Records (Weekly during Construction)	Construction Manager

Relevant mitigation and management measure	Procedure within BMP	location	Parameters for monitoring	Monitoring method	Location within Project site	Reporting timing	Responsibility
Temporary and permanent fencing to protect significant environmental features such as riparian zones	Refer to Section 6.3.2 for exclusion zones and fencing requirements.		Prior to construction commencing, exclusion fencing and signage would be installed around habitat to be retained.	Observe that exclusion fencing and signage that surrounds the sites significant environmental features is upright, clearly visible and in the right place.	Throughout the Development Footprint to delineate between all exclusion zone interfaces.	Weekly Site Environmental Inspection Records (Before construction commences).	Construction Manager
Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	Refer to Section 6.11 weed and pathogen management procedure		A Weed and Pathogen Management procedure aims to prevent and minimise the spread of weeds and pathogens.	Observe the following: • Presence of weeds. • Presence/signs of pathogens	Throughout the Development Footprint and Subject land.	Weekly Site Environmental Inspection Records (Weekly during Construction) Vehicle Hygiene Checklists (Upon arrival during construction) Pest Management Register (Updated fortnightly during construction and 6 monthly during operations)	Contract Ecologist Construction Manager

8. Biodiversity offsetting

Prior to carrying out any construction that could directly or indirectly impact the biodiversity values requiring offset, OX2 will retire the biodiversity credits and provide evidence to the Planning Secretary as required by Condition B14 and B15 of the Development Consent. An outline of the Ecosystem credits to be retired is presented in Table 22 and the staging of credits is outlined in Table 23. An outline of the Species credits to be retired is presented in Table 24 and the staging of species credits is outlined in Table 25.

Table 22: Sourcing Ecosystem credits

Vegetation community	PCT ID	Credits required
Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	281	754
Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	1691	232
Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter	1603	622
Blakely's Red Gum - Narrow-leaved Ironbark - Rough-barked Apple shrubby woodland of the upper Hunter	1607	21
Total		1,629

Table 23: Sourcing Ecosystem credits – Staged Southern and Northern

Vegetation community	PCT ID	Credits required
Southern		
Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion	281	754
Narrow-leaved Ironbark - Grey Box grassy woodland of the central and upper Hunter	1691	232
Total (Southern)		986
Northern		
Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter	1603	622
Blakely's Red Gum - Narrow-leaved Ironbark - Rough-barked Apple shrubby woodland of the upper Hunter	1607	21
Total (Northern)		643
Combined Total		1,629

Table 24: Sourcing Species credits

Species	Common Name	Credits required
<i>Cymbidium canaliculatum</i> - endangered population	<i>Cymbidium canaliculatum</i> population in the Hunter Catchment	2
<i>Chalinolobus dwyeri</i>	Large-eared pied bat	111
<i>Myotis macropus</i> Southern Myotis 78 <i>Phascogale tapaotafa</i>	Brush-tailed Phascogale	452
<i>Petaurus norfolcensis</i>	Squirrel Glider	829
<i>(Delma impar)</i> *	Striped Legless Lizard	656
<i>Diuris tricolor</i> - endangered population	Pine Donkey Orchid population in the Muswellbrook local government area	278
<i>Myotis macropus</i>	Southern Myotis	159
Total		2,487

* The *Delma impar* species credit requirement may be met by credits generated from the broader *Delma impar* species complex, inclusive of *Delma vescolineata* (Hunter Valley Delma).

Table 25: Sourcing Species credits – Staged Southern and Northern

Species	Common Name	Credits required
Southern		
<i>Cymbidium canaliculatum</i> - endangered population	<i>Cymbidium canaliculatum</i> population in the Hunter Catchment	2
<i>Chalinolobus dwyeri</i>	Large-eared pied bat	45
<i>Myotis macropus</i>	Southern Myotis	78
<i>Phascogale tapaotafa</i>	Brush-tailed Phascogale	452
<i>Petaurus norfolcensis</i>	Squirrel Glider	183
<i>(Delma impar)</i> *	Striped Legless Lizard	648
Total (Southern)		1,408
Northern		
<i>Diuris tricolor</i> - endangered population	Pine Donkey Orchid population in the Muswellbrook local government area	278
<i>Chalinolobus dwyeri</i>	Large-eared pied bat	66
<i>Myotis macropus</i>	Southern Myotis	81
<i>Petaurus norfolcensis</i>	Squirrel Glider	646
<i>Delma impar</i> *	Striped Legless Lizard	8
Total (Northern)		1,079
Combined Total		2,487

* The *Delma impar* species credit requirement may be met by credits generated from the broader *Delma impar* species complex, inclusive of *Delma vescolineata* (Hunter Valley Delma).

9. Biodiversity management framework

9.1. Roles and responsibilities

Key roles and responsibilities for implementing this plan are outlined in Table 22.

Table 26: Roles and responsibilities for Muswellbrook Solar Farm staff relevant to this BMP.

Role	Responsibilities
Site Manager	• Maintain ultimate responsibility for project environmental performance • Maintain a working knowledge of this BMP and be aware of all environmental legislative requirements associated with their respective operation • Provide sufficient resources for the implementation of this plan and associated plans • Internal and External reporting of incidents and non-compliances • Act as an escalation point for any disputes or community complaints that cannot be resolved by the Community Manager and Construction Manager • Ensure that complaints are investigated to ensure effective resolution • Stop work immediately if an unacceptable impact on the environment is likely to occur • Implementing mitigation measures as detailed in Table 17.
Environment Manager	• Oversee the implementation of the BMP and sub-plans • Maintain the BMP and sub-plans • Facilitate a process of managing overall compliance with regulatory requirements and assist the site manager in undertaking external reporting for incidents and non-compliances as required • Coordinate the implementation of corrective actions with the Construction Manager and evaluate their effectiveness associated with community complaints; liaise with relevant government authorities and affected landholders in relation to regulatory conditions and compliance issues • Provide ongoing environmental advice as required • Implementing mitigation measures as detailed in Table 17.
Construction Manager (or delegate)	• Implement the requirements of the BMP and sub-plans as they relate to the construction stage • Facilitate activities under their control so that they are completed in accordance with this BMP and associated management plans and site procedures • Coordinate monitoring as per the BMP and sub-plans • Identify appropriate resources required for implementation of the BMP and sub-plans • Coordinate training to communicate requirements of the BMP to relevant personnel • Responsible for appointing an appropriately qualified and experienced Contract Ecologist, in liaison with the Environment Manager and Site Manager • Receiving plant, materials and chemicals and ensuring all items are appropriately stored • Responsible for addressing corrective actions arising from environmental inspections • Responsible for notifying the Site Manager of any incidence or non-compliances with this BMP • Review all environmental monitoring data to confirm compliance with the relevant criteria. Where exceedances occur, report to the site manager and investigate the cause of the exceedance. • Conduct environmental inspections as per the BMP • Ensure environmental controls within their jurisdiction are implemented, operated and maintained in a proper and efficient manner • Advise Site Manager and Environment Manager of any actual or potential incidents or non-compliances immediately, co-ordinate investigations and assist with reporting requirements • Stop work immediately if an unacceptable impact on the environment is likely to occur. • Report any issues that cannot be resolved to the Site Manager

Role	Responsibilities
	- Report any complaints from the public received directly to the Contractor to the Community Manager and Site Manager - Regular checks of boundary fencing and temporary flagging to ensure that it is maintained at all times throughout construction and operation. - Resolve any community complaints in collaboration with the Community Manager and Site Manager - Provide necessary information to the Community Manager for consultation activities. - Implementing mitigation measures as detailed in Table 17.
Operations Manager	- Maintain ultimate responsibility for project environmental performance - Maintain a working knowledge of this BMP and be aware of all environmental legislative requirements associated with their respective operation - Provide sufficient resources for the implementation of this plan and associated plans - Internal and External reporting of incidents and non-compliances - Act as an escalation point for any disputes or community complaints that cannot be resolved by the Community Manager and Operations Supervisor. - Ensure that complaints are investigated to ensure effective resolution. - Stop work immediately if an unacceptable impact on the environment is likely to occur - Maintain the BMP and sub-plans - Facilitate a process of managing overall compliance with regulatory requirements and undertake external reporting for incidents and non-compliances as required - Coordinate the implementation of corrective actions with the Operation Supervisor and evaluate their effectiveness associated with community complaints; liaise with relevant government authorities and affected landholders in relation to regulatory conditions and compliance issues - Provide, or seek assistance with, ongoing environmental advice as required - Coordinate training to communicate requirements of the BMP to relevant personnel - Implementing mitigation measures as detailed in Table 17.
Operation Supervisor	- Implement the requirements of the BMP and sub-plans as they relate to the operational stage - Facilitate activities under their control so that they are completed in accordance with this BMP and associated management plans and site procedures - Coordinate monitoring as per the EMS and sub-plans - Identify appropriate resources required for implementation of the EMS and sub-plans - Review all environmental monitoring data to confirm compliance with the relevant criteria. Where exceedances occur, report to the site manager and investigate the cause of the exceedance. - Assist with the development and delivery of environmental training packages - Conduct environmental inspections as per the BMP - Ensure environmental controls within their jurisdiction are implemented, operated and maintained in a proper and efficient manner - Advise the Operation Manager of any actual or potential incidents or non-compliances immediately, co-ordinate investigations and assist with reporting requirements. - Stop work immediately if an unacceptable impact on the environment is likely to occur. - Report any issues that cannot be resolved to the Operation Manager. - Report any complaints from the public received directly to the Contractor to the Operation Manager - Resolve any community complaints in collaboration with the Operation Manager. - Implementing mitigation measures as detailed in Table 17.
Contract Ecologist	- Supervise works being undertaken in environmentally sensitive areas - Undertake pre-clearing and clearance surveys and associated reporting - Oversee vegetation removal - Ongoing monitoring of retained vegetation and threatened species - Ongoing monitoring of relocated fauna habitat - Provide biodiversity advice where necessary

Role	Responsibilities
	Implementing mitigation measures as detailed in Table 17.
All personnel and contractors	- Take direction from the Project Management team - Conduct all activities in accordance with this BMP, and associated management plans and procedures, in an environmentally responsible manner - Immediately report all environmental incidents and community complaints to their immediate supervisor - Participate in relevant environmental training - Participate in incident and non-compliance investigations as directed by supervisors - Implementing mitigation measures as detailed in Table 17.

10. Environmental management protocols and procedures

10.1. Training

All employees, contractors (and their subcontractors) and utility staff working on site will undergo site induction training relating to biodiversity management issues. The induction training will address elements related to biodiversity management including:

- Contents and specifications contained within this BMP
- Relevant legislation and approvals
- Roles and responsibilities for biodiversity management planning and implementation
- Flora and fauna species that may be impacted by construction work, and identification of these species
- Process for implementing the relevant protocols detailed in this BMP including:
 - Ground disturbance procedure
 - Vegetation clearance procedure
 - Threatened species finds procedure
 - Weed management procedure
 - Pathogen management procedure
 - Pest animal procedure
 - Vehicle hygiene procedure
- Noise, light and dust management procedure

The employees, contractors, sub-contractors and utility staff will be made aware of the conditions of consent relevant to activities they will be undertaking in respect of the development, and will be instructed to comply.

Daily toolbox talks will be completed, and when relevant will contain information on the above procedures. This will ensure up-to-date, site-specific information is provided to staff prior to work being undertaken. Further details regarding staff induction and training are outlined in the EMS.

11. Review and improvement process

The BMP should be regularly reviewed as part of a continual improvement process to ensure it remains current and relevant to the project.

The process that will be adopted to review and, where necessary, revise the BMP will be documented in this section. It should also include details of the triggers or thresholds for review or revision.

The BMP should be reviewed and, where necessary, revised following:

- any non-compliance with the conditions of consent or other legal requirement
- any non-conformance with any other environmental requirements
- audit findings (internal, external and/or independent)
- project modifications approved by the consent or approval authority
- changes to legislative requirements.

When the BMP is revised, it should be submitted to the Department for assessment and approval in accordance with the requirements of any relevant conditions of consent and the review process that was documented and approved in the earlier version/s.

In accordance with CoA C2 of the Development Consent, OX2 will:

“(a) update the strategies, plans or programs required under this consent to the satisfaction of the Planning Secretary prior to carrying out any upgrading or decommissioning activities on site; and”

(b) review and, if necessary, revise the strategies, plans or programs required under this consent to the satisfaction of the Planning Secretary within 1 month of the:

- (i) submission of an incident report under condition C10 of Schedule 2;
- (ii) submission of an audit report under condition C13 of Schedule 2; or
- (iii) any modification to the conditions of this consent. ”

As such, this BMP will be updated in accordance with CoA C2 as required.,

A copy of the updated BMP and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure.

To facilitate more efficient document review and approval (if required), a version of the revised BMP will be provided to the Department, and accompanied by information that identifies:

- what has changed and why it has been changed
- the proposed timeframe to implement the change.

A brief summary of the changes made and the circumstances that triggered the review and revision should also be included in the version control information.

11.1. Community Communication

All community feedback, enquiries, and complaints will be managed via the Community and Stakeholder Engagement Strategy.

The Community Manager (or delegate) will complete a site inspection and record observations and weather conditions in response to any community complaints associated with biodiversity

management. Actions or rectification (if required) will be undertaken by the construction team as soon as reasonably practicable.

In accordance with CoA C14, "The Applicant must:

- a) make the following information publicly available on its website as relevant to the stage of the development:
 - i. the EIS;
 - ii. the final layout plans for the development;
 - iii. current statutory approvals for the development;
 - iv. approved strategies, plans or programs required under the conditions of this consent (other than the Fire Safety Study and Emergency Plan);
 - v. the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;
 - vi. a comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent;
 - vii. how complaints about the development can be made;
 - viii. a complaints register;
 - ix. compliance reports;
 - x. any independent environmental audit, and the Applicant's response to the recommendations
 - xi. any other matter required by the Planning Secretary; and
- b) keep this information up to date."

In accordance with CoA C14(a)(iv) this Plan will be publicly available on the Project website at <https://www.muswellbrooksolarfarm.com/>

12. Incident and non-compliance management

12.1. Incident Management

The Development Consent defines an incident as “an occurrence or set of circumstances that causes or threatens to cause material harm to the environment, and as a consequence of that environmental harm, may cause harm to the health and safety of human beings, and which may or may not be or cause a non-compliance.”

Material harm is defined by the Development Consent as “harm that:

- involves actual harm to the environment that may include (but not be limited to) a leak, spill, emission other escape or deposit of a substance, and as a consequence of that environmental harm (pollution), may cause harm to the health or safety of people; or
- results in actual loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).”
- The immediate response to an incident will include:
 - stop work in the area and ensure personnel safety
 - notify relevant personnel (Construction Manager/Operations Manager and Site Manager, Environmental Manager)
 - Notify emergency services if required (to be undertaken by Site Manager/Operations Manager or delegate)
 - isolate the hazard where safe to do so (e.g. shut down plant, apply site controls to mitigate the risk of potential pollutants spreading)
 - Site Manager/Operations Manager or delegate to report the incident to any regulatory authorities or asset owners as required (NSW EPA, council)
 - initiate any clean up to mitigate the risk of further impact to the environment

The incident will be recorded in the Project incident register (or equivalent). The Site Manager/Operations Manager or delegate will investigate the incident, including the root cause, and corrective actions will be identified.

The investigation process would typically include:

- An analysis of the incident by the Site Manager/Operation Manager or delegate in more detail, with the aim of determining possible causes
- A site inspection by the Site Manager/Operation Manager or delegate
- Advising relevant personnel of the problem
- Identifying and agreeing on actions to resolve or mitigate the risk
- Implementing actions to rectify or mitigate the risk.
- Processes to monitor and review effectiveness of actions and/or additional measures.

Any corrective actions will be added to the environmental corrective action register and will be assigned to the relevant Project Team personnel for implementation and closeout. Actions will be assigned and implementation prioritised in a collaborative way by the Site Manager (or Operation

Manager during operation) based on the environmental risk. Timeframes will be set to ensure any damage incurred is rectified and any chance of recurrence is eliminated as soon as practicable.

Following corrective action, the Site Manager (or Operation Manager during operation) or delegate will close out the incident, noting that additional obligations may be required following notification to the Planning Secretary (see Section 12.2). It should be noted that any incident investigation should assess the risk of future events and whether current controls are effective.

This section of the Plan aligns with Section 8 of the EMS.

12.2. Incident notification to the Planning Secretary

In accordance with CoA C10 of the Development Consent, OX2 will "notify the Department within 24 hours of becoming aware of an incident. The notification must be made via the NSW planning portal (Major Projects) and address details of the incident including:

- (a) date, time and location;
- (b) a brief description of what occurred and why it has been classified as an incident;
- (c) a description of what immediate steps were taken in relation to the incident; and
- (d) identifying a contact person for further communication regarding the incident."

In accordance with CoA C11 OX2 will "provide the Department with a subsequent incident report in accordance with Appendix 6 (Incident Notification and Reporting Requirements).

Incident notification and reporting requirements are included in Appendix 6 of the Development Consent. Appendix 6 states:

"Incident and Notification Requirements:

1. All incident notifications and reports must be submitted via the NSW planning portal (Major Projects).
2. The Applicant must provide notification as required under these requirements, even if the Applicant fails to give the notification required under condition C10 or, having given such notification, subsequently forms the view that an incident has not occurred.
3. Within 7 days (or as otherwise agreed by the Planning Secretary) of the Applicant making the immediate incident notification (in accordance with condition C10), the Applicant is required to submit a subsequent incident report that:
 - a) identifies how the incident was detected;
 - b) identifies when the Applicant became aware of the incident;
 - c) identifies any actual or potential non-compliance with conditions of consent;
 - d) identifies further action(s) that will be taken in relation to the incident;
 - e) a summary of the incident;
 - f) outcomes of an incident investigation, including identification of the cause of the incident;

- g) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence, including the period for implementing any corrective and/or preventative actions; and
 - h) details of any communication with other stakeholders regarding the incident.
4. The Applicant must submit any further reports as directed by the Planning Secretary.”

12.3. Non-compliance management

A non-compliance is defined by the Development consent as “an occurrence, set of circumstances or development that is a breach of the consent but is not an incident.”

Where a non-compliance (or potential non-compliance) is detected, an investigation will occur. Non-compliance may be detected through compliance tracking processes, audits, monitoring or other project inspections. The investigation will be conducted by the Site Manager/Operations Manager or delegate.

The investigation process would typically include:

The investigation process would typically include:

- An analysis of the potential non-compliance by the Site Manager/Operation Manager or delegate in more detail, with the aim of determining possible causes
- A site inspection by the Site Manager/Operation Manager or delegate (where relevant)
- a clear description of the non-conformance, and its actual/potential harm to biodiversity
- all personnel involved in the non-conformity, their organisation and contact details
- next steps, including the need for additional investigations and/or corrective actions
- contacting DPHI/CPHR to advise them of the non-conformity and outline corrective measures
- Advising relevant personnel of the potential non-compliance
- Identifying and agreeing on actions to resolve or mitigate the risk
- Implementing actions to rectify or mitigate the risk.
- Processes to monitor and review effectiveness of actions and/or additional measures.

Any corrective actions will be added to the environmental corrective action register and will be assigned to the relevant Project Team personnel for implementation and closeout. Actions will be assigned and implementation prioritised in a collaborative way by the Site Manager (or Operation Manager during operation) based on the environmental risk. Timeframes will be set to ensure any damage incurred is rectified and any chance of recurrence is eliminated as soon as practicable.

Following corrective action, the Site Manager (or Operation Manager during operation) or delegate will close out the non-compliance, noting that additional obligations may be required following notification to the Planning Secretary (see Section 12.4). It should be noted that any non-compliance investigation should assess the risk of future events and whether current controls and/or practices are effective.

Any non-conformance will be used in improvement of the BMP as outlined in Section 11.

This section of the Plan aligns with Section 8 of the EMS.

12.4. Non-compliance notification to the Planning Secretary

In accordance with CoA C12 of the Development Consent, "Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing and must be submitted via the NSW planning portal (Major Projects). The notification must identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply, the reasons for the non-compliance (if known), and what actions have been undertaken, or will be undertaken, and when, to address the non-compliance.

Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance."

13. EPBC Act approval conditions

13.1. EPBC Act notification requirements

EPBC Conditions 3-5 relate to the requirement for the approval holder to notify the Commonwealth DCCEEW with any changes to the Project relating to protected matters. The following are key timeframes that must be adhered to as per EPBC conditions:

- EPBC Condition 3: The approval holder must notify the department in writing of any proposed change to the NSW approval that may relate to protected matters within 2 business days of formally proposing such a change and within 5 business days of becoming aware of any proposed change.
- EPBC Condition 4: The approval holder must notify the department in writing of any change to the NSW approval conditions that may relate to protected matters, within 5 business days of such a change to conditions coming into effect. Such notification must include a copy of the changed NSW approval conditions showing what changes have been made.
- EPBC Condition 5: The approval holder must notify the department electronically of the date of commencement of the Action, within 5 business days following commencement of the Action.

13.2. EPBC Act Annual Compliance Report Guidelines

EPBC Conditions 8-9 and 13-19 relate to the requirement for an annual compliance report.

As per EPBC Condition 15, OX2 must ensure each compliance report is completed to the satisfaction of the Minister and is consistent with the Annual Compliance Report Guidelines (DCCEEW 2023). This section contains details for annual compliance reporting specified by DCCEEW 2023. The suggested content of the compliance report is summarised in Table 27.

Annual Compliance Reports help to ensure projects with the potential to impact on matters protected under the EPBC Act are implemented as approved. The reports help the Australian Government to understand how well approval conditions are being understood and implemented, plus they contribute to improving the effectiveness of the department's operations.

Under the EPBC Act, and in accordance with EPBC Condition 8, approval holders must maintain accurate records of all activities associated with or relevant to the conditions of approval so that they can be made available to the department on request (in accordance with EPBC Condition 9). Such documents may be subject to audit and used to verify compliance. In some cases, this requirement may be added as a condition attached to an approval.

The reports must clearly articulate the different requirements included for each regulator.

The Commonwealth DCCEEW Compliance and Environment Branch delivers the compliance and audit regime for approvals issued under the EPBC Act and is responsible for guiding and assisting EPBC approval holders to ensure they meet the obligations set out in an approval. Requests for assistance or clarification are encouraged and must be sent in writing to epbcmonitoring@dcceew.gov.au.

Compliance reports must be titled 'Annual Compliance Report' with the project name and EPBC approval number, clearly labelled beneath the title. Annual Compliance Reports must be forwarded to epbcmonitoring@dcceew.gov.au.

The complete report (text, figures, and appendices) must be supplied as an Adobe Acrobat PDF file. At a minimum, the PDF document is to be bookmarked to the major components (e.g., contents, main report, and appendices). Where this is not possible, the department will accept individual components in common formats. Where individual digital components are supplied, please provide a file list and the corresponding report reference. Electronic data will be accepted via email or via online storage services with prior arrangement.

Table 27: Annual compliance report guidelines as per DCCEEW (2023).

Contents	Description
Declaration of accuracy	Under sections 490 and 491 of the EPBC Act, a person must not knowingly provide information to the department that is false or misleading. A template of an appropriate declaration of accuracy is provided by DCCEEW (2023), however, OX2 may seek legal advice regarding interpretation of the declaration.
Document version control	The document version control system must be a simple system for ensuring version control and documenting details of key changes to the document over time. It must identify changes and include details of timing, people responsible, and reasons for those changes.
Table of contents	The table of contents must contain: all section headings and page numbers, all figures, tables, plans and maps (which must be numbered), all appendices (with meaningful titles, including sub-appendices if any); if appendices contain a collation of data, include a summary of the contents.
Description of activities	The description of activities section must contain a description of the approved action and details of the current activities undertaken during the period covered by the report. The compliance report must clearly identify: • EPBC number • project name • approval holder and ACN or ABN • the approved action • location of the project • person accepting responsibility for the report – signed declaration (see above) • dates for the reporting period of the report • date of preparation of the report.
Addressing all approval conditions	The compliance report must: • Demonstrate all conditions of the EPBC approval have been considered and addressed. • List the conditions of the EPBC approval, including any variations to those conditions, noting • If compliance or non-compliance with each condition has been achieved. • If a management plan is required under an approval condition: ○ The specifics in a management plan that support an approval condition must be detailed in the compliance report; and ○ Material must be provided demonstrating that the requirements of that plan have been implemented.
EPBC approval conditions and compliance table	As part of every compliance report, a conditions compliance table is required. The table must include: • Condition number and reference.

Contents	Description
	• Full wording of the condition as per the EPBC approval. • Designation regarding compliance or non-compliance. • Summary of evidence to support the compliance designation. • Any references to any other parts of the compliance report that may relate to that approval condition. The report must include a clear statement that operations were, or were not, compliant with the EPBC conditions of approval, which must be supported by a summary of evidence clearly demonstrating the conclusion that compliance with the condition was (or was not) met. Supporting data such as flora and fauna surveys, photograph monitoring and groundwater monitoring data must be provided as appendices.
Designations to record findings	The following designations must be used to record findings in compliance reports: Compliant: 'Compliance' is achieved when <u>all the requirements</u> of a condition have been met, including the implementation of management plans or other measures required by those conditions. Non-compliant: A designation of 'non-compliant' must be given where the requirements of a condition or elements of a condition, including the implementation of management plans and other measures, have not been met. Not applicable: A designation of 'not applicable' must be given where the requirements of a condition or elements of a condition fall outside of the scope of the current reporting period. For example, a condition that applies to an activity that has not yet commenced.
Correcting non-compliances	Findings of non-compliance must be accompanied by a summary detailing any corrective measures taken and include: • If the department was notified of the non-compliance and, if so, when, and how and to whom. • The relevant condition number and reference. • Who detected the non-compliance. • Date when the non-compliance was detected. • How the non-compliance was/will be corrected. • Who (the actual person completing the correction) was/is responsible for correcting the noncompliance. • Date when correction measures were/will be commenced and/or completed or the timeframe for correction. • What measures have been/ will be taken to avoid recurrence. Instances of non-compliance included in previous compliance reports not fully corrected at the end of the reporting period must have a progress update in the subsequent report and an assessment of the effectiveness of the measures taken.

Contents	Description
New environmental risks	The compliance report must discuss any new environmental risks that have become apparent during the reporting period. New environmental risks may include new pests or diseases, new information on groundwater levels, unexpected erosion etc. If new risks are identified, there must be a risk analysis and reporting. A commitment to revise the appropriate management plan (if required) must be included in the compliance report.
Other information	Any additional monitoring information or environmental research relevant to the EPBC approval and approval conditions can be included in the relevant section or appended to the compliance report. Appendices can be attached to support reporting against the EPBC approval conditions. Colour photographs and/or aerial photography can provide an excellent time record of the operation and should be included. Any additional information such as supporting documentation, consultant studies and reports must be appended.

13.2.1. Non-conformance reporting (e.g. unauthorised clearing)

EPBC Condition 20 and 21 relate to the requirement for reporting non-compliance.

OX2 must notify the department electronically, within 2 business days of becoming aware of any incident. The approval holder must specify:

- Any condition or commitment (e.g. within this BMP) which has not been, or may have not been, complied with,
- A short description of the incident, and
- The location (if applicable, including co-ordinates), date and time of the incident.

OX2 must provide to the department in writing, within 12 business days of becoming aware of an incident, the details of that incident. The approval holder must specify:

- All corrective measures and investigations which the approval holder has already taken in respect of the incident,
- The potential impacts of the incident,
- The method and timing of any corrective measures that the approval holder proposes to undertake to address the incident, and
- Any variation of these conditions or revision of a plan that will be required to prevent recurrence of the incident and/or to address its consequences.

13.3. Independent audit

EPBC Conditions 22 – 30 relate to the requirement of independent auditing. The Site Manager must ensure each audit report is completed as per the *Independent Audit and Audit Report Guidelines* (CoA 2019).

13.3.1. Independent Audit and Audit Report Guidelines

The *Independent Audit and Audit Report Guidelines* (CoA 2019) contains detailed information on the independent audit process including specifications for the independent auditor's declaration of independence, audit criteria and methodology (include a template) and a template for the auditor's certification. The information provided below is taken directly from CoA (2019) and CoA (2019) must be referenced for more detailed information when preparing and while undertaking the audit process.

A summary of the audit process is provided in Table 28 and below.

When an independent audit is required to be undertaken:

- the nominated auditor and the audit criteria and methodology must be approved by the Minister or delegate before the audit starts
- the Department can approve both the nominated auditor and the audit criteria and methodology at the same time. However, there is a risk associated with this approach in the event that the nominated auditor is not approved by the Department
- The Department takes the process of appointing independent auditors and approving audit criteria and methodology very seriously as these processes are fundamental to ensuring that the audit report is satisfactory.

- The approval holder is to nominate an individual from within their organisation as the single point of contact to liaise with the Department on all audit matters.

Independent auditor means a person (or firm) who:

- Does not have any individual, financial/employment (other than for the purpose of undertaking the role for which the person, or firm, is required) or family affiliation or any conflicting interests with the project, OX2 or OX2's staff, representatives, or associated persons
- Has demonstrated experience in undertaking government-regulated environmental compliance audits, and
- Holds relevant professional qualifications and accreditations.

13.3.1.1. Key dates and timeframes

It generally takes up to two months for an approval holder to source an appropriate auditor, have the auditor approved by the Department and then have the audit criteria approved. Approval holders should try to nominate an independent auditor to the Department as soon as possible to meet designated timeframes.

Annual Compliance Report (ACR) period means each subsequent 12-month period following the commencement of the Action until the expiry date of this approval, unless otherwise specified in writing by the Minister.

- Submit details of the proposed independent auditor and their qualifications to the department within 10 business days following the end of each audit period.
- Submit an audit report to the department for written agreement from the department within 3 months following the end of each audit period, or as otherwise directed by the Minister in writing.
- Publish each audit report on the website, in a format that is easily accessible and downloadable, within 10 business days of the date the department agrees to that audit report in writing.
- Notify the department within 5 business days of the date the audit report is published on the website. In this notification, the approval holder must provide the department with the web address for where the audit report is published on the website.
- Keep each audit report published on the website from the first date which that audit report must be published and until the expiry date of this approval.

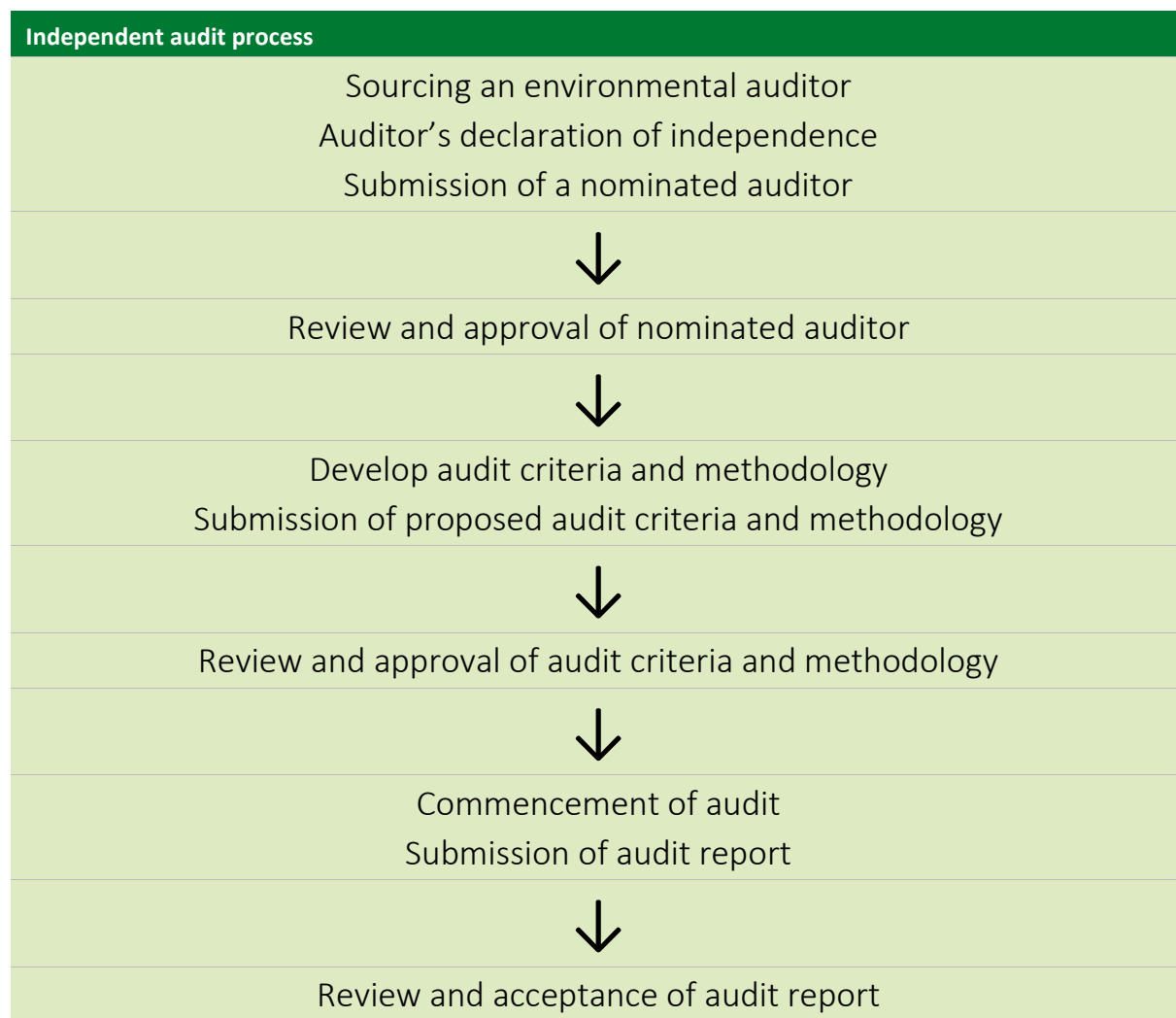
13.3.1.2. Key principals

The audit report must:

- Include details of actual measurements made, sample sizes and audit evidence obtained. Where sample records are referenced (e.g. water quality monitoring records, inspection logs, pre-clearance surveys etc) a sufficiently representative sample of records must be reviewed
- Not report by exception and must include details of all findings made against each criterion. Where the implementation of plans, reports, or programs etc (however described) is required by the approval conditions, the details of the individual commitments contained in those plans, reports, or programs etc are to be separately identified and measured

- Ensure that findings are based on independently verifiable third party evidence and must not place an over-reliance on representations made by the approval holder or their representatives.

Table 28: Independent audit process (CoA 2019)



13.4. Monitoring report specifications

The approval holder must ensure that any monitoring data, surveys, maps, and other spatial and metadata required under the conditions of this approval are prepared in accordance with the *Guidelines for biological survey and mapped data*, Commonwealth of Australia 2018, or as otherwise specified by the Minister in writing.

As per EPBC Condition 12, the approval holder must submit all monitoring data, surveys, maps, other spatial and metadata and all species occurrence record data (sightings and evidence of presence) electronically to the department within 20 business days of the next anniversary of the date of this approval decision except where otherwise specified in a plan.

13.4.1. Guidelines for biological survey and mapped data

As per EPBC Condition 10, OX2 must ensure that any monitoring data, surveys, maps, and other spatial and metadata required under the conditions of this approval are prepared in accordance with the *Guidelines for biological survey and mapped data* (CoA 2018), or as otherwise specified by the Minister in writing.

The core data for biological observations, as specified by CoA (2018) are:

- Scientific name of species
- Geocode of observation – in latitude and longitude
- Datum of the geocode, i.e. GDA 94
- Precision of the geocode - radius in metres, may be a grid block; GPS coordinates have a precision of 15 – 100 metres
- Site identifier – a unique survey number (and visit number) as generated and maintained by the custodian
- Date of the observation

The following supplementary information is also desirable (where available/applicable):

- Common name
- Number of individuals counted
- Reliability of the observation, e.g. confirmed, doubtful, backed by voucher specimen collected under permit (include voucher number)
- Referral number i.e. the EPBC Act Referral number
- Data source and record identifier - to distinguish data collated from other sources

Basic metadata should be provided for all data. A Data/Metadata Template is provided by CoA (2018) and is available separate to this BMP (species-observation-data-template.xlsx).

13.4.1.1. Database point records

Data should preferably be supplied as csv or MS Excel format files as indicated in the Data/Metadata Template. Where delimitation is by commas, double quotes (“an example”) should be placed around text fields as these may already include commas. Fields with unknown or null values should be set to blank or ‘null’, never zero.

13.4.1.2. Spatial data

Spatial data should be supplied in an electronic format that can be read by the ESRI ArcGIS geographic information system software. The preferred format is ESRI shapefile or KML file.

All datasets and their attributes should be documented according to the Data/Metadata Template. Spatial information should be supplied in geographic decimal degree coordinates. The datum must be specified. The preferred datum for data provided is the Geocentric Datum of Australia (GDA94).

If a non-geographical projection is used, then information about the projection type and its parameters need to be provided. This includes information about major and minor axes, central meridian, standard parallels, latitude origin and false origin and the datum and spheroid

13.4.2. Guide to providing maps and boundary data for EPBC Act projects

As per EPBC Condition 11, OX2 must ensure that any monitoring data, surveys, maps, and other spatial and metadata required under the conditions of this approval are prepared in accordance with the *Guide to providing maps and boundary data for EPBC Act projects* (DAWE 2021) or as otherwise specified by the Minister in writing.

DAWE (2021) relates to project boundary information only.

What to show on maps:

- All relevant features and only relevant features
- Confidential locations
- If map shows details of a location that may endanger a threatened species if made publicly available, request the map is kept confidential.
- Appropriate amount of information and detail
- Background map
- Use satellite imagery, include source details.
- JPEG resolution 300 dpi

In most instances when capturing and displaying data for Australian locations, the geographic coordinate system Geocentric Datum of Australia 2020 (GDA2020 or GDA94), or the projected coordinate system Map Grid of Australia 2020 (MGA2020 or MGA94) will be suitable.

13.4.2.1. Metadata

All spatial data provided to the department should include 'metadata'. Metadata is documentation describing the data. Metadata typically includes information about the project, the creation and reliability of the dataset and data ownership.

Metadata is documentation describing a given dataset. In general, metadata should include enough information to allow the spatial data to be fully understood and/or re-created. Metadata may be included as a part of (or separate to) the spatial data shapefile or KML file. If included with the shapefile, the metadata will be contained with the shapefile's .xml file. When including shapefile metadata within the online referral form at the time of referral submission – while the data attachment section of the online referral form (section 1.3) does not accept the .xml file, it is possible to separately attach the shapefile .xml file at section 1.4 of the form.

The department uses metadata standard: ISO/TS 19139-1:2019 (SA/SNZ TS ISO 19139.1:2019).

Metadata for spatial data in relation to EPBC project boundaries should typically include:

- project information, such as the EPBC referral number and project title
- dataset information, including the title of the dataset; when, how and who created the data; the scale at which data were digitised (if applicable); what data sources were used (if applicable); and, estimations of the precision and accuracy of the data
- a description of the geographical extent of your data, including the general location, region and landscape
- a statement about the ownership (that is, who owns the intellectual property rights, if any) and custodianship (who has responsibility for maintenance, if required) of the data, and any conditions attached to use of the data. Please note that, in line with the department's

information strategy, key data in relation to EPBC Act projects, including referral project boundaries, will be made publicly available (see 5. Intellectual property rights and what happens to the data you provide)

- contact details, including name, organisation, phone number, email and postal address.

Spatial data files can be provided to the department in the form of a 'shapefile', KML or KMZ file. A shapefile is a collection of at least 4 separate files with the extensions .dbf, .prj, .shp and .shx. Any shapefile submitted to the department must consist of at least the essential 4 files, with the file extensions: .dbf, .prj, .shp and .shx. Shapefiles must be created using specialised 'geographic information systems (GIS)' software, such as 'Esri ArcGIS', or free GIS software, such as 'QGIS'.

A KML file (.kml) is a spatial file format commonly used for sharing and viewing spatial data without specialised geographic software. A KML can be created using specialised geographic software, as well as by using general, open-source applications such as Google Earth. A KMZ file (.kmz) is a compressed version of a KML file.

A shapefile can only contain one type of spatial data (for example, polygon data) but a KML (or KMZ) file can include different types of spatial data, such as polygons, polylines, points and 'raster' (image) data. If you provide your spatial data as a KML (or KMZ) file, make sure it contains only polygon data.

When you submit spatial data directly to the assessment officer at this stage, the files may be provided in the form of a shapefile, a KML file or a KMZ file. It is a good idea to compress (or, 'zip') the shapefile components to reduce the file size and keep the components together. When creating and providing a Zip folder (.zip) of shapefile components, include all of the shapefile components in addition to the 4 essential components (that is, .dbf, .prj, .shp and .shx, and also .cpg, .sbn, .sbx and .shp.xml).

If your map shows the details of a location that may endanger a threatened species if made publicly available, you must request that the map be kept confidential.

References

Commonwealth of Australia (2019). Environment Protection and Biodiversity Conservation Act 1999 Independent Audit and Audit Report Guidelines.

Commonwealth of Australia (CoA) 2018. Guidelines for biological survey and mapped data.

DAWE 2021, Guide to providing maps and boundary data for EPBC Act projects, Department of Agriculture, Water and the Environment, Canberra, February. CC BY 4.0.

Department of Climate Change, Energy, the Environment and Water 2023, Annual Compliance Report Guidelines, Canberra. CC BY 4.0.

Department of the Environment. 2015, 'Arrive Clean, Leave Clean, Commonwealth of Australia.

Eco Logical Australia (ELA). 2024. Muswellbrook Solar Farm Biodiversity Development Assessment Report dated 16 Feb 2024.

Eco Logical Australia (ELA). 2024a. MSF AAMs Response 20240625 Final.

EMM. 2023, Muswellbrook Solar Farm Environmental Impact Statement. Prepared for ESCO

EMM. 2025, Environmental Management Strategy, Muswellbrook Solar Farm. Prepared for ESCO Solar Farm 9 Pty Ltd

G.M. Cunningham et al, 1988, Systems used to classify rural lands in New South Wales. Sourced: <https://www.environment.nsw.gov.au/sites/default/files/systems-used-to-classify-rural-lands-nsw.pdf>

Appendix A – Consultation Records

A1.1. Initial Consultation

Initial consultation occurred via Teams on the 19th August 2025 and was attended by:

- Lily Gorrell (ELA Project Ecologist)
- Carla Evans (OX2 Project Manager)
- Lucy Knutson (CPHR)
- Clementine Watson (CPHR)

1. Project introduction and discussion of timeframes for submission of the draft BMP
2. Raised issue of *Delma vescolineata* and need for pre-clearance mitigation measures
3. Receipt of email from Lucy Knutson (CPHR) on the 22nd August. These items are outlined below (Table 25), and how they have been addressed in this BMP.

Table 29: Consultation log

Content	Addressed
Regarding retiring credits for <i>Delmar vescolineata</i> , the conditions of consent state that the offset requirement for <i>delma impar</i> may be offset by credits generated from the broader impar species complex inclusive of <i>delma vescolineata</i> .	Noted
Pre-clearance surveys for <i>Delmar vescolineata</i> will need to be in accordance with the TBDC with the addition of a capture and relocation strategy and providing a map detailing appropriate release locations. Apologies as I know this does not align with the timing of the project but upon internal discussion with species experts this is what was concluded.	This has been addressed with a Hunter Valley Delma survey mitigation strategy developed in Section 6.8
In addition, a fauna management protocol to minimise impacts to fauna onsite during operation is required within the BMP. Specific measures are to be included regarding delma as it is assumed that this species will recolonise the site post construction and during the operation phase. Measures should include pre-clearance survey for any additional works/ disturbance onsite during operation, keeping access tracks clear of vegetation etc.	This has been addressed with a Hunter Valley Delma survey mitigation strategy developed in Section 6.8
The BMP should place an emphasis on the improvement of PCT 281 within and outside the disturbance boundary and the rehabilitation of temporary disturbance areas.	This has been addressed in Section 6.14
Regarding the area proposed for additional and appropriate measures, Condition B14.(b) (iii) requires that these measures be included within the BMP. As discussed, as this area sits within the wider site to be managed it makes practical sense that management regimes are aligned and incorporated into a single management document.	This AAMs area has been set aside in order to meet Condition B14 “maintaining and improving the condition and extent of PCT 281 (provided all relevant approvals are in place), including regular reporting on the effectiveness of these measures to BCS, in accordance with the applicant’s letter dated 25 June 2024”. A separate AAMs Restoration Plan will be developed specifically relating to the biodiversity values present within this AAMs area and the requirements of “maintaining and improving the condition and extent of PCT 281”. This Plan will be appended to this BMP.

Content	Addressed
	Whilst it is considered likely that management of the surrounding lands within the Subject land and Development Footprint will overlap with this area, the management and intensity of actions proposed, and to be developed in the AAMs Restoration Plan, for this area will be more intensive than that proposed elsewhere.

A1.2. Final Consultation – CPHR

The Final BMP (dated 20251018) was submitted to CPHR for review on the 20th October 2025. Consultation in the form of several emails and phone conversations occurred between Lily Gorrell (ELA Project Ecologist) and Stevie Kay (Conservation Planning Officer – CPHR). The CPHR reviewed BMP was provided on the 24th November and a number of comments and recommendations were outlined for review (DOC25/895271-2).

The BMP has been amended to incorporate all comments, where applicable and the BMP (v1 – 20251209) has been finalised for submission.

An email dated 5th December 2025 was provided by Jessica Dickson (A/Coordination and Planning Officer – CPHR) to confirm that CPHR is satisfied with the amendments made to the Biodiversity Management Plan (BMP) in response to recommendations provided by CPHR (DOC25/895271-2).

An outline of the CPHR recommendations, and a response on how they have been addressed in the BMP is provided below as evidence of consultation.



Your ref: PAE-96919969
Our ref: DOC25/895271-2

Carla Evans
Senior Development Manager
OX2 Australia
Level 4/65 Dover St
Cremorne VIC 3121

By email: carla.evans@ox2.com

Dear Carla,

Subject: Muswellbrook Solar Farm (SSD-46543209-PA-2) - Biodiversity Management Plan

Thank you for your Major Projects Portal request dated 20 October 2025 seeking advice from the Conservation Programs, Heritage & Regulation Group (CPHR) of the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) on Muswellbrook Solar (SSD-46543209-PA-2), Biodiversity Management Plan (BMP).

CPHR has reviewed the provided information, and it is recommended that the BMP be amended, and greater detail provided to achieve the required outcomes in accordance with the conditions of consent. Recommendations are provided in **Attachment 1**.

CPHR notes that credit obligations, as required by the conditions of consent, must be retired prior to any site disturbance occurring. CPHR has consulted with the proponent directly regarding their proposed staged credit retirement arrangement.

If you have any further questions about this issue, please contact the Hunter Central Coast Planning Team at huntercentralcoast@environment.nsw.gov.au.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Joe Thompson'.

Joe Thompson
Director Hunter Central Coast
Conservation Programs, Heritage & Regulation Group (CPHR)

24 November 2025

Enclosure: Attachment 1

Attachment 1 - CPHR Comments

Muswellbrook Solar (SSD-46543209-PA-2) - Biodiversity Management Plan (BMP)

Table 1 - Development Consent Conditions and CPHR recommendations

Condition	BMP Reference	Condition Met?	Required Amendments and Recommendations	ELA comment
B11. The Applicant must not clear any native vegetation or fauna habitat located outside the approved disturbance areas described in the EIS.	Section 6.3	No / Ongoing	There are discrepancies in clearing limits (hectares) between the BMP and Biodiversity Development Assessment Report (BDAR). The BMP should be amended so the clearing limits are consistent with the approved BDAR. Section 6.4.8 of the BMP outlines details to be included in the post-clearance survey reports. In addition to this, the BMP should be amended so the final report also provides evidence confirming that clearing was only undertaken within the approved disturbance areas as described in the EIS.	Clearing limits reviewed and updated in the BMP This wording has been added to Section 6.4.8 of the BMP
B12. Prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset, the Applicant must retire biodiversity credits of a number and class specified in Table 4 and Table 5. The retirement of these credits must be carried out in accordance with the NSW Biodiversity Offsets Scheme and can be achieved by: A. Acquiring or retiring 'biodiversity credits' within the meaning of the Biodiversity Conservation Act 2016 (BC Act); B. Making payments into an offset fund that has been developed by the NSW Government; and/or C. Funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the biodiversity offset scheme.	Tables 4 & 5, Section 8	TBC	CPHR notes the credit obligation specified in Tables 4 & 5 and the BMP states that OX2 Australia Pty Ltd will provide the Planning Secretary (DPHI) with evidence in a separate document confirming the correct number and class of credits have been retired prior to the commencement of vegetation clearing.	This is correct.

Condition	BMP Reference	Condition Met?	Required Amendments and Recommendations	ELA comment
B13. Prior to carrying out any development that could directly or indirectly impact the biodiversity values requiring offset, the Applicant must provide evidence to the Planning Secretary that biodiversity credits have been retired.		TBC	See above comments on B12.	
B14. Prior to carrying out any development that could directly or indirectly impact biodiversity values, the Applicant must prepare a Biodiversity Management Plan for the development in consultation with BCS, and to the satisfaction of the Planning Secretary. This plan must:				
A. be prepared in accordance with the Biodiversity Development Assessment Report (dated 16 February 2024);	The BMP Table 6	Yes	Nil comment.	
B. include a description of the measures that would be implemented for: i. protecting vegetation and fauna habitat outside the approved disturbance areas;	Section 6.3	No / Ongoing	CPHR notes Section 6.3 and recommends the BMP is amended to include the following details: • best practice ‘construction’ fencing will be used in conjunction with ‘No Go Zone’ signage at the interface between the development footprint and all retained exclusion zone areas, • construction flagging will be used internally in some areas, e.g. roads and existing easements, and include ‘No Go Zone’ signage where appropriate, • all fencing will be checked regularly for damage and maintained for the duration of the	These items have been included in section 6.3.3 Exclusion zones

			project. The BMP refers to a '<i>Diuris tricolor</i> Translocation Plan' and that this plan will be developed prior to commencement of the Northern Portion of the development footprint. CPHR has not received a <i>Diuris tricolor</i> Translocation Plan and is therefore unable to comment on protection measures for the species and its habitat outside the approved disturbance area. It is recommended that the translocation plan is developed and submitted to CPHR for review and included in the Appendix of an amended version of this BMP prior to any clearing. <i>Note: Further CPHR and/ or expert advice may be required (i.e. Translocation is a process that generally requires an approved translocation plan supported by a scientific license and translocation plan/risk matrix).</i> Hunter Valley Delma (species) has been detected within the approved disturbance footprint. CPHR notes Section 6.8 and recommends the BMP is changed to meet the below advice for best practice survey efforts. CPHR's current advice for best practice survey effort for Hunter Valley Delma (species) required at this particular site is to base the required amount of tile arrays on the below: • ≤2 ha: 2 arrays • >2–50 ha: 2 arrays plus 1 additional array per 12 ha (or part thereof) beyond 2 ha (Max: 8 arrays at 50 ha) • >50–100 ha: 8 arrays plus 1	ELA notes the requirements of the '<i>Diuris tricolor</i> Translocation Plan' Prior to commencement of the Northern Portion of the Development Footprint a plan will be developed in liaison with CPHR and included into an Appendix of an amended version of the BMP. The BMP has been updated to include current advice for best practice survey effort for Hunter Valley Delma (Section 6.8.2.1) A total of 12 tile arrays are proposed in the Southern Portion of the Development Footprint in accordance with the current advice.
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			additional array per 25 ha (or part thereof) beyond 50 ha (Max: 10 arrays at 100 ha) • >100–1000 ha: 10 arrays plus 1 additional array per 100 ha (or part thereof) beyond 100 ha (Max: 19 arrays at 1000 ha) • for sites >1000 ha, contact the department via the BOS Helpdesk to confirm appropriate survey effort. Sections 6.4.2, 3, and 4 discuss pre-clearance surveys. CPHR acknowledges and supports the proposed survey efforts and recommends the inclusion of specific diurnal and nocturnal pre-clearance surveys to ensure fauna utilisation within the development footprint is recorded and able to be avoided or mitigated prior to clearing.	Wording added to Section 6.4.3 Pre-clearance survey report “Records of any identified usage (species presence) or signs of usage of HBTs will be included in the report, which will be used by Arborists as a guide to what species may be encountered, when they come to assessing each tree prior to clearing”.
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Condition	BMP Reference	Condition Met?	Required Amendments and Recommendations	ELA Comment
ii. managing and enhancing the remnant vegetation and fauna habitat on site;	Section 6.3, Section 6.4, Section 6.7, Section 6.11, Section 6.12, Section 6.13,	Ongoing	CPHR notes the relevant sections pertaining to this condition. See comments above related to Section 6.3.	Section 6.3 addressed as per the above responses.

	Section 6.14			
iii. maintaining and improving the condition and extent of PCT 281 (provided all relevant approvals are in place), including regular reporting on the effectiveness of these measures to BCS, in accordance with the applicant's letter dated 25 June 2024;	Section 6.14	TBC	The BMP states the following: <i>The Additional and Appropriate Measures (AAMs) Restoration Plan will be developed as a separate document, however, some aspects of management will overlap with the required actions proposed in this BMP.</i> And <i>A separate AAMs Restoration Plan will be developed specifically relating to the biodiversity values present within this AAMs area and the requirements of "maintaining and improving the condition and extent of PCT 281". This Plan will be appended to this BMP.</i>	AAMs Plan has been developed and will be submitted for review
iv. minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;	Section 6.3	No / Ongoing	See comments above related to Section 6.3.	Section 6.3 addressed as per the above responses.
v. minimising the impacts to fauna on site and implementing fauna management protocols;	Section 6.3, Section 6.4, Section 6.7, Section 6.11	No / Ongoing	CPHR notes the relevant sections pertaining to this condition. See comments above related to Section 6.3.	Section 6.3 addressed as per the above responses.
vi. protection of downstream aquatic habitat including key fish habitat through exclusion zones and revegetation;	Section 6.3.2, Section 6.14.4	TBC	Nil comment.	

vii.	rehabilitating and revegetating temporary disturbance areas with native species that are appropriate to the site's ecology and conditions, including PCT 281;	Section 6.14	TBC	CPHR notes the relevant sections pertaining to this condition, including the AAMs Restoration Plan to be developed.	Section 6.3 addressed as per the above responses. AAMs Plan has been developed and will be submitted for review
viii.	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	Section 6.4, Section 6.7, Section 6.14	TBC	Nil comment.	N/A
ix.	controlling weeds, feral pests and pathogens;	Section 6.11, Section 6.12	TBC	Nil comment.	N/A
C.	include a program to monitor and report on the effectiveness of mitigation measures and report to BCS following each annual reporting window;	Section 7.1	Ongoing	CPHR will review when provided.	N/A
D.	include an incidental threatened species finds protocol to identify the avoid and/or minimise options to be implemented if additional threatened species are discovered on site; and	Section 6.10	Ongoing	Nil comment.	N/A
E.	include details of who would be responsible for monitoring, reviewing and implementing the plan.	Section 6.1, Section 6.9	Ongoing	Nil Comment.	N/A

