Tallawarra Stage B Gas Turbine Power Station

Flora and Fauna Management Sub-Plan

EnergyAustralia Tallawarra Pty Ltd

Reference: MP07_0124

Revision: 2.5

2022-02-02

EnergyAustralia

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Document control record

Document prepared by:

Aurecon Australasia Pty Ltd
ABN 54 005 139 873
Level 5, 116 Military Road
Neutral Bay NSW 2089
PO Box 538
Neutral Bay NSW 2089
Australia

T +61 2 9465 5599
F +61 2 9465 5598
E sydney@aurecongroup.com
W aurecongroup.com

Document control					
Report title		Flora and Fauna Management Sub-Plan			
Document code		Tallawarra B Power Station	**Project number**		MP07_0124
Client		EnergyAustralia Tallawarra Pty Ltd			
Client contact		Amanda Jones	**Client reference**		
Rev	**Date**	**Revision details/status**	**Author**	**Reviewer**	**Approver**
0	2021-08-20	Draft for consultation	LS	DA / PF	
1.0	2021-09-14	Response to EA, GECL and BCD comments	LS	DA / PF	
1.1	2021-10-06	Address ER comments	AJ / LS	AJ / PF	
2.0	2021-10-06	Address ER comments	LS / PF	AJ / PF	
2.1	2021-10-19	Issue for DPIE submission	PF	AJ / PF	
2.2	2021-12-06	Responding to DPIE comments	PF / MC	AJ / PF	
2.3	2022-01-20	Responding to DPIE feedback	AJ/MC	AJ/PF	
2.4	2022-02-02	Response to DPIE review comments	AJ	PF	
2.5	2022-04-21	Minor amendments	AJ	PF	
Current revision		**2.5**			

Approval			
Author		Approver	
Name	Peter Fawcett	Name	Amanda Jones
Title	Principal, Environment and Planning	Title	Environmental Planning & Assurance Specialist

Contents

Appendices

Figures

Tables

Glossary/Abbreviations

Abbreviations	Definition
ABLV	Australian bat lyssavirus
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BCS	NSW Biodiversity, Conservation and Science Directorate
BC Act	*Biodiversity Conservation Act 2016*
CE	Critically endangered species or vegetation community as listed under the *BC Act* and/or *EPBC Act*
CEMP	Construction Environmental Management Plan
Cth	Commonwealth
CoA	Conditions of Approval
DPIE	Department of Planning, Industry and Environment (NSW)
E	Endangered species or vegetation community as listed under the *BC Act* and/or *EPBC Act*
EA	EnergyAustralia
EEC	Endangered ecological community
EMS	Environmental Management Strategy
Environmental Assessment	Original environmental assessment completed as part of initial project approval: SKM, 2009. *Tallawarra Stage B Gas Turbine Power Station: Environmental Assessment*
EPBC	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EPL	Environmental protection licence
ER	Environmental Representative
EWMS	Environmental Work Method Statement
FFMP	Flora and Fauna Management Sub Plan
FM Act	Fisheries Management Act 1994 (NSW)
GECL	GE Clough (Principal Contractor)
HSSE Lead	EnergyAustralia's Health, Safety, Security and Environment leader
IDWA	Illawarra District Weeds Authority
NSW	New South Wales
OCGT	Open cycle gas turbine
OEH	Office of Environment and Heritage (NSW) – Functions of the department assumed by DPIE as of July 2019
PCT	Plant Community Type
Project boundary	Project lot boundary assessed as part of the Environmental Assessment
Secretary	Secretary of the Department of Planning, Industry and Environment (NSW)
TEC	Threatened Ecological Community as listed under the *BC Act* and/or *EPBC Act.* This includes Critically Endangered Ecological Communities (CEECs), Endangered Ecological Communities (EECs), and Vulnerable Ecological Communities (VECs).
The Project	Design, construction, and commissioning of the Tallawarra B open cycle gas turbine power station
Tree	For the purposes of this plan, a tree is defined as native trees, shrubs and saplings of woody vegetation indigenous to Australia in accordance with species growth forms as defined by the Biodiversity Assessment Methodology. This does not include ground cover species, vines, scramblers, or forbs. A list of native species by growth form is available from: https://www.lmbc.nsw.gov.au/bamcalc/app/assets/NativeSpeciesByGrowthFrom_PowerQuery.xlsx
V	Vulnerable species or vegetation community as listed under the *BC Act* and/or *EPBC Act*
WoNS	Weeds of National Significance

1 Introduction

1.1 Document structure

The Tallawarra B open cycle gas turbine power station project (the Project) Environmental Management Strategy (EMS) provides the overarching strategic environmental management framework for the delivery (design, construction and operation) of the Project.

Within the management framework provided by the EMS, a Construction Environment Management Plan (CEMP) has been developed by EnergyAustralia to provide a system of environmental management for the construction phase of the project. The CEMP includes procedures, policies, and processes to establish and maintain project compliance and best practice controls. Its implementation will ensure that potential environmental impacts are managed during the construction of the Project. The CEMP is structured to include a range of aspect specific management sub-plans, including this document, to translate the corresponding environmental management requirements, commitments, and conditions of approval into an actionable construction management plan.

This Flora and Fauna Management Sub-Plan (FFMP) has been prepared to supplement the CEMP. It should be read in conjunction with the EMS and CEMP. Given that the management of visual impacts from the Project is largely related to landscaping measures, this FFMP also addresses visual impacts from the Projects. This FFMP should be used to inform the development of Environmental Work Method Statement (EWMS)

This FFMP is required to be implemented by EnergyAustralia, GE Clough (as the principal contractor) and all other contractors that undertake construction work on the project.

1.2 Location and land use

The Project is located at Yallah Bay Road, Yallah approximately 13 km south of Wollongong and 60 km south of Sydney. The site was previously used for a coal-fired power station, which was decommissioned in 1989. The Project will be constructed immediately adjacent to the existing Tallawarra A closed cycle gas turbine power station. As a result of its previous uses, most of the land surrounding the Project site (Tallawarra Lands) is vacant and has been cleared of vegetation. Currently, cattle grazing, and other rural activities constitute the primary land use beyond the power station site boundary.

The location of the project and the extent of Tallawarra Lands currently owned by EnergyAustralia is shown in Figure 1-1.

1.3 Tallawarra A power station

The existing Tallawarra A closed cycle gas turbine power station is operated by EnergyAustralia. It will continue be operational throughout construction of the Project. The Project will utilise much of the existing Tallawarra Stage A power station equipment and infrastructure during construction.

1.4 Objectives

The FFMP has been developed in consultation with the NSW Biodiversity, Conservation and Science Directorate (BCS) in compliance with Condition of Approval 7.3c.

The objectives of this Flora and Fauna Management Sub Plan are:

- Minimise impacts to impacts to native fauna
- Prevent impacts to threatened flora/fauna, threatened ecological communities, riparian zones and aquatic ecology
- Prevent the spread and reduce the extent of weed invasion

- Restrict clearing and disturbance to the minimum possible extent
- Enable biodiversity impacts to be offset in accordance with the Conditions of Approval such that biodiversity within the site is replaced or improved compared to existing conditions
- Ensure compliance with commitments and requirements to address the visual impacts of the Project.
- Comply with all relevant legislation and project approval conditions.

1.5 Performance outcomes and targets

Flora and fauna performance outcomes and targets relevant to the FFMP are identified below with details of how they will be achieved listed in Table 1-1**.**

Table 1-1 FFMP Performance objectives and targets

Item	Objective	Target	Measurement tool
Construction compliance	Construction of the project in accordance with environmental approvals and licences	Compliance with all statutory approvals	Safeguards and management measures – Section 6 Audits – Section 8.5 Construction compliance reporting – CEMP Section 13 Management reviews – CEMP Section 13 and 14
Flora and fauna	Minimise impacts to impacts to native fauna Prevent impacts to threatened flora/fauna, threatened ecological communities, riparian zones and aquatic ecology	No impacts to adjacent Endangered Ecological Communities The prevention of injury or mortality of native fauna No clearing of vegetation, spills, sedimentation or other contamination into the adjacent Yallah Creek (including riparian area), Lake Illawarra, or other waterway features	Safeguards and management measures – Section 6 Flora and fauna monitoring – Section 7 Audits – Section 8.5
Visual impacts	Ensure compliance with commitments and requirements to address the visual impacts of the Project.	The completion of landscaping works consisting of local native species following construction.	Safeguards and management measures – Section 6 Landscaping Plan – Appendix E Audits – Section 8.5
Biosecurity	Prevent the spread and reduce the extent of weed invasion	No intensification of weed presence following construction.	Safeguards and management measures – Section 6 Weed Management – Section 3.7.1 Flora and fauna monitoring – Section 7 Audits – Section 8.5
Offset and rehabilitation	Biodiversity impacts to be offset in accordance with the Conditions of Approval such that biodiversity within the site is replaced or improved compared to existing conditions	Cleared native vegetation to be offset at minimum 2:1 planting ratio. All temporarily disturbed sites rehabilitated and stabilised with native vegetation	Safeguards and management measures – Section 6 Tallawarra B Vegetation Offset Plan Flora and fauna monitoring – Section 7 Audits – Section 8.5

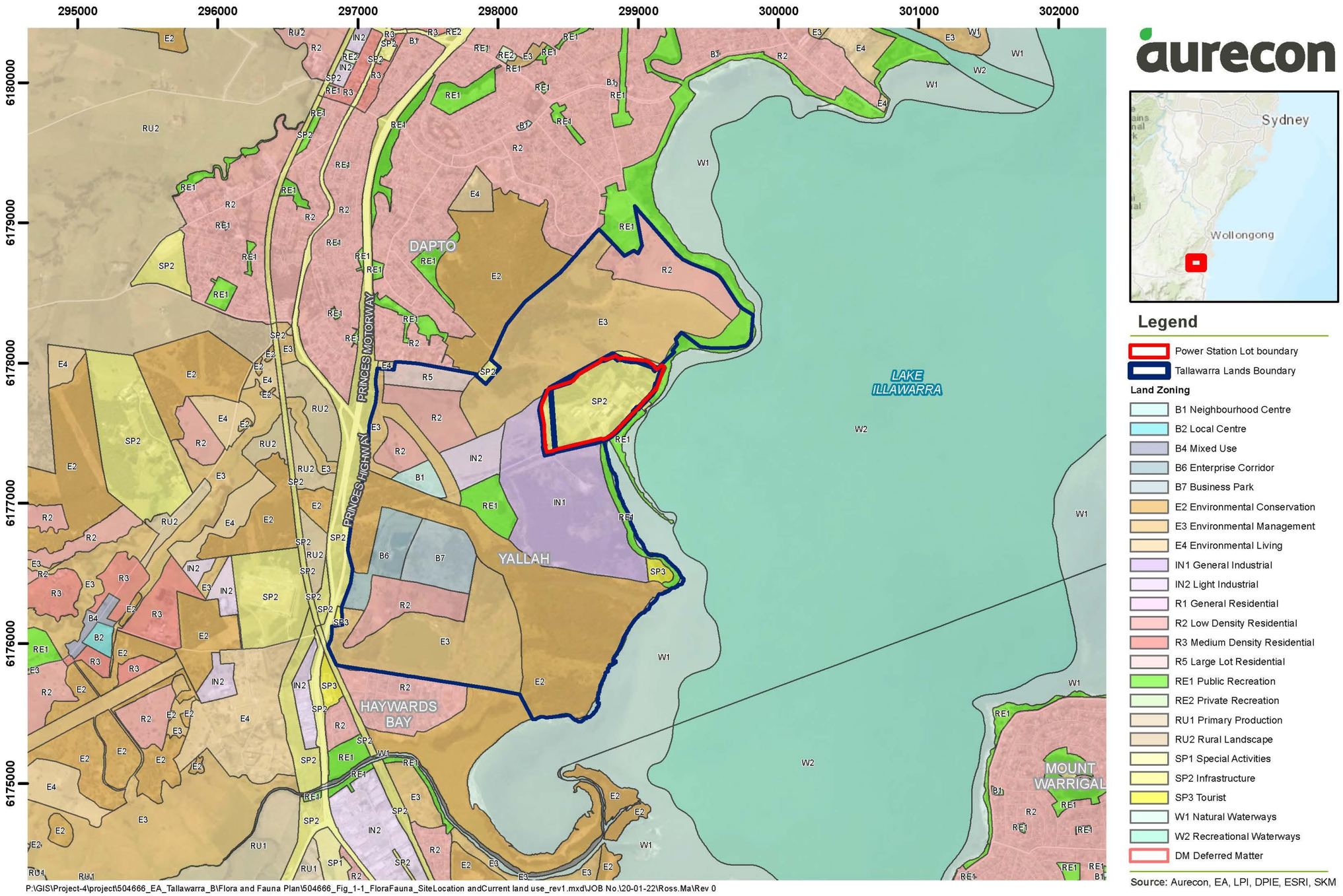


Figure 1-1 Site location and land use

2 Relevant legislation and guidelines

2.1 Relevant legislation

State and Commonwealth legislation relevant to the management of flora and fauna considered within this plan include:

- *Biodiversity Conservation Act 2016* (NSW) (BC Act)
- *Biosecurity Act 2015* (NSW)
- *Environment Planning and Assessment Act 1979* (NSW) (EP&A Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Fisheries Management Act 1994* (NSW) (FM Act)
- *Pesticides Act 1999* (NSW).

A responsibility table for addressing approvals, licenses, and permits required for the Project is provided in the EMS Appendix G.

2.2 Guidelines and policies

The guidelines and policies addressed in this FFMP include:

- *A rehabilitation manual for Australian streams* (Rutherfurd et al., 2000)
- Australian Standard 4970 (2009) *Protection of Trees on Development Sites*
- '*Blue Book': Managing Urban Stormwater: Soils and construction - Volume 1* (4th edition) (NSW Government, 2004)
- *Hygiene protocols for the control of diseases in Australian Frogs* (Murray et al., 2011)
- *Nest Boxes for Wildlife: A Practical Guide* (Franks and Franks, 2006)
- *New South Wales Weed Control Handbook – A guide to weed control in non-crop, aquatic and bushland situations 7th Edition* (DPI, 2018)
- *Rabies and Australian bat lyssavirus infection fact sheet* (NSW Health, 2019)
- *TQMS04-HSE-L001 – Energy Australia Tallawarra Environment Plan.*

2.3 Conditions of Approval

The Project (MP07-0124) was granted approval by the then Minister for Planning on 21 December 2010. The Project was declared as Critical State Significant Infrastructure (CSSI) by the Minister for Planning on 26 February 2008 in accordance with section 5.13 of the *Environment Planning and Assessment Act 1979* (EP&A Act).

An approval modification (Mod-1) for extension of the lapse date was approved March 2016, which extended the Project Approval lapse date by five years to 21 December 2020. A second approval modification (Mod-2) was approved by the Department of Planning, Industry and Environment (DPIE) in December 2020. Mod-2 extended the Project Approval lapse date by a further two years to December 2022 and amended several conditions of approval, including allowing for a single OCGT to be used for the project.

The Conditions of Approval (CoA) specifically relating to this FFMP are provided in Table 2-1 along with the responsibility for compliance. Where these conditions translate into an environmental safeguard or management measure, Table 2-1 indicates where in this FFMP (or other management plan) the condition is addressed.

The statement of commitments associated with the approved project is addressed in Section 6.2.

Table 2-1 Conditions of Approval relevant to the FFMP

CoA #	Condition Requirement	Responsibility	Where addressed
3.38	The Proponent shall ensure that there is no disturbance to the endangered ecological communities, including the Illawarra Subtropical Rainforest in the Sydney Basin Bioregion and the Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions, during the construction and operation of the project.	HSSE Lead Contractor	Section 6.5 Table 6-1
3.39	The Proponent shall mark the areas of endangered ecological communities with flagging tape or similar prior to commencing construction to ensure that there is no incursion into, or clearing of the areas.	HSSE Lead Contractor	Section 4.3.1 Table 6-1
3.40	The Proponent shall ensure that clearing of native vegetation is limited to the minimal extent required for the construction of the project and shall undertake all reasonable and feasible measures to avoid the clearing of any threatened flora species. All cleared areas shall be stabilised with local native grasses and ground cover plants as soon as practicable to minimise soil erosion.	HSSE Lead Contractor	Section 3.1 Table 4-1 Section 4.3.1 Section 4.3.2 Section 4.3.3 Table 6-1
3.41	At least one month prior to the commencement of construction of the project, the Proponent shall develop a plan for offsetting the biodiversity impacts resulting from the removal of any native vegetation. The plan shall be submitted to the Secretary for approval and include as appropriate, but not necessarily be limited to: a) measures for encouraging the natural regeneration of locally native vegetation, including weed management measures as identified in condition 3.44; b) replanting/compensatory plantings (at a ratio of at least 2:1) and/or land offsets, and rehabilitation measures; c) measures for replacing specific habitat values impacted by the project (e.g. provision of roost/nest boxes where significant habitat trees such as hollow bearing trees are impacted); d) a timeline for the implementation of the identified measures, including ongoing monitoring and maintenance; e) demonstration of how the plan would achieve the outcome of maintaining or improving biodiversity values in the local area; and f) measures for monitoring and maintaining any offsets in perpetuity.	HSSE Lead Contractor	EMS Appendix I

CoA #	Condition Requirement	Responsibility	Where addressed
	The plan shall be implemented in accordance with the specified measures and timeframes, unless otherwise agreed to by the Secretary.		
3.42	The Proponent shall establish a riparian zone consisting of local native plant species adjacent to Yallah Creek within the power station site boundary. The width of the riparian zone is to be a minimum of 50 metres on both sides of the creek, where practicable. All works and disturbance areas associated with the construction and operation of the project must be located outside of the riparian zone, including new transmission line poles.	HSSE Lead Contractor	Section 3.6 Section 4.3.1 Table 6-1
3.43	The Proponent shall monitor and maintain the riparian zone along Yallah Creek (referred to in condition 3.42) throughout the life of the project.	HSSE Lead	Section 6.5 Table 6-1 Section 7 OEMP
3.44	The Proponent shall monitor all rehabilitated areas, offset areas, and riparian zones for weed infestation. Any infestations shall be actively managed to remove or minimise their spread.	HSSE Lead Contractor	Section 3.7 Table 6-1 Section 7 Offset Plan (EMS Appendix I) OEMP
Visual amenity			
3.49	The Proponent shall undertake landscaping works to reduce the visual impact of the power station from residences along the foreshore, prior to the commencement of operation of the project. Vegetation used in landscaping works shall comprise local native species.	HSSE Lead Contractor	Section 4.4.2 Table 6-1 Offset Plan (Section 3.11) Appendix E
3.50	The Proponent shall minimise the use of reflective building elements and maximise the use of building materials and treatments which visually complement the surrounding landscape.	Contractor	Section 4.4.3 Table 6-1
3.51	The Proponent shall ensure that the power station is consistent in design (including materials, finishes and colours) with the Tallawarra Stage A power station.	Contractor	Section 4.4.3 Table 6-1

CoA #	Condition Requirement	Responsibility	Where addressed
3.52	The Proponent shall ensure that all external lighting associated with the project is mounted, screened, and directed in such a manner so as not to create a nuisance to the surrounding environment, properties and roadway. The lighting shall be the minimum level of illumination necessary and shall comply with Australian Standard AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting.	Contractor	Section 4.4.1 Table 6-1
3.53	Where aviation hazard lighting is recommended by CASA and/or AirServices Australia, all reasonable and feasible attempts shall be made to ensure that this lighting is designed and directed so as not to create a nuisance to the surrounding environment, properties and roadway.	HSSE Lead Contractor	Section 4.4.1 Table 6-1
Environmental management			
7.3 c)	Flora and Fauna Management Plan to manage flora and fauna impacts during construction in consultation with the BCS. The Plan shall include, but not necessarily be limited to: i) details of all impacted and potentially affected threatened flora and fauna species (including ecological communities) and specific management procedures for each of these species …	HSSE Lead	This Plan Section 3 Section 4.3 Section 6 Appendix A Appendix D
7.3 c)	*Flora and Fauna Management Plan to manage flora and fauna impacts during construction in consultation with the BCS. The Plan shall include, but not necessarily be limited to: …* ii) general management procedures for both the removal of redundant transmission lines and construction of new transmission lines within vegetated areas, including the procedures for clearing vegetation and minimising the extent of clearing, weed management and the rehabilitation of any disturbed vegetation, and …		Section 4.3 Section 4.5 Section 6 Appendix E
7.3 c)	*Flora and Fauna Management Plan to manage flora and fauna impacts during construction in consultation with the BCS. The Plan shall include, but not necessarily be limited to: …* iii) proposed revegetation and rehabilitation measures, including completion criteria and monitoring, for any cleared areas, offset areas, and riparian zones along Yallah Creek;		Appendix E EMS Appendix I (Offset plan)

3 Existing environment

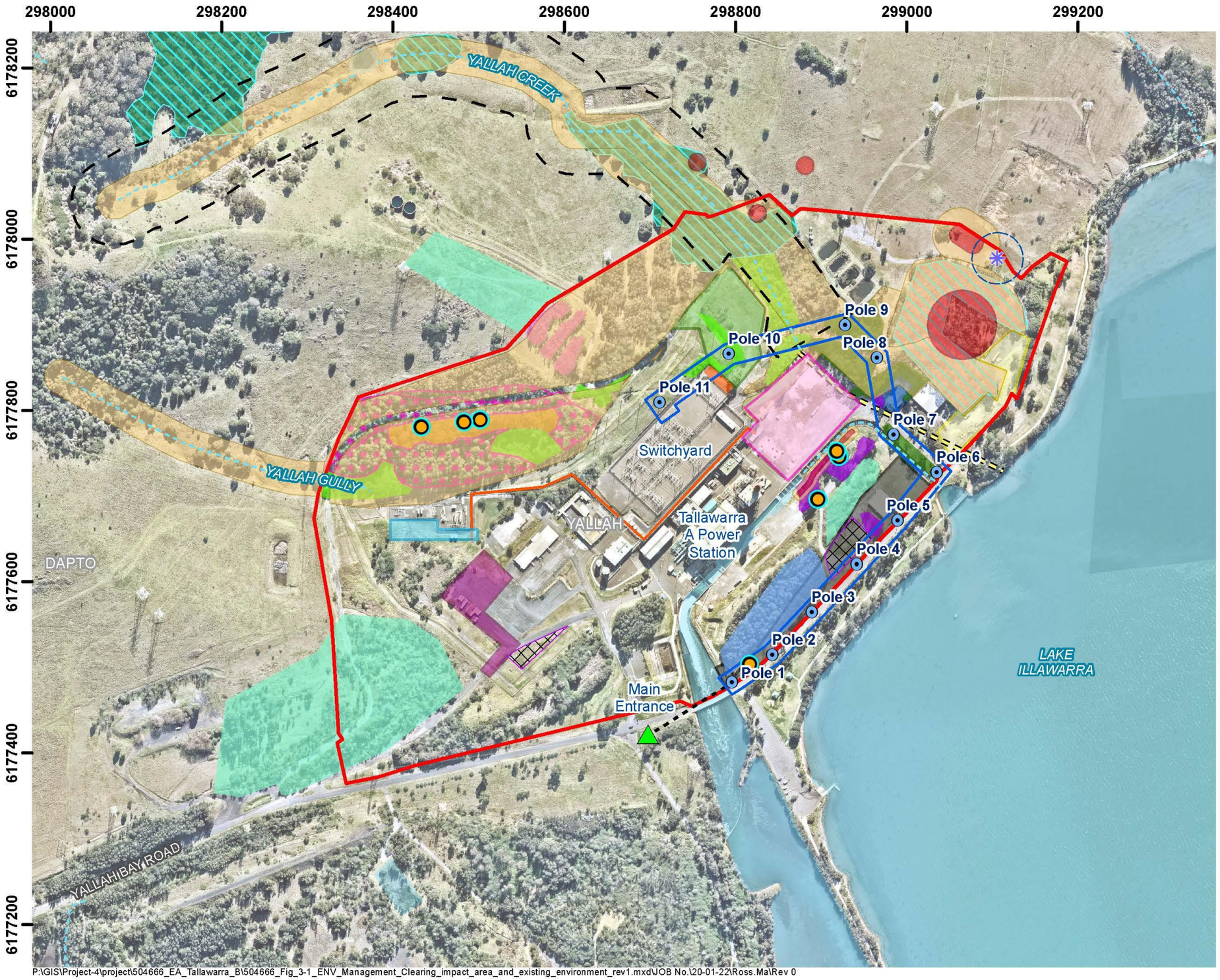
Tallawarra Power Station and the surrounding Tallawarra Lands area contain a range of key flora and fauna features. This section discuses those features and provides detail of management activities to minimise the impacts of construction. Locations of these features are mapped in Figure 3-1.

Ten vegetation communities have been considered relevant to the current project area, two endangered ecological communities (EEC) and eight general vegetation communities. Vegetation communities have been determined from previous ecological investigations (Ecological 2006, Aurecon 2020) and have been classified in accordance with the following where practicable:

- BioNet Vegetation Information System
- *Wollongong LGA Bioregional Assessment (Part I): Native Vegetation of the Illawarra Escarpment and Coastal Plain* (NPWS, 2002)
- State Vegetation Type Mapping - *Illawarra Plant Community Type Vegetation Map, 2016. VIS_ID 4678*
- General best fit community descriptions for non-native vegetation assemblages.

These vegetation communities are discussed in more detail in the following sub-sections and potential threatened species in the project area are listed in Appendix B.

The Yallah Creek riparian zone (condition of approval 3.42, 3.43 and 3.44) and weed considerations (condition of approval 3.44) are also discussed in more detail as per the Project Approval requirements.



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Legend

- Power Station Lot boundary
- Tallawarra B gas receival station
- Existing tower 502
- Tallawarra B Power Station
- Gas Feeder
- Transmission Alignment
- Stringing to existing tower under Endeavour Energy in separate approval
- Construction Ancillary Site 1
- Construction Ancillary Site 2
- Construction Ancillary Site 3
- Construction Ancillary Site 4
- Construction ancillary Site 5
- Osprey nest
- 30m ground Osprey buffer
- Watercourse
- North drain
- Switchyard carpark
- Archaeological sensitivity zone - Moderate
- Archaeological sensitivity zone - High
- Construction parking areas
- Hollow bearing trees
- Riparian 50m buffer - No Go Area

Impact area

- Proposed pole location

Threatened ecological communities

- EPBC and BC Act

Vegetation community (Aurecon 2021)

- Acacia scrub
- Coastal Swamp Oak Forest (TEC)
- Eucalypt and casuarina grassy woodland
- Forest red gum and paperbark forest
- Grey gum and forest red gum woodland
- Ironbark forest
- Lowland Dry-Subtropical Rainforest (TEC)
- Planted natives and weeds
- Radiata pine forest
- Weeds and exotics

Source: Aurecon, EA, NSW Spatial Services, OEH, Ecological, ESRI, Nearmap

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0 100 200m

Projection: GDA 1994 MGA Zone 56

Tallawarra B Power Station

FIGURE 3.1: Clearing impact area and existing environment

3.1 Threatened ecological communities

Threatened Ecological Communities (TECs) are defined as a community of plants and animals which are listed as threatened under the BC Act or the EPBC Act. This includes Critically Endangered Ecological Communities (CEECs), Endangered Ecological Communities (EECs), and Vulnerable Ecological Communities (VECs).

Previous ecological investigations (Ecological, 2006; Aurecon 2020) identified the following two EPBC and BC Act listed Endangered Ecological Communities (EECs):

- Illawarra Subtropical Rainforest in the Sydney Basin Bioregion – listed as Endangered (BC Act) and Critically Endangered (EPBC Act)
- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – listed as Endangered (BC and EPBC Act).

These EECs are located outside of proposed construction areas (Figure 3-1) and will not be impacted by the Project providing appropriate mitigation and exclusion measures are implemented (Section 4.3.5).

3.2 Native and non-native vegetation

The Project boundary area is comprised of eight general vegetation communities. These communities are predominantly planted as part of the Tallawarra A Power Station Landscape Master Plan (URS, 2006) with some evidence of native recolonisation. This has resulted in the formation non-natural vegetation formations that generally do not meet Plant Community Type (PCT) definitions. As such, Plant Community Types were not assigned to the vegetation communities (See Appendix C for further details of each community and assessments of consistency with PCTs).

The vegetation communities identified within Tallawarra Power Station are as follows.

- Swamp Oak Floodplain Forest - listed as Endangered (BC and EPBC Act)
- Illawarra Subtropical Rainforest in the Sydney Basin Bioregion – listed as Endangered (BC Act) and Critically Endangered (EPBC Act)
- Planted eucalypt and casuarina grassy woodland
- Planted grey gum and forest red gum woodland
- Planted forest red gum and paperbark forest
- Ironbark forest
- Acacia scrub
- Radiata pine forest
- Weeds and non-native.

Much of the vegetation throughout the Project Boundary area is extensively invaded by lantana (*Lantana camara)* and other ground cover weeds. The approximate area of the vegetation communities is listed in Table 3-1 and their locations are shown in Figure 3-1.

Impacts to these vegetation communities are discussed in Section 4.3.1.

Table 3-1 Approximate area of each vegetation community in the Project Boundary

Vegetation community	Approximate area (ha)
Native	
Swamp Oak Floodplain Forest	1.26
Illawarra Subtropical Rainforest in the Sydney Basin Bioregion	0.75

Vegetation community	Approximate area (ha)
Planted eucalypt and casuarina grassy woodland	0.30
Planted grey gum and forest gum woodland	0.30
Planted forest red gum and paperbark forest	0.70
Ironbark forest	0.44
Acacia scrub	0.76
Planted natives and weeds	0.55
Non-native vegetation	
Radiata pine forest	1.73
Weeds and non-natives.	5.11

3.3 Threatened flora

No threatened flora species are recorded within the Project site, however multiple records of *Solatum celatum* are identified within the Tallawarra Lands area, less than 1km northwest of the Project site (Figure 3-1). A description of this species is provided below:

Solanum celatum

Solanum celatum is a shrub species that grows up to 2 metres tall with purple flowers appearing between July and October. Most notably, this species is characterised from most other native/non-native *Solanum* species within the Illawarra region by the presence of prickles along the mid vein of the leaf and dense hairs on the upper leaf surface (Figure 3-2).

This species appears normally along disturbed margins and clearings, particularly along rainforest clearings and wet sclerophyll forest. As such, whilst field surveys have not recorded this species within the Project site, this species is to be considered in the event of an unexpected find.

Figure 3-2 *Solanum celatum.* Source: Jedda Lemmon/OEH

3.4 Fauna habitat

A range of potential fauna habitat values for both threatened, migratory and non-threatened native species are present within the Project site and the surrounding area. As such, when working within or adjacent to the fauna habitats, extra precautions are required to limit harm to both construction personnel and fauna species.

Eastern Osprey (*Pandion cristatus*)

An Eastern Osprey (listed as Vulnerable under the BC Act) breeding pair has a well-established nesting site within a transmission tower north east of the project site (Figure 3-1). This species is a moderately large fish-eating bird of prey that is often seen flying overhead at Tallawarra. To avoid impacts to this well established species, the tower which contains the pair's nest will be retained for the sole purpose of maintaining species habitat.

As these individuals have resided adjacent to Tallawarra Power Station for several years, they are believed to be accustomed to general operating noise of the power station. Additionally, the height of the nest approximately 30 to 50 metres off the ground provides further protection from surrounding disturbances. Regardless, this species is still at risk of disturbance, particularly during the June to October breeding season where nearby activities may result in the birds becoming aggressive, ultimately leading to a failed breeding attempt.

To prevent breeding failure of the species, a ground level 30-metre protection buffer around the transmission tower is to be instated during this breeding season as recommended by the Department of Primary Industry and the Environment threatened species office (D Bain 2020, personal communication, 15 October). Within this buffer, new disturbance activities such as sustained loud works, excavations, night-time lighting, and vegetation clearing is not permitted. The current tower structure where the nest is located is to be retained.

Disturbance works at heights have a greater possibility of disturbing the Osprey breeding pair and therefore a 50-metre protection buffer for any works greater than 5 metres in height during the breeding period is required. This includes the disconnection of transmission lines at the nesting tower site, or any activities associated with the tower approximately 50m south east of the nest tower.

Actions at height can occur within this 50m protection zone outside of the June to October breeding season provided that all practical steps are undertaken to minimise the length and extent of any disturbance. Works at height outside of this 50m buffer zone can occur during the breeding season (such as works associated with the transmission approximately 100m west-south-west of the nesting tower), however active monitoring of the nests and birds are to be undertaken whilst doing so, and works halted if the birds show signs of disturbance.

Operations such as the movement and unloading of trucks associated with the 'additional warehouse laydown' area as identified in Figure 3-1 is unlikely to cause impacts to the nesting pair either during or outside the breeding season. However, lighting design in this area, and all other nearby locations, are to utilise overhead covers/shields to direct lighting downward, as opposed to spreading light pollution upwards towards the nest.

Regular monitoring (weekly) of the nest is to occur throughout construction to identify any evidence of disturbance such as damage to the nest (See Table 7-1).

To assist in identification of the species, the nesting site at Tallawarra Power Station is shown in Figure 3-3 and an example image of an Eastern Osprey is shown Figure 3-4.

Osprey exclusion buffers are shown in Figure 6-1.

Figure 3-3 Resident Eastern Ospreys nesting atop a transmission tower at Tallawarra Power Station

Figure 3-4 Eastern Osprey. Source: *Queensland Government (2000)*

Microbat habitat

Previous ecological investigations (Don Fox Planning, 2011) recorded the following threatened microbat species within the surrounding Tallawarra Lands area. As such, microbats may temporarily utilise roosting sites within the Project Boundary. Microbat species which have the potential to occur on site include:

- Little Bentwing Bat (*Miniopterus australis*) – Vulnerable BC Act
- Large Bentwinged Bat (*Miniopterus orianae oceanensis*) – Vulnerable BC Act
- Eastern Freetail Bat (*Mormopterus norfolkensis*) – Vulnerable BC Act
- Southern Myotis (*Myotis Macropus*) – Vulnerable BC Act
- Yellow-bellied Sheathtail-Bat (*Saccolaimus flaviventris*) – Vulnerable BC Act

These species are known to utilise a range of habitats as roosting sites including tree hollows, loose tree bark, amongst dense foliage and within built structures such as culverts.

Figure 3-5 Example of loose tree bark which may serve as roosting habitat for microbat species

Reptiles and amphibians

A range of suitable habitat for reptiles and amphibians are present within the Project site including:

- Riparian areas
- Ponds, dams, swampy areas and wetlands
- Tall grass, sedges and dense vegetation thickets
- Hollows and loose bark on and at the base of trees
- Amongst construction material such as sheets of metal (particularly snakes).

Whilst there is not expected to be any threatened reptiles within the Project boundary, hazardous species such as the Eastern Brown Snake (*Pseudonaja textilis*) is known to occur in the area. This species is highly venomous and causes the most deaths from snake bites in Australia. As such care should be given when operating in these areas (particularly in the warmer seasons). Although dangerous, this snake is still a protected species under the BC Act and as a native animal is not to be harmed. Stop work procedures in accordance with Appendix A are to occur in the event of encountering any snake. Only a qualified snake handler is to handle or move on the snake to minimise chances of harm to both the snake and people.

Figure 3-6 Eastern Brown Snake (*Pseudonaia textilis*). Source: Australian Museum, 2020A © Australian Museum

Bird species

The Project boundary, Tallawarra lands and the surrounding Lake Illawarra region is home to a highly diverse range of both threatened and non-threatened bird species. These species utilise a range of habitats including:

- Wetland and lake areas
- Nesting, roosting, and foraging in tree canopies
- Amongst thick shrubs, grass and other vegetation (including weeds such as lantana)
- Flying overhead
- Within urban environments.

Given the range of suitable habitats, the chance of encountering bird species is considered very high. However, given the high mobility of most bird species, and the fact that most bird species encountered are urban bird species (such as Magpies) which would be accustomed to some level of human presence, the chance of impacting bird species is considered low in most cases.

Regardless care needs to be given during construction to minimise any potential impacts and stop work procedures (in accordance with Appendix A) are to take place in the event that a bird species is injured, a nest site will be impacted, or a bird does not move on from impact areas.

Furthermore, the possibility for spills and pollution have potential to impact bird species operating within waterways, particularly species such as Pelicans (*Pelecanus onocrotalus*) which often foraging for fish around the water outflow site of Tallawarra A Power Station.

Additionally, threatened bird species have been historically recorded directly adjacent to the Project Boundary (Figure 3-1). Whilst there is expected to be minimal impact, a summary of each species is provided in Table 3-2 to assist in identification and prevent risk of impact to protected species. Migratory species protected under the EPBC Act are discussed in further detail in Section 3.5.

Table 3-2 Threatened and migratory bird species previously recorded at the Project site

Species	BC Act	EPBC Act	Habitat description	Context of sighting
Swift Parrot (*Lathamus discolor*) Species shown in Figure 3-7	Critically Endangered	Endangered	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. Swift Parrots are found in dry sclerophyll forests and woodlands, suburban parks and gardens and flowering fruit trees. They roost communally, often in the same tree each night. They are almost always in trees, only coming to ground to drink.	One BioNet record of two individuals recorded in June 2020 Observed from the Lake Illawarra foreshore area
Blue-billed Duck (*Oxyura australis*) Species shown in Figure 3-8	Vulnerable	Not listed	The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed but prefers to dive if approached.	One BioNet record of six individuals recorded in May 2014 Observed from the Lake Illawarra foreshore area
White-bellied Sea Eagle (*Haliaeetus leucogaster*)	Vulnerable	Not listed	Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass. No nests have been observed on site	One BioNet record of one individual in May 2015 Observed from the Lake Illawarra foreshore area
Caspian Tern (*Hydroprogne caspia*)	Not listed	Marine and Migratory	Often found amongst sandy or muddy margins of lakes, bays, estuaries and lagoons. Have also been known to utilise artificial wetlands and sewage ponds. Breeding nest sites can occur in a range of habitats (although coastal environments are preferred). Nest is a deep scrape in the ground and can be in the open or amongst low vegetation	Seven BioNet recordings of one to two individuals ranging from March 2013 to August 2015 Observed from the Lake Illawarra foreshore area

Figure 3-7 Swift parrot perching. Source: NESP (2019)

Figure 3-8 Blue-billed Duck. Source: Australian Museum, 2020B. © Australian Museum

3.5 Migratory species

Ecological (2006) has identified a range of migratory species which are known to utilise the surrounding Tallawarra Lands area. Whilst these species are generally more likely to use wetlands and mudflats areas in the greater Lake Illawarra area, there is still a chance these species may be present within the Project Boundary. Given the abundance of migratory species in the area and noting that construction works are outside of preferred habitat for migratory species, impacts to bird species still need to be avoided. The stop work procedure as detailed in Appendix A must be implemented if impacts cannot be avoided. This includes exclusion zones implemented where bird nesting sites occur within the construction site, or in the event that a species is unable to move away from works of their own accord (such as if they are injured). Migratory species which may be present at the Project site include:

- Bar-tailed Godwit (*Limosa lapponica*)
- Black-faced Monarch (*Monarcha melanopsis*)
- Caspian Tern (*Sterna caspia*)
- Cattle Egret (*Ardea ibis*)
- Curlew Sandpiper (*Calidris ferruinea*)
- Double-banded Plover (*Charadrius bicinctus*)
- Eastern Curlew (*Numenius madagascariensis*)
- Great Egret (*Aredea alba*)
- Latham's Snipe (*Gallinago hardwickii*)
- Marsh Sandpiper (*Tringa stanatilis*)
- Osprey (*Pandion cristatus*)
- Pacific Golden Plover (*Pluvialis fulva*)
- Red-necked Stint (*Calidris ruficollis*)
- Rufus Fantail (*Rhipidura rufifrons*)
- Sharp-tailed Sandpiper (*Calidris artilage*)
- White-bellied Sea-Eagle (*Haliaeetus leucogaster*)
- White-throated Needletail (*Hirundapus caudacutus*).

3.6 Yallah Creek riparian zone

Yallah Creek is an ephemeral stream flows from Mt Brown to the north west of the site and into Lake Illawarra to the south east of the site. A significant portion of the creek is bounded by the EEC *Illawarra Subtropical Rainforest* to the north of the site boundary (Figure 3-9).

Within the Project boundary (as shown in Figure 3-1) the creek is directed into the existing 'North Drain' pipe which flows underneath the hardstand eastern power station site area. Existing fencing is present at the beginning of this pipe, and generally surrounding the creek, effectively excluding Yallah Creek and the EEC from the works.

Some Project activities such as vegetation clearing, laydown areas and construction will be occurring within the 50-metres of the North Drain. The North Drain is not considered part of Yallah Creek and so these activities are permissible and compliant with condition of approval 3.42.

In some locations due to practical reasons, the riparian exclusion zone adopted is less than 50 metres wide and in some cases is greater than 50 metres wide (as shown in Figure 3-1). The adopted riparian exclusion zone complies with condition of approval 3.42 because the buffers from the creek have been selected in consultation with BCS, to maximise the existing biodiversity values of the riparian zone where practical.

No Project activities will be undertaken within the riparian exclusion zone (as shown in Figure 3-1). Construction activities proposed in proximity to the riparian exclusion zone include:

- Construction ancillary site 4 is located adjacent to, but outside of the riparian exclusion zone.
- Transmission line span 9 – 10 spans the riparian exclusion zone however the design of the transmission line requires no disturbance or clearing of vegetation within the riparian exclusion zone.

Figure 3-9 Example of an area of Illawarra Subtropical Rainforest within Yallah Creek north of the site which is to be avoided

3.7 Weeds

Weeds species are prevalent across within the Project boundary and present in differing densities in all the vegetation communities. Lantana (*Lantana camara*) is dominant in the mid and understorey at various locations across within the Project Boundary, often forming dense shrubs up to 3 metres high. Thirteen registered weeds including seven priority weeds and six Weeds of National Significance (WoNS) are identified on site (Table 3-3).

Table 3-3: Registered weeds identified within the Project boundary

Species	Biosecurity duty	High Threat Weed	WoNS
Bellyache bush (*Jatropha gossypiifolia*)	Prohibition on dealings	No	Yes
Bitou bush (*Chrysanthemoides monilifera* subsp. *rotundata*)	Biosecurity Zone	Yes	Yes
Blackberry (*Rubus fruticosus*)	Prohibition on dealings	Yes	Yes
Bridal creeper (*Asparagus* spp.)	Prohibited matter	Yes	Yes
Fireweed (*Senecio madagascariensis*)	Prohibition on dealings / Regional Recommended Measure	Yes	Yes
Lantana (*Lantana camara*)	Prohibition on dealings / Regional Recommended Measure	Yes	Yes
Prickly Pear (*Opuntia stricta*)	Prohibition on dealings	Yes	Yes
African lovegrass (*Eragrostis curvula*)	Regional Recommended Measure	Yes	No
African olive (*Olea europaea*)	Regional Recommended Measure	Yes	No
Cotoneaster (*Cotoneaster* spp.)	Not listed	Yes	No
Small-leaved privet (*Ligustrum sinense*)	Not listed	Yes	No
Cassia (*Senna spp.*)	Not listed	Yes	No
passion vine (*Passiflora* spp.)	Not listed	Yes	No
Black eyed susan (*Thunbergia alata*)	Not listed	Yes	No

For further details on these species and the associated biosecurity duties refer to weeds.dpi.nsw.gov.au.

For species specific weed management measures and treatments refer to *New South Wales Weed Control Handbook – A guide to weed control in non-crop, aquatic and bushland situations 7th Edition* (DPI, 2018).

3.7.1 Weed management

To meet biosecurity duties, active management of weed species in accordance with relevant weed control guidelines such as *New South Wales Weed Control Handbook – A guide to weed control in non-crop, aquatic and bushland situations 7th Edition* (DPI, 2018) will be undertaken during all early works and construction activities. In addition to active management of new and existing weed infestations, post disturbance site rehabilitation and effective hygiene practices will prevent the introduction and spread of weeds.

As outlined in Table 6-1, weed management measures for the Project will be applied to control appropriate weed and pathogen biosecurity control risks. These measures will be implemented from the commencement

of construction activities and throughout the life of the project. The measures will target the management of WoNs listed in Table 3-3, particularly the extensive Blackberry (*Rubus fruticosus*) and Lantana (*Lantana camara*) infestation which is prevalent along the riparian zone. The measures to be applied are:

- Vehicles, boots and equipment are to be clean and weed free prior to entering and leaving site.
- Effective stockpile management and use of any weed free imported material to prevent weed invasion
- Reestablishment of disturbed areas with native and locally endemic groundcover species as soon as practicable
- Active rehabilitation and removal and spot spraying with chemicals appropriate to weed species within the construction areas, riparian zone and amongst adjacent retained native vegetation within the Project boundary. For species specific weed management measures and treatments refer to *New South Wales Weed Control Handbook – A guide to weed control in non-crop, aquatic and bushland situations 7th Edition* (DPI, 2018)
- Separation of weed species from native species (weeds not to be used as mulch)
- No stockpiling of weed contaminated material
- Disposal of weed material at an appropriate waste facility.

Ongoing weed management is undertaken as a priority weed control program in conjunction with Illawarra District Weeds Authority (IDWA). This is currently being undertaken for Tallawarra Power Station and the surrounding Tallawarra Lands area. The 2021 and onwards program is detailed within Table 3-4 and management zones are provided within Figure 3-10. Of these zones, Zone 2 and Zone 6 cover weed management within the Project Boundary.

This program (or similar program) is will continue to be implemented throughout the life of the project to ensure continued management of priority weeds throughout the Tallawarra Power Station site and surrounding Tallawarra lands.

Table 3-4 IDWA Priority weed management program for 2021 onwards

Month	Weed	Location
March	Alligator Weed	**Zone 4 / Zone 5 -** Duck Creek, Ash Pond 1, 2 & 3
January and March	Water Hyacinth	**Zone 3 / Zone 4 -** Ash Pond 3 / Horse Lease
January to May	Blackberry and Prickly Pear	**Zone 1 -** Mount Brown Hillside Lease
February to April	General weeds within clearways Lantana, Bitou Bush, Blackberry and other woody weeds	**Zone 6 –** Power Station Site
March to April	Lantana	**Zone 4 –** Duck Creek and Yallah Bay Road.
September	Bitou Bush, Pampas Grass, African Boxthorn, Groundsel Bush	**Zone 4 / Zone 5 -** Ash Pond 1, 2 & 3
October to November	Serrated Tussock and Coolatai Grass	**Zone 1 / Zone 2 -** Mt Brown Hillside, Access Track to Ash Pond 3, Yallah Bay Road
October to November	General weeds	**Zone 6 –** Power Station Site
December	Blackberry	**Zone 4** – Ash Pond 3 and Swamp
December	Alligator Weed	**Zone 4 / Zone 5 -** Duck Creek, Ash Pond 1, 2 & 3

Figure 3-10 IDWA 2021 and onwards priority weed management map of Tallawarra Power Station and Tallawarra Lands

4 Aspects and impacts

4.1 Construction activities

The new Tallawarra B Power Station is to be constructed directly adjacent to the operational Tallawarra A Power Station, and is unlikely to directly impact local biodiversity due to the already heavily disturbed nature of the site. However, associated ancillary and early works facilities will involve direct impacts to native vegetation. These facilities include:

- Construction ancillary areas 1 to 5
- Switchyard carpark
- Car parking areas
- New transmission line alignment easement and poles
- Tallawarra B gas receival station
- Gas feeder pipeline
- Tallawarra B power station (main turbine hall, generator, etc).

The location of these construction areas is provided in Figure 3-1.

4.2 Project GeoPortal and sensitive area maps

The Project's environmentally sensitive areas (threatened species or populations, threatened ecological communities, retained threatened species habitat e.g. hollow-bearing trees) are identified and visually displayed in the project **GeoPortal**. The GeoPortal is a web-based geospatial mapping tool that digitally identifies site environmentally sensitive areas and key project features and construction ancillary sites.

Works should consider avoidance, management and/or mitigation of these environmentally sensitive areas.

Further information is available in the CEMP, Section 6.4.

4.3 Ecological impacts

4.3.1 Vegetation clearance

A survey of clearing areas identified up to 805 native trees of various ages and sizes to be removed for the Project. A count of native trees potentially impacted at each construction area is detailed in Table 4-1, with a more detailed inventory of trees identified for removal provided in the Project Offset Plan (*EMS Appendix I).*

Areas of vegetation clearance are shown in Figure 3-1 and are available in the GeoPortal.

No clearing areas are identified (or permitted) within areas of EEC or within the riparian exclusion zone. These areas must be marked off with flagging tape or similar prior to commencing construction to ensure that there is no incursion into or clearing of the areas.

Table 4-1 Vegetation inventory of clearing areas

Site location	Vegetation communities and types within the site	Native trees to be removed
Construction ancillary site 1	■ Planted forest red gum and paperbark forest. ■ Planted eucalypt and casuarina grassy woodland.	502
Construction ancillary site 2	■ Scattered natives and non-natives.	14
Construction ancillary site 3	■ Scattered natives and non-natives.	20

Site location	Vegetation communities and types within the site	Native trees to be removed
Construction ancillary site 4	▪ Scattered natives and non-natives.	37
Construction ancillary site 5	▪ Planted natives and weeds.	32
Gas receival station	▪ Scattered natives and non-natives.	8
Switchyard carpark	▪ Scattered natives and non-natives.	16
Tallawarra B Power Station	▪ Scattered natives and non-natives.	16
Transmission line easement	▪ Acacia scrub. ▪ Weeds and exotics. ▪ Planted natives and weeds. ▪ Swamp Oak floodplain swamp forest. ▪ Planted eucalypt and casuarina grassy woodland. ▪ Planted forest red gum and paperbark forest. ▪ Scattered natives and non-natives.	160
Total		**805**

Counts of impacted native trees will be conducted at the time of clearing. Following clearing of any vegetation, the location and number of native trees, non-native trees and area of vegetation cleared must be reported to the HSSE Lead.

During vegetation clearing, there is a greater risk of accidental impacts to fauna species that may be present at the time of clearing. A pre-clearance survey will be required. To minimise the risk of injury or death of fauna species, an ecologist will be present to conduct a pre-clearance survey and during vegetation clearing activities.

Given the extent of woody vegetation clearing, large woody debris created as a result of native tree removal should be retained and placed within the offset area to provide habitat for small fauna species such as snakes and lizards.

4.3.2 Cleared area stabilisation

All areas cleared for the Project must be stabilised with local native grasses and ground cover plants as soon as practicable to minimise soil erosion.

4.3.3 Opportunities for limiting clearing

To comply with CoA 3.40, clearing of native vegetation is to be kept to the minimal necessary extent.

Although the removal of up to 805 native trees is predicted, the selection of the construction areas was carefully chosen as the only remaining options due to environment, site access and geographic restraints within the Project boundary, with all other disturbed areas already being utilised for the purposes of the Project or for Tallawarra A operations.

The inventory of potential clearing has taken a conservative approach and with it assumed that all native trees within identified construction areas will be removed. As such there are opportunities at each location to retain vegetation and so to minimise clearing and required offsets. This includes:

Construction ancillary sites 1 - 5

Clearing for temporary works must only be undertaken where necessary. Detailed construction planning will be undertaken to ensure that all areas identified as construction laydown areas need to be cleared. In some cases, will be feasible to reduce the area of construction ancillary sites, or to protect and retain stands of trees located within the extend of the mapped areas.

Transmission line easement

Clearing estimates have been based upon complete ground clearance of a 6-metre easement either side of the proposed transmission line. Depending on transmission line detailed design, reduced easement widths may be considered in consultation with Endeavour Energy. Opportunities to retain native vegetation by pruning rather than clearing (in accordance with the relevant National powerline vegetation management requirements) will be considered.

Where new poles are located within stands of vegetation, a conservative assessment of clearing to support access and pole installation of 100 square metres per pole has been made. Detailed construction planning will minimise the clearing of vegetation for access and construction of new poles the greatest extent practical. Where possible, vegetation trimming and lopping will be implemented to minimise clearing of vegetation.

No vegetation clearance is permitted within the riparian exclusion zone. The transmission line between pole 9 and pole 10 spans the riparian exclusion zone. Clearing within these poles is not required because natural topography allows sufficient separation between transmission lines and vegetation and because the transmission line has been designed to utilise existing cleared areas where possible.

4.3.4 Removal of habitat

One small hollow (<40mm) was identified within a *Eucalyptus* sp. tree along the proposed transmission line easement (between poles 2 and 3) and therefore needs to be replaced with a nest box in accordance with CoA 3.41 (c). As this may be suitable roosting for microbat species such as the Little Bent-winged Bat (*Miniopterus australis*) which are known to occur in the local, a minimum of one nest box (to meet a one to one ratio of replacement) is to be installed in line with microbat nest box designs such as detailed in Franks and Franks (2006). Additional nest boxes can be installed if desired and economical.

Location of the nest box is best suited for installation amongst the retained eucalypt planted area north of construction ancillary site 1 (Figure 3-1). Continued monitoring and maintenance of the nest box is to be undertaken to ensure nest box is repaired where required, not invaded by pest species, and determine whether it has been successfully utilised by native species. Examples of monitoring and maintenance requirements are detailed in *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects* (RTA, 2011).

The installation, monitoring and maintenance of nest boxes will be the responsibility of EnergyAustralia.

4.3.5 Injury and mortality of fauna

During construction, there is potential for injury or mortality to fauna particularly during clearing of native vegetation or other habitat features. Less mobile fauna such as ground dwelling reptiles, nocturnal fauna, young nesting birds and tree dwelling mammals are most at risk.

Additionally, fauna may be trapped within any ground excavations/trenches or within machinery and construction material stored on site.

To prevent injury and mortality of fauna, pre-clearance surveys will be undertaken by an ecologist or other wildlife professional wherever vegetation clearing occurs.

4.3.6 Invasion and spread of weeds

There is high potential for weed species to be spread through the movement of construction vehicles and machinery, as well as the disturbance and transportation of soil in the area. An abundance of weeds (including Weeds of National Significance) were recorded within the Project site (as detailed in Section 3.7) and are at higher risk of further invading the local plant communities. The invasion and spread of weeds would be limited and managed with the implementation of the mitigation measures outlined in Table 6-1. If weeds are managed prior to work commencing, then this has the potential to reduce density and slow their spread into more contained areas.

4.3.7 Invasion and spread of pathogens and disease

There are currently no known existing infestations of pathogens and disease within Tallawarra Power Station and the surrounding lands. The highest risk of invasion and spread of pathogens such as Phytophthora (*Phytophthora cinnamomi*) and Myrtle Rust (*Uredo rangelii*) is via the importation of soils either on machinery or as fill. Pathogens present a greater risk for areas where clearing is to occur, as the increased stress of edge effects may make some species more susceptible to disease.

Additionally, incorrect handling of amphibian species has the potential to spread chytrid fungus (a key threatening process under the BC Act).

Incorrect handling of megabats (such as Flying-foxes) and microbat species have the potential to spread Australian Bat Lyssavirus (ABLV) to humans which can result in severe illness or death. Exposure may be resultant from bites or scratches, with greatest risk occurring during vegetation clearing. The risk can be mitigated against by avoiding NSW Health, 2019. *Rabies and Australian bat lyssavirus infection fact sheet*.

4.3.8 Noise, light and vibration

During construction fauna may be temporarily disturbed due to increased noise and vibration involved with the operation of machinery and equipment. These impacts will be mitigated against in accordance with recommendations provided in the Noise and Air Quality Management Sub-Plan of the CEMP.

Effective lighting design in areas located near the Osprey buffer zones (such as the additional warehouse laydown area) is to minimise possible disturbance to the species. This includes utilising overhead covers/shields to direct lighting downward, as opposed to spreading light pollution upwards towards the nest.

4.4 Visual impacts

4.4.1 Project lighting

The Project will include a single exhaust stack up to 50m-tall and 7m in diameter. The design will incorporate a plume dispersion device on top of the stack with a tapered width of 7-20m. Aviation safety lighting atop the stack will be provided when the power station is operational. Visual impacts will be managed with landscaping and lighting measures identified in Table 6-1 including designing and directing aviation hazard

lighting not to create a nuisance to the surrounding environment, properties and roadway where reasonable and feasible.

The project external lighting will be mounted, screened, and directed in such a manner so as not to create a nuisance to the surrounding environment, properties and roadway. The lighting will be the minimum level of illumination necessary and will be designed to comply with Australian Standard AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting.

4.4.2 Landscaping plan

A Project landscaping plan has been prepared in consultation with Wollongong City Council. The Project landscaping plan is provided in Appendix E. The landscaping plan seeks to reduce the visual impacts of the Project from residences along the foreshore, prior to the commencement of operation of the Project by creating visual screening of infrastructure. For more detail on carparking, refer to the Traffic Management Plan (TMP) Section 3.1.3.

4.4.3 Finishes and design

The project design will minimise the use of reflective building elements and maximise the use of building materials and treatments which visually complement the surrounding landscape. Where practical, the Project will be made consistent in design (including materials, finishes and colours) with the Tallawarra Stage A power station.

5 Roles and responsibilities

A complete breakdown of the Project personnel roles, responsibilities and authorities is in the CEMP Section 8.

Responsibilities for the implementation of environmental mitigation measures are indicated in this document in Table 6-1.

6 Environmental safeguards and management measures

The Project environmental safeguards and management measures are consolidated in Table 6-1.

6.1 Conditions of approval

The conditions of approval specifically relating to this FFMP are provided Table 2-1 along with the responsibility for compliance. Where these conditions translate into an environmental safeguard or management measure, they are included in Table 6-1

6.2 Statements of commitments

The Environmental Assessment Statement of Commitments (EA, 2009) provides the mitigation measures and safeguards that have been developed to manage potential environmental impacts associated with the Project. The Environmental Assessment Statement of Commitments specifically applicable to this FFMP are addressed in Table 6-1.

6.3 Commitments made in Project modifications

No commitments that are relevant to the management of potential biodiversity impacts have been made in Modification 1, Modification 2, submissions reports associated with these modifications, or technical specialist studies that prepared to support the modification applications.

Mod-2 provided for a single stack to be constructed up to 50m high with a plume dispersion device to be installed. The mitigation measures in the Environmental Assessment statement of commitments were considered suitable to minimise visual impacts from the modified project so remain unchanged from the statement of commitments measures. Accordingly, commitments for addressing visual impacts are addressed in Table 6-1.

6.4 Environmental protection licence

No licence conditions relevant to the management of potential flora, fauna or visual impacts are required by the environmental protection licence (EPL).

Table 6-1 Safeguards and mitigation measures

ID	Objective	Action	Resources	Timing	Responsibility	Reference
FF1	Restrict clearing and disturbance to the minimum possible extent	Temporary fencing is to be installed to clearly define disturbance footprint (including in areas associated with the removal and installation of transmission lines) and to prevent unnecessary vegetation and habitat removal. Prior to any clearing of vegetation opportunities for limiting vegetation clearing must be considered in accordance with Section 4.3.2 prior to defining the clearing footprint.	Australian Standard 4970 (2009) *Protection of Trees on Development Sites*	During site preparation	HSSE Lead Contractor Demarcating of disturbance footprint to be the responsibility of EnergyAustralia	Statement of Commitments (EA 2010) CoA 3.40 CoA 7.3 (c)
FF2		Locations of the *Illawarra Subtropical Rainforest in the Sydney Basin Bioregion* and the *Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions* are to be clearly marked by appropriate exclusion measure visible to all personnel to prevent incursion/clearing of these areas. Additionally, Grey Ironbark (*Eucalyptus paniculata*) trees within the Ironbark Forest vegetation community are to be identified and protected from use of the switchyard access track during construction. This includes both hollow bearing trees and non-hollow bearing trees.	Australian Standard 4970 (2009) *Protection of Trees on Development Sites*	During site preparation	HSSE Lead Contractor Demarcating of exclusion areas to be the responsibility of EnergyAustralia	CoA 3.38 CoA 3.39
FF3		Areas of the Yallah Creek riparian zone adjacent to construction activities is to be identified and clearly marked by appropriate exclusion measures visible to all personnel to prevent incursion/clearing of these areas and monitored to ensure exclusion measures are effective.	Australian Standard 4970 (2009) *Protection of Trees on Development Sites*	During site preparation and for the life of the project	HSSE Lead Contractor Demarcating of exclusion areas to be the responsibility of EnergyAustralia	Statement of Commitments (EA 2010) CoA 3.42
FF4	Prevent or minimise impacts to native vegetation /habitat	Additional sediment and erosion control and spill protection measures are to be implemented, monitored and maintained continuously for works and laydown areas located adjacent to	'*Blue Book': Managing Urban Stormwater: Soils*	During site preparation and	HSSE Lead Contractor	Statement of Commitments (EA 2010)

ID	Objective	Action	Resources	Timing	Responsibility	Reference
		waterways and riparian zones (including Yallah Creek and the Lake Foreshore).	*and construction - Volume 1* (4th edition) (NSW Government, 2004)	throughout the life of the project		CoA 3.42
FF5		Site induction is to include details on potential threatened flora, threatened ecological communities, riparian zones, location of exclusion zones, noxious weeds, Hollow bearing tree locations, biosecurity measures and fauna habitat values identified in Section 3.	-	Prior to construction, during toolbox talk	HSSE Lead Contractor	CoA 3.38 CoA 3.39
FF6		At minimum, one nest box is to be installed in a non-impacted vegetated location within Tallawarra Power Station site as detailed in (Section 4.3.4). Any additional hollows identified during clearing will also require installation additional nest boxes of appropriate dimensions to offset potential impacts. Monitoring of the nest boxes is to occur as detailed in Section 8.4	*Nest Boxes For Wildlife: A Practical Guide* (Franks and Franks, 2006)	Prior to clearing of hollows, or as soon as practicable before construction is complete	HSSE Lead	CoA 3.41 (c)
FF7	To prevent fauna impacts	Pre-clearance surveys are to be conducted by an ecologist or other wildlife professional prior to and during vegetation removal to limit the potential for protected native fauna species to be inadvertently impacted. This includes during the removal of redundant transmission lines or the construction of new transmission lines within vegetated areas. During pre-clearance survey a count of tree species removed will be conducted to provide input into final offsetting obligations (See FF12 for further information)	-	During construction (vegetation removal)	HSSE Lead Contractor	CoA 7.3 (c)
FF8		A stop work procedure is to occur in the event of unexpected fauna or potential fauna habitat (occupied nest or hollow) encountered on site. The stop work procedure is detailed in Appendix A. WIRES (1300 094 737) or alternative wildlife carer contact details to be readily available at all times during construction.	Appendix A – Stop work procedure	During construction	HSSE Lead Contractor	CoA 7.3 (c)

ID	Objective	Action	Resources	Timing	Responsibility	Reference
FF9		Eastern Osprey breeding pair and nest site within transmission tower are to be protected from disturbance activities, especially during the June to October breeding season. This includes: ■ No ground disturbance activities within 30m of the nesting tower during breeding season ■ No activities at height (>5m) within 50m of the nesting tower during breeding season ■ Monitoring for disturbance to the species if conducting works at height outside of the 50m buffer zone	Section 3.4	During construction	HSSE Lead Contractor Demarcating of exclusion areas to be the responsibility of EnergyAustralia	CoA 7.3 (c)
FF10		Handling of fauna is to be restricted to qualified wildlife professionals such as ecologists, veterinarians, and rescue groups (e.g. WIRES). This is to prevent: ■ Envenomation from inappropriate handling of snakes ■ Spread of Australian Bat Lyssavirus (ABL) through handling of microbats by unvaccinated persons ■ Spread of Amphibian Chytrid Fungus from inappropriate handling of frogs and tadpoles ■ Bites, scratches and spread of other diseases associated with inappropriate handling of fauna species ■ Death, injury, or undue stress of fauna species during the handling process	*Hygiene protocols for the control of diseases in Australian Frogs* (Murray et al., 2011) *Rabies and Australian bat lyssavirus infection fact sheet* (NSW Health, 2019)	During construction	HSSE Lead Contractor	CoA 7.3 (c)
FF11	Prevent the spread and reduce the extent of weed invasion	Appropriate weed and pathogen biosecurity control measures are to be implemented from the commencement of construction activities (including early works) to prevent the spread of weeds. This includes: ■ Vehicles, boots and equipment are to be clean and weed free prior to entering and leaving site. ■ Effective stockpile management and use of any weed free imported material to prevent weed invasion	■ *A rehabilitation manual for Australian streams* (Rutherford et al., 2000) ■ *New South Wales Weed Control Handbook – A guide to weed*	During all phases of construction and throughout the life of the project	HSSE Lead Contractor	Statement of Commitments (EA 2010) CoA 3.43 CoA 3.44 CoA 7.3 (c)

ID	Objective	Action	Resources	Timing	Responsibility	Reference
		▪ Reestablishment of disturbed areas with native and locally endemic groundcover species as soon as practicable ▪ Active rehabilitation and removal and spot spraying of weed species within the construction areas, riparian zone and amongst adjacent retained native vegetation within the Power Station Site Boundary ▪ Separation of weed species from native species (weeds not to be used as mulch) ▪ No stockpiling of weed contaminated material ▪ Disposal of weed material at an appropriate waste facility ▪ Management of WoNs listed in Table 3-3, particularly the extensive Blackberry (*Rubus fruticosus*) and Lantana (*Lantana camara*) infestation along riparian zones	*control in non-crop, aquatic and bushland situations 7th Edition* (DPI, 2018)			
FF12	Enable biodiversity impacts to be offset	An inventory of tree species is to be conducted as part of the pre-clearance survey for any clearing of native trees. For every one tree cleared, two will need to be planted to offset the environmental impacts. Final count will be incorporated within the Offset Plan (*504666_OffsetPlan_TallawarraB_PS*). Following clearing of any vegetation, the location and number of native trees, non-native trees and area of vegetation cleared must be reported to the HSSE Lead.	*504666_OffsetPlan_TallawarraB_PS*	During construction	HSSE Lead Contractor	CoA 3.41
FF13	To rehabilitate disturbed areas with appropriate local species	All cleared sites are to be rehabilitated with local native grasses and groundcovers to stabilise the soil and minimise erosion. Potential local species include: ▪ Weeping Grass (*Microleana stipoides*) ▪ Kangaroo Grass (*Themeda australis*) ▪ Basket Grass (*Oplosmenus hirtellus*) ▪ Common Sedge (*Carex longebrachiata*) ▪ Commelina (*Commelina cyanea*) ▪ Kidney Weed (*Dichondra repens*)	'*Blue Book': Managing Urban Stormwater: Soils and construction - Volume 1* (4th edition) (NSW Government, 2004)	During Construction and post construction rehabilitation prior to the operation of the project	HSSE Lead Contractor	Statement of Commitments (EA 2010) CoA 3.40

ID	Objective	Action	Resources	Timing	Responsibility	Reference
		▪ Tussock grass (*Poa labillardieri*) ▪ Bushy Hedgehog-grass (*Echinopogon caespitosus*) ▪ Native Geranium (*Geranium homeanum*) Revegetation of earthwork areas will be conducted as soon as practicable during the construction phases.				
FF14		Prior to the operation of the project, landscaping works are to be implemented along disturbed areas along the lake foreshore to minimise visual impact of the station[1]. Native species suitable for planting include: ▪ Spotted Gum (*Corymbia maculata*) ▪ Forest Red Gum (*Eucalyptus tereticornis*) ▪ Swamp Mahogany (*Eucalyptus robusta*) ▪ Native Quince (*Alectryon subcinereus*) ▪ Willow Bottlebrush (*Callistemon salignus*) ▪ Prickly-leaved Paperbark (*Melaleuca styphelioides*).	-	During Ccnstruction and post construction rehabilitation prior to the operation of the project	HSSE Lead	Statement of Commitments (EA 2010) CoA 3.49
V1	To mitigate visual impacts	Plant will be designed to be consistent with adjacent structures, including Tallawarra Stage A.	-	Design	Project Director	Statement of Commitments (EA 2010) CoA 3.51
V2		The design and colour scheme chosen for the built components will be selected to ensure they do not stand out within the natural settings. The Proponent shall minimise the use of reflective building elements and maximise the use of building materials and treatments which visually complement the surrounding landscape.	-	Design	HSSE Lead Contractor	Statement of Commitments (EA 2010) CoA 3.50
V3		Measures are to be prepared in consultation with Wollongong City Council, to reduce the visual impacts of the project,	-	Design	HSSE Lead	CoA 7.2 (c)(ii)

[1] Note: Planting for landscaping purposes will not be considered to contribute to the offsetting requirements as listed in the Offset Plan (EMS Appendix I) as these plantings will not be held to the same monitoring and reporting standards of the offset area.

ID	Objective	Action	Resources	Timing	Responsibility	Reference
		including landscape plans illustrating the proposed landscape planting and any embankment works. The Landscape Masterplan provided in Appendix E has been designed to meet the above requirement.			Contractor	
V4		The Proponent shall ensure that all external lighting associated with the project is mounted, screened, and directed in such a manner so as not to create a nuisance to the surrounding environment, properties and roadway. The lighting shall be the minimum level of illumination necessary and shall comply with Australian Standard AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting.	AS4282 1997 – Control of the Obtrusive Effects of Outdoor Lighting	Design	HSSE Lead Contractor	CoA 3.52
V5		Where aviation hazard lighting is recommended by CASA and/or AirServices Australia, all reasonable and feasible attempts shall be made to ensure that this lighting is designed and directed so as not to create a nuisance to the surrounding environment, properties and roadway.	-	Design	HSSE Lead Contractor	CoA 3.53

6.5 Exclusion zones

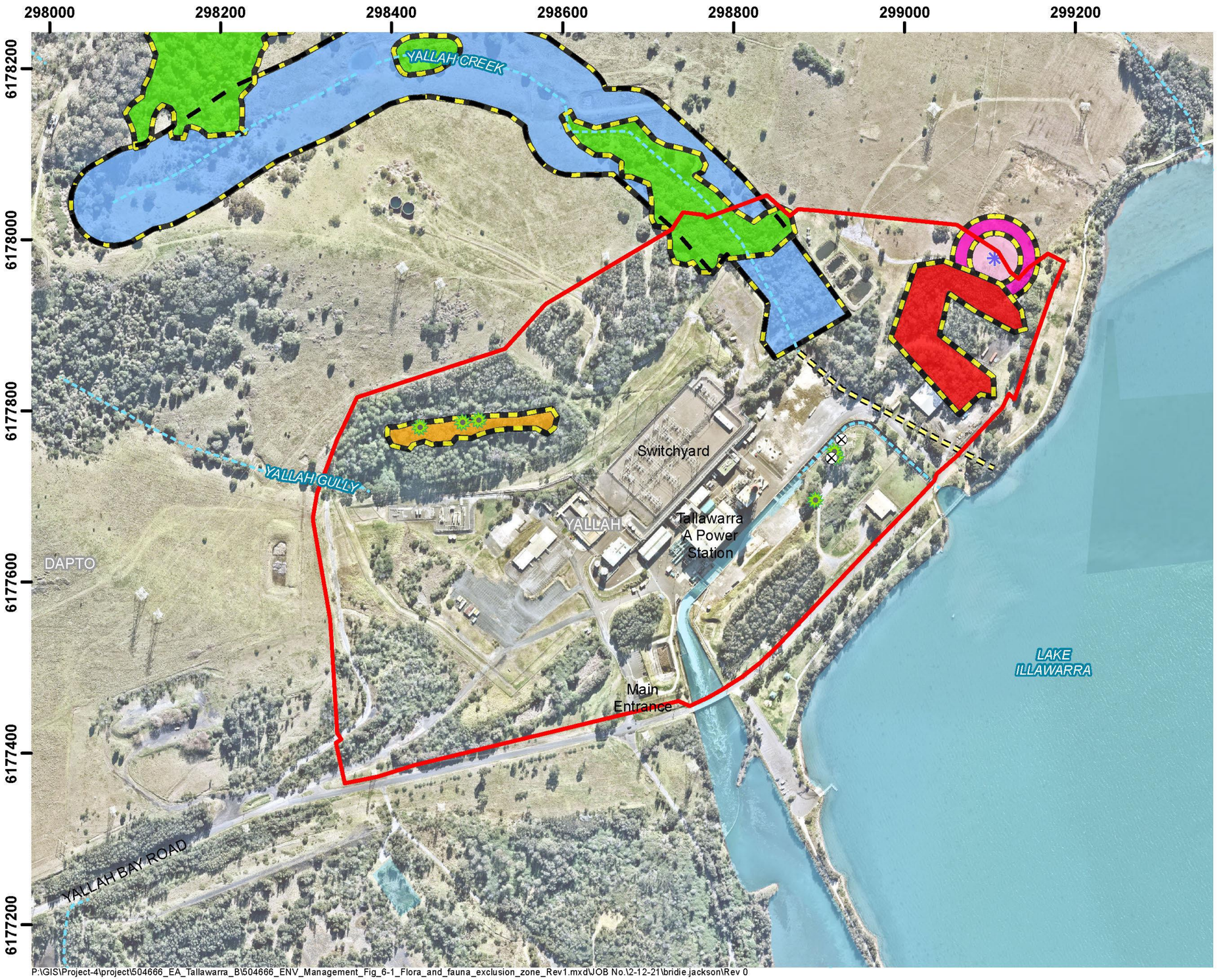
Whilst construction works which may impact native vegetation are to be restricted to the disturbance footprints identified in Table 4-1, additional areas of high ecological sensitivity must be identified prior to works and be clearly marked an effective exclusion measure visible to all personnel to prevent incursion/clearing of these areas.

Entry into these zones is to be avoided where possible during the Project. Entry is only recommended for the purposes of ecological management (such as weed maintenance).

A summary of required exclusion zones includes:

- Swamp Oak Floodplain forest EEC
- Illawarra Subtropical Rainforest EEC
- Yallah Creek riparian zone (which incorporates proposed vegetation offset zone)
- Osprey Nest buffer zone during breeding season (June to October)
- Ironbark forest adjacent to the existing switchyard access route.

The location of exclusion zones are identified in Figure 6-1.



aurecon

Legend

- Power Station Lot boundary
- Watercourse
- Hollow bearing tree
- Osprey nest
- Habitat Stag
- NorthDrain

Exclusion Zones

- 30m Ground Osprey Buffer
- 50m Aerial Osprey Buffer
- Illawarra Subtropical rainforest Endangered Community
- Ironbark Forest Exclusion Zone
- Swamp oak floodplain forest Endangered Community
- Yallah Creek Exclusion Zone

Source: Aurecon, EA, NSW Spatial Services, OEH, Ecological, ESRI

1:6,200

0 100 200m

Projection: GDA 1994 MGA Zone 56

Tallawarra B Power Station

FIGURE 6.1: Flora and fauna exclusion zones

7 Monitoring

Monitoring, measurement, analysis and evaluation for the project is detailed and maintained as part of the EMS, Section 7.5. Section 4 of the Offset Plan must also be followed for monitoring associated with the biodiversity offsets. Specific monitoring and inspections related to this FFMP are summarised below.

Table 7-1 FFMP monitoring requirements

Type	Purpose and method	Frequency	Responsibility
Monitoring of offset areas as required by EMS Appendix I	To ensure the success and viability of offset areas.	As detailed in EMS Appendix I (Offset plan, Section 4)	HSSE Lead
Vegetation clearing compliance	Visual reviews must be undertaken to ensure vegetation clearing only occurs or has occurred in designed and approved areas. Reviews must include visual checking of the construction exclusion zone areas identified in Section 6.5 of the FFMP to ensure no disturbance has occurred within construction exclusion zones. These exclusion zones are: ■ Swamp Oak Floodplain forest endangered ecological community ■ Illawarra Subtropical Rainforest endangered ecological community ■ Yallah Creek riparian zone (which incorporates proposed vegetation offset zone) ■ Osprey Nest buffer zone during breeding season (June to October) ■ Ironbark trees adjacent to the existing switchyard access route.	As part of weekly environmental inspections undertaken by the contractor in accordance with Section 12.1 of the CEMP.	HSSE Lead Contractor
Vegetation clearing area verification	Following clearing of any vegetation, the location and number of native trees, non-native trees and area of vegetation cleared must be reported to the HSSE Lead in order to track vegetation clearing areas and number of native trees impacted, to verify offset obligations.	Following any vegetation clearing.	HSSE Lead Contractor
Incidental fauna monitoring	To ensure native fauna are not impacted by the Project or inhabiting work areas, daily visual checks of the construction works area and any fauna relocation areas must be undertaken.	Daily as part of the daily site inspections required under Section 12.1 of the CEMP.	HSSE Lead
Nest box monitoring	To ensure the success and viability of nest boxes. Nest box monitoring is to include the below details to assist in the identification of required corrective actions: ■ Name of observer ■ Date of observation ■ Assessment of nest box condition (E.g. structural integrity, evidence of rot/termite activity) ■ Evidence of fauna activity, including pest species such as European Honey Bees (*Apis mellifera*) and Common Myna (*Acridotheres tristis*)	Monitoring of nest boxes is to occur at least at least every six months during construction phase of the project. Upon completion of construction, monitoring can be reduced to once yearly for two years. Upon the second yearly inspection the need for additional inspection can be reviewed.	HSSE Lead

Type	Purpose and method	Frequency	Responsibility
Eastern Osprey monitoring	To ensure construction activities have not caused disturbance to the Osprey breeding pair, or nesting site. Observations are to include: ■ Damage to the nesting site or transmission tower ■ Absence/presence of the species ■ Any additional incidental observations	As part of weekly environmental inspections undertaken by the contractor in accordance with Section 12.1 of the CMEP.	HSSE Lead Contractor
Weed and feral fauna monitoring	To ensure areas disturbed by the Project, including construction worksites, rehabilitated areas, offset areas, and riparian zones are managed for weed and feral fauna infestation a visual check, supported by a photographic record for the presence of weeds and/or feral fauna must be undertaken.	As part of weekly environmental inspections undertaken by the contractor in accordance with Section 12.1 of the CMEP.	HSSE Lead Contractor
Yallah Creek riparian zone	To ensure the Yallah Creek riparian zone is not impacted by the Project.	At least weekly.	HSSE Lead

8 Compliance management

8.1 Communication

Communication shall be undertaken as outlined in the EMS Section 6. EnergyAustralia will be the main point of contact with DPIE and will notify the Department (via the Major Project website) prior to the commencement of construction, operations, upgrading and decommissioning of the project. The HSSE Lead (or equivalent role) for the construction contractor may be required to communicate with DPIE directly in relation to specific environmental issues if directed by EnergyAustralia or the Environmental Representative (ER).

Consultation with agencies as required to comply with CoA as outlined in the EMS Appendix E.

8.2 Consultation

This FFMP was completed in consultation with the NSW Biodiversity, Conservation and Science Directorate (BCS) as required in CoA 7.3(c). BCS comments have been fully addressed and incorporated into this plan and the Offset Plan as appropriate. Appendix D provides an agency consultation log.

8.3 Training and competency

All project personnel are required to undergo site induction training which incorporates FFMP measures in accordance with Section 8 of the CEMP.

Flora and fauna specific training to be incorporated to inductions, toolbox talks, and other training and awareness packages include:

- Locations of exclusion zones and environmental constraints such as threatened ecological communities, Osprey nest site and riparian zones
- Stop work procedures in the instance of unexpected flora/fauna find or injury
- Noxious weeds present on site and required biosecurity management measures
- Relevant legislation and obligations
- Specific species likely to be encountered by construction workers and how these species can be identified
- Other mitigation measures detailed in Table 6-1 where relevant.

8.4 Unexpected finds procedure

For any unexpected fauna encountered or injured on site, the unexpected fauna procedure (Appendix A) must be followed and the following information is to be recorded and be made readily available:

- Species identification
- Location (GPS point) and time captured
- Location (GPS point) and time released
- Behaviour and condition upon release
- Details of any injury or deaths that occurred
- Contact details of recorder
- Contact details and location of licensed wildlife carer or vet if the animal was transferred into their care

Records are to be provided for input in the OEH BioNet database prior to the completion of the project

8.5 Audit and reporting

Regular audits are to be completed in accordance with Section 12 of the CEMP. Audits will assess FFMP compliance, to identify any issues of noncompliance, and to confirm licence and approval conditions are being met. Audits shall also consider how following targets that apply to this FFMP are being addressed:

- No impacts to adjacent the *Illawarra subtropical Rainforest in the Sydney Basin Bioregion* and the *Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin Bioregion and South East Corner Bioregion* threatened ecological communities
- Prevent and minimise the clearing of vegetation, spills, sedimentation or other contamination into the adjacent Yallah Creek (including riparian area), Lake Illawarra, or other waterway features
- Prevent and minimise the risk of injury and mortality of native fauna
- All legislative requirements, including the Conditions of Approval, are complied with.

8.6 Incident management and corrective actions

The management, investigation, reporting and notification process for environmental incidents is to be undertaken in accordance with:

- GECL Emergency Response Plan for Tallawarra B (where related to the construction of the project)
- EnergyAustralia TQMS12-HSE-L001 - Emergency Response Plan (where related to the broader project site or Tallawarra A operations)
- Conditions of Approval incident reporting requirements
- EPL 555 requirements.

If an incident does occur, project personnel in the immediate area are required to promptly cease works and follow the processes in line with the EnergyAustralia TQMS12-HSE-L001 - Emergency Response Plan, and notification and reporting requirements outlined in the following sections.

If the incident is under the control of GECL during construction, then the GECL Emergency Response Plan for Tallawarra B must be followed.

Generally environmental incident notification and reporting would ensure that all environmental incidents and non-compliances must be immediately reported to the HSSE Lead and Construction Manager. Verbal notification must occur immediately on becoming aware of the incident or non-compliance. EnergyAustralia will notify NSW EPA immediately of all pollution incidents that cause or threaten material harm to the environment. EnergyAustralia will also notify the ER of any environmental incident immediately or within 24 hours of becoming aware of the incident.

EnergyAustralia will notify the Secretary in writing via the Major Projects website immediately after it becomes aware of an environmental incident following the requirements of CoA 5.1 and Appendix 1 of the major project approval. The major project approval Appendix 1 incident reporting requirements are replicated in Appendix F of this FFMP.

For full details of incident management requirements, refer to Section 13.2 of the CEMP.

Possible incidents that could trigger incident requirements regarding this FFMP include:

- Clearing or other impacts that reduce the extent of native vegetation or habitat values within mapped TECs
- Injury or death of threatened or migratory fauna or flora
- Spills, sedimentation or other contamination into Lake Illawarra, Yallah Creek riparian zone, or other surrounding wetland feature.

8.7 Review

This plan will be subject to continuous review throughout the construction and pre-operational stage of the Project, aimed at identifying areas for improvement. Review will be carried out in accordance with procedures described in the Section 13 of the CEMP.

This plan will be subject to continuous review throughout the construction stage of the Project, aimed at identifying areas for improvement.

Specific review of this plan is required to comply with Condition of Approval 7.7. This condition requires that within 3 months, unless the Secretary agrees otherwise, of:

a) the submission of an incident report under condition 5.1 of this approval;

b) the submission of an Independent Environmental Audit report under condition 5.11 of this approval;

c) the approval of any modification to the conditions of this approval; or

d) a direction from the Secretary under condition 1.3 of this approval;

EnergyAustralia must review and, if necessary, revise the studies, strategies or plans required under the conditions of approval to the satisfaction of the Secretary.

Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.

In accordance with project condition of approval 7.8, to ensure the studies, strategies and plans for the project are updated on a regular basis and incorporate any required measures to improve the environmental performance of the project, EnergyAustralia may submit revised studies, strategies or plans required for the project under the conditions of approval at any time.

With the agreement of the Secretary, EnergyAustralia may also submit any study, strategy or plan required under the conditions of this approval on a staged basis. The Secretary may approve a revised strategy or plan required under the conditions of approval, or the stage submission of these documents, at any time.

With the approval of the Secretary, EnergyAustralia may prepare the revised or staged strategy or plan without undertaking consultation with all parties nominated under the applicable condition in this approval.

9 References

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National Parks and Wildlife Services (NPWS), 2002. *Wollongong LGA Bioregional Assessment (Part I): Native Vegetation of the Illawarra Escarpment and Coastal Plain*. Report for the Commission of Inquiry into Planning and Development on the Illawarra Escarpment. NSW National Parks and Wildlife Service, Sydney

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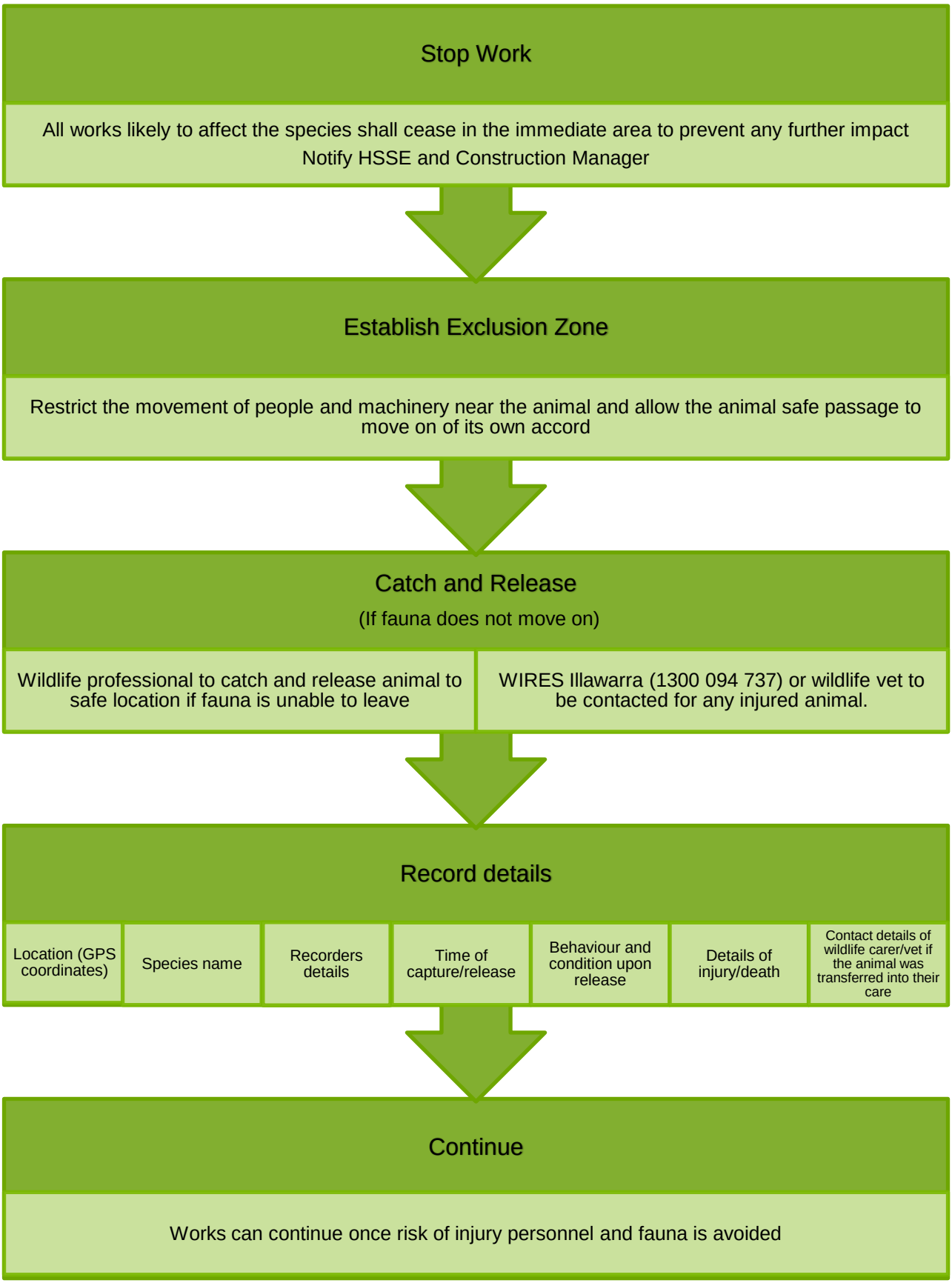
Rutherfurd, I.D., Jerie, K. and Marsh, N., 2000. *A rehabilitation manual for Australian streams* (Vol. 1, p. 171). Canberra: Land and Water Resources Research and Development Corporation and Cooperative Research Centre for Catchment Hydrology.

SKM, 2009. *Tallawarra Stage B Gas Turbine Power Station: Environmental Assessment*

URS Australia, 2006. *Tallawarra Power Station – Landscape Master Plan*

Appendix A: Unexpected fauna procedure

If wildlife is encountered on site during construction activities that may harm the animal or pose safety risk to construction personnel, the following procedure is to be followed:



Appendix B: Potential threatened species in the project boundary

Candidate species	Assessed in EIS	Status BC Act/	Status EPBC Act	Habitat	Likelihood of Occurrence	Ideal survey time
Flora						
Illawarra Socketwood *(Daphnandra johnsonii)*	No	Endangered	Endangered	Occupies the rocky hillsides and gullies of the Illawarra lowlands, occasionally extending onto the upper escarpment slopes. Associated vegetation includes rainforest and moist eucalypt forest.	Low – suitable habitat unlikely	September and early October (flowering)
Illawarra Irene (*Irenepharsus trypherus*)	Yes	Endangered	Endangered	Associated vegetation includes moist sclerophyll forest, Ironwood *Backhousia myrtifolia* thicket, and rainforest. Typically inhabits steep rocky slopes near cliff lines and ridge tops. The species is less typically found growing out of rock crevices or on narrow benches along cliff lines.	Low – suitable habitat unlikely	December to June (flowering)
Illawarra Zieria (*Zieria granulate)*	Yes	Endangered	Endangered	The typical habitat is dry ridge tops and rocky outcrops on shallow volcanic soils, usually on Bumbo Latite. Less frequently found on the moist slopes of the Illawarra escarpment and in low-lying areas on Quaternary sediments. Vegetation types typically associated with the species include subtropical rainforest, *Melaleuca armillaris* (Bracelet Honey-myrtle) scrub to tall shrubland, and *Eucalyptus tereticornis* (Forest Red Gum) open forest. The species is less frequently recorded in a number of other vegetation types.	Low – suitable habitat unlikely	Spring to Summer (flowering)
White-flowered Wax Plant (*Cynanchum elegans*)	Yes	Endangered	Endangered	Usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest.	Low – suitable habitat unlikely	August and May, with a peak in November (flowering)

Candidate species	Assessed in EIS	Status BC Act/	Status EPBC Act	Habitat	Likelihood of Occurrence	Ideal survey time
Spiked Rice-flower (*Pimelea spicata*)	Yes	Endangered	Endangered	In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a better developed shrub and grass understorey. Coastal headlands and hilltops are the favoured sites.	Low – suitable habitat unlikely	May to January, but sporadic
Mammals						
Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)	No	Vulnerable	Not listed	Prefers moist habitats, with trees taller than 20 m. Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Moderate – suitable habitat likely	Spring to Summer
Golden-tipped bat (*Phoniscus papuensis*)	No	Vulnerable	Not listed	Found in rainforest and adjacent wet and dry sclerophyll forest up to 1000m. Also recorded in tall open forest, Casuarina-dominated riparian forest and coastal Melaleuca forests.	Moderate– suitable habitat likely	Spring to Summer
Little Bentwing-bat (*Miniopterus australis*)	No	Vulnerable	Not listed	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. They often share roosting sites with the Common Bentwing-bat and, in winter, the two species may form mixed clusters	Moderate – suitable habitat likely	Spring to Summer
Grey-headed Flying Fox (*Pteropus Poliocephalus)*	Yes	Vulnerable	Vulnerable	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Moderate – suitable habitat likely. Observed in previous study (Eco Logical, 2006)	Spring to late Summer
Greater Broad-nosed Bat (*Scoteanax ruepellii)*	Yes	Vulnerable	Not listed	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	Moderate – suitable habitat likely	Late Spring to Summer
Yellow-bellied Sheathtail-bat (*Saccolaimus Flaviventris)*	Yes	Vulnerable	Not listed	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.	Moderate – suitable habitat likely	Spring to Summer

Candidate species	Assessed in EIS	Status BC Act/	Status EPBC Act	Habitat	Likelihood of Occurrence	Ideal survey time
Southern Myotis (*Myotis Macropus)*	Yes	Vulnerable	Not listed	Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.	Moderate – suitable habitat likely	Spring to Summer
Large Bent-wing Bat /Eastern Bent-wing Bat (*Miniopterus orianae oceanensis)*	Yes	Vulnerable	Not listed	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	Moderate – suitable habitat likely. Observed in previous study (Eco Logical, 2006)	Spring to Summer
Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)	No	Vulnerable	Not listed	Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures.	Moderate – suitable habitat likely	Spring to Summer
Large -eared Pied Bat *(Chalinolobus dwyeri)*	No	Vulnerable	Vulnerable	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon arie*l), frequenting low to mid-elevation dry open forest and woodland close to these features	Moderate – suitable habitat likely. Observed in previous study (Eco Logical, 2006)	Spring to Summer
Amphibians						
Stuttering Frog *(Mixophyes balbus)*	No	Endangered	Vulnerable	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Breed in streams during summer after heavy rain.	Low – Possible suitable habitat, but no nearby records	Summer

Candidate species	Assessed in EIS	Status BC Act/	Status EPBC Act	Habitat	Likelihood of Occurrence	Ideal survey time
Green and Golden Bell Frog (*Litoria aurea)*	Yes	Endangered	Vulnerable	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available.	Low – Possible suitable habitat, but no nearby records	Spring to Summer
Birds						
Freckled Duck *(Stictonetta naevosa)*	Yes	Vulnerable	Not listed	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.	Moderate – Possible suitable habitat. Observed in previous study (Eco Logical, 2006)	Late Winter to Summer
Blue Billed Duck *(Oxyura australis)*	No	Vulnerable	Not listed	The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed but prefers to dive if approached.	Moderate – Possible nearby suitable habitat	Late Winter to Autumn
Australasian Bittern *(Botaurus poiciloptilus)*	Yes	Endangered	Endangered	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.).	Low – Possible suitable habitat, but no recent records	Spring to Summer
Black Bittern *(Ixobrychus flavicollis)*	Yes	Vulnerable	Not listed	Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	Moderate – Possible suitable habitat. Observed in previous study (Eco Logical, 2006)	Late Spring to Autumn

Candidate species	Assessed in EIS	Status BC Act/	Status EPBC Act	Habitat	Likelihood of Occurrence	Ideal survey time
Eastern Osprey *(Pandion cristatus)*	Yes	Vulnerable	Not listed	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes.	High –Suitable habitat, part of larger foraging area. Observed during the site visit and observed nearby in previous study (Eco Logical, 2006)	Winter to Summer
White-bellied Sea-Eagle *(Haliaeetus leucogaster)*	No	Vulnerable	Not listed	Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass.	Moderate – Possible nearby suitable habitat, part of larger foraging area	Winter to Summer
Pied Oystercatcher *(Haematopus Longirostris)*	Yes	Endangered	Not listed	Favours intertidal flats of inlets and bays, open beaches and sandbanks. Nests mostly on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas.	Low – Possible nearby suitable habitat	Winter to Summer
Glossy Black-cockatoo *(Calyptorhynchus lathami)*	Yes	Vulnerable	Not listed	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Dependent on large hollow-bearing eucalypts for nest sites.	Low – Possible suitable habitat (*C. glauca* not a favoured feed tree)	All year

Candidate species	Assessed in EIS	Status BC Act/	Status EPBC Act	Habitat	Likelihood of Occurrence	Ideal survey time
Powerful Owl *(Ninox strenua)*	No	Vulnerable	Not listed	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine *Syncarpia glomulifera*, Black She-oak *Allocasuarina littoralis*, Blackwood *Acacia melanoxylon*, Rough-barked Apple *Angophora floribunda*, Cherry Ballart *Exocarpus cupressiformis* and a number of eucalypt species.	Low – Possible nearby suitable habitat, part of larger foraging area	Autumn to late Winter
Masked Owl *(Tyto novaehollandiae)*	No	Vulnerable	Not listed	Lives in dry eucalypt forests, roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. A forest owl, but often hunts along the edges of forests, including roadsides.	Low – Possible nearby suitable habitat, part of larger foraging area	Autumn to late Winter
Sooty Owl (*Tyto tenebricosa*)	No	Vulnerable	Not listed	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.	Low – Possible nearby suitable habitat, part of larger foraging area	Autumn to late Winter

Appendix C: Vegetation community description

Planted eucalypt and casuarina grassy woodland

Floristics and structure

This is an open woodland community with assorted eucalypt species including brown stringybark (*Eucalyptus capitellata),* spotted gum (*Corymbia maculata*), lemon scented gum (*Corymbia citriodora*), forest red gum (*Eucalyptus teriticornis*) and coast grey box (*Eucalyptus bosistoana)*. There are several additional medium to large trees including willow bottlebrush (*Callistemon salignus*) and swamp oak (*Casuarina glauca*). The ground cover is dominated by couch grass (*Cynodon dactylon*) and other ground herbs including clovers (*Trifoloum spp.*), plantains (*Plantago spp.*), crabgrass (*Digitaria sanguinalis*), and flea bane (*Conyza spp.*).

This community does not fit a PCT description as it is an assortment of scattered trees of various species, the majority of which may have been planted. The condition of the vegetation is moderate.

Typical representation of the 'Eucalypt and casuarina grassy woodland'. Photo facing north west towards the Tallawarra Stage B Gas Turbine Power Station Site

Planted grey gum and forest red gum woodland

Floristics and structure

This is a closed woodland structure with a canopy of about 5 – 10 metres high. It is dominated by forest red gum (Eucalyptus tereticornis), grey gum (Eucalyptus punctata) and some thin-leaved stringy bark (Eucalyptus eugenioides) (Figure 6). It should be noted that very little fruiting material was available due to the young age of the trees, which makes identification difficult. It is possible there are other eucalypt species present in this community that were not identified in the field assessment. The midstorey is generally dominated by large lantana shrubs (Lantana camara).

This community does not fit a PCT description as it is a planted community and not a natural formation. However, it is loosely similar to that of PCT 838 'Forest Red Gum - Thin-leaved Stringybark grassy woodland on coastal lowlands, southern Sydney Basin Bioregion' and 'MU23 Coastal Grassy Red Gum Forest' (NPWS, 2002). The condition of the community is moderate to low due to the amount of dead juvenile eucalypts and extensive lantana (Lantana camara).

Typical representation of the 'Grey gum and forest red gum woodland'. Photo facing north east towards the woodland from the existing cleared transmission alignment

A review of historical aerial images and details provided in the Tallawarra Power Station Master Plan (URS Australia, 2006) indicates this area was planted in the late 2000's and therefore is about 10-12 years old. The relatively young age of the species present supports the observation of a minimal amount of fruiting material and a lack of hollows. Nonetheless, a higher than expected amount of fallen timber was observed for a community of this age which indicates previous clearing or wind damage. Fallen timber may provide habitat for ground dwelling fauna species.

Historical aerial image from January 2010 showing the planting of the 'Grey gum and forest red gum woodland', indicating this area was planted in the late 2000's. Source: Nearmap

Planted forest red gum and paperbark forest

Floristics and structure

This is a woodland community with a canopy of about 5 – 10 metres high. It is dominated by forest red gum (*Eucalyptus tereticornis*) and Prickly-leaved Paperbark (*Melaleuca styphelioides*), also with scattered individuals of tea tree (*Leptospermum spp*.), Swamp Mahogany (*Eucalyptus robusta*), Thin-leaved Stringybark (*Eucalyptus eugenioides*), Willow Bottlebrush (*Callistemon salignus*), and Coastal Grey Box (*Eucalyptus bosistoana*). The condition of the vegetation is moderate to high with the lowest density of weed species of the assessed areas.

The following Plant Community Types have been considered for best fit, however, as a planted community with non-natural formations, this community does not fit into any defined PCTs as per the BioNet Vegetation Classification System.

Plant Community Type	Consistencies with PCT definition	Inconsistencies with PCT definition	Conclusion
PCT 1326: Woollybutt - White Stringybark - Forest Red Gum grassy woodland on coastal lowlands, southern Sydney Basin Bioregion and South East Corner Bioregion	■ Forest Red Gum (*Eucalyptus tereticornis*) upper stratum species ■ Sweet Pittosporum (*Pittosporum undulatum*) middle stratum species ■ Below 100m sea level within the Illawarra	■ Presence of Swamp Mahogany (*Eucalyptus robusta*) and Coastal Grey Box (*Eucalyptus bositoana*) ■ Absence of diverse grassy groundcover species ■ Absence of other diagnostic species such as Spotted Gum (*Corymbia maculata*), White Stringybark (*Eucalyptus globoidea*), and Woollybutt (*Eucalyptus longifolia*) ■ Dominance of Prickly-Leaved Paperbark (*Melaleuca styphelioides*) within the mid-storey which is not a key diagnostic species	Not consistent with PCT due non-natural planted formation containing limited diagnostic species.
PCT 838: Forest Red Gum - Thin-leaved Stringybark grassy woodland on coastal lowlands, southern Sydney Basin Bioregion	■ Forest Red Gum (*Eucalyptus tereticornis*) upper stratum species ■ Thin-leaved stringybark (*Eucalyptus eugenoides*) upper stratum species. Note <10 individuals were observed ■ Sweet Pittosporum (*Pittosporum undulatum*) middle stratum species	■ Absence of diverse grassy groundcover species ■ Lack of open shrub layer. Shrub layer was densely filled with *Melaleuca*, *Callistemon* and *Leptospermum* species ■ Presence of non-diagnostic Swamp Mahogany (*Eucalyptus robusta*) and Coastal Grey Box (*Eucalyptus bositoana*)	Not consistent with PCT due non-natural planted formation resulting in the absence of the diagnostic 'open shrub layer and continuous grassy groundcover'.
PCT 1064: Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	■ Presence of Forest Red Gum (*Eucalyptus tereticornis*), Swamp Mahogany (*Eucalyptus robusta*), Willow bottlebrush (*Callistemon salignus*) and Prickly-leaved Paperbark (*Melaleuca styphelioides*) ■ Presence of *Leptospermum spp.* Middle stratum species	■ Presence of non-diagnostic upper stratum species such as Thin-leaved Stringybark (*Eucalyptus eugenioides*), and Coastal Grey Box (*Eucalyptus bosistoana*) ■ PCT is predominantly associated with the NSW North Coast and is not associated with the Illawarra IBRA sub-region.	Whilst diagnostic species are present, the geographic distribution of the community is not consistent diagnostic PCT descriptions

Typical representation of the 'Forest red gum and prickly-leaved paperbark forest' south of the 'office and laydown area'. Photo facing north east along the existing access track.

A review of historical aerial images and details provided in the Tallawarra Power Station Master Plan (URS Australia, 2006) indicates this area was planted in the late 2000's and therefore is expected to be about 10- 12 years old. This information supports the minimal amount of fruiting material found and the lack of hollows observed.

Historical aerial image from January 2010, showing the planting of the 'Forest red gum and paperbark forest', indicating this area was planted in the late 2000's. Source: Nearmap

Ironbark forest

Floristics and structure

This is a tall closed forest community with a canopy of about 10 – 15 metres high. It is dominated by grey ironbark (*Eucalyptus paniculata*). The midstorey is generally dominated by large lantana shrubs (*Lantana camara).*

This community is loosely similar to that of PCT 873 'Grey Ironbark - Grey Gum shrubby open forest of the gorges of Shoalhaven catchment, southern Sydney Basin Bioregion' due to the presence of Grey Ironbark, however it does not meet the following diagnostic criteria:

- Does not occur on the rocky slopes of the Ettrema, Shoalhaven, Danjera or Yarramunmum gorges where sediments underlying the Sydney Basin are exposed
- PCT 873 is not associated with the Illawarra IBRA subregion

Therefore, it is possible the small community is a remnant stand of trees left after historical clearing.

Three mature trees with small hollows were identified south of the access track. The hollows may provide habitat for birds and small mammals. It is possible that there are more hollows in this area that were not observed due to the large size of the trees and the inability to access the site due to the extensive lantana.

Typical representation of the 'Ironbark forest' along the access the existing switchyard access track route. Photo facing west along the existing access track.

Acacia scrub

Floristics and structure

This community is a scrubland with a canopy of about 3 – 5m high. It is a derived vegetation community resulting from colonisation by acacias and other colonising species following past clearing and disturbance of the original vegetation community. Acacia species present include *Acacia mearnsii*, *Acacia maidenii*, *Acacia longifolia, Acacia suaveolens.* The midstorey is generally dominated by large lantana shrubs (*Lantana camara)*. Other weed species identified in the understorey includes asparagus weed (*Asparagus spp.*), bitou bush (*Chrysanthemoides monilifera*), fireweed (*Senecio madagascariensis*), blackberry (*Rubus fruticosus*), balloon cotton bush (*Gomphocarpus physocarpus*), oxalis (*Oxalis spp.*), cassia (*Senna spp.*), olive (*Olea europena*) and passion vine (*Passiflora spp.*).

This community matches the community 'MU56 Acacia scrub' (NPWS, 2002), and is noted to occur in combination with species common to rainforest and wet sclerophyll forest types. This community does not meet any PCT definitions.

Typical representation of 'Acacia scrub' along the 'approved transmission line alignment'. Photo facing south west along the northern power station site fence line.

Radiata pine forest

Floristics and structure

This is an open woodland community dominated by radiata pine (*Pinus radiata*) and with a canopy of about 10 – 15 metres high. The midstorey was variable depending on the density, and therefore canopy cover, of the radiata pine (*Pinus radiata*). In more open areas (less canopy cover), the midstorey is dominated by weed species including lantana (*Lantana camera*), cotoneaster (*Cotoneaster spp.*), small-leaved privet (*Ligustrum sinense*). Other weed species identified in the understorey including asparagus weed (*Asparagus spp.*), bitou bush (*Chrysanthemoides monilifera*), fireweed (*Senecio madagascariensis*), blackberry (*Rubus fruticosus*), balloon cotton bush (*Gomphocarpus physocarpus*). In areas where the radiata pine (*Pinus radiata*) is in denser stands that shade or crowd out other species (more canopy cover), there is little mid or understorey, with the ground covered by pine leaf litter.

Typical representation of 'Radiata pine forest' along the 'approved project transmission line alignment'. Photo facing east along the northern power station site fence line.

Weeds and exotics

Floristics and structure

The most disturbed parts within the Project Boundary comprise of the 'Weeds and exotics' vegetation community. Lantana (*Lantana camara)* dominates most of the areas mapped as 'Weeds and exotics' with numerous other ground and midstorey weeds including asparagus weed (*Asparagus spp.*), African lovegrass (*Eragrostis curvula*), red natal grass (*Melinis repens*), rhodes Grass (*Chloris gayana),* Kikuyu (*Pennisetum clandestinum*), bitou bush (*Chrysanthemoides monilifera*), fireweed (*Senecio madagascariensis*), cobblers pegs (*Bidens spp.*), blackberry (*Rubus fruticosus*), speak thistle (*Cirsium vulgare*), black eyed susan (*Thunbergia alata*), balloon cotton bush (*Gomphocarpus physocarpus*), cotoneaster (*Cotoneaster spp.*), small-leaved privet (*Ligustrum sinense*), cassia (*Senna spp.*), and passion vine (*Passiflora spp.*).

Isolated individual emergent trees were present including swamp oak (*Casuarina glauca)* which may have been indicative of the original vegetation type before clearing and the colonisation of exotic species.

Typical representation of the 'Weeds and exotics' within the 'diesel storage area'. Photo facing south.

Planted natives and weeds

Some areas previously defined in the Environmental Assessment (SKM, 2009) as '*weeds and exotics*' have been reclassified as *'Planted natives and weeds'* as of the November 2020 survey. This was done due to the number of native species identified within these areas during the November 2020 survey, and as such the classification of *'weeds and exotics'* was not appropriate, regardless of the amount of weed species present.

Distribution

A total of 0.55 ha of this community was identified during the November 2020 survey and was observed within a significant portion of the 'proposed transmission line alignment' area along the north eastern side of the site. As this community was only defined during the 2020 survey, it was not mapped during the 2019 survey and as such may be present in other areas of the site.

Floristics and structure

This community was largely located adjacent to roadways and consists largely of an assortment of native vegetation that was likely planted as part of Tallawarra Landscape Master Plan (URS, 2006) which has since been heavily invaded by an assortment of weed species, particularly within the understorey.

Whilst native species include some local endemic species such as Swamp Oak (*Casuarina glauca)* and Paperbarks (*Melaleuca spp.*), many natives identified originate from outside the Illawarra region including Tuckeroo *(Cupaniopsis anacardioides)* and Brush Box *(Lophostemon confertus)*. Lantana (*Lantana camara)* was generally the most dominant weed although other weed species such as Mickey Mouse Plant (*Ochna serrulate*) and invasive grasses such as Kikuyu (*Pennisetum clandestinum*) were also present.

Appendix D: Agency consultation log

Consultation undertaken for this FFMP is summarised below.

Agency	Date	Method	Actions and responses
Biodiversity conservation division	*06-09-2021*	Teleconference, document review and written comments provided by Biodiversity conservation division	■ ***Comment**: Vegetation community classifications are to consider consistency with PCT terminology.* – ***Response**: This has been addressed via PCT consistency assessments within Appendix C* ■ ***Comment**: Recommended osprey buffer of 50 metres.* – ***Response**: This has been addressed in Section 3.4 which has clarified a 30m ground disturbance buffer and a 50m at height disturbance buffer as per previous consultation with DPIE* ■ ***Comment**: Ironbark vegetation is to be protected from access track works.* – ***Response**: This has been addressed in Section 6.5 and* Figure 6-1 ■ ***Comment**: Provide areas of clearing and justification for meeting CoA 3.40 to minimise native vegetation clearing.* – ***Response**: This has been addressed in Table 4-1 and Section 4.3.2* ■ ***Comment**: Provide additional context for threatened species recorded on site.* – ***Response**: This has been addressed in Table 3-2* ■ ***Comment**: Provide further information on how weeds will be managed to meet CoA 3.41(a) and 3.44.* – ***Response**: This has been addressed in Section 3.7.1* ■ ***Comment**: Provide further details on measures to protect the osprey within safeguard and mitigation table.* – ***Response**: This has been addressed in Table 6-1* ■ ***Comment**: Provide additional native groundcover species for rehabilitation purposes.* – ***Response**: This has been addressed in Table 6-1* ■ ***Comment**: Monitoring of the Ospreys are recommended.* – ***Response**: This has been addressed in Table 7-1* ■ ***Comment**: Consider incorporating species associated with the Swamp Sclerophyll Forest EEC into rehabilitation plan/offset site.* – ***Response:** This has been addressed within separate Offset Plan report*
Wollongong City Council	*08-09-2021*	Teleconference, document review	■ Teleconference with WCC discussing: – Overview of the Tallawarra B Power Station Project – Overview of the proposed environmental management framework for construction – Overview of the planning approval conditions relevant to WCC

			– Discussion on FFMP, general management procedures and landscape plan. ■ Next steps
Wollongong City Council	*07-12-2021*	Email	Written comments received from Andrew Heaven (Development Engineering Manager). Comments/consultation issues outlined below: ■ ***Comment:*** *the flood report that is referenced in you submission is a 2001 study that was superseded almost two decades ago (there was a later 2003 study). That 2003 study has been superseded by the current Lake Illawarra Flood Risk Management Study. I would suggest that prior to finalising your engineers review their advice against the Lake Illawarra Flood Risk Management Study and Plan 2012, including a check against the sea level rise projections.* – **Response:** Information has been provided to EPC Contractor. No plan updates required.

Consultation undertaken for the Offset Plan is summarised below.

Agency	Date	Method	Actions and responses
Biodiversity and Conservation Division (BCD)	27-08-2021 to 30-08-2021	Email	■ Email sent to BCD seeking consultation contacts and teleconference meeting ■ Response from Vanessa Allen (Senior Conservation Planning Officer) stating that they would be happy to review flora and fauna management reports ■ Offset Plan and Flora and Fauna management Plan provided to BCD for review prior to teleconference meeting.
Biodiversity and Conservation Division (BCD)	06-09-2021	Teleconference	■ Teleconference with BCD discussing: – Overview of the Tallawarra B Power Station Project – Overview of the proposed environmental management framework for construction – Overview of the planning approval conditions relevant to BCS – Discussion on FFMP, general management procedures and offsets. – Next steps
Biodiversity and Conservation Division (BCD)	09-09-2021	Email – Written comments received	Written comments received from Vanessa Allen. Overall the proposed actions within the offset plan has been supported following update of the report as per BCD comments. Consultation comments/issues outlined below: ■ ***Comment:*** *Further information on measures for encouraging the natural regeneration of locally native vegetation, including weed management, in accordance with CoA 3.41(a) is required. The Offset Plan only addresses weed management for the Yallah Creek offset area prior to planting. Existing native vegetation to be retained within the site could also benefit from weed management, particularly given disturbance resulting from new works will occur. These areas should be identified in the Offset Plan, including*

			details on how weed management will be achieved to meet CoA 3.41 (particularly a,d,e,f). – **Response:** Report has been updated to reflect this, particularly with the inclusion of Section 2.5 ■ ***Comment:*** *Species list for replanting. Species list should be expanded. Use species inventory from Mount Brown as guide. Provide list as a reference in Appendix. Refer to http://www.irbd.com.au/ for nearby species lists.* – **Response:** Species planting list has been moved to Appendix B and additional species have been added including Brush Wilga, Red Ash, Grey Myrtle, Cockspur thorn, Hairy Cleodendrum, Swamp Mahogany, Coastal Grey Box, Mutton Wood. Additionally have added Kidney Weed and Tussock Grass to groundcover seeding suggestion. Have added further details regarding the absence of more groundcover/vine species within Section 3.5 ■ ***Comment:*** *The Report states that seeds may be sourced from nearby vegetation at Mount Brown. Please be aware that a Biodiversity Conservation Licence is required for this. Refer to* ***https://www.environment.nsw.gov.au/licences-and-permits/wildlife-licences/licences-to-controlor-*** *harm/licences-to-harm-threatened-species* – **Response:** Added the requirement for licence ■ ***Comment:*** *The document states that traditional permanent photo points are unlikely to be effective given the size and shape of the area. We disagree and consider these should be included.* – **Response:** Requirement for traditional photo points has been added ■ ***Comment:*** *Replacement plantings occur if losses greater than 20% within 6 months. This should be increased to 12 months to ensure plants get through at least one summer.* – **Response:** Increased period from 6 months to 12 months as required.

Appendix E: Landscape plan

Legend

EXISTING PROGRAMME

1 Tallawarra A entrance
2 Stormwater retention pond
3 Pedestrian bridge (maintenance only)
4 Sewerage treatment ponds
5 Water treatment plant
6 Workshop & store building
7 Electrical module ST & GT
8 Gas turbine & steam turbine generator building
9 Feedwater structure
10 Heat recovery steam generator
11 Administration & control building
12 Storage
13 Inlet canal
14 Outlet canal
15 Switching station
16 Gas station
17 Security office
18 Project office
19 Crib hut area
20 Gate 12 security hut
21 Scaffold crib hut
22 Warehouse
23 Maintenance road (no public access) to be maintained
24 Vegetated earth mound
25 Former bowling club
26 Parking for power station
27 Visitor car park
28 Drainage / settlement ponds
29 Playground and picnic area
30 Heavy haulage entrance
31 Boat ramp car park

PROPOSED / UPGRADED PROGRAMME

A Riparian exclusion zone to be maintained
B Potential car park
C Riparian corridor to be rehabilitated
D Public access diversion
E New street planting with decorative treeguards to highlight site entry

GENERAL

Tallawarra lands cadastral boundary
Tallawarra lands internal boundary
Staging boundary
Ripian buffer
Existing building / plant
Proposed building / plant
Laydown area to be remediated
Gate general - existing
Boom gate - existing

SERVICES

Existing transmission lines retained
Existing transmission tower retained
Proposed transmission lines
Proposed 132 Kw transmission tower
Temporary trasmission tower retained
Gas feeder

RAILS AND FENCING

Fencing - general
Fencing - propose

WATER ELEMENTS

Water element - natural grade
Yallah Creek route

FURNITURE AND FITTINGS

Existing picnic shelter

PAVEMENTS

Existing road / parking
Existing maintenance & bushfire access track
Existing stone chipping
Existing pedestrian / cycle path
Proposed road

PLANTING

Existing trees / shrubs to be removed
Existing trees / shrubs
Existing turf/grass areas
Proposed tree planting
Vegetation community (Aurecom)

NOT FOR CONSTRUCTION

DRAWING NUMBER
L.SK.01

DRAWING NAME
Landscape Master Plan

REVISION
G

PROJECT NUMBER
SD21221

DRAWING DATE
02/05/22

SCALE
1:1500

SCALE BAR
0 20 40 60 80 100

STATUS

NP

PROJECT NAME AND ADDRESS
Tallawarra Energy Facility
Yallah Bay Road, Yallah NSW 2530

CLIENT NAME
Energy Australia

DRAWN BY	**TR/ND**
CHECKED BY	**CH**

CONSULTANTS
Civil Engineer
CLOUGH
Clough Group
Consultant Contact

DRAWINGS BY
scape DESIGN
LANDSCAPE ARCHITECTURE
Suite 5 / 15 The Corso
Manly NSW 2095
www.scapedesign.com.au

Appendix F: Incident notification requirements (major project approval, Appendix 1)

Written incident notification requirements:

1. A written incident notification addressing the requirements set out below must be submitted to the Secretary via the Major Projects website within seven days after the Proponent becomes aware of an incident. Notification is required to be given under this condition even if the Proponent fails to give the notification required under condition 5.1 or, having given such notification, subsequently forms the view that an incident has not occurred.

2. Written notification of an incident must:

    a. identify the development and application number;
    b. provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
    c. identify how the incident was detected;
    d. identify when the Proponent became aware of the incident;
    e. identify any actual or potential non-compliance with conditions of approval;
    f. describe what immediate steps were taken in relation to the incident;
    g. identify further action(s) that will be taken in relation to the incident; and
    h. identify a project contact for further communication regarding the incident.

3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Secretary, the Proponent must provide the Secretary and any relevant public authorities (as determined by the Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.

4. The Incident Report must include:

    a. a summary of the incident;
    b. outcomes of an incident investigation, including identification of the cause of the incident;
    c. details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
    d. details of any communication with other stakeholders regarding the incident.

Document prepared by

Aurecon Australasia Pty Ltd
ABN 54 005 139 873
Level 5, 116 Military Road
Neutral Bay NSW 2089
PO Box 538
Neutral Bay NSW 2089
Australia

T +61 2 9465 5599
F +61 2 9465 5598
E sydney@aurecongroup.com
W aurecongroup.com

aurecon

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