Akaysha Energy

Biodiversity Management Plan

Waratah Super Battery

May 2023

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Biodiversity Management Plan
Waratah Super Battery

Akaysha Energy

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	Name	Date	Signature
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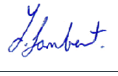
Reviewed by:	Toby Lambert	19/05/2023	
Approved by:	Nathan Cooper	19/05/2023	

WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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Appendix A BAM Vegetation Integrity Plot Methodology
Appendix B Flora and Fauna Management Sub-plan

Terms and abbreviations

Akaysha	Akaysha Energy
BC Act	*Biodiversity Conservation Act 2016* (NSW)
Biosecurity Act	*Biosecurity Act 2015* (NSW)
BCD	Biodiversity and Conservation Division of the NSW Department of Planning and Environment
BDAR	Biodiversity Development Assessment Report
BMP	Biodiversity Management Plan
CEMP	Construction Environmental Management Plan
DPE	Department of Planning and Environment
EEC	Endangered ecological community
EnergyCO	Energy Corporation of NSW
Environmental Assessment	Waratah Super Battery – Munmorah | Environmental Impact Statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
Pesticides Act	*Pesticides Act 1999*
Subject land	Construction footprint or area of direct disturbance
TEC	Threatened ecological community
WoNS	Weeds of National Significance

1 Introduction

1.1 Background

The New South Wales (NSW) Government, through the Energy Corporation of NSW (EnergyCo), is developing the 'Waratah Super Battery' (the project) to ensure NSW continues to have reliable, affordable energy supplies following the planned closure of the Eraring Power Station in 2025. EnergyCo was granted Infrastructure Approval on 21 February 2023 to construct and operate a System Integrity Protection Scheme (SIPS) control and standby network battery system on the site of the former Munmorah Power Station at Colongra.

This Biodiversity Management Plan (BMP) has been prepared for the project.

1.2 Purpose and scope

This Biodiversity Management Plan (BMP) has been developed for the Waratah Super Battery project (the project) on Behalf of Akaysha Energy (Akaysha) and EnergyCo.

This BMP addresses Schedule 2 (Part B), Condition B8 and B11 of the project's state Infrastructure Approval SSI 48492458 (project approval), which requires EnergyCo to prepare and implement a BMP. Under Condition B11 of the project approval, the BMP must satisfy a set of requirements including, protection of vegetation and habitats outside the approved disturbance areas and minimising impacts to fauna within the subject land (area of direct disturbance).

Management measures and procedures contained in this BMP provide a framework for managing biodiversity values in the subject land, whilst protecting adjacent vegetation and habitat throughout construction of the project. This BMP is a working document and should be considered with reference to the Flora and Fauna Management Sub-plan, which is appended to the project Construction Environmental Management Plan (CEMP). The BMP is applicable to all activities associated with the construction phase of the project.

1.3 Objectives

The key objective of the BMP is to ensure that appropriate environmental controls and procedures are implemented and maintained during construction activities to avoid or minimise potentially adverse impacts to fauna and flora within the subject land. To achieve this objective, the project will undertake the following:

- ensure appropriate environmental controls and procedures are implemented during construction to minimise fauna and flora impacts
- ensure appropriate measures are implemented to address relevant project approval conditions and the safeguards detailed in the project Environment Impact Statement (EIS) (Environmental Assessment) (GHD, 2022a) and associated Biodiversity Development Assessment Report (BDAR) (GHD, 2022b)
- ensure appropriate measures are implemented to comply will relevant legislation and other requirements as detailed in Section 2 of this BMP.

1.4 Associated documents

The associated and supporting documents to this BMP are detailed in Table 1.1.

Table 1.1 Associated documents

Document	Reference
Construction Environmental Management Strategy	(WSP, 2023)
Construction Environmental Management Plan	(Consolidated Power Projects, 2022)
Flora and Fauna Management Sub-plan	(Consolidated Power Projects, 2022)
Infrastructure Approval – SSI 48492458	(NSW Department of Planning and Environment, 2023)
Waratah Super Battery – Munmorah | Environmental Impact Statement	(GHD, 2022a)
Waratah Super Battery | Biodiversity Development Assessment Report	(GHD, 2022b)

1.5 Consultation

In accordance with Condition B11 of Schedule 2 of the project's Infrastructure Approval, this BMP has been prepared in consultation with the Biodiversity and Conservation Division (BCD) of the Department of Planning and Environment (DPE). BCD received a draft version of this BMP for review in March 2023. Akaysha Energy received review recommendations on the BMP from BCD on 4 April 2023 and revised the contents of this BMP accordingly on 20 April 2023. Further recommendations were received from BCD on 5 May 2023 and the BMP was updated on 19 May 2023. Table 1.2 details the incorporation of BCD recommendations in this BMP.

Table 1.2 BCD recommendations

BCD recommendation	BMP update
Provision of Flora and Fauna Management Sub-plan	Appendix B
Provision of a monitoring program for the rehabilitation of temporary disturbed areas	Section 5.8.6, Appendix A
Rehabilitation monitoring sites will be compared to reference sites	Section 5.8.6
Rehabilitation monitoring reports to be submitted to BCD	Section 5.8.6.3
Protocol for pre-clearing inspection of man-made structures for roosting microbats (including roost exclusion and additional mitigation measures)	Section 5.3.3.1
Species of microbat recorded to determine type of supplementary habitat	
Supplementary microbat habitat installed at a minimum ratio of 2:1	
Requirement for contacting wildlife groups prior to the commencement of tree clearing	Section 5.3.3
Protocol for tree clearing operations not to occur during temperatures of 35°C or higher	
Scheduling for tree clearing operations to occur outside breeding and torpor seasons	
Illustration of fauna release sites	Figure 5.1
Provision of responsibility for ensuring hygiene protocols are adhered to	Table 5.1, Table 6.1

BCD recommendation	BMP update
Update Section 6 of the BMP to include further detail regarding monitoring and reporting	Section 6, Table 6.1
Amend Table 6.1 to reflect appropriate performance measures for man-made structures	Table 6.1
Routine inspections to be undertaken by an ecologist or suitably qualified person. The suitably qualified person should be proficient in frog and weed identification.	Section 6.1
Inclusion of responsible parties for monitoring, reviewing and implementing the BMP	Section 5.1, Table 6.1 Section 6.3

Waratah Super Battery

Figure 1.1
Locality Plan
Biodiversity Management Plan

Legend

- PlacePoint
- Roads
- Watercourses
- Waterbodies
- Project Area
- Subject Land
- NPWS Estates

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A3

1:15,000 Date: 22/02/2023

GDA 2020

Data sources: DELWP, Geoscience Australia, NPSW

2 Legislation and other requirements

2.1 Relevant legislation and guidelines

The main legislation relevant to biodiversity management for the project is:

- *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act)
- *Biodiversity Conservation Act 2016* (NSW) (BC Act)
- *Biosecurity Act 2015* (NSW) (Biosecurity Act)
- *Pesticides Act 1999* (Pesticides Act).

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* was not triggered during the Environmental Assessment.

The main guidelines, plans and specifications and policy documents relevant to this BMP include:

- Hygiene guidelines – Protocols to protect priority biodiversity areas in NSW from *Phytophthora cinnamomi*, myrtle rust, amphibian chytrid fungus and invasive plants (Department of Planning Industry and Environment, 2020b)
- Management of *Phytophthora cinnamomic* for Biodiversity Conservation in Australia (O'Gara et al., 2005)
- Myrtle Rust Factsheet (Department of Primary Industries, 2015).

2.2 Project Infrastructure Approval Conditions

The Infrastructure Approval conditions relevant to this BMP are listed in Table 2.1. A cross reference is also included to indicate where the condition is addressed within this BMP.

Table 2.1 Project Infrastructure Approval conditions relevant to this BMP

Condition	Condition requirement	BMP Reference
B8	***Vegetation Clearance*** The Proponent must not clear any native vegetation or fauna habitat outside the approved disturbance areas described in the EIS	 Section 5.2 Section 5.3.1
B11	***Biodiversity Management Plan*** Prior to commencing construction, the Proponent must prepare a Biodiversity Management Plan for the project in consultation with BCS, and to the satisfaction of the Planning Secretary. This plan must: **a** Be prepared in accordance with the *Biodiversity Development Assessment Report* (dated 4 November 2022) **b** Include a description of the measures and timeframes that would be implemented for: **i** Protecting vegetation and fauna habitat outside the approved disturbance areas **ii** Minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development	 Section 5.3.1 Section 5.3 Section 5.3

Condition	Condition requirement	BMP Reference
	iii Minimising the impacts to fauna on site and implementing fauna management protocols	Section 5.4
	iv Rehabilitating and revegetating temporary disturbance areas with species that are endemic to the area	Section 5.8
	v Maximizing the salvage of vegetative and soil resources within the approved disturbance area for beneficial reuse in the enhancement or the rehabilitation of the site, and	Section 5.3.3
	vi Controlling weeds, feral pests and pathogens	Section 5.6 Section 5.7
	c Include a program to monitor and report on the effectiveness of mitigation measures	Section 6
	d Include an incidental threatened species protocol to identify the avoid and/or minimise and/or offset options to be implemented if additional threatened species are discovered on site	Section 5.5
	e Include details of who would be responsible for monitoring, reviewing and implementing the plan	Section 5.1 Table 6.1 Section 6.3

2.3 Requirements from the Environmental Assessment

The approved Environmental Assessment (GHD, 2022a) specified a number of measures to be implemented during construction phases of the project. The requirements relevant to the management of biodiversity are summarised in Table 2.2.

Table 2.2 Requirements from the Environmental Assessment

No.	Outcome	Mitigation measure	Reference
B1	Protection of terrestrial ecology during construction of the project.	Prepare a flora and fauna management sub-plan prior to construction of the project	CEMP
B2	Site workers made aware of the ecological values of the project site, protection measures to be implemented, and penalties for breaches during construction.	All workers are to be provided with an environmental induction prior to starting work on site. This would include information on the ecological values of the site, protection measures to be implemented to protect biodiversity and penalties for breaches.	Section 5.2 CEMP
B3	Site workers made aware of areas to be protected during construction.	Prepare plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features, threatened plants and TECs in the vicinity of work areas and revegetation areas.	Section 5.2 CEMP

No.	Outcome	Mitigation measure	Reference
B4	Avoidance of unnecessary vegetation and habitat removal and the transmission of weeds or disease.	Prior to the commencement of any work in or adjoining areas of native vegetation, a survey would be carried out to mark the construction impact boundary. The perimeter of this area would be fenced using high visibility fencing and clearly marked as the limits of clearing. All vegetation outside this fence line would be clearly delineated as an exclusion zone to avoid unnecessary vegetation and habitat removal and the transmission of weeds or disease. Fencing and signage would be maintained for the duration of the construction period. Fencing would be designed to allow fauna to exit the site during clearing activities.	Section 5.3.1 CEMP
B5	Prevention of weed and pathogen spread and establishment.	Wash and disinfect machinery entering the site prior to work on site to prevent the potential spread of weeds, Cinnamon Fungus and Myrtle Rust/Exotic Rust Fungi in accordance with the national best practice guidelines for Phytophthora (O'Gara et al. 2005), the Myrtle Rust factsheet (DPI 2015) for hygiene control and the NSW hygiene guidelines for wildlife (DPIE 2020d). Implement protocols to prevent the introduction or spread of chytrid fungus following the NSW hygiene guidelines for wildlife (DPIE 2020d).	Section 5.6 CEMP
B6	Protection of unexpected threatened species and inclusion in offset strategy, if required.	Prepare an unexpected finds protocol that details measures to be undertaken if threatened flora and fauna not previously recorded in the project site are detected during clearing or construction activities, or if additional occurrences of threatened species previously recorded in the broader area, but not previously recorded at a specific location, are recorded during clearing or construction activities. Include any unexpected finds in the offset strategy, as required.	Section 5.5 CEMP
B7	Protection of fauna and fauna habitat.	Protocols for the management of fauna and habitats would be included in the flora and fauna sub-plan. These would include (if required): — A procedure for the felling of hollow-bearing trees to prevent or minimise mortality of fauna. — Salvage of hollows and logs where practicable. — Temporary frog-proof fencing should be installed where required such as roadside drains and detention ponds near the project site to be retained to prevent frogs from being injured or killed by equipment. — Management of any trenches or drill sites to prevent fauna from becoming trapped or injured.	CEMP Section 5.3.3.3 Section 5.3.3.3 Section 5.3.2 Section 0

No.	Outcome	Mitigation measure	Reference
B8	Protection of fauna and fauna habitat	Undertake pre-clearing surveys prior to construction by a suitably qualified ecologist. Ensure surveys and inspections, and any subsequent relocation of species, is undertaken in accordance issue-specific environmental management sub-plans. Include the following specific surveys: — Surveys for roosting microbats for any man-made structures to be removed. — Searches for nest trees in vegetation to be removed. — Identification of hollow-bearing trees and logs requiring fauna management during removal.	Section 5.3.3 Section 5.4

3 Existing environment

The project area has been subject to significant ground disturbance and clearing due to previous use as a stockpile and loading area to transfer coal to the now decommissioned Munmorah Power Station. Small, fragmented patches of vegetation exist amongst the cleared and denuded areas, which were previously regularly maintained by Generator Property Management Pty Ltd (GHD, 2022a). Generator Property Management Pty Ltd are currently in the process of rehabilitating the Munmorah Power Station site under consent number DA/413/2014. In the project area, this involves the partial removal of the coal loader structure, sedimentation basin and weed removal (GHD, 2022a).

Most of the project area is highly modified and disturbed, with vegetated areas separated by exotic grassland, existing roads, and hardstand areas. A small detention basin existed in the project area, which at the time of biodiversity assessment surveys, contained vegetation dominated by pine trees. The boundary of the lot associated with the project area was delineated by a chain-link barbed wire fence (GHD, 2022a).

3.1 Vegetation types

The project area contained large areas of cleared and modified land with areas of planted mixed native and exotic trees/shrubs and native vegetation cover (Figure 3.1). Numerous high threat exotics plant species were also observed therein (Section 3.2).

Two plant community types (PCTs) were identified within the project area (GHD, 2022a) (GHD, 2022b), including:

- Scribbly Gum-Red Bloodwood- *Angophora inopina* heathy woodland on lowlands of the Central Coast (PCT 1636)
- Broad-leaved paperbark – Swamp oak- Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast (PCT 1724).

One threatened ecological community (TEC) listed under the NSW BC Act was recorded in the project area during biodiversity field surveys informing the Environmental Assessment (GHD, 2022a) (GHD, 2022b). PCT 1724 contained characteristic plant species listed in the Final Determination for Swamp Sclerophyll Forest on the Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, which is listed as an endangered ecological community (EEC) under the NSW BC Act. Whilst this EEC is also commensurate with the Coastal Swamp Sclerophyll Forest of the New South Wales and South East Queensland, listed as an EEC under the EPBC Act, the PCT in the project area did not meet the Commonwealth listing condition threshold (GHD, 2022a) (GHD, 2022b).

3.2 Flora

A total of 36 species of plant were recorded during surveys informing the BDAR, including 19 native species and 17 exotic species (GHD, 2022b). One species listed as vulnerable under the BC Act and EPBC Act was recorded in the project area in association with PCT 1636, being *Angophora inopina* (Charmhaven Apple).

Three species of plant recorded in the project area were listed as priority weeds under Biosecurity Act for the Greater Sydney Area, which incorporates the Central Coast Council area (Table 3.1); two of which are also listed as Weeds of National Significance (WoNS).

Table 3.1 Priority weeds, WoNS and high threat weeds recorded in the project area

Species	NSW Priority weeds	WoNS	High Threat Weeds
Camphor laurel (*Cinnamon camphora*)	-	-	Yes
Micky Mouse plant (*Ochna serrulate*)	-	-	Yes
Whiskey grass (*Andropogon virginicus*)	-	-	Yes
Rhodes grass (*Chloris gayana*)	-	-	Yes
Pampas grass (*Cortaderia selloana*)	-	-	Yes
Coolatai grass (*Hyparrhenia hirta*)	-	-	Yes
Balloon vine (*Cardiosspermum grandiflorum*)	-	-	Yes
Lantana (*Lantana camara*)	Yes	Yes	Yes
Boneseed (*Chrysanthemoides monifera*)	Yes	-	Yes
Fireweed (*Senecio madagascariensis*)	Yes	Yes	Yes

3.3 Fauna

A total of 41 species of animal were recorded during biodiversity surveys, including species recorded flying over the project area or recorded in adjacent habitats. This comprised:

- five species of frog
- two reptiles
- seven mammals
- 27 birds.

One threatened species, White-bellied Sea-eagle, was observed flying north-west of the project area, however, the project area retained no habitat for this species. In total, 11 threatened fauna species are assumed present in the project area as seasonal surveys could not be conducted (GHD, 2022b).

Four introduced species were recorded, including:

- Common Starling
- Red Fox
- Domestic Sheep
- European Rabbit.

3.4 Fauna habitat

A very limited area of 0.46 ha of vegetation with potential habitat resources for native fauna would be cleared for the project. The clearing of 0.46 ha of native woodland and forest would include the removal of a relatively young forest with no large canopy trees containing hollows appropriate for fauna. The habitat was fragmented and occurs within a completely fenced site with limited fauna permeability.

Waratah Super Battery

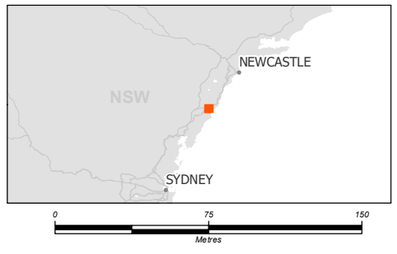
Figure 3.1
Plant Community Types
Biodiversity Management Plan

Legend

- Roads
- Watercourses
- Waterbodies
- Subject Land
- Project Area

Plant Community Type

- Broad-leaved Paperbark –Swamp Oak – Saw Sedge swamp forest (PCT 1724)
- Cleared Land
- Non-Native Vegetation
- Scribbly Gum - Red Bloodwood - Angophora inopina heathy woodland on lowlands of the Central Coast (PCT 1636)
- Artificial dam



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Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A3

1:3,000 Date: 22/02/2023

GDA 2020

Data sources: DELWP, Geoscience Australia

4 Impact assessment

4.1 Direct impacts

The project will result in residual direct impact to 0.46 ha of native vegetation in moderate condition, comprising 0.20 ha of PCT 1636 and 0.26 1 ha of PCT 1724. The project required the removal of the threatened ecological community, Swamp Sclerophyll Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, which was commensurate with PCT 1724 in the project area. In addition, one individual of the Commonwealth and State-listed threatened plant, *Angophora inopina* (Charmhaven Apple), will also be impacted by the project (GHD, 2022a) (GHD, 2022b).

The clearing of 0.46 ha of native woodland and forest will impact a relatively young forest with no large canopy trees containing hollows appropriate for fauna. The habitat present within the project area was fragmented and existed in a completely fenced site with limited fauna permeability.

Based on the project's assessment under the BC Act and in accordance with the Biodiversity Assessment Method (Department of Planning Industry and Environment, 2020a), 11 species of animal were assumed to be present, and thus impacted, due to a lack of survey effort during the appropriate survey periods. These species included:

- Eastern Pygmy-possum (*Cercartetus nanus*)
- Large-eared Pied-bat (*Chalinolobus dwyeri*)
- Wallum Froglet (*Crinia tinnula*)
- Giant Burrowing Frog (*Heleioporus australiacus*)
- Pale-headed Snake (*Hoplocephalus bitorquatus*)
- Green and Golden Bell Frog (*Litoria aurea*)
- Green-thighed Frog (*Litoria brevipalmata*)
- Squirrel Glider (*Petaurus norfolcensis*)
- Brush-tailed Phascogale (*Phascogale tapoatafa*)
- Common Planigale (*Planigale aculate*)
- Mahony's Toadlet (*Uperoleia mahonyi*).

4.2 Indirect impacts

The project may result in the following residual indirect impacts on biodiversity:

- weed invasion and edge effects
- introduction and spread of weeds, pests, and pathogens
- noise and light impacts on fauna.

5 Biodiversity management

5.1 Roles and responsibilities

Akaysha Energy

Akaysha Energy will:

- assume overall accountability for the implementation of the BMP
- ensure the Construction Contractor and its sub-contractors comply with this BMP
- check compliance with the various approvals (where applicable) and mitigation measures detailed in this BMP, the Construction Environmental Management Plan and Flora and Fauna Management Sub-plan.
- organise revisions of the BMP as necessary (Section 6.3).

Construction Contractor

The Construction Contractor will be required to:

- Prepare a Flora and Fauna Management Sub-plan, which will be appended to the Construction Environmental Management Plan
- Construct the project in accordance with the various approvals, including the implementation of mitigation measures detailed in this BMP and the Flora and Fauna Management Sub-plan, including but not limited to:
  - environmental induction training (inclusive of keeping training records of all personnel and contractors who have completed the induction)
  - installation of standard temporary fencing delineating the subject land
  - installation of temporary frog-proof fencing (as required)
  - implementation of a vegetation clearing procedure
  - implementation of a ground disturbance permit system
  - implementing the relocation and handling procedure
  - preparation of weed and pathogen prevention measures
  - incidental threatened species finds procedure
- Nominate a suitably qualified Project Manager and Site Manager who will be available fulltime and who will have the responsibility for ensuring that environmental obligations are being met.
- Engage a suitably qualified Project Ecologist.

Project Ecologist

The Project Ecologist will be responsible for:

  - subject land pre-clearing inspections, including inspections of man-made structures for microbats (where applicable)
  - tree clearing supervision/ spotter catcher
  - implementing the relocation and handling procedure during tree clearing
  - provision of a Tree Clearing Report detailing all relevant information to the Construction Contractor.

5.2 Environmental induction training

All personnel and contractors should undergo environmental induction training before commencing work on site. The induction will provide information on the ecological values of the site and protection measures implemented to protect biodiversity.

Awareness of areas to be protected will be conveyed through preparation of plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features, threatened plants and TECs in the vicinity of work areas and revegetation areas.

The Construction Contractor is required to keep a training record of all personnel and contractors who have completed the induction.

5.3 Vegetation and fauna habitat management

5.3.1 Protection of vegetation and habitat outside disturbance boundary

Prior to the commencement of any work in or adjoining areas of native vegetation, the Construction Contractor would engage a licensed surveyor to mark the subject land. The perimeter of this area will be fenced using high visibility or standard temporary construction fencing and clearly identified with signage. The fencing/ signage defines the extent of ground disturbance and vegetation clearance that is approved under the Infrastructure Approval. All vegetation outside this fence line would be clearly delineated as an exclusion zone to avoid unnecessary vegetation and habitat removal.

Fencing and signage would be maintained for the duration of the construction period. Fencing should be designed to allow fauna to exit the site during clearing activities.

The Project Ecologist (or suitably qualified person) would include the inspection of this perimeter fencing as part of a weekly Environmental Site Inspection Checklist, to ensure they have not been compromised in some way.

5.3.2 Temporary frog exclusion fencing

Due to favorable extant habitat adjacent to the subject land for amphibians and their propensity to move between habitats and disperse through the landscape, temporary frog exclusion fencing should be installed to reduce the risk of amphibians entering the subject land and being injured or subject to mortality during construction activities.

Frog exclusion fencing can be made from any durable material but will need to have a roof and lip or curve to prevent frogs climbing over it. The fence will need to be at least one metre high so frogs cannot jump over it. Alternatively, curved metal posts embedded into the ground with the curve facing the frogs' habitat. Shade cloth is attached from the curve edge to the ground and can be dug in up to 30 centimetres deep to help prevent frogs burrowing under it and escaping. The location, extent and type of frog exclusion fencing could be considered in consultation with the Project Ecologist. Temporary frog exclusion fencing will be installed where required, such as roadside drains and detention ponds near the subject land to be retained, to prevent frogs from being injured or killed by construction equipment. Frog exclusion fencing will be maintained for the duration of construction activities. An example design of temporary frog exclusion fencing is provided in Photo 5.1 and Photo 5.2.

In some locations, frog exclusion fencing may need to include frog-proof gates to allow vehicle and personnel access to the construction area. If frog-proof gates are installed, they must be shut at the end of each day.

The Project Ecologist (or suitably qualified person) would include the inspection of frog exclusion fences as part of the weekly Site Environmental Checklist, to ensure they are functional and not torn, holed or compromised in some other way. Damage to the fence from machinery during construction would be fixed within the working day. The Site Manager would ensure any repairs to the fence are made before dusk to minimise the risk of frogs entering the work area overnight.

Photo 5.1 An example of frog exclusion fencing

Photo 5.2 An example of frog exclusion fencing

5.3.3 Vegetation clearing and grubbing

Although vegetation clearing associated with the project is very limited in scope with a maximum of 0.46 ha of native vegetation communities impacted, the following will apply:

- vegetation clearing will occur outside local breeding and torpor seasons, being June to November inclusive. If clearing is to occur during June to November, a written assessment by the Project Ecologist justifying clearing activities (i.e. no impact to breeding or torpor habitat) must be recorded and made available to DPE prior to works.
- local wildlife organisations (i.e. Australian Wildlife Rescue Organisation (WIRES)) and a local veterinary clinic will be contacted at least seven days prior to the commencement of clearing activities. All correspondence with wildlife rescue organisations, veterinary surgeries will be recorded by the Project Ecologist for inclusion in the Tree Clearing Report.
- vegetation clearing will occur in a two-stage process. Non-habitat trees will be removed first, then habitat trees removed after a 24-hour period to allow an opportunity for nocturnal, hollow-dependent fauna, to move from the clearing area during their night activity period.
- all clearing of native vegetation, inclusive of Stage 1 and Stage 2 (i.e. salvage of fauna habitat, clearing of under-storey and removal of both habitat and non-habitat trees), will cease when temperatures exceed 35°C.

Following the two-stage clearing process, and once the final surface vegetation is removed, soil stripping will be undertaken by appropriate construction machinery stripping to a thickness defined by depth below the surface and/ or a distinct colour change. The Construction Contractor will maximise the salvage of vegetative and soil resources in the subject land for the beneficial reuse during rehabilitation of areas subject to temporary construction disturbance (e.g. construction compounds and laydown areas).

5.3.3.1 Pre-clearing inspection

The Site Manager is to coordinate a pre-clearing inspection to be undertaken by a suitably qualified and licensed Ecologist (refer Section 5.3.4). The pre-clearing inspection would be completed no more than 48 hours prior to the proposed clearing campaign.

The Site Manager is responsible for identifying:

- If the vegetation proposed for removal is clearly demarcated (through temporary bunting or survey pegs) and correlates with the relevant site plans to ensure the extent of clearing is known and inadvertent clearing is avoided.

The Project Ecologist is responsible for:

- undertaking a pre-clearing survey of underlying groundcover, shrubs, woody debris and relocate any identified fauna
- identification and marking of hollow-bearing trees, nests or other habitat features that are to be retained during the stage 1 clearing of non-habitat trees. Habitat features would be marked using spray paint, flagging tape and location recorded using a hand-held GPS.
- identification and marking of woody debris or other salvageable material that may be beneficial in rehabilitation areas. Salvageable material would be marked using spray paint, flagging tape and location recorded using a hand-held GPS.
- inspection for and marking of animal dens or burrows, with attention to determining if they are likely in current use (e.g. fresh droppings/ scats, maintained entrance/ fresh soil, scratchings)
- undertaking a nocturnal active search to capture and relocate amphibians if suitable habitat is associated with dams, drains or other wet areas that are subject to disturbance during clearing activities.
- identifying suitable relocation sites for rescued fauna outside the subject land. Preliminary relocation sites for captured fauna includes native vegetation to the west and south-west of the subject land (Figure 5.1).
- searches for the presence and extent of high threat weed species and vertebrate pest species that require management
- the Ecologist will consider specific times of the year when species may be using habitat features for breeding or roosting and provide advice on mitigative measures if occupation is observed or deemed likely.

Pre-clearing inspection of man-made structures for microbats

The now decommissioned Munmorah Power Station, which includes the project subject site, is currently being demolished and the site rehabilitated under consent number DA/413/2014. On the selected site for the Waratah Super Battery, this involves the removal of the coal loader structure, sedimentation basin, weed removal and the concrete structure broken down to below ground level. Consequently, it is not likely that existing man-made structures will require disturbance or modification during construction of the project. However, and where necessary, the Project Ecologist will complete a pre-clearing survey of existing man-made structures for microbats as follows:

- a diurnal search of cavities in structures for roosting microbats. Searches would be aided by torches, headlamps, binoculars and flexible inspection camera as necessary.
- diurnal search of structure for supplementary evidence of use (i.e. accumulated droppings).

If the structure retains cavities that cannot be inspected adequately or safely during a diurnal search, a nocturnal emergence survey for bats leaving the structure will be required. Nocturnal survey would be completed by:

- direct observation of the structure for a period of 15 minutes prior to and 60 minutes after sunset. Direct observation may require more than one person and is dependent on structure size and potential microbat access/ egress points.
- use of ultrasonic bat detector units (i.e. Anabat Walkabout) or thermal imagining cameras.

A pre-clearance survey approving works is valid for a single structure for a period of 24 hours, after which another pre-clearance survey must be completed before construction works can continue.

If microbats are detected during a pre-clearance survey, the Project Ecologist will implement the fauna handling and rescue procedure (Section 5.4). If microbats are observed exiting the structure during a nocturnal emergence survey and are occupying an inaccessible cavity (or cavities), a roost exclusion would be required, and the pre-clearing inspection undertaken again until the Project Ecologist can determine that the structure is free of microbats.

Roost exclusion

Excluding bats from a roost is a process that allows them to exit unharmed, but not re-enter. Roost exclusion would be employed at those structures where microbats are observed to be actively using the structure and where such structures require removal or substantial modification.

Roost exclusion would consist of, but not necessarily limited to, the following actions:

- completion of pre-clearing inspection (as described above)
- primary exit points for identified active roost(s) would be determined and marked. Identified roosts would remain in-situ at this stage
- all other unoccupied/ potential roost sites would be sealed using suitable material, such as wood, sheet metal, expandable foam. Care and due consideration must be given to avoid sealing microbats in the roost.
- nocturnal survey would be completed at the active roost(s), as per the pre-clearing inspection. Roost locations would then be inspected by the Project Ecologist, as far as practicable, to ascertain if all microbats have vacated the roost.
- if clearance is given by the Project Ecologist, roost locations would be permanently filled or blocked using suitable material.
- where the Project Ecologist cannot be sure that all microbats have left the roost (i.e. obscure cavity), one-way valves made of clear plastic sheeting could be used as a means of preventing re-entry.

Mitigation measures

Where microbats are observed roosting in an artificial structure during a pre-clearing survey that requires demolition or substantial modification, the species of microbat will be recorded and used to determine the type of supplementary habitat provided. Where hollow-dependent microbat(s) are using an artificial structure, supplementary habitat will be installed at a rate of two microbat structures (nest boxes) for each occupied roost location as a compensatory measure. Microbat structures would be:

- double or triple chambered
- constructed out of timber or recycled plastic
- sourced from a reputable supplier (i.e. Hollow Log Homes)
- ordered following the pre-clearing inspection and installed as soon as practicable thereafter
- installed under the guidance of the Project Ecologist
- installed in habitat not impacted by the project. Where this is not practicable, microbat boxes could be installed in adjacent remnant vegetation with prior landowner/ land manager approval.
- installed between 2-5 metres above ground level
- installed with an approximate north-east aspect to avoid the afternoon sun and limit exposure to the prevailing direction of inclement weather, being from the south-east and west.

A concise letter report would be prepared by the Project Ecologist and submitted to the Construction Contractor's Site Manager and Akaysha Energy detailing the installation of microbat structures, which will include the following information:

- date microbat structure was installed
- the type of microbat structure installed
- geographic coordinates, installation height, aspect, donor tree for each microbat structure
- photographic evidence of each microbat structure

- figure illustrating the location and distribution of microbat structures.

If microbat boxes are installed, the following monitoring program would be adopted:

- monitoring is to be undertaken by a suitably qualified ecologist
- a diurnal inspection of each microbat structure would be undertaken quarterly in the first-year post installation, then biannually for the second and third year. It is envisaged that microbat structures would be monitored concurrently with the rehabilitation monitoring (5.8.6).
- the diurnal inspection would document any observed use, occurrence of any pest species, and structural condition
- each microbat structure will be photographed as evidence of structural condition
- a concise monitoring report will be prepared after each monitoring event and include key observations, supporting photographic evidence, and management actions (as necessary).

Under the current BC Act Biodiversity Offset Scheme, there is no provision for calculating the value of offsets such as threatened microbat roosting or breeding habitat within artificial structures. Although it is not likely that existing man-made structures will remain in the subject land, if a pre-clearing survey identifies a cave-dependent or threatened species of bat roosting in a man-made structure, a suitable method for calculating the financial value of an offset will need to be agreed upon by Akaysha Energy, DPE and a suitably qualified ecologist. Offset funds could contribute to the management and conservation of maternity roost sites identified under the Saving Our Species program, or to direct funding into a research project that aims to address identified critical actions for the affected species.

5.3.3.2 Hold point

During construction of the project, the Construction Contractor will implement an internal permit system (i.e. ground disturbance permit) with hold points for activities that are deemed to be critical and require approval by a delegated authority. Hold points will apply to:

- the clearing of vegetation and fauna habitat (including man-made structures that may provide habitat for roosting microchiropteran bats)
- incidental threatened species finds (Section 5.5).

Prior to vegetation clearing or ground disturbance works, a pre-clearing checklist will be completed by the Site Manager and Project Ecologist. Completion of this checklist will ensure that all required actions relevant to pre-clearing activities have been completed (for example, completion of pre-clearing inspection, environmentally sensitive areas appropriately delineated). Where necessary, the Project Ecologist will provide advice to the Construction Contractor relating to the pre-clearing inspection findings and possible management and mitigation measures. Where the Project Ecologist identifies sensitive values, management and mitigation measures will be presented to the Construction Contractor who will adopt the measures into the permit system and direct clearing personnel to undertake the actions.

5.3.3.3 Clearing supervision

Once approval has been granted, vegetation removal may occur. Vegetation removal will occur in a two-stage process.

Stage 1 clearing

- non-habitat trees will be removed first to disturb the area in the presence of the qualified and licensed ecologist
- the salvage of woody debris or beneficial material for re-use in rehabilitation of temporary work areas would be maximized during Stage 1 clearing
- where possible, habitat trees would be knocked using earth moving equipment to create enough disturbance to encourage fauna to abandon the tree.
- prior to Stage 2 clearing, habitat trees will be left to stand over night to enable resident nocturnal fauna to self-relocate during their night time activity period.

Stage 2 clearing

- where possible, habitat trees are to be knocked with an excavator bucket or earth moving equipment used for clearing to create only enough disturbance to encourage any remaining fauna to move from the tree, or at least show themselves prior to felling. This may not be possible for some trees due to safety risks to the plant operator. Excessive knocking of the tree must not take place.
- habitat trees will be felled sequentially and succeeding trees not felled until direction is given by the Ecologist
- felling will involve gently pushing the tree and lowering to avoid sudden falling to minimise fauna injuries
- felled habitat trees will be inspected immediately by the Ecologist for any fauna present
- if animals are found, the Fauna Handling and Rescue Procedure is to be followed (Section 5.4)
- captured animals will be relocated to designated relocation sites, as identified during the pre-clearing survey (Section 5.3.3.1)
- felled trees are to remain in place at least overnight to allow any undetected fauna further opportunity to escape.

During clearing operations records will kept detailing the findings of Stage 1 and Stage 2 clearing events, including:

- animals that are sighted, captured, released, injured, shocked or killed as a result of clearing operations and fauna rescue
- records of the fauna relocation sites.

This information will be included in a Tree Clearing Report, which will be completed by the Project Ecologist and submitted to the Construction Contractor's Site Manager and Akaysha Energy following the completion of clearing operations. Section 5.3.5 provides additional information pertaining to the Tree Clearing Report.

5.3.4 Qualifications of spotter/catcher (Project Ecologist)

The management of clearing operations and fauna handling and care will be undertaken by qualified ecologists with practical experience in undertaking spotter/catcher activities. Spotter/catchers will operate under relevant permits and licences and:

- hold current animal research approval and appropriate handling permits
- have knowledge of and experience in:
  - identification of vertebrate fauna, including threatened species
  - the humane capture, trapping and handling of vertebrate fauna
  - identification of fauna habitat and habitat resources
  - humane techniques for emergency euthanasia of vertebrate fauna
  - State and Commonwealth legislation relevant to the conduct and responsibilities of wildlife spotter/catchers
- have appropriate equipment for the rescue and care of wildlife
- be vaccinated against the Australian Bat Lyssavirus – rabies vaccination.

5.3.5 Tree Clearing Report

At the completion of clearing, the Project Ecologist will prepare a Tree Clearing Report, which will be submitted to the Construction Contractor's Site Manager following the completion of clearing operations. The report will confirm the final area cleared, the identity of all vegetation removed, and a count of hollow-bearing trees felled (if any). The Tree Clearing Report will also document any fauna or nests impacted by clearing works and provide fauna capture and relocation data. Data to be recorded includes:

- date and time of animal sightings and details of the observer
- species
- number of individuals recorded
- age (adult, juvenile, nestling etcetera)
- condition of the animal (living, dead, injured)
- management action undertaken (e.g. captured, handled, taken to vet)
- results of any management actions (e.g. released, euthanized, placed with carer)
- inventory of hollow-bearing trees and fallen timber salvaged and stockpiled/ relocated.

5.3.6 Excavations

To minimise the potential for fauna from becoming trapped or injured, any excavation left open overnight will have a ramp or opening installed to allow access for any fauna to escape. Alternatively, the excavation can be completely covered, with the cover being secured.

The Construction Contractor's Foreman is responsible for ensuring any excavation left open overnight will have an access ramp installed or be completely covered. The Construction Contractor's Site Manager will inspect open excavations to ensure no fauna has been trapped. Any fauna discovered within the subject land should be brought to the attention of the Site Manager and the fauna handling and rescue procedure implemented.

Waratah Super Battery

Figure 5.1
Indicative Fauna Relocation Sites

Legend

- Indicative Fauna Relocation Sites
- Roads
- Watercourses
- Waterbodies
- Subject Land
- Project Area

0 75 150
Metres

Coordinate system: GDA2020 MGA Zone 56

Scale ratio correct when printed at A3

1:3,000 Date: 13/04/2023

GDA 2020

Data sources: DELWP, Geoscience Australia

5.4 Fauna handling and rescue

If animals are encountered at any stage of the project, the following fauna handling and rescue procedure will be implemented. If the fauna species is identified as a threatened species that has not previously been recognized as occurring or likely to occur in the project area, the Construction Contractor and/or Site Manager must enact the incidental threatened species finds protocol (Section 5.5).

5.4.1 Identification of fauna and implement initial protection

To minimise stress to native fauna, the Site Manager will:

- identify fauna and implement initial protection
- ensure the animal is protected from accidental trauma by other animals, equipment and machinery
- ensure the animal is protected from adverse sensory stimuli, such as loud noises
- allow the animal to leave the area without intervention (where practicable)
- ensure appropriate PPE (e.g. gloves) are available prior to attempting to handle injured or distressed fauna
- cover larger animals with a towel or blanket and place in a cardboard box, hessian bag or similar. Ensure confinement method provides sufficient airflow to allow normal air exchange and dispersal of heat.
- place smaller animals in a cotton bag, tied at the top
- if handling bats, the handler must be vaccinated against Australian Bat Lyssavirus
- frogs will be transported in moistened plastic bags (one frog per bag with the bag used once) with a small amount of leaf litter. Handling and translocation of frogs will be completed in accordance with the hygiene protocols nominated in Section 5.6.3. Mitigation measures for pathogen management are detailed in Section 5.6.
- keep animal in a quiet, warm, ventilated and dark place away from noisy construction activities.
- ensure the animal is checked regularly during its period of confinement.

If the animal cannot be handled (i.e. venomous reptile):

- exclude all personnel from the vicinity with fencing and/or signage
- record the exact location of the animal and advise the appropriate rescue agency.

The Site Manager or Construction Contractor will call the Project Ecologist and follow any advice provided. The Project Ecologist may nominate to contact a rescue agency (e.g. WIRES) to assist. Any decisions regarding the care of the animal will be made by the Project Ecologist, with advice from a rescue agency as required.

If the fauna species is identified as a threatened species that is not identified in the Environmental Assessment (GHD, 2022a) (GHD, 2022b) the Site Manager or Construction Contractor will enact the incidental threatened species find procedure (Section 5.5).

5.4.2 Release procedure

Relocation of fauna from the subject land will be undertaken by the Site Manager or Project Ecologist and records will be maintained in a fauna handling and rescue register. Where appropriate, a wildlife carer with specific animal handling experience may be used to carry out animal handling and relocation. If the animal is not injured or stressed, it may be released nearby in adjacent vegetation (Figure 5.1) that is not subject to disturbance by construction of the project, in accordance with the following:

- sites identified as suitable release points by the Project Ecologist or rescue agency
- release will be into similar habitat as close to the original areas as possible
- if the species is nocturnal, release will be undertaken at dusk
- release would generally not be undertaken during periods of heavy rainfall.

5.5 Incidental threatened species finds

The purpose of the incidental threatened species finds procedure is to outline the process to follow in the event of an unexpected species find during construction works. If a new threatened flora or fauna species in unexpectedly encountered, and which is likely to be affected by construction activities, the following steps will be followed:

1. Stop work immediately.
   - the worker/contractor is to notify the Site Manager and other workers in the immediate area
   - site Manager to notify the Project Manager
   - Project Manager will notify Akaysha and the Project Ecologist accordingly.
2. Site Manager and/or Project Manager to demarcate and prevent access to the area to reduce impact on the species and redirect works to an alternate area where practicable.
3. Site Manager and/ or the Project Ecologist will record and document the unexpected find (i.e. species, abundance and location).
4. Where possible, a qualified person will capture the individual(s).
5. For fauna in trees or shrub habitat, encourage the individual to vacate the development footprint through minor disturbance to the habitat, e.g., shaking of the tree by construction machinery. If the individual(s) does not vacate the area, the individual may be captured and relocated by a suitably qualified person, before the habitat may be “soft felled” or lowered gently under supervision of an arborist so that injury or death to the individual(s) is unlikely.
6. Delay the clearance related works within the immediate vicinity until the next day to allow the species to naturally vacate the area.
7. The Site Manager and Project Manager to assess the situation with the Project Ecologist:
   - the Site Manager and the Project Ecologist to determine the significance of the likely impact to the threatened species and appropriate management options, such as relocation measures, developed in consultation with the Akaysha. Where required, appropriate specialists will be consulted to assess the significance of the find.
   - if an impact is likely to occur, Akaysha will undertake consultation with the DPE/ BCD as appropriate.
   - Akaysha Energy will obtain any relevant licences, permits or approvals required if the threatened species is likely to be impacted.

8 Implement all management measures as recommended by the Project Ecologist and in accordance with any relevant licenses, permits or approvals.

9 Following confirmation that the demarcated area is deemed safe, all safety and environmental controls will be removed before work recommences. Once confirmed, the Site Manager and/ or Project Manager will release hold on work.

10 The following actions will be undertaken following the incident.

- maintain regular inspections.
- relevant information on the species will be included in the induction and a toolbox talk will be given to discuss the outcome.
- where required, Akaysha Energy, in consultation with DPE/ BCD, will calculate additional biodiversity offsets (condition B9) for any significant impact to unaccounted threatened flora and/or fauna species in the subject land.

5.6 Weed and pathogen management

5.6.1 Pathogens

The project has the potential to increase the spread of pathogens that threaten native biodiversity values, such as the soil-borne pathogen *Phytophthora cinnamomi* (Phytophthora) and *Austropuccinia psidii* (Myrtle rust). Phytophthora infects root systems whereas Myrtle Rust deforms leaves and leads to heavy defoliation. Both pathogens are associated with damage and death to native plants and may be dispersed over large distances.

Phytophthora cinnamomi is a microscopic soil-borne water mould, which causes root rot of susceptible plant species. *Phytophthora cinnamomi* has been recorded in Sydney and dieback associated with the water mould is evident in many areas. It can be spread through flowing water, such as storm runoff, or may be spread within a site via mycelial growth from infected roots to roots of healthy plants. Propagules of Phytophthora may also be dispersed by vehicles (e.g. cars and earth moving equipment), animals, walkers and movement of soil.

Myrtle rust is an exotic fungus (*Uredo rangelii*) that infects the foliage of Myrtaceae species in the form of powdery rust that causes leaf deformity and death. Myrtle rust is dispersed by wind, insect and animal movements, contaminated clothing, infected plant material and equipment. Due to the significance of biodiversity values associated with vegetation and habitat adjacent to the subject land and the project's potential to increase the risk of dispersal of Phytophthora and/or Myrtle Rust through works involving soil disturbance, Phytophthora and Myrtle Rust prevention measures should be implemented.

In addition, the accidental introduction or spread of Chytrid Fungus (*Batrachochytrium dendrobatidis*) (hereafter referred to as Chytrid) has the potential to adversely affect frog populations worldwide. Chytrid causes Chytridiomycosis, a lethal and highly contagious disease that affects amphibians (frogs and tadpoles) worldwide and capable of causing 100% mortality in some populations. Hence, it has been associated with mass die-off or species extinctions. Chytrid is a water-borne fungus that may be spread as a result of handling frogs or through cross contamination of water bodies. The fungus attacks the parts of a frog's skin that have keratin in them. Since frogs use their skin in respiration, this makes it difficult for the frog to breathe. It also damages the nervous system, affecting the frog's behaviour. In Australia, Chytrid has impacted native frog species causing the extinction of one species and suspected to have caused the extinction of three others.

These pathogens are commensurate with Key Threatening Processes listed under the BC Act and/or the EPBC Act, including:

- infection of native plants by *Phytophthora cinnamomi*
- introduction and establishment of Exotic Rust Fungi of the order *Pucciniales* pathogenic on plants of the family *Myrtaceae*
- infection of frogs by amphibian Chytrid fungus causing the disease Chytridiomycosis.

Accordingly, mitigation measures should be implemented to minimise the risk of the introduction of pathogens.

5.6.2 Weeds

Three NSW priority weed species were recorded in the subject land (Table 3.1). All of these species have a general biosecurity duty under the Biosecurity Act, which requires any person who deals with the plant to ensure the biosecurity risk of the weed is prevented, eliminated or minimised, so far as is reasonably practicable.

Two WoNS were identified within the project area (Table 3.1). These weeds are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts.

Many weeds recorded in the project area are also identified as high threat weeds (Table 3.1). These plants are not native to Australia, that if not controlled, will invade and outcompete native plant species.

5.6.3 Weed and pathogen prevention

5.6.3.1 Training

To reduce the likelihood of introducing or spreading weeds or pathogens, all construction personnel and contractors should be trained in weed and pathogen prevention measures as part of environmental induction training.

5.6.3.2 Hygiene protocols

Table 5.1 presents a range of best practice hygiene protocols to reduce the risk of the introduction or spread of pathogens and weeds within the subject land through the movement of contaminated machinery and materials over long distances, in accordance with the Hygiene guidelines – Protocols to protect priority biodiversity areas in NSW from *Phytophthora cinnamomi*, myrtle rust, amphibian chytrid fungus and invasive plants (Department of Planning Industry and Environment, 2020b).

Table 5.1 Hygiene protocols to be implemented during construction works to prevent the spread or introduction of weeds and pathogens

Hygiene Protocols		Responsibility
Inductions	All personnel (including visitors) to be inducted on weed and pathogen management measures for the site through toolbox talks and site inductions.	Construction Site Manager (construction) Akaysha Energy (operation)
Restrict access	Set up exclusion zones with fencing and signage to restrict access into vegetation and habitat adjacent to the subject land.	
Vehicles and machinery	Vehicles initially entering the subject land must not be tracking soil/mud and/or vegetative material from elsewhere. If soil/mud and/or vegetative material are found on these vehicles, they must be cleaned in a hard stand area within the subject land and disinfected with Farmcleanse (in accordance with the manufacturer recommended dosages), methylated spirits diluted in town water (70:30 ratio), or similar. Any organic waste collected during the washdown process would be removed from site. Restrict vehicles to parking within the subject land (i.e. within designated parking areas). Provide a bunded area for the wash down of vehicles and earthmoving equipment.	
Personnel and equipment	Clean personal protective equipment, especially boots, prior to unavoidable entry on foot into native vegetation adjacent to the subject land (as may be required for the relocation of native animals) and rehabilitation area. Personnel should disinfect their footwear with methylated spirits diluted in town water (70:30 ratio). Disinfect hands or change gloves between the handling of individual frogs and between each site. Only handle frogs when necessary and always use gloves. Use the ‘one bag-one frog’ or ‘one container-one frog’ approach.	
New material	Source landscaping materials (soil, mulch, seed) from a supplier that is certified to be disease-free.	
Disposing of material	To avoid cross contamination, generally avoid transferring water between two or more separate waterbodies.	
Further information	Hygiene guidelines – Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants (Department of Planning Industry and Environment, 2020b).	

5.6.4 Weed control

Areas of weed management should be identified prior to the commencement of the project and will initially be undertaken as part of the pre-clearing survey (Section 5.3.3.1) and be documented in the pre-clearing checklist to be populated by the Site Manager and Project Ecologist.

Where required, the Construction Contractor will engage a suitably qualified Bush Regeneration or Weed Management Contractor to undertake biannual maintenance weeding (i.e. early Spring and Autumn) in the subject land. Maintenance weeding will also be apportioned to the immediate adjacent natural bushland where weed incursion has been identified. The frequency and timing of weed control may be revised in consultation with the Bush Regeneration or Weed Management Contractor, depending on weed incursions. Follow-up inspections will be undertaken to assess the effectiveness of weed management measures implemented and to identify the requirement for any additional management measures.

Weeds recorded in the project area were predominately herbaceous, as detailed in Section 3.2. The suite of weed species present should be regarded as fluid, as new weeds may be introduced by wind, stormwater runoff, native and pest animals, people and machinery. As such, generic weed control methods provided are suited to the project, however they will also allow flexibility for the Bush Regeneration or Weed Management Contractor to adapt to changing requirements of weed control to achieve the best outcomes for biodiversity.

The Bush Regeneration or Weed Management Contractor will consider the following weed control methods:

- where feasible, removal of weeds should be undertaken prior to seed developing
- general weed control strategies should be implemented, including:
  - spraying with herbicide in accordance with the *Pesticide Act 1999*
  - direct removal
  - suppression of isolated weed infestations
- application of herbicide should occur at optimum timing and conditions for treatment
- herbicides will not be applied by spray in areas adjacent to waterbodies, watercourses, or stormwater systems. In these areas, the herbicide will be manually applied using a cut and paint, and or direct drill method.
- following weed removal, any bare soil areas should be stabilised to reduce erosion and further weed problems
- all weeds removed from the subject land are to be disposed of to an appropriately licensed waste disposal facility.

Verification of proposed control measures and supervision of weed control activities is to be undertaken in consultation with the Bush Regeneration or Weed Management Contractor. Weed management activities must be recorded on the Environmental Site Inspection Checklist.

Monthly visual assessments of weeds should be undertaken throughout construction by the Project Ecologist (or suitably qualified person). The presence of weeds and their extent will be noted on the Environmental Site Inspection Checklist.

5.7 Pest animal management

Four pest animal species were recorded during the Environmental Assessment, including Common Starling, Red Fox, European Rabbit and Domestic Sheep (GHD, 2022b). Pest animal species will be monitored via observations during clearing operations (Section 5.3.3) and via weekly visual assessments throughout construction by the Site Manager. The presence of pest animals and their abundance will be noted on the Environmental Site Inspection Checklist. If required, Akaysha Energy and the Construction Contractor will implement a pest animal baiting and/or trapping program using best practice trapping and baiting methods and use humane methods to dispose of captured pest animals.

5.8 Rehabilitation of temporary disturbance areas

Progressive rehabilitation of native vegetation will be undertaken in areas subject to temporary disturbance. Areas such as construction compounds and laydown areas in the subject land will be progressively rehabilitated and revegetated during the later stages of construction and post construction. The Construction Contractor will engage a suitably qualified Bush Regeneration or Rehabilitation Specialist to implement a rehabilitation plan, which will consider Section 5.8.1 to Section 5.8.5.

A key risk to the project is bushfire. The extent of revegetation (i.e. area and plant species) of this zone (and any others identified during the construction phase) will be undertaken with consideration of the Planning for Bushfire Protection guidelines, specifically the maintenance of a minimum 25 m asset protection zone and the radiant heat flux associated with any introduced fuel load (i.e. 29 kW/m^2 or less), as well as the findings and recommendations in the Fire Safety Study required under Condition B21.

5.8.1 Site preparation

Appropriate site preparation is essential for a successful revegetation program. The biggest threat to revegetation in the subject land is likely to be inadequate weed control prior to seeding and planting. Weed control is one of the most important features of any revegetation program and is often a major factor in the success or failure of a revegetation project.

Rehabilitation areas may require soil (or sub soil) to be ripped, or scalped, and treated with herbicide prior to the spreading of topsoil. The site must also be clearly delineated to identify where revegetation works are to occur, and temporary fencing may be required to deter rabbits from grazing seed as it emerges and seedlings. Fencing may also reduce the risk of site vehicles and site personnel from traversing rehabilitated areas. Revegetation areas will be established and signposted once most of the infrastructure works have been completed.

The limited extent of native plant community types in the subject land, indicate that topsoil will need to be sourced from external suppliers to facilitate the rehabilitation. Any topsoil will be imported in accordance with the hygiene protocols and be certified weed and disease free.

5.8.1.1 Stabilisation and weed suppression

The following soil stabilisation guidelines should be followed:

- in areas where there is a risk of erosion, soil stabilisers are to be used, such as geotextile material or thick jute mesh
- temporary soil stabilisation using vegetation will avoid the introduction of exotic plants. Where exotic species are used, these will be sterile, non-invasive and easily eradicated when permanent native vegetation is established.

5.8.1.2 Soil preparation

To provide optimal conditions for seed germination and seedling establishment, the soils at the site will require preparation. The requirements for optimal seed germination and seedling establishment are soft, uncompacted soils and soil that is bare and free of weeds.

5.8.1.3 Soil management

Rehabilitation areas must be accompanied by an erosion and sediment control plan prepared in accordance with:

- International Erosion and Sediment Control Association of Australia – Erosion and Sediment Control – A Field Guide for Construction Site Managers
- Landcom – The Blue Book – Managing Urban Stormwater: Soils and Construction (Landcom, 2004).

5.8.2 Revegetation

Active revegetation, such as direct seeding and the planting of tube stock, is likely to be required for the project owing to the limited extent of topsoil likely to be recovered during construction clearing and grubbing, and the areas ability to naturally recover.

5.8.3 Plant species selection

As per the Infrastructure Approval (Section 2.2), temporary disturbed areas are to be rehabilitated using species that are endemic to the area. Two PCTs were identified within the project area (GHD, 2022a) (GHD, 2022b), being:

- Scribbly Gum – Red Bloodwood – *Angophora inopina* heathy woodland on lowlands of the Central Coast (PCT 1636)
- Broad-leaved paperbark – Swamp oak – Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast (PCT 1724).

PCT 1724 is to be removed as part of the project and currently occurs within the proposed revegetation area. Therefore, the native plant species recommended are from PCT 1724, as these species would have greater chance of success in the rehabilitation of the site.

The condition and limited area of remnant vegetation associated with the subject land dictates that seed will be required from several sources, including where possible, native vegetation communities adjacent to the project. Harvested seed will be collected and stored or propagated for use in disturbed areas. Seed collection licences are to be held by personnel undertaking seed collection. To collect seed from threatened flora species, a state licence under the BC Act would be required as follows: Section 91 Licence to harm or pick a threatened species, population or ecological community or damage habitat listed under the BC Act. Thus, these species may preferably be avoided.

Indicative species for rehabilitation are detailed in Table 5.2 and will guide planning for seed collection and/ or seedling orders. It is important to include a mix of coloniser species, such as *Acacia* spp. And *Dodonaea* spp. That will establish and grow quickly in the revegetation areas. These species help to create the optimal environment for species that are slower to colonise areas to establish. Acacias are a significant genus for providing nitrogen within the soil for the use of other plants due to symbiotic nitrogen fixing bacteria and fungus. This will increase soil carbon, reduce surface temperature variation, reduce erosion, and create surface conditions conducive to the establishment of other longer lived native plant species such as Eucalyptus spp.

5.8.4 Plant installation guidelines

5.8.4.1 Direct seeding – hydroseeding

Instead of spreading seed by hand, a Hydroseeder or similar machine can be used to seed large areas quickly and economically as the seed, fertilizer, mulch, tackifier and water are all applied at once. The seed, water and mulch are mixed in the tank of the Hydroseeder to form a slurry, which is then sprayed over the site through a high-pressure water cannon.

5.8.4.2 Tube stock planting

Tube stock, grown in small square plastic nursery tubes, is the preferred method of revegetation for tree and shrub species. Planting of tube stock will be carried out using hand tree planting tools.

5.8.4.3 Timing

Seeding and planting will be scheduled for the optimal time of year for the Central Coast Region, and the rehabilitation program will be adjusted if conditions are not suitable.

5.8.4.4 Plant protection

Tree guards should be installed over the newly planted seedlings to provide protection from grazing animals during the plant establishment period.

Table 5.2 Indicative plant species for rehabilitation

Plant species	PCT 1636	PCT 1724	Broadcast Seed	Seedling
Overstorey				
Allocasuarina littoralis (Black She Oak)	✓		Yes	Yes
Cupaniopsis anacardioides (Tuckeroo)		✓	Yes	
Eucalyptus robusta (Swamp Mahogany)		✓		Yes
Glochidion ferinandi (Cheese Tree)	✓	✓		Yes
Livistonia australis (Cabbage Palm)		✓		Yes
Melaleuca quinquenervia (Broad-leaved Paperbark)		✓	Yes	Yes
Mid storey				
Acacia longifolia subsp. *Longifolia* (Coastal Wattle)	✓	✓	Yes	Yes
Callistemon rigidus (Stiff Bottlebrush)		✓	Yes	Yes
Dodonaea triquetra (Large-leaf Hop-bush)	✓	✓		Yes
Groundcover				
Clematis glycinoides (Headache Vine)	✓			Yes
Dianella caerulea (Blue Flax Lily)		✓		Yes
Entolasia marginata (Bordered Panic)		✓	Yes	Yes
Entolasia stricta (Wiry Panic)	✓		Yes	
Imperata cylindrica (Blady Grass)	✓		Yes	
Lobelia purpurascens (Whiteroot)		✓		Yes
Lomandra longifolia		✓		Yes

*Threatened species – licence restrictions on seed collection.

5.8.4.5 Weed control and mulching

A weed suppression mat should be installed around the base of each seedling to reduce competition from weeds in the immediate area of each planting. Mulching also provides protection to bare soil, retention of soil moisture and suppression of weed re-growth. Organic mulch, such as hoop pine fines or similar (to meet AS4454-2003) and is certified free of weed seed or foreign objects, should be spread to a depth of 100mm–150mm and allowed to settle for four weeks before planting seedlings. Alternatively, woody vegetative material obtained from clearing may contain canopy stored seed and can be mulched and re-spread if it is weed and disease free.

5.8.4.6 Watering

Watering would be required to ensure planting survival is of an adequate success rate, which ideally would include the following watering schedule:

- 20 litres of water per plant at weekly intervals for the first four weeks
- 10 litres of water per plant at 14-day intervals from 4 – 12 weeks
- 10 litres of water per plant at monthly intervals for 3 – 6 months.

The above watering schedule would be up to the discretion of the Bush Regeneration Contractor, in accordance with current climatic conditions, such as drought, or high rainfall events.

5.8.5 Maintenance

Ongoing maintenance of the rehabilitation may be required, and this would be programmed to coincide with broader weed treatment and/ or maintenance programs on site. Akaysha would be responsible for enacting any maintenance requirements, as required, through consultation with a suitably qualified Bush Regeneration Contractor during operational phases of the project.

5.8.6 Monitoring

The success of revegetation measures should be monitored as part of the rehabilitation of temporary disturbance areas to assess its effectiveness and to determine the need for amendments. The data gathered will be compared to reference sites established in adjacent vegetation communities (where suitable public access is available) to determine the success of revegetation.

5.8.6.1 Monitoring methods

The monitoring program is as follows:

- monitoring is to be undertaken by a suitably qualified ecologist independent of the contractors undertaking the work
- establish two randomly positioned vegetation integrity plots in accordance with the methods outlined in the Biodiversity Assessment Method (BAM) (Department of Planning Industry and Environment, 2020a) within the rehabilitation area. See Appendix A for BAM vegetation integrity plot methodology.
- establish two randomly positioned vegetation integrity plot in accordance with the methods outlined in the BAM (Department of Planning Industry and Environment, 2020a) in adjacent intact native PCT 1724 vegetation (reference sites)
- BAM vegetation integrity plots should be pegged at each corner
- the start of the BAM transect will be staked and the location recorded using a GPS
- transect orientation for the vegetation integrity plots to be the same for each monitoring plots in successive years of monitoring
- record all plant species, including exotic species within the 20x20m quadrat
- count number of individuals trees by species and stem class ranges being <5cm, 5-9cm, 10-19cm, 30-49cm, 50-70cm and 80+cm with the 20x50m plot
- count of tube stock in the vegetation integrity plot to ascertain planting success

- photographic monitoring points will be set at permanent sites from where a series of photographs over time can be compared to illustrate short or long-term physical change in vegetation attributes, such as but not limited to vegetation structure, plant health, plant mortality and reproduction phases. Photographic monitoring will occur along the vegetation integrity plot transect in the same orientation during each monitoring event. Photo monitoring points will be used to demonstrate compliance with performance criteria.

5.8.6.2 Frequency

The monitoring should be implemented quarterly during the first-year post rehabilitation and then biannually for a further two years.

5.8.6.3 Reporting

Reporting is required after each monitoring event in the form of a concise monitoring report including key observations and supporting photographic evidence. The Rehabilitation Monitoring Report will be submitted to Akaysha Energy and BCD.

5.8.6.4 Success criteria

The first monitoring event will provide a baseline variable from the intact vegetation for comparison against the revegetation works. The success criteria include:

- evidence of locally endemic species used in rehabilitation.
- greater than (or equal to) 80 % of planted tube stock successfully established at the end of year three monitoring.
- priority weeds are controlled
- exotic species diversity does not exceed that recorded from the reference sites.

6 Monitoring and reporting

6.1 Monitoring and performance indicators

Monitoring, inspection and auditing will be undertaken to measure effectiveness and facilitate continuous improvement of biodiversity management. General environmental monitoring, inspection and auditing requirements are summarised in Table 6.1. The Project Ecologist, or suitably qualified person proficient in frog and weed identification, will undertake routine inspections of the subject land, including the following items at a minimum:

- date of inspection
- personnel undertaking the inspection
- features to be inspected/monitored (e.g. perimeter fence, temporary frog-exclusion fencing, ground disturbance permits, erosion and sedimentation controls, excavations, salvaged habitat features, hygiene inspection forms, presence of weeds)
- outcomes of the inspection and details of any non-compliance against the GDP or other management measure(s) or objective(s)
- requirement for any corrective actions
- details of any photographic records detailing evidence of monitoring.
- confirmation subject land/ construction footprint is appropriately delineated, and sign posted.

Success will be assessed by the Project Ecologist (or suitably qualified person) and the Site Manager according to the criteria listed in Table 6.1.

Accurate and complete compliance records will be maintained throughout the construction and operation of the project. The following records and reports must be maintained on site:

- environmental training records, including signed and dated:
  - environmental induction training
  - environmental toolbox talks
  - pre-start meetings
- pre-clearing inspection records
- Stage 1 and Stage 2 clearing records
- fauna handling and rescue register
- environmental inspection reports
- all incident reports.

Table 6.1 Biodiversity inspection and reporting program

Management activity	Monitoring action	Responsibility	Performance indicator	Timeframe		Corrective action
				Performance measured	Completion	
Personnel						
Environmental induction training	Monthly audit of induction training records and tool box talks	Construction Site Manager	Training record of all personnel and contractors who have completed the site-specific induction. Toolbox meetings incorporating environmental constraints and responsibilities.	Monthly audits	Short to long-term (ongoing).	Induct employees and contractors in accordance with Section 5.2.
Vegetation and fauna habitat management						
Protection of vegetation outside disturbance boundary (demarcation of subject land)	Weekly site inspection Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager	Subject land delineated using high visibility or standard temporary construction fencing. Inclusion of appropriate signage. Documentation of weekly site inspections. Appropriate preventative maintenance to fencing during project construction. No incursions by site personnel, vehicles, stockpiles or clearing activities outside the subject land Pre-start meetings to acknowledge clearing limits and clearing procedures. Tree clearing operations conducted in accordance with vegetation clearing	Tree Clearing Report will supply tree clearing and survey data for verification. Site Environmental Inspection Checklist Pre-start meeting records	Short to long-term (ongoing).	Fix boundary fence to comply with Section 5.3.1. Any breech occurring outside the demarcated subject land that results in a loss of native vegetation must be reported immediately as detailed in Section 6.2.1 and Section 6.2.2, and a rehabilitation plan prepared and implemented in consultation with the DPE.

			and grubbing procedure detailed in Section 5.3.3.			
Pre-clearing inspection	Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager Project Ecologist	Tree clearing operations conducted in accordance with vegetation clearing and grubbing procedure detailed in Section 5.3.3. Implementation of the fauna handling and rescue procedure (where required) (Section 5.4). Pre-clearing checklist completed by Construction Site Manager and Project Ecologist.	Tree Clearing Report will supply tree clearing and survey data for verification.	Short-term – pre-clearing inspection required within 48 hours of each clearing event.	Undertake tool box talk with construction employees and contractors. If vegetation clearing has commenced, stop work and the Project Ecologist to inspect felled vegetation and implement the fauna handling and rescue procedure as necessary. Instigate review into clearing hold points through ground disturbance permit process. Pre-clearing inspection to be completed prior to recommencing Stage 1 or Stage 2 clearing.
Pre-clearing inspection (identification of weed management areas)	Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager Project Ecologist	Pre-clearing checklist completed by Construction Site Manager and Project Ecologist.	Tree Clearing Report will supply tree clearing and survey data for verification.	Short-term	Undertake tool box talk with construction employees and contractors. Weed management areas to be delineated as soon as practicable.
Pre-clearing inspection (man-made structures)	Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager Project Ecologist	Pre-clearing checklist completed by Construction Site Manager and Project Ecologist.	Diurnal search of cavities in structure by Project Ecologist undertaken Nocturnal emergence survey completed where cavities are not accessible	Short to medium-term	Undertake tool box talk with construction employees and contractors. Report any non-conformances as detailed in Section 6.2.1. Undertake a pre-clearing inspection of all man-made

				Pre-clearing inspection of man-made structures will be detailed in the Tree Clearing Report.		structures to ascertain contemporary use of remaining structures and compile interim pre-clearing checklist.
Vegetation clearing (maximise the salvage of habitat resources)	Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager Project Ecologist	Where applicable, the salvage and relocation/storage of habitat resources for use in rehabilitation areas. Where applicable, maps of the salvage pile site(s) to be produced and included within the tree clearing report. Photographic evidence and documentation of habitat features salvaged included in the tree clearing report. Salvage of suitable topsoil inhabited by native flora species.	Tree Clearing Report will supply tree clearing and survey data for verification.	Short to medium-term	Where appropriate salvaged material is stockpiled incorrectly or removed from site, additional resources with similar specifications will be sourced from another local development or reputable landscaping business.
Vegetation clearing (Stage 1 and Stage 2 clearing)	Ground disturbance permit process implemented through the CEMP.	Project Ecologist	Tree clearing operations conducted in accordance with vegetation clearing and grubbing procedure detailed in Section 5.3.3. Project Ecologist present during Stage 1 and Stage 2 clearing.	Tree Clearing Report will supply tree clearing and survey data for verification.	Short to medium-term	Undertake tool box talk with construction employees and contractors. Report any non-conformances as detailed in Section 6.2.1. Project Ecologist to undertake immediate inspection of felled vegetation and implement fauna handling and rescue procedure (Section 5.4).

Frog-proof fencing	Weekly site inspection	Project Ecologist (or suitably qualified person) Construction Site Manager	Documentation of weekly site inspections. Appropriate preventative maintenance to fencing during project construction.	Monthly audits	Long-term – for duration of construction	Fix temporary frog-proof fence to comply with Section 5.3.2.
Fauna handling and rescue						
Vegetation clearing	Ground disturbance permit process implemented through the CEMP.	Project Ecologist	Tree clearing operations conducted in accordance with vegetation clearing and grubbing procedure detailed in Section 5.3.3 Fauna handling and rescue procedure implemented (Section 5.4). Project Ecologist present during Stage 1 and Stage 2 clearing. Fauna handling and rescue register compiled (where applicable).	Tree Clearing Report will supply tree clearing and survey data for verification.	Short to medium-term	Undertake tool box talk with construction employees and contractors.
General construction activities	Weekly site inspection	Construction Site Manager Project Ecologist (or suitably qualified person)	Species of fauna receive appropriate care and are managed as per the fauna handling and rescue procedure, where necessary (Section 5.4). Documentation of weekly site inspections. Fauna handling and rescue register compiled (where applicable).	Monthly audits	Long-term – for duration of construction	Undertake tool box talk with construction employees and contractors.

Weed, pest and pathogen management						
Weed and pest monitoring and prevention	Monthly site inspection	Project Ecologist (or suitably qualified person)	Weeds identified during pre-clearing inspection and management measures implemented to ensure no spread into new, disturbed or rehabilitated areas. Records of priority weed observations and pest observations documented in Site Environmental Inspection Checklist. Increases in weed densities in immediate adjacent natural bushland are monitored in consultation with relevant land managers.	Monthly audits	Long-term – for duration of construction	Where necessary, increase the frequency of biannual site inspections by the Bush Regeneration Contractor with treatment as necessary.
Weed control/ maintenance weeding	Biannual site inspection in early Spring and early Autumn	Bush Regeneration Contractor	Site inspection in early Autumn and early Spring by Bush Regeneration Contractor No incursion of weeds into adjacent habitat. Weed control undertaken in accordance with the relevant practices and guidelines specified in Section 0. Where significant or new weed infestations are identified, a review has been undertaken and appropriate control measures are implemented.	Bush Regeneration Contractor to provide concise letter report detailing results of inspection, weed observations, treatment and disposal, and adaptive management actions required.	Long-term – for duration of construction	Undertake follow-up or additional weed control/ maintenance weeding to control major weed incursions.
General construction activities (vehicle and machinery washdown)	Vehicle/machine hygiene inspections undertaken prior to commencement of works (free from	Construction Contractor Site Manager	Completed hygiene inspection forms are to be kept within the relevant vehicle/machine during the works and filed at completion of the works.	Monthly audits	Long-term – for duration of construction	Undertake tool box talk with construction employees and contractors.

	soil and plant material).					
General construction activities (landscaping materials)	Prior to, or on delivery of landscape material.	Construction Contractor Site Manager	Certificate (or similar) detailing disease free material or virgin excavated natural material.	Monthly audits (where applicable)	Long-term – for duration of construction	Undertake tool box talk with construction employees and contractors.
Rehabilitation and microbat boxes						
Rehabilitation of temporary disturbance areas	Quarterly for the first-year post rehabilitation planting. Biannually for the second and third year post rehabilitation planting.	Construction Site Manager/ Akaysha Energy Bush Regeneration Contractor Suitably qualified ecologist	Evidence of locally endemic species used in rehabilitation. Greater than (or equal to) 80 % of planted tube stock successfully established at the end of year three monitoring. Priority weeds are controlled. Exotic species diversity does not exceed that recorded from the reference sites.	Concise monitoring reports following each monitoring installment.	Long-term	Replant tube stock to meet minimum planting requirements Retreat priority weeds until performance criteria is met.
Microbat structure installation (where necessary)	Quarterly for the first-year post installation. Biannually for the second and third year post installation.	Akaysha Energy Suitably qualified ecologist	Microbat boxes installed as detailed in Section 5.3.3.1. Observations of pest species use recorded. Observations of structural integrity recorded.	Concise monitoring reports following each monitoring installment.	Long-term	Pest species occupying nest boxes should be treated (if applicable) or the microbat box replaced. Microbat boxes with poor structural integrity will be replaced.

6.2 Reporting

All environmental incidents, complaints, non-conformance or exceedance of performance criteria as identified by monitoring or reporting will be managed as per the requirements detailed in the Environmental Management Strategy (WSP, 2023).

6.2.1 Non-compliance reporting

Immediately after a non-compliance has been identified, the following actions will be undertaken:

- stop work, if applicable
- notify the Construction Contractor's Site Manager (and SQE Manager during construction)
- identify corrective action(s) to be undertaken
- record details of non-compliance and actions taken
- review the cause of the non-compliance and implement any identified improvements in environmental management.
- the Site Manager will notify Akaysha Energy within 24 hours of becoming aware of an incident.
- Akaysha Energy will notify the DPE in accordance with Condition C11 to C13 of the Infrastructure Approval. The DPE will be notified in writing via the Major Projects website within seven days after Akaysha Energy becomes aware of any non-compliance.
- the non-compliance notification will identify the project and the project approval number for it, set out the condition of approval that the project is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

6.2.2 Environmental incident reporting

An incident is a set of circumstances that causes or threatens to cause material harm to the environment. Immediately after identification of an incident, the following actions are to be followed:

- remove people from harm and isolate the area around the incident to restrict access
- stop works in the vicinity of the incident and ensure personnel safety
- implement containment measures to prevent the impact of the incident spreading and restrict access
- notify the Construction Contractor's Site Manager
- implement the emergency procedures as relevant to the incident
- estimate the significance of the incident.

The Construction Contractor's Site Manager will notify Akaysha Energy upon becoming aware of an incident. In accordance with condition C10 of the project's Infrastructure Approval, the Planning Secretary must be notified in writing via the Major Projects website immediately after the proponent becomes aware of an incident.

Akaysha Energy will provide a written incident notification to be submitted to the DPE via the Major Projects website within seven days of becoming aware of an incident. The written notification will:

- identify the project and application number
- provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident)
- identify how the incident was detected

- identify when the Proponent became aware of the incident
- identify any actual or potential non-compliance with conditions of approval
- describe what immediate steps were taken in relation to the incident
- identify further action(s) that will be taken in relation to the incident
- identify a project contact for further communication regarding the incident.

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

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

6.2.3 Tree clearing report

The Project Ecologist will prepare and submit a Tree Clearing Report, which will be submitted to the Construction Contractor's Site Manager and Akaysha Energy following the completion of clearing operations. The report will verify that tree clearing operations were undertaken in accordance with the vegetation clearing procedures and protocols detailed in Section 5.3.3 to Section 5.3.5. The report will confirm the final area cleared, the identity of all vegetation removed, and a count of hollow-bearing trees felled (if any). The Tree Clearing Report will also document any fauna or nests impacted by clearing works and provide fauna capture and relocation data.

6.2.4 Rehabilitation monitoring reports

A concise monitoring report will be prepared after each monitoring event and include key observations, supporting photographic evidence and management actions (as necessary). Rehabilitation Monitoring Reports will be submitted to Akaysha Energy.

6.2.5 Microbat box monitoring reports

A concise monitoring report will be prepared after each monitoring event and include key observations and supporting photographic evidence and management actions (as necessary). Microbat Box Monitoring Reports will be submitted to Akaysha Energy.

6.3 Document review

A Review of this BMP may be triggered as described in Schedule 2, Condition C2 of the Infrastructure Approval. Akaysha Energy must update this BMP to the satisfaction of the Planning Secretary prior to carrying out any upgrading or decommissioning activities on site. Akaysha Energy will be responsible for coordinating a review and, if necessary, a revision of the BMP to the satisfaction of the Planning Secretary within one month in response to:

- submission of an incident report under Condition C10 of Schedule 2.
- submission of an audit report under Condition C14 of Schedule 2, where the audit indicates performance targets/completion criteria may not be achieved.
- modification to the conditions of the Infrastructure Approval.

The BMP may be reviewed and updated, where necessary, to incorporate additional measures or amendments to improve the environmental performance of the development, Akaysha Energy will review the BMP biannually during construction (should none of the above triggers occur). Where a revision of the BMP is required, consultation and approval will be sought from the Planning Secretary.

6.4 Environmental auditing

The Infrastructure Approval Condition C14 to C19 detail the requirement for independent audits. Akaysha will engage an independent auditor, approved by the Planning Secretary, to conduct and carry out independent audits of the development in accordance with the Independent Audit Post Approval Requirements (2020) to the following frequency:

- within three months of commencing construction
- within three months of commencement of operations.

Independent auditors will be agreed to in writing by the Planning Secretary prior to the commencement of an independent audit. The Planning Secretary may require Independent Audits to be undertaken at different times to that specified, upon giving four weeks' notice to Akaysha Energy of the date upon which the audit must be commenced.

Following delivery of an independent audit, Akaysha Energy will:

- review and respond to each Independent Audit Report prepared under Infrastructure Approval Condition C14 or Condition C16 where notice is given by the Planning Secretary.
- submit the Independent Audit Report and Akaysha Energy's response to audit findings to the Planning Secretary within two months of undertaking the independent audit site inspection, unless otherwise agreed by the Planning Secretary.
- make each Independent Audit Report, and Akaysha Energy's response to audit findings, publicly available within 60 days of the submission to the Planning Secretary (unless otherwise agreed by the Planning Secretary).

6.5 Complaints handling

The Environmental Management Strategy (WSP, 2023) details the project's complaint management system. The following actions will be undertaken upon receipt of a complaint:

- the details of the complaint will be recorded in a complaints register
- the relevant project management personnel will be notified
- the complaint will be acknowledged by email or phone call within three working days from receipt of the complaint
- all practical measures to modify the activity causing the complaint will be carried out
- for complaints regarding significant matters, a detailed response will be provided to the complainant within 14 working days from receipt of the complaint.

The Construction Site Manager will be responsible for maintaining the complaints register. The details to be recorded in the complaints register are:

- the date and time of the complaint
- the channel through which the complaint was made (e.g. via phone or email)
- contact details of the complainant if provided
- the nature of the complaint
- any action taken to address the complaint, including timeframes for carrying out the action.

7 Limitations

This Report is provided by WSP Australia Pty Limited (*WSP*) for Akaysha Energy (*Client*) in response to specific instructions from the Client and in accordance with WSP's proposal dated 31/01/2023 and agreement with the Client dated 31/01/2023 (*Agreement*).

7.1 permitted purpose

This Report is provided by WSP for the purpose described in the Agreement and no responsibility is accepted by WSP for the use of the Report in whole or in part, for any other purpose (*Permitted Purpose*).

7.2 qualifications and assumptions

The services undertaken by WSP in preparing this Report were limited to those specifically detailed in the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report or otherwise communicated to the Client.

Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and / or recommendations in the Report (*Conclusions*) are based in whole or in part on information provided by the Client and other parties identified in the report (*Information)*, those Conclusions are based on assumptions by WSP of the reliability, adequacy, accuracy and completeness of the Information and have not been verified. WSP accepts no responsibility for the Information.

WSP has prepared the Report without regard to any special interest of any person other than the Client when undertaking the services described in the Agreement or in preparing the Report.

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7.4 disclaimer

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Appendix A

BAM Vegetation Integrity Plot Methodology

A1 BAM vegetation integrity plot methodology

The methodology below is to be used for each of the monitoring plots installed for the rehabilitation monitoring program in accordance with the Biodiversity Assessment Method (Department of Planning Industry and Environment, 2020a).

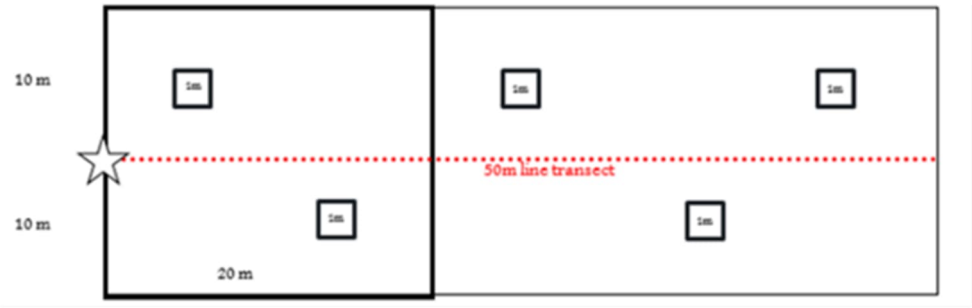

Figure B-1 Vegetation integrity plot layout

The following site attributes are to be recorded at each vegetation integrity plot location:

- **location:** (easting – northing grid type GDA94, Zone 56)
- **vegetation structure and dominant species and vegetation condition:** Vegetation structure was recorded through estimates of percentage foliage cover, average height and height range for each vegetation layer
- **native and exotic species richness** (within a 400-metre squared quadrat): This consists of recording all species by systematically walking through each 20 metre x 20 metre plot. The cover and abundance (percentage of area of quadrat covered) of each species is estimated. The growth form, stratum/layer and whether each species was native/exotic/high threat weed is also recorded
- **number of trees with hollows** (1000 metre squared quadrat): This is the frequency of hollows within living and dead trees within each 50 metre x 20 metre plot. A hollow is only recorded if (a) the entrance could be seen: (b) the estimated entrance width was at least five centimetres across: (c) the hollow appeared to have depth: (d) the hollow was at least one metre above the ground and the (e) the centre of the tree was located within the sampled quadrat
- **number of large trees and stem size diversity** (1000 metre squared quadrat): tree stem size diversity is calculated by measuring the diameter at breast height (DBH) (i.e. 1.3 metre from the ground) of all living trees (greater than five centimetre DBH) within each 50 metre x 20 metre plot. For multi-stemmed living trees, only the largest stem was included in the count. Number of large trees was determined by comparing living tree stem DBH against the PCTs benchmarks.
- **total length of fallen logs** (1000 metre squared quadrat): This is the cumulative total of logs within each 50 metre x 20 metre plot with a diameter of at least 10 centimetres and a length of at least 0.5 metre
- **litter cover:** This comprised estimating the average percentage groundcover of litter (i.e., leaves, seeds, twigs, branchlets and branches with a diameter less than 10 centimetre which is detached from a living plant) from within five 1 metre x 1 metre sub-plots spaced evenly either side of the 50-metre central transect
- **evaluation of regeneration:** This is estimated as the presence/absence of overstorey species present at the site that was regenerating (i.e. saplings with a diameter at breast height less than or equal to five centimetres).

Appendix B

Flora and Fauna Management Sub-plan

Flora and Fauna Management Plan

Waratah Super Battery Energy Storage System

State Significant Infrastructure (SSI-48492458)

CPP Project No: 12590

Document Number: 12590-GE-PL-30002			
Revision:	2.0	Revision Date: 23/05/2023	
Task:	**Responsibility:**	**Date:**	**Signature:**
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Updated By:	Andrew Sheed (Akaysha)	23/05/2023	
SQE Review:	Brandon Stewart	23/05/2023	
Review by Responsible Site Manager:	Peter Martin	23/05/2023	
Approved by Accountable Project Manager:	Stephen Brannigan	23/05/2023	

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Glossary and List of Abbreviations

Term or abbreviations	Definition
BAM	Biodiversity Assessment Method
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BOS	Biodiversity Offset Scheme
CEMP	Construction Environment Management Plan
CPP	Consolidated Power Projects
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPE	Department of Planning and Environment
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation ACT 1999* (Commonwealth)
FFMP	Flora and Fauna Management Plan
HBT	Hollow bearing tree
NSW	New South Wales
OEH	Office of Environment and Heritage
PCT	Plant community type
Project Site	The area shown as Project site in Figure 3, Figure 4 and other figures throughout this report
RTSR	Response to Submission Report
SEPP	State Environmental Planning Policy
SSF	Swamp Sclerophyll Forest
TEC	Threatened Ecological Community
WoNS	Weeds of National Significance

1 INTRODUCTION

Consolidated Power Projects (CPP) specialises in providing full turnkey high voltage solutions for power utility, industrial, resource and renewable energy sectors.

We offer specialist design, construction, commissioning and maintenance of high voltage infrastructure. As a trusted partner to Australia's largest renewable and power transmission utility companies, we continue to deliver successful, large-scale Projects including battery infrastructure, solar and wind farms, and high voltage transmission substations.

This Flora and Fauna Management Plan (FFMP) provides broad scale biodiversity management measures for the management of direct and indirect impacts to terrestrial biodiversity values prior to and during construction activities for the execution of CPP Projects, including Project specific requirements. A copy of this plan, together with the Construction Environmental Management Plan (CEMP) and other relevant appendices, shall be made available to all CPP staff and supplied to all subcontractors prior to commencing work on any Project.

Staff and subcontractors shall conform to the requirements of this FFMP.

A copy of the plan and or any revisions to the plan shall be retained for the duration of the Project.

This plan shall be amended following any significant events as described in Schedule C, Condition C2 of the Development Consent, or if there are significant changes to Project scope, methodology, risk profile or legislation and ensure that each relevant person affected by the amendment is advised of the details of the amendment or given a copy of the amendment.

Implementation of this plan shall be monitored via the internal audit process and site inspections.

The Project Manager is the owner responsible for the implementation of this plan.

As a company, CPP strives for continuous improvement daily, both as individuals as well as an organisation. Our core values reflect who we are and define our approach to doing business.

Consolidated Power Projects core values are:

Team Work - One team, together we achieve;

Integrity - Doing the right thing / doing what's right;

Innovation - Always learning, creating, adapting; and

Sustainability - Ensuring our future.

"Strive for Environmental Excellence"

2 BACKGROUND

On 2 September 2022, the Waratah Super Battery Energy Storage System (BESS) Project was declared CSSI in accordance with section 5.13 of the EP&A Act and Schedule 5, section 30 of State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP). The Minister for Planning is the consent authority, and the Project is to be assessed in accordance with the provisions of Division 5.2 of the EP&A Act.

The Infrastructure Approval for the Waratah BESS was granted on the 21 February 2023, which requires a Biodiversity Management Plan (BMP) be prepared for the construction and operational phases of the proposal (see Schedule 2, Part B, Condition B11). The Environmental Impact Statement (EIS) also committed to the preparation of a Flora and Fauna Management Plan (FFMP) to address measures, processes and responsibilities to minimise the potential biodiversity impacts during construction. This document has been prepared to address the requirements of the Infrastructure Approval and the FFMP commitment in the EIS. It is noted however, that this document only addresses the construction phases of the proposal. A separate biodiversity management plan will be prepared for the operational phase.

Niche Environment and Heritage (Niche) was commissioned by Consolidated Power Projects (CPP) to prepare the Flora and Fauna Management Plan (FFMP) for the proposed development of the Waratah Super BESS, located within Lot 10 DP 1201414 at Waratah, NSW.

A Biodiversity Development Assessment Report (BDAR) (GHD 2022a) accompanied the EIS (GHD 2022b). The Response to Submission Report (RTSR) updated the species credit requirements described in the BDAR following additional survey efforts (GHD 2023).

These reports identified that:

- There was 0.26 hectares (ha) of vegetation that would be removed, which aligned with two plant community types (PCT's):
    - PCT 1636: *Scribbly Gum – Red Bloodwood – Angophora inopina heathy woodland on lowlands of the Central Coast* (0.16 ha)
    - PCT 1724: *Broad-leaved Paperbark – Swamp Oak – Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast* (0.10 ha)
- PCT 1724 is commensurate with *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* – an endangered ecological community (EEC) under the *Biodiversity Conservation Act 2016* (BC Act)
- Threatened flora and fauna species were either identified on site or their presence was presumed as the survey could not be undertaken in the desired survey window:
    - *Angophora inopina* (Charmhaven Apple) – Vulnerable (Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed, recorded on site
    - 11 fauna species were assumed present (3 EPBC listed)
- No hollow-bearing trees (HBTs) are present within the site.
- There are no karst, caves, crevices, cliffs, rocks or other geological features of significance located within the Project site.

This FFMP draws on information from the BDAR, EIS and RTSR.

The Project will be carried out generally in accordance with the EIS and the Infrastructure Approval as per Schedule 2, Part A, Condition A2 of the Infrastructure Approval. All conditions listed within Infrastructure Approval will be adhered to and implemented throughout the life of the Project.

3 SCOPE

The purpose of this FFMP is to provide CPP and its subcontractors and consultants with broad scale biodiversity management measures for them to follow when carrying out the scope of work for this Project. It will allow them to manage direct and indirect impacts to terrestrial biodiversity values prior to and during construction.

This FFMP has been prepared to meet the requirements of Schedule 2, Part B, Condition B11 of the Infrastructure Approval and measure B1 of the mitigation requirements listed in the EIS (GHD 2022b). In accordance with the Infrastructure Approval, prior to the commencement of construction, the BMP must be prepared in consultation with the Biodiversity Conservation and Science Directorate within the Department and to the satisfaction of the Planning Secretary. Following the Planning Secretary's approval, the Developer will implement the BMP.

To meet the requirements of the Infrastructure Approval and to support the implementation of other licenses and permits an Environmental Management Strategy and associated management plans (including (but not limited to) the Traffic Management Plan, Emergency Plan, and Safety Management System) have been prepared.

The FFMP is an integral part of this environmental framework for the proposal which ensures appropriate environmental management throughout construction phase of the proposal.

3.1 Project and Site description

EnergyCo's Waratah BESS will be developed within the former Munmorah Power Station site on the Central Coast of NSW. The site has an area of approximately 14 ha and was previously used as the coal stockpile area for the power station, meaning it had been subjected to significant ground disturbance and clearing in the past (Figure 1).

The Project site includes the main battery storage area, switchyard and easements for the transmission line and permanent access roads. The easements are located over hardstand and gravel surfaces. The site is bordered to the north, north-east and north-west by the Colongra Power station. Directly south, southeast and southwest is undeveloped vegetated land zoned for electricity and generating works under the Central Coast Land zones overlay.

The Projects key construction activities would include, but not be limited to, clearing of remnant vegetation, earthworks and site re-grading, development of ancillary infrastructure and buildings, establishment of a laydown area, delivery, installation and electrical fit-out of battery modules, power conversion systems and transformers, installation of switchyard and overhead transmission lines and establishment of asset protection zones or other design solutions for bushfire protection.

Key biodiversity features are discussed in Section 4 and biodiversity impacts associated with the Project are detailed in Section 5.

3.2 Preparation of this FFMP

This FFMP has been prepared by Niche Environment and Heritage Pty Ltd (Niche) on behalf of CPP.

Sian Griffiths (Niche Practice Leader - Ecology; and BAM Accredited Assessor) has reviewed this FFMP. Sian Griffiths is a suitability qualified ecologist to review this FFMP.

3.3 Relationship with other Management Plans

This FFMP was produced in association with the CEMP, published as Appendix D. Other management plans prepared as part of the CEMP include:

- Environmental Management System (Appendix A)

- Traffic Management Plan (Appendix B)
- Biodiversity Management Plan (Appendix C)
- Contamination Management Plan (Appendix E)
- Erosion and Sediment Control Plan (Appendix F)
- Environment Policy (Appendix G)
- Environmental Essentials (Appendix H)
- Environmental Management Plan Revisions (Appendix I)

3.4 Statutory Requirements and Legislation

The requirement for this FFMP is established by Schedule 2, Part B, Condition B11 of the Infrastructure Approval. Table 1 details the requirements under this condition and identifies the sections in which these requirements have been addressed.

Table 1: Relevant Infrastructure Approval Condition

Condition no.	Condition	Section of the FFMP
B8	The Proponent must not clear any native vegetation or fauna habitat located outside the approved disturbance areas described in the EIS.	Section 5.1.1
B11	Prior to commencing construction, the Proponent must prepare a Biodiversity Management Plan for the Project in consultation with BCS, and to the satisfaction of the Planning Secretary. This plan must:	Section 0
(a)	Be prepared in accordance with the *Biodiversity Development Assessment Report* (dated 4 November 2022)	Section 4
(b)	include a description of the measures and timeframes that would be implemented for:	
(i)	protecting vegetation and fauna habitat outside the approved disturbance areas;	Section 5
(ii)	minimising clearing and avoiding unnecessary disturbance of vegetation that is associated with the construction and operation of the development;	Section 5
(iii)	minimising the impacts to fauna on site and implementing fauna management protocols;	Section 5
(iv)	rehabilitating and revegetating temporary disturbance areas with species that are endemic to the area;	Section 5.2.11
(v)	maximising the salvage of vegetative and soil resources within the approved disturbance area for beneficial reuse in the enhancement or the rehabilitation of the site; and	Section 5.2.9
(vi)	controlling weeds, feral pests and pathogens;	Sections 5.2.4 and 0
(c)	include a program to monitor and report on the effectiveness of mitigation measures;	Section 6
(d)	include an incidental threatened species finds protocol to identify the avoid and/or minimise and/or offset options to be implemented if additional threatened species are discovered on site;	Section 5.2.7 and Appendix 2

(e)	include details of who would be responsible for monitoring, reviewing and implementing the plan.	Section 9
	Following the Planning Secretary's approval, the Proponent must implement the Biodiversity Management Plan. Note: If the biodiversity credits are retired via a Biodiversity Stewardship Agreement, then the Biodiversity Management Plan does not need to include any of the matters that are covered under the Biodiversity Stewardship Agreement	Section 8.

3.5 Legislative Context

The following legislation/documents were considered in development of this FFMP:

- NSW *Environmental Planning and Assessment Act 1979* (EP&A Act)
- BC Act
- EPBC Act
- Infrastructure Approval (SSI-48492458)
- Biodiversity Development Assessment Report (BDAR) - GHD (2022a)
- Environmental Impact Statement (EIS) – GHD (2022b)
- Response to Submission Report (RTSR) – GHD (2023).

The SQE Manager monitors changes to legislation and advises Project Managers via emails or bulletins and the update of CPP System requirements.

3.6 Stakeholder Consultation

As per the requirements of the Infrastructure Approval, Schedule 2, Part B, Condition B11 consultation with Biodiversity, Conservation and Science Directorate (BCS). Details of consultation with the Biodiversity, Conservation and Science Directorate (BCS) can be found in the Biodiversity Management Plan.

3.7 Map of Project

The general location of the Waratah BESS site is shown in Figure 1, with the general arrangement of the main Project components and construction areas shown in Figure 2.

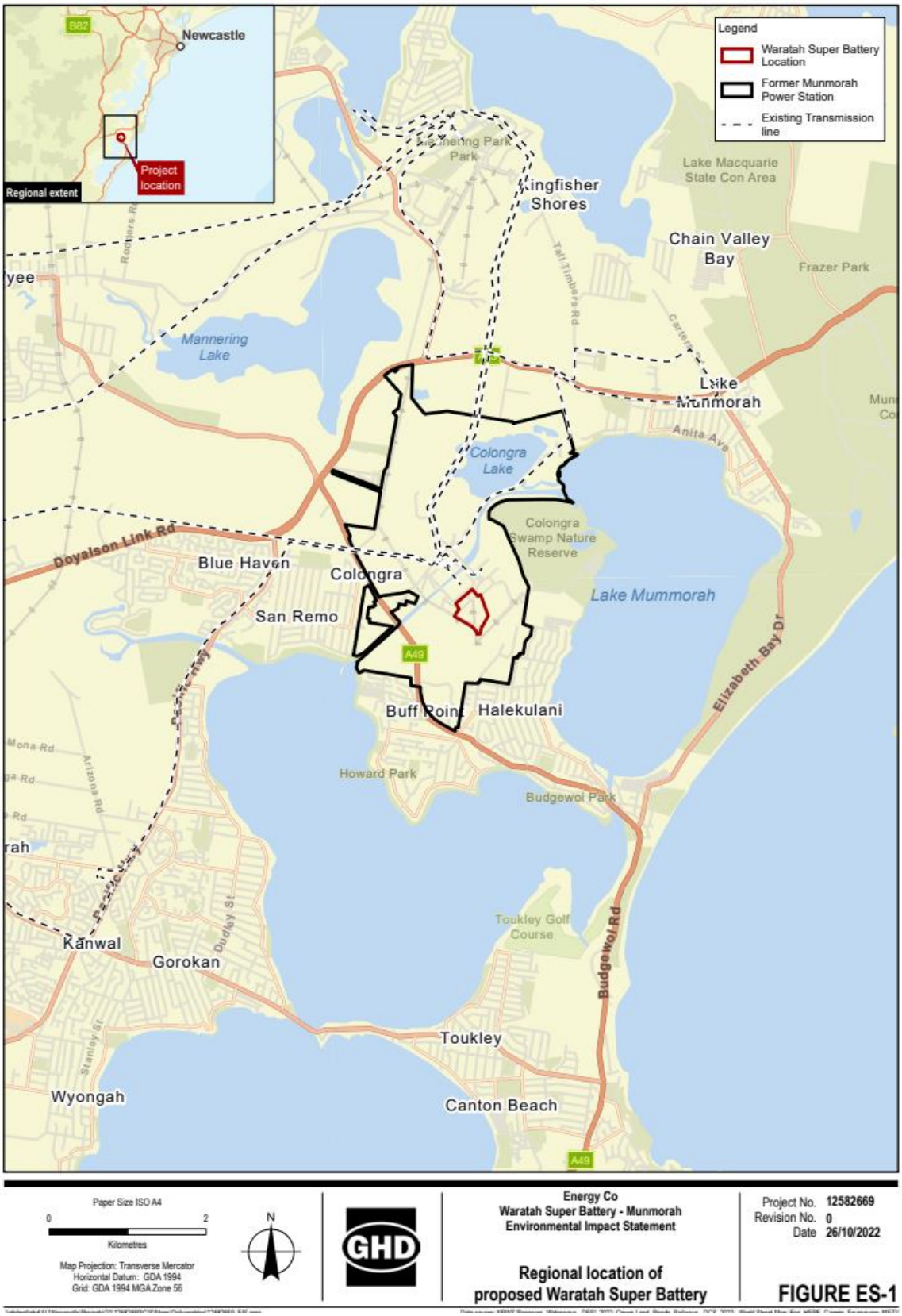

Figure 1: General Site Location

Figure 2: General Construction Arrangement

4 BIODIVERSITY VALUES

4.1 Previous Biodiversity Assessment

The biodiversity values applicable to the FFMP have been assessed in detail in the following studies:

- Biodiversity Development Assessment Report (BDAR) – GHD (2022a)
- Environmental Impact Statement (EIS) – GHD (2022b)
- Response to Submissions Report (RTSR) – GHD (2023)

The above reports have assessed the impact to both State and Commonwealth listed biodiversity in accordance with the Office of Environment and Heritage Framework for Biodiversity Assessment (OEH 2018), and associated State and Commonwealth guidelines.

4.2 Native Vegetation and Threatened Ecological Communities (TECs)

GHD mapped and quantified the impact on the two PCT's within the Project site, as:

- PCT 1636: *Scribbly Gum - Red Bloodwood - Angophora inopina heathy woodland on lowlands of the Central Coast* (0.16 ha)
- PCT 1724: *Broad-leaved Paperbark - Swamp Oak - Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast* (0.10 ha)

The location of these PCT are shown in Figure 3.

PCT 1724 corresponds to the TEC *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions,* listed as an EEC under NSW legislation (Figure 4).

The associated credit requirements for each PCT are detailed in Section 8.

4.3 Threatened flora and fauna and their habitats

One threatened flora species, *Angophora inopina* (Charmhaven Apple) was identified within the Project site (see Figure 5).

The vegetation within the Projects disturbance footprint provides habitat resources for native fauna species, including threatened species. While no threatened fauna species were recorded within the site during targeted surveys, the presence of 11 species (see Table 2) was assumed as the survey could not be undertaken in the required survey window.

No hollow bearing trees appropriate for fauna were identified within the Project site. There were also no karst, caves, crevices, cliffs, rocks or other geological features of significance located within the site.

Table 2: Presence of Flora and Fauna Species (recorded on the site or assumed present)

Scientific Name	Common Name
Angophora inopina	Charmhaven Apple
Cercartetus nanus	Eastern Pygmy-possum
Chalinolobus dwyeri	Large-eared Pied Bat
Crinia tinnula	Wallum Froglet
Heleioporus australiacus	Giant Burrowing Frog
Hoplocephalus bitorquatus	Pale-headed Snake
Litoria aurea	Green and Golden Bell Frog
Litoria brevipalmata	Green-thighed Frog
Petaurus norfolcensis	Squirrel Glider
Phascogale tapoatafa	Brush-tailed Phascogale
Planigale maculata	Common Planigale
Uperoleia mahonyi	Mahony's Toadlet

4.4 Weeds and invasive species

Three NSW priority weed species were recorded in the Project site (see Table 3). All of these species have a general biosecurity duty under the NSW Biosecurity Act 2015 which requires any person who deals with the plant to ensure the biosecurity risk of the weed is prevented, eliminated or minimised, so far as is reasonably practicable.

Two Weeds of National Significance (WoNS) were identified within the Project site (Table 3). These weeds are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts.

Many weeds recorded within the Project site are also identified as high threat weeds (See Table 3). These are plants not native to Australia, that if not controlled will invade and outcompete native plant species. Project

Table 3: Weed species recorded on the site

Species	NSW Priority weeds	Weed of National Significance	High Threat Weed
Camphor laurel *(Cinnamomum camphora)*	-	-	Yes
Micky Mouse plant *(Ochna serrulata)*	-	-	Yes
Whiskey grass *(Andropogon virginicus)*	-	-	Yes
Rhodes grass *(Chloris gayana)*	-	-	Yes
Pampas grass *(Cortaderia selloana)*	-	-	Yes
Coolatai grass *(Hyparrhenia hirta)*	-	-	Yes
Balloon vine *(Cardiospermum grandiflorum)*	-	-	Yes
Lantana *(Lantana camara)*	Yes	Yes	Yes
Boneseed *(Chrysanthemoides monilifera)*	Yes	-	Yes
Fireweed *(Senecio madagascariensis)*	Yes	Yes	Yes

Figure 3: Mapped PCT's on the site

Figure 4: Mapped TEC on the site

Figure 5: *Angophora inopina* (Charmhaven Apple) species and species polygons

5 BIODIVERSITY AVOIDANCE, MITIGATION AND MANAGEMENT MEASURES

This section describes the avoidance, management and mitigation measures that will be implemented to avoid, minimise and manage the potential risks and impacts to biodiversity values during the construction of the Project. The sections below outline specific measures pertaining to Schedule 2, Part B, Condition B11 of the Infrastructure Approval.

CPP is committed to implementing all reasonable and feasible measures to prevent and/or minimise any material harm to the environment.

The following sub-sections provide procedures and techniques to be implemented by CPP to manage and further minimise the biodiversity impacts of the Project as approved.

5.1 Avoiding Off Site Vegetation and Fauna Habitat Impacts

5.1.1 Demarcation of the Construction Area

Prior to the commencement of any work in or adjoining areas of native vegetation, a licensed surveyor will be engaged to mark the subject land. Also prior to the commencement of any works on site the perimeter of the area approved for construction will be marked using high visibility fencing or temporary construction fencing and signage installed and will be maintained for the duration of the construction period. The fencing / signage defines the extent of ground disturbance and vegetation clearance which is approved under the Infrastructure Approval. (NB the EIS refers to the Projects disturbance footprint as the “subject land” as shown on Figure 3. Ground disturbance and vegetation removal is not permitted outside of the perimeter fence.

Fencing and signage will be maintained for the duration of the construction period. Fencing will be designed to allow fauna to exit the site during clearing activities. The Project Ecologist (or suitably qualified person) would include the inspection of this perimeter fencing as part of a weekly Environmental Site Inspection Checklist, to ensure they have not been compromised in some way.

Where deemed necessary, the perimeter fence between the construction site and native vegetation will include a frog proof barrier. The barrier will extend approximately 20 metres past the corner where the fence adjoins native vegetation and include a 10 metre return to directs frog(s) back towards the adjoining native vegetation and away from the Project.

A frog proof fence will also be installed around the southern detention pond and the artificial dam located within the construction compound and laydown area (see Figure 2). Alternatively CPP may incorporate this fencing with the perimeter fence to facilitate the potential movement of frogs. Five threatened frog species were assumed present on the Project site (Table 2) and if any of these species are identified during construction, the Project ecologist should be contacted immediately (Table 11).

If fauna become trapped within the construction compound, the trapped and injured fauna procedure will be implemented, as detailed in Section 5.2.6.

5.2 Minimising On Site Vegetation and Fauna Impacts

The ground disturbance permit process (refer to Section 5.2.1), pre-clearance procedure (refer to Section 5.2.2) and tree-felling procedure (refer to Section 5.2.3) will be implemented to avoid, minimise and manage on site vegetation and fauna impacts during the construction phase.

5.2.1 Ground Disturbance Permit Process

The Ground Disturbance Permit Process (GDP) and associated pre-clearing and tree felling procedures are designed to:

- Provide a hold-point to ensure the Project is being undertaken in accordance with the relevant approvals.
- Minimise the impact of the Project on fauna and their habitat; and
- Reduce impacts to hollow-dependent native species from clearing activities.

Table 4 outlines the GDP requirements for pre-disturbance and construction phases.

Table 4 Ground Disturbance Permit Requirements

Phase	Requirement
Prior to disturbance	The following are the minimum requirements for the Pre-Construction GDP phase: • Identify the location of the proposed worksite / Identifier. • Confirm the proposed works are within the approved disturbance footprint before construction commences. • Identify if species-specific management measures for threatened species are applicable when undertaking this work, i.e., is the proposed location of the worksite located within identified threatened species habitat (i.e. PCT's) (i.e. nocturnal survey requirements) • The Pre-clearing Procedure (Section 5.2.2) has been implemented.
Construction	Where vegetation is to be cleared, the Project Manager is responsible for ensuring the following vegetation clearance measures are implemented: • The Pre-Construction Vegetation Disturbance Permit Requirements have been implemented. • The Tree Felling Procedure has been communicated to those undertaking the work and is being implemented. • Inspection records are available which documents the above.

5.2.2 Pre Clearance Procedure

Pre-clearing inspections are carried out prior to clearing of the mapped PCT vegetation (see Figure 3) no more than 48 hours prior to the clearing of vegetation.

As part of this process, a suitably qualified ecologist will inspect the area proposed for clearing prior to the clearing with the key purpose being identifying key habitat features and the presence of fauna (i.e. hollow bearing trees, nests) to minimise impact on these ecological features.

The following steps are to be completed as part of the Pre-clearing Procedure:

- The extent of the work site is designated visibly (e.g. through temporary bunting or survey pegs) in the field to ensure the extent of clearing is known and inadvertent clearing is avoided.
- An suitably qualified and experienced ecologist is to identify and mark all habitat trees (being those containing hollows, cracks, splits, spouts, large amounts of peeling bark sheets, active bird nests, bat roosts and possum dreys) using spray paint and flagging tape and, using a GPS, record the location. Further detail is provided below:
    - Inspect for and marking of animal dens/burrows, with attention paid to determining if they are currently used (e.g., signs of scratches, fresh soil, droppings/scats etc).

- Identification and marking of habitat features with potential to be salvaged for later use. These may include fallen timber, hollow logs and boulders. These are to be marked with spray paint and flagging tape and, location recorded with a GPS.
- Searches for the presence and extent of High Threat Weed (HTW) species and vertebrate pest species that require management action.
- Searches for presence of frogs.
- The Ecologist will consider specific times of the year when species may be using habitat features for breeding or roosting and provide advice on mitigative measures if occupation is observed or deemed likely.

Further details on the pre-clearance survey methodology and species of interest can be found in Appendix 1.

The primary goal of this task is to relocate as many ground animals as possible prior to clearing. The release site for any captured animals is the native vegetation to the south east and south west of the Project.

The Ecologist will provide advice to the Project Manager relating to the Pre-clearing Procedure findings and possible management and mitigation measures. Where the Ecologist identifies sensitive values, management and mitigation measures will be presented to the Project Manager who will adopt the measures into the GDP and direct clearing personnel to undertake the actions.

5.2.3 Tree Felling Procedure

The tree felling procedure will be implemented to minimise the potential for impacts on native fauna species (including threatened species) as a result of the clearing of habitat trees.

Table 5 documents the steps required to be completed as part of the tree felling process. Further details on the tree felling methodology and species of interest can be found in Appendix 1.

Table 5 Tree Felling Procedure

Phase	Requirement
Prior to Felling Habitat Trees	• Completion of actions recommended from the pre-clearing inspections, including (but not limited to) salvage of identified habitat features, additional Ecologist (or other suitably qualified person) inspections to determine threatened fauna usage of the area (if suitable nests are identified during the Pre-clearance inspection, identification of active dens or burrows, any action required to discourage fauna occupation, and weed or feral fauna management requirements. • Removal of non-habitat trees/vegetation within 20 metres of the habitat tree as close to the planned habitat tree felling date as possible to create disturbance to discourage fauna usage of the habitat trees. Removal of vegetation within a 20m radius will not be required where the edge of the approved disturbance footprint is reached. • Shaking or knocking of habitat trees for at least 30 seconds using earth moving equipment to encourage fauna to abandon trees. This will occur the day before clearing of the habitat tree.
On Day of Felling of Habitat Trees	• Complete a visual inspection of the area to be cleared for fauna species and nests that may have become active since pre-clearing inspections. • Shake or knock the habitat tree for at least 30 seconds, or as appropriate, prior to felling to encourage fauna to abandon the tree. • Lower the habitat tree as gently as possible, noting in some situations manual felling by chainsaw may be appropriate. • Inspect all hollows in felled trees for remaining or injured fauna. • Capture of any displaced or injured fauna. Unharmed fauna are to be released into a nearby location which is not subject to future disturbance by the Project, on the same day. Injured fauna are to be triaged immediately, humanely euthanised if required (i.e. if injuries are deemed too substantial, making it inhumane to keep the injured animal alive), or

	taken to a veterinarian or wildlife carer for further attention if required. All personnel who are involved in the capture/handling/housing and/or transport of native fauna species (injured or uninjured) must be suitably qualified. • Felled trees are to be rolled so that the number of hollows blocked against the ground is minimised. • Felled trees that may hold sheltering fauna are to remain in place at least overnight to allow any remaining fauna to escape. If such a tree is accidentally felled in the wrong direction to which it was planned and subsequently needs to be moved (i.e., blocks a track, road or similar), it can be moved on the day of felling to rectify the issue. In such circumstances, with consideration to safety or accessibility concerns, the tree must only be moved the minimum distance required to rectify the issue. • Salvage of suitable hollows for use as compensatory habitat in rehabilitation area.
Following Tree Felling	• Upon completion of the tree felling, the Project Ecologist is to provide a Tree Clearing Report to the Project Manager which will confirm the final area cleared, the identity of all vegetation removed, and a count of hollow-bearing trees felled (if any). • Tree Clearing Report will also include any fauna or nests impacted by clearing works and provide fauna capture and relocation data.

5.2.4 Weed Prevention

5.2.4.1 Training

To reduce the likelihood of introducing or spreading weeds or pathogens, all construction personnel and contractors should be trained in weed and pathogen prevention measures as part of environmental induction training.

5.2.4.2 Hygiene Protocols

Table 5.1 presents a range of best practice hygiene protocols to reduce the risk of the introduction or spread of pathogens and weeds within the subject land through the movement of contaminated machinery and materials over long distances, in accordance with the Hygiene guidelines – Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants (Department of Planning Industry and Environment, 2020b).

Weed prevention measures and methods for their implementation are detailed in Table 6.

Table 6 Weed prevention measures and methods for their implementation

Weed Prevention Measure	Method of Implementation
Ensure all materials brought into the construction site (e.g., soil, mulch, gravel etc.) are certified free of weeds and pathogens	Site Manager responsible for approving all materials purchased or salvaged to be brought on site.
Ensure correct machinery, vehicle and boot hygiene will be observed to help prevent the spread of invasive plant diseases and weeds threatening native plants, animals, and ecosystems.	Contractor education is undertaken on induction and monthly. Wash and disinfect machinery entering the site prior to work on site to prevent the potential spread of weeds, Cinnamon Fungus and Myrtle Rust/Exotic Rust Fungi in accordance with the national best practice guidelines for Phytophthora (O'Gara et al. 2005), the Myrtle Rust factsheet (DPI 2015) for hygiene control
Use a wash-down facility for vehicles and machinery, or wash-down on a hard, well-drained surface, such as on a road	
Clean PPE (Personal Protective Equipment), especially boots, prior to unavoidable entry on foot into the native vegetation and rehabilitation area	

	and the NSW hygiene guidelines for wildlife (DPIE 2020).
Minimise activities that cause soil disturbances as is practical by reducing disturbance footprints and reducing soil disturbance by machinery where practical	Contractor education is undertaken on induction and monthly to inform all staff about site boundaries and minimising disturbance during construction.

Further hygiene protocols from the Biodiversity Management Plan will also be adopted per the below table:

Table 7 - Hygiene Protocols required by Biodiversity Management Plan

Hygiene Protocols		Responsibility
Inductions	All personnel (including visitors) to be inducted on weed and pathogen management measures for the site through toolbox talks and site inductions.	Construction Site Manager (construction) Akaysha Energy (operation)
Restrict access	Set up exclusion zones with fencing and signage to restrict access into vegetation and habitat adjacent to the subject land.	
Vehicles and machinery	Vehicles initially entering the subject land must not be tracking soil/mud and/or vegetative material from elsewhere. If soil/mud and/or vegetative material are found on these vehicles, they must be cleaned in a hard stand area within the subject land and disinfected with Farmcleanse (in accordance with the manufacturer recommended dosages), methylated spirits diluted in town water (70:30 ratio), or similar. Any organic waste collected during the washdown process would be removed from site. Restrict vehicles to parking within the subject land (i.e. within designated parking areas). Provide a bunded area for the wash down of vehicles and earthmoving equipment.	
Personnel and equipment	Clean personal protective equipment, especially boots, prior to unavoidable entry on foot into native vegetation adjacent to the subject land (as may be required for the relocation of native animals) and rehabilitation area. Personnel should disinfect their footwear with methylated spirits diluted in town water (70:30 ratio). Disinfect hands or change gloves between the handling of individual frogs and between each site. Only handle frogs when necessary and always use gloves. Use the 'one bag-one frog' or 'one container-one frog' approach.	
New material	Source landscaping materials (soil, mulch, seed) from a supplier that is certified to be disease-free.	
Disposing of material	To avoid cross contamination, generally avoid transferring water between two or more separate waterbodies.	
Further information	Hygiene guidelines – Protocols to protect priority biodiversity areas in NSW from Phytophthora cinnamomi, myrtle rust, amphibian chytrid fungus and invasive plants (Department of Planning Industry and Environment, 2020b).	

5.2.5 Weed Control

Areas of weed management should be identified prior to the commencement of the project and will initially be undertaken as part of the pre-clearing survey (Section 5.3.3.1) and be documented in the pre-clearing checklist to be populated by the Site Manager and Project Ecologist.

Where required, the Construction Contractor will engage a suitably qualified Bush Regeneration or Weed Management Contractor to undertake biannual maintenance weeding (i.e. early Spring and Autumn) in the subject land. Maintenance weeding will also be apportioned to the immediate adjacent natural bushland where weed incursion has been identified. The frequency and timing of weed control may be revised in consultation with the Bush Regeneration or Weed Management Contractor, depending on weed incursions. Follow-up inspections will be undertaken to assess the effectiveness of weed management measures implemented and to identify the requirement for any additional management measures.

Weeds recorded in the project area were predominately herbaceous, as detailed in Section 3.2. The suite of weed species present should be regarded as fluid, as new weeds may be introduced by wind, stormwater runoff, native and pest animals, people and machinery. As such, generic weed control methods provided are suited to the project, however they will also allow flexibility for the Bush Regeneration or Weed Management Contractor to adapt to changing requirements of weed control to achieve the best outcomes for biodiversity.

The Bush Regeneration or Weed Management Contractor will consider the following weed control methods:

- Where feasible, removal of weeds should be undertaken prior to seed developing;
- General weed control strategies should be implemented, including:
    - Spraying with herbicide in accordance with the Pesticide Act 1999;
    - Direct removal;
    - Suppression of isolated weed infestations.
- Application of herbicide should occur at optimum timing and conditions for treatment;
- Herbicides will not be applied by spray in areas adjacent to waterbodies, watercourses, or stormwater systems. In these areas, the herbicide will be manually applied using a cut and paint, and or direct drill method;
- Following weed removal, any bare soil areas should be stabilised to reduce erosion and further weed problems;
- All weeds removed from the subject land are to be disposed of to an appropriately licensed waste disposal facility.

Verification of proposed control measures and supervision of weed control activities is to be undertaken in consultation with the Bush Regeneration or Weed Management Contractor. Weed management activities must be recorded on the Environmental Site Inspection Checklist.

Monthly visual assessments of weeds should be undertaken throughout construction by the Project Ecologist (or suitably qualified person). The presence of weeds and their extent will be noted on the Environmental Site Inspection Checklist.

5.2.6 Fauna Injury and Entrapment Procedure

The following procedure will guide actions taken in the event that fauna is injured during any clearing activity or trapped and/or injured during construction or operation.

Should fauna be observed near the works area, and are potentially at risk of being harmed, the following procedure will be followed:

1. Contact the project ecologist to attend site.
2. Contact the Site Manager.
3. The project ecologist and Site Manager reviews if the animal is at risk of being harmed.
    a. If yes, all works in the vicinity of the animal (works in other areas may continue) will be halted. The animal, if highly mobile (such as Kangaroo) will be slowly and gently encouraged to leave the construction area (i.e., corralled toward).
    b. If the animal is not at risk of being harmed, then works will be halted in the vicinity of the animal until it moves on (works may continue in other areas of the site).
    c. If the animal is not capable of moving on of its own accord, then the following steps will ensue.
4. If an animal is found within the site that is injured the following procedure will be implemented:
    a. Contact the Site Manager
    b. The Site Manager determines the most appropriate person to engage (see Section 7 for contact information):
        - Project Ecologist, or
        - The Wildlife Information and Rescue Services (WIRES), who will respond to all sick, injured or orphaned native wildlife queries.
5. If the injuries are too great for the animal to be relocated, then the animal will be taken to a WIRES Wildlife Carer or Veterinary Clinic.

5.2.7 Unexpected threatened species finds

In the event that a new threatened species is unexpectedly encountered during construction, the Incidental Species Finds Protocol should be followed (refer to Appendix 2).

5.2.8 Dam De-watering

The Project does not involve any dam dewatering activities.

5.2.9 Maximise the salvage of resources

Salvageable habitat features (including hollows in living and dead wood, standing, and fallen dead wood, and rocks) identified during the pre-clearance survey will be retained for placement in the revegetation area (see Section 5.2.11). Suitable topsoil inhabited by native flora species will also be salvaged where possible for use in revegetation areas (see Section 5.2.11).

5.2.10 Roles and Responsibilities and Environmental Training

Key environmental management roles and responsibilities are described in Table 8.

Table 8: Environmental Management Roles and Responsibilities

Role	Responsibilities	Reports to
Project Manager	• Ensure all works comply with relevant regulatory and Project requirements. • Ensure the requirements of this FFMP are fully implemented.	Akaysha

	• Ensure all personnel and contractors have completed a site induction and orientation. • Ensure all approval reporting and review requirements are met. • Provide adequate resources (personnel, financial and technological) to ensure effective development, implementation and maintenance of this FFMP. • Ensure that all personnel receive appropriate induction training including details of the environmental and community requirements. • Liaise with government authorities as required. • Stop work immediately where there is an actual or potential risk of harm to the environment.	
Site Manager	• Plan construction works in a manner that avoids or minimises impact to environment. • Ensure construction personnel manage construction works in accordance with statutory and approval requirements. • Ensure environmental management procedures and protection measures are implemented. • Ensure all Project personnel attend an induction prior to commencing works. • Stop work immediately where there is an actual or potential risk of harm to the environment. • Conduct site environmental inspections. • Investigate and review non-conformance and identify, implement and monitor corrective and preventative actions. • Maintenance of training, non-conformance and complaints registers. • Undertake or coordinate environmental monitoring events. • Undertake scheduled and non-scheduled environmental audits.	Project Manager
SQE Manager	• Ensuring that the Ensuring that the WHSEQ System is implemented according to organisational requirements. • Maintaining a high level of WHSEQ compliance and awareness amongst all personnel. • Ensuring all staff are familiar with the requirements of the management system. • Ensuring that an effective system of regular review of environmental documentation and procedures is conducted to ensure legislative compliance and duty of care obligation is upheld.	Project Manager
Project Ecologist	• Conduct Pre-clearing Assessment. • Manage fauna during tree clearing. • Possess suitable fauna licences and permits. • Provide tree clearing report upon completion of clearing.	Site Manager

To ensure that this FFMP is effectively implemented, each level of management is responsible for ensuring that all personnel reporting to them are aware of the requirements of the FFMP. The following environmental training will be undertaken.

Environmental Induction

All personnel, including sub-contractors, are required to attend a compulsory site induction that includes an environmental component prior to commencing work on-site. The Site Manager, SQE (or delegate) will conduct the environmental component of the site induction. The environmental component will include an overview of:

- Relevant details of the FFMP including purpose and objectives.
- Key environmental issues in the Project site, i.e. pre-clearance protocol, vehicle hygiene and fauna awareness.
- Conditions of environmental approvals.
- Specific environmental management requirements and responsibilities.
- Mitigation measures for the control of environmental issues.
- Environmental incident responses.
- Location of environmental sensitivities (Figure 3, Figure 4, Figure 5).

A record of all environmental inductions will be maintained and kept on site.

Pre-start meeting

Pre-start meetings will be used to raise awareness and educate personnel on construction related environmental issues. They occur at the beginning of each day and cover work activities and work zones. Representatives such as Site Manager, SQE, Site Supervisor and leading hands will lead the pre-start, all workers will be present at the pre-start meeting. The pre-start meetings will be used to ensure environmental awareness continues throughout the various stages of the construction period.

Pre-start meetings will be tailored to specific environmental issues including:

- Vegetation clearing controls.
- Fauna management.
- Biodiversity values and conservation areas.
- Weed management.
- Hygiene protocol.

Pre-start meeting attendance is mandatory, and attendees are required to sign an attendance form and the records maintained.

Toolbox Meetings

Toolbox Meetings are a tool for informing the workforce (including all sub-contractors) of the safe work practices, environmental protection practices, work area restrictions, activities that may affect the works, coordination issues with other trades, hazards and other information that may be relevant to the work. The environmental component of toolbox meeting will include any environmental issues that could potentially be impacted by, or impact on, the work activities. All attendees will be required to sign on to the toolbox meeting and acknowledge their understanding of the issues explained. Toolbox meeting topics, dates delivered, and a register of attendees will be recorded, and the records maintained.

Toolbox Meetings will be held weekly, led by a Site Manager, Supervisor, and/or SQE Advisor and shall include the following items:

- Work related issues that have not been resolved elsewhere;
- Action items to be recorded and followed up at the subsequent meeting;
- Safety first, alerts and other safety information is discussed;
- Periodic review and reinforcement of emergency procedures; and
- A short information/training session.

Reference document(s):

FRM-S028 Toolbox Meeting Agenda

5.2.11 Vegetation Clearing and Grubbing

Although vegetation clearing associated with the project is very limited in scope with a maximum of 0.46 ha of native vegetation communities impacted, the following will apply:

- Vegetation clearing will occur outside local breeding and torpor seasons, being June to November inclusive. If clearing is to occur during June to November, a written assessment by the Project Ecologist justifying clearing activities (i.e. no impact to breeding or torpor habitat) must be recorded and made available to DPE prior to works;

- Local wildlife organisations (i.e. Australian Wildlife Rescue Organisation (WIRES)) and a local veterinary clinic will be contacted at least seven days prior to the commencement of clearing activities. All correspondence with wildlife rescue organisations, veterinary surgeries will be recorded by the Project Ecologist for inclusion in the Tree Clearing Report;
- Vegetation clearing will occur in a two-stage process. Non-habitat trees will be removed first, then habitat trees removed after a 24-hour period to allow an opportunity for nocturnal, hollow-dependent fauna, to move from the clearing area during their night activity period;
- All clearing of native vegetation, inclusive of Stage 1 and Stage 2 (i.e. salvage of fauna habitat, clearing of under-storey and removal of both habitat and non-habitat trees), will cease when temperatures exceed 35°C.

Following the two-stage clearing process, and once the final surface vegetation is removed, soil stripping will be undertaken by appropriate construction machinery stripping to a thickness defined by depth below the surface and/ or a distinct colour change. The Construction Contractor will maximise the salvage of vegetative and soil resources in the subject land for the beneficial reuse during rehabilitation of areas subject to temporary construction disturbance (e.g. construction compounds and laydown areas).

5.2.11.1 Pre-clearing inspection

The Site Manager is to coordinate a pre-clearing inspection to be undertaken by a suitably qualified and licensed Ecologist (refer Section 5.3.4). The pre-clearing inspection would be completed no more than 48 hours prior to the proposed clearing campaign.

The Site Manager is responsible for identifying:

- If the vegetation proposed for removal is clearly demarcated (through temporary bunting or survey pegs) and correlates with the relevant site plans to ensure the extent of clearing is known and inadvertent clearing is avoided.

The Project Ecologist is responsible for:

- Undertaking a pre-clearing survey of underlying groundcover, shrubs, woody debris and relocate any identified fauna;
- Identification and marking of hollow-bearing trees, nests or other habitat features that are to be retained during the stage 1 clearing of non-habitat trees. Habitat features would be marked using spray paint, flagging tape and location recorded using a hand-held GPS;
- Identification and marking of woody debris or other salvageable material that may be beneficial in rehabilitation areas. Salvageable material would be marked using spray paint, flagging tape and location recorded using a hand-held GPS;
- Inspection for and marking of animal dens or burrows, with attention to determining if they are likely in current use (e.g. fresh droppings/ scats, maintained entrance/ fresh soil, scratchings);
- Undertaking a nocturnal active search to capture and relocate amphibians if suitable habitat is associated with dams, drains or other wet areas that are subject to disturbance during clearing activities;
- Identifying suitable relocation sites for rescued fauna outside the subject land. Preliminary relocation sites for captured fauna includes native vegetation to the west and south-west of the subject land (Figure 5.1);
- Searches for the presence and extent of high threat weed species and vertebrate pest species that require management;

- The Ecologist will consider specific times of the year when species may be using habitat features for breeding or roosting and provide advice on mitigative measures if occupation is observed or deemed likely.

5.2.11.2 Pre-clearing inspection of man-made structures for microbats

The now decommissioned Munmorah Power Station, which includes the project subject site, is currently being demolished and the site rehabilitated under consent number DA/413/2014. On the selected site for the Waratah Super Battery, this involves the removal of the coal loader structure, sedimentation basin, weed removal and the concrete structure broken down to below ground level. Consequently, it is not likely that existing man-made structures will require disturbance or modification during construction of the project. However, and where necessary, the Project Ecologist will complete a pre-clearing survey of existing man-made structures for microbats as follows:

- A diurnal search of cavities in structures for roosting microbats. Searches would be aided by torches, headlamps, binoculars and flexible inspection camera as necessary;
- Diurnal search of structure for supplementary evidence of use (i.e. accumulated droppings).

If the structure retains cavities that cannot be inspected adequately or safely during a diurnal search, a nocturnal emergence survey for bats leaving the structure will be required. Nocturnal survey would be completed by:

- Direct observation of the structure for a period of 15 minutes prior to and 60 minutes after sunset. Direct observation may require more than one person and is dependent on structure size and potential microbat access/ egress points;
- Use of ultrasonic bat detector units (i.e. Anabat Walkabout) or thermal imagining cameras.

A pre-clearance survey approving works is valid for a single structure for a period of 24 hours, after which another pre-clearance survey must be completed before construction works can continue.

If microbats are detected during a pre-clearance survey, the Project Ecologist will implement the fauna handling and rescue procedure (Section 5.4). If microbats are observed exiting the structure during a nocturnal emergence survey and are occupying an inaccessible cavity (or cavities), a roost exclusion would be required, and the pre-clearing inspection undertaken again until the Project Ecologist can determine that the structure is free of microbats.

Roost Exclusion

Excluding bats from a roost is a process that allows them to exit unharmed, but not re-enter. Roost exclusion would be employed at those structures where microbats are observed to be actively using the structure and where such structures require removal or substantial modification.

Roost exclusion would consist of, but not necessarily limited to, the following actions:

- Completion of pre-clearing inspection (as described above);
- Primary exit points for identified active roost(s) would be determined and marked. Identified roosts would remain in-situ at this stage;
- All other unoccupied/ potential roost sites would be sealed using suitable material, such as wood, sheet metal, expandable foam. Care and due consideration must be given to avoid sealing microbats in the roost;
- Nocturnal survey would be completed at the active roost(s), as per the pre-clearing inspection. Roost locations would then be inspected by the Project Ecologist, as far as practicable, to ascertain if all microbats have vacated the roost;

- If clearance is given by the Project Ecologist, roost locations would be permanently filled or blocked using suitable material;
- Where the Project Ecologist cannot be sure that all microbats have left the roost (i.e. obscure cavity), one-way valves made of clear plastic sheeting could be used as a means of preventing re-entry.

Mitigation Measures

Where microbats are observed roosting in an artificial structure during a pre-clearing survey that requires demolition or substantial modification, the species of microbat will be recorded and used to determine the type of supplementary habitat provided. Where hollow-dependent microbat(s) are using an artificial structure, supplementary habitat will be installed at a rate of two microbat structures (nest boxes) for each occupied roost location as a compensatory measure.

Microbat structures would be:

- Double or triple chambered;
- constructed out of timber or recycled plastic;
- sourced from a reputable supplier (i.e. Hollow Log Homes);
- Ordered following the pre-clearing inspection and installed as soon as practicable thereafter;
- Installed under the guidance of the Project Ecologist;
- Installed in habitat not impacted by the project. Where this is not practicable, microbat boxes could be installed in adjacent remnant vegetation with prior landowner/ land manager approval;
- Installed between 2-5 metres above ground level;
- Installed with an approximate north-east aspect to avoid the afternoon sun and limit exposure to the prevailing direction of inclement weather, being from the south-east and west.

A concise letter report would be prepared by the Project Ecologist and submitted to the Site Manager and Akaysha Energy detailing the installation of microbat structures, which will include the following

information:

- Date microbat structure was installed;
- The type of microbat structure installed;
- Geographic coordinates, installation height, aspect, donor tree for each microbat structure;
- Photographic evidence of each microbat structure;
- Figure illustrating the location and distribution of microbat structures.

If microbat boxes are installed, the following monitoring program would be adopted:

- Monitoring is to be undertaken by a suitably qualified ecologist;
- A diurnal inspection of each microbat structure would be undertaken quarterly in the first-year post installation, then biannually for the second and third year. It is envisaged that microbat structures would be monitored concurrently with the rehabilitation monitoring (5.8.6).
- The diurnal inspection would document any observed use, occurrence of any pest species, and structural condition;
- Each microbat structure will be photographed as evidence of structural condition;

- A concise monitoring report will be prepared after each monitoring event and include key observations, supporting photographic evidence, and management actions (as necessary).

Under the current BC Act Biodiversity Offset Scheme, there is no provision for calculating the value of offsets such as threatened microbat roosting or breeding habitat within artificial structures. Although it is not likely that existing man-made structures will remain in the subject land, if a pre-clearing survey identifies a cave-dependent or threatened species of bat roosting in a man-made structure, a suitable method for calculating the financial value of an offset will need to be agreed upon by Akaysha Energy, DPE and a suitably qualified ecologist. Offset funds could contribute to the management and conservation of maternity roost sites identified under the Saving Our Species program, or to direct funding into a research project that aims to address identified critical actions for the affected species.

5.2.11.3 Hold Point

During construction of the project, the Construction Contractor will implement an internal permit system (i.e. ground disturbance permit) with hold points for activities that are deemed to be critical and require approval by a delegated authority. Hold points will apply to:

- The clearing of vegetation and fauna habitat (including man-made structures that may provide habitat for roosting microchiropteran bats);
- Incidental threatened species finds (Section 5.5).

Prior to vegetation clearing or ground disturbance works, a pre-clearing checklist will be completed by the Site Manager and Project Ecologist. Completion of this checklist will ensure that all required actions relevant to pre-clearing activities have been completed (for example, completion of pre-clearing inspection, environmentally sensitive areas appropriately delineated). Where necessary, the Project Ecologist will provide advice to the Construction Contractor relating to the pre-clearing inspection findings and possible management and mitigation measures. Where the Project Ecologist identifies sensitive values, management and mitigation measures will be presented to the Construction Contractor who will adopt the measures into the permit system and direct clearing personnel to undertake the actions.

5.2.11.4 Clearing Supervision

Once approval has been granted, vegetation removal may occur. Vegetation removal will occur in a two-stage process.

Stage 1 Clearing

- Non-habitat trees will be removed first to disturb the area in the presence of the qualified and licensed ecologist;
- The salvage of woody debris or beneficial material for re-use in rehabilitation of temporary work areas would be maximized during Stage 1 clearing;
- Where possible, habitat trees would be knocked using earth moving equipment to create enough disturbance to encourage fauna to abandon the tree;
- Prior to Stage 2 clearing, habitat trees will be left to stand over night to enable resident nocturnal fauna to self-relocate during their night time activity period.

Stage 2 Clearing

- Where possible, habitat trees are to be knocked with an excavator bucket or earth moving equipment used for clearing to create only enough disturbance to encourage any remaining fauna to

move from the tree, or at least show themselves prior to felling. This may not be possible for some trees due to safety risks to the plant operator. Excessive knocking of the tree must not take place.

- Habitat trees will be felled sequentially and succeeding trees not felled until direction is given by the Ecologist;
- Felling will involve gently pushing the tree and lowering to avoid sudden falling to minimise fauna injuries;
- Felled habitat trees will be inspected immediately by the Ecologist for any fauna present;
- If animals are found, the Fauna Handling and Rescue Procedure is to be followed (Section 5.4);
- Captured animals will be relocated to designated relocation sites, as identified during the pre-clearing survey (Section 5.3.3.1);
- Felled trees are to remain in place at least overnight to allow any undetected fauna further opportunity to escape.

During clearing operations records will kept detailing the findings of Stage 1 and Stage 2 clearing events, including:

- Animals that are sighted, captured, released, injured, shocked or killed as a result of clearing operations and fauna rescue;
- Records of the fauna relocation sites.

This information will be included in a Tree Clearing Report, which will be completed by the Project Ecologist and submitted to the Construction Contractor's Site Manager and Akaysha Energy following the completion of clearing operations. Section 5.3.5 provides additional information pertaining to the Tree Clearing Report.

5.2.12 Revegetation of Temporary Disturbance Areas

Revegetation of the area disturbed during the construction phases is limited to the construction compound and laydown area (see Figure 2). A key risk to the Project is bushfire. The extent of revegetation (i.e. area and plant species) of this zone (and any others identified during the construction phase) will be undertaken giving consideration to the Planning for Bushfire Protection guidelines (NSW RFS 2019), specifically the maintenance of an appropriate asset protection zone and the radiant heat flux associated with any introduced fuel load (i.e. 29 kW/m^2 or less), as well as the findings and recommendations in the Fire Safety Study required under Condition B21.

Where possible revegetation will be undertaken progressively during construction to minimise the total area exposed at any time.

5.2.13 Pest Animal Management

Four pest animal species were recorded during the Environmental Assessment, including Common Starling, Red Fox, European Rabbit and Domestic Sheep (GHD, 2022b). Pest animal species will be monitored via observations during clearing operations (Section 5.3.3) and via weekly visual assessments throughout construction by the Site Manager. The presence of pest animals and their abundance will be noted on the Environmental Site Inspection Checklist. If required, Akaysha Energy and the Construction Contractor will implement a pest animal baiting and/or trapping program using best practice trapping and baiting methods and use humane methods to dispose of captured pest animals.

6 MONITORING AND REPORTING

6.1 Monitoring, Performance Indicators and Contingency Plan

The monitoring and associated performance indicators for each management action are provided in Table 9. Table 9 also includes details on responsibility, and contingency measures if required. An ecologist or suitably qualified person must conduct all routine inspections. The suitably qualified person should be experienced in frog and weed identification.

Table 9: Monitoring and associated performance indicators for management activities

Management activity	Term	Monitoring proposed	Responsibility	Performance Indicator	Contingency action	Report on effectiveness/completion
Demarcation of Clearing Area and Construction Area	Short term – before and during construction	Ground disturbance permit process.	Site Manager	Fence is in place and no vegetation clearing to occur beyond clearing limits.	Fix the fence to comply with Section 5.1.1. Where any clearing has been undertaken outside demarcated area, active revegetation must commence immediately.	Rectification of breech to be inspected by Project Ecologist and confirmation of effectiveness to be provided in a letter report. Report any non-conformances using the procedures outlined in the CEMP (Section 11.8 Incident investigation and Section 16 Event Reporting and Recording).
Environmental Training	Long term – environmental awareness training in place and ongoing	Monthly audit	Site Manager	No evidence of encroachment by heavy plant, vehicles or personnel in retained areas	Re-induct contractors in accordance with Section 5. Where any breech has occurred outside demarcated area that results in a loss to vegetation, active revegetation must commence immediately.	Rectification of breech to be inspected by Project Ecologist and confirmation of effectiveness to be provided in a letter report.
Pre-clearance Management Measures and Surveys – Fauna	Short term –48 hours before vegetation clearing	Ground disturbance permit process.	Project Ecologist	Minimal impacts to fauna during vegetation clearing activities. Any impacted fauna to be managed as per this FFMP (see section 5.2.3, 5.2.6, and Appendix 1).	Re-induct contractors in accordance with Section 5.	Site Manager to confirm pre-clearance undertaken prior to any ground disturbance works occurring. Report any non-conformances using the procedures outlined in the CEMP (Section 11.8 Incident investigation and Section 16 Event Reporting and Recording)
Clearing of Vegetation – Maximise the salvage of resources	Short term – at least 48 hours before vegetation clearing	Ground disturbance permit process.	Site Manager	Salvage and subsequent relocation and/or storage for later reuse of habitat features. Salvage of all suitable topsoil inhabited by native flora species.	Where salvaged resources are inappropriate or inadequate, additional resources can be sourced from another nearby local development.	Project Ecologist to supervise relocation, reuse and/or storage of habitat features and provide a letter report confirming satisfactory completion. Report any non-conformances using the procedures outlined in the CEMP (Section 11.8 Incident investigation and Section 16 Event Reporting and Recording)
Clearing of Vegetation	Short term – at least 48 hours before vegetation clearing	Ground disturbance permit process.	Project Ecologist	Minimal impacts to fauna during vegetation clearing activities. Any impacted fauna to be managed as per this FFMP (see section 5.2.3, 5.2.6, and Appendix 1).	Implement ground disturbance permit process. Implement fauna injury and entrapment procedure in Section 5.2.6.	Project Ecologist to provide results and confirmation of effectiveness in a letter report. Rectification of breech to be inspected by Project Ecologist and confirmation of effectiveness to be provided in a letter report.

Management activity	Term	Monitoring proposed	Responsibility	Performance Indicator	Contingency action	Report on effectiveness/completion
						Report any non-conformances using the procedures outlined in the CEMP (Section 11.8 Incident investigation and Section 16 Event Reporting and Recording)
Weed Prevention	Long term – for the duration of construction	Monthly audit	Site Manager	Weeds identified during pre-clearance process and management measures implemented to ensure no spread into new, disturbed or rehabilitated areas	Re-educate contractors in accordance with Section 5.	Results of GDP process are filed and made available on request. Rectification of breech to be inspected by Project Ecologist and confirmation of effectiveness to be provided in a letter report. Report any non-conformances using the procedures outlined in the CEMP (Section 11.8 Incident investigation and Section 16 Event Reporting and Recording)
Weed Control	Long term – for the duration of construction and throughout operation	Biannual walk over in early Spring and early Autumn by site bush regenerator prior to weed maintenance	Project Ecologist and Project Bush Regenerator	No incursion of weeds into adjacent habitat. Weed densities stay within 1% of baseline.	Additional weeding event to control major incursions.	Project bush regenerator to provide short letter report containing results of inspection, determine extent of weed occurrence and report on adaptive management actions required. Report any non-conformances using the procedures outlined in the CEMP (Section 11.8 Incident investigation and Section 16 Event Reporting and Recording)
Fauna Injury and Entrapment Procedure	Long term – ongoing	Record all encounters that result in injury or entrapment: • Species • Number(s) • Location • Outcome (i.e. fauna death, fauna received care, fauna escaped) At monthly audit review record and determine whether there is any	Site Manager	Ideally no incidents, or all injured fauna to receive appropriate care.	Address any identifiable causes for repeated fauna injury and entrapment and continue to evaluate records of incidents.	Results of GDP process are filed and made available on request. Report any non-conformances using the procedures outlined in the CEMP (Section 11.8 Incident investigation and Section 16 Event Reporting and Recording)

Management activity	Term	Monitoring proposed	Responsibility	Performance Indicator	Contingency action	Report on effectiveness/completion
		particular location causing frequent incidences (more than twice).				

The Site Manager (or delegate)will undertake routine inspections of the Project site. The routine inspection checklist will include the following items, as a minimum:

- Date of inspection.
- Personnel undertaking the inspection.
- Features to be inspected/monitored (e.g., increasing presence of weeds, dieback, pest or disease, erosion, salvaged habitat features, erosion sediment controls etc).
- Outcomes of the inspection and details of any non-compliance against the GDP or other management measure(s) or objective(s).
- Requirement for any corrective actions.
- Details of any photographic records (file name and saved location) detailing evidence of monitoring.
- Confirmation that the construction is within the approved disturbance footprint.

Success will be assessed by the Site Manager according to the criteria listed in Table 9 and the Project Ecologist.

6.2 Environmental Auditing

The Infrastructure Approval includes the following independent audit condition.

C14. Independent Audits of the development must be conducted and carried out at the frequency and in accordance with the Independent Audit Post Approval Requirements (2020) to the following frequency:
(a) within 3 months of commencing construction; and
(b) within 3 months of commencement of operations

C15. Proposed independent auditors must be agreed to in writing by the Planning Secretary prior to the commencement of an Independent Audit.

C16. The Planning Secretary may require the initial and subsequent Independent Audits to be undertaken at different times to those specified in condition C14 of Schedule 2 upon giving at least 4 weeks' notice to the Proponent of the date upon which the audit must be commenced.

C17. In accordance with the specific requirements in the Independent Audit Post Approval Requirements (2020), the Proponent must:
(a) review and respond to each Independent Audit Report prepared under condition C14 of Schedule 2 of this approval, or condition C16 of Schedule 2 where notice is given by the Planning Secretary;
(b) submit the response to the Planning Secretary; and
(c) make each Independent Audit Report, and response to it, publicly available within 60 days of submission to the Planning Secretary. unless otherwise agreed by the Planning Secretary.

C18. Independent Audit Reports and the Proponent's response to audit findings must be submitted to the Planning Secretary within 2 months of undertaking the independent audit site inspection as outlined in the Independent Audit Post Approvals Requirements (2020) unless otherwise agreed by the Planning Secretary.

C19. Notwithstanding the requirements of the Independent Audit Post Approvals Requirements (2020), the Planning Secretary may approve a request for ongoing independent operational audits to be ceased, where it has been demonstrated to the Planning Secretary's satisfaction that independent operational audits have demonstrated operational compliance.

6.3 Reporting

All environmental incidents, complaints, non-conformance or exceedance of performance criteria as identified by monitoring or reporting will be managed as per the requirements detailed in the Environmental Management Strategy (WSP, 2023).

6.3.1 Non-Compliance Reporting

Immediately after a non-compliance has been identified, the following actions will be undertaken:

- Stop work, if applicable;
- Notify the Site Manager (and SQE Manager during construction);
- Identify corrective action(s) to be undertaken;
- Record details of non-compliance and actions taken;
- Review the cause of the non-compliance and implement any identified improvements in environmental management;
- The Site Manager will notify Akaysha Energy within 24 hours of becoming aware of an incident;
- Akaysha Energy will notify the DPE in accordance with Condition C11 to C13 of the Infrastructure Approval. The DPE will be notified in writing via the Major Projects website within seven days after Akaysha Energy becomes aware of any non-compliance;
- The non-compliance notification will identify the project and the project approval number for it, set out the condition of approval that the project is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

6.3.2 Environmental Incident Reporting

An incident is a set of circumstances that causes or threatens to cause material harm to the environment. Immediately after identification of an incident, the following actions are to be followed:

- Remove people from harm and isolate the area around the incident to restrict access;
- Stop works in the vicinity of the incident and ensure personnel safety;
- Implement containment measures to prevent the impact of the incident spreading and restrict access;
- Notify the Construction Contractor's Site Manager;
- Implement the emergency procedures as relevant to the incident;
- Estimate the significance of the incident.

The Construction Contractor's Site Manager will notify Akaysha Energy upon becoming aware of an incident. In accordance with condition C10 of the project's Infrastructure Approval, the Planning Secretary must be notified in writing via the Major Projects website immediately after the proponent becomes aware of an incident.

Akaysha Energy will provide a written incident notification to be submitted to the DPE via the Major Projects website within seven days of becoming aware of an incident. The written notification will:

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

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

- A summary of the incident;
- Outcomes of an incident investigation, including identification of the cause of the incident;
- Details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence;
- Details of any communication with other stakeholders regarding the incident.

6.3.3 Tree Clearing Report

The Project Ecologist will prepare and submit a Tree Clearing Report, which will be submitted to the Construction Contractor's Site Manager and Akaysha Energy following the completion of clearing operations. The report will verify that tree clearing operations were undertaken in accordance with the vegetation clearing procedures and protocols detailed in Section 5.3.3 to Section 5.3.5. The report will confirm the final area cleared, the identity of all vegetation removed, and a count of hollow-bearing trees felled (if any). The Tree Clearing Report will also document any fauna or nests impacted by clearing works and provide fauna capture and relocation data.

6.3.4 Rehabilitation Monitoring Reports

A concise monitoring report will be prepared after each monitoring event and include key observations, supporting photographic evidence and management actions (as necessary). Rehabilitation Monitoring Reports will be submitted to Akaysha Energy.

6.3.5 Microbat Box Monitoring Reports

A concise monitoring report will be prepared after each monitoring event and include key observations and supporting photographic evidence and management actions (as necessary). Microbat Box Monitoring Reports will be submitted to Akaysha Energy.

6.3.6 Inspection and Reporting Program (Biodiversity Management Plan)

The inspection and reporting program from the Biodiversity Management Plan must be followed and is set out below.

Table 10 - Inspection and Reporting Plan

Management activity	Monitoring action	Responsibility	Performance indicator	Timeframe		Corrective action
				Performance measured	Completion	
Personnel						
Environmental induction training	Monthly audit of induction training records and tool box talks	Construction Site Manager	Training record of all personnel and contractors who have completed the site-specific induction. Toolbox meetings incorporating environmental constraints and responsibilities.	Monthly audits	Short to long-term (ongoing).	Induct employees and contractors in accordance with Section 5.2.
Vegetation and fauna habitat management						
Protection of vegetation outside disturbance boundary (demarcation of subject land)	Weekly site inspection Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager	Subject land delineated using high visibility or standard temporary construction fencing. Inclusion of appropriate signage. Documentation of weekly site inspections. Appropriate preventative maintenance to fencing during project construction. No incursions by site personnel, vehicles, stockpiles or clearing activities outside the subject land Pre-start meetings to acknowledge clearing limits and clearing procedures. Tree clearing operations conducted in accordance with vegetation clearing	Tree Clearing Report will supply tree clearing and survey data for verification. Site Environmental Inspection Checklist Pre-start meeting records	Short to long-term (ongoing).	Fix boundary fence to comply with Section 5.3.1. Any breech occurring outside the demarcated subject land that results in a loss of native vegetation must be reported immediately as detailed in Section 6.2.1 and Section 6.2.2, and a rehabilitation plan prepared and implemented in consultation with the DPE.

			and grubbing procedure detailed in Section 5.3.3.			
Pre-clearing inspection	Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager Project Ecologist	Tree clearing operations conducted in accordance with vegetation clearing and grubbing procedure detailed in Section 5.3.3. Implementation of the fauna handling and rescue procedure (where required) (Section 5.4). Pre-clearing checklist completed by Construction Site Manager and Project Ecologist.	Tree Clearing Report will supply tree clearing and survey data for verification.	Short-term – pre-clearing inspection required within 48 hours of each clearing event.	Undertake tool box talk with construction employees and contractors. If vegetation clearing has commenced, stop work and the Project Ecologist to inspect felled vegetation and implement the fauna handling and rescue procedure as necessary. Instigate review into clearing hold points through ground disturbance permit process. Pre-clearing inspection to be completed prior to recommencing Stage 1 or Stage 2 clearing.
Pre-clearing inspection (identification of weed management areas)	Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager Project Ecologist	Pre-clearing checklist completed by Construction Site Manager and Project Ecologist.	Tree Clearing Report will supply tree clearing and survey data for verification.	Short-term	Undertake tool box talk with construction employees and contractors. Weed management areas to be delineated as soon as practicable.
Pre-clearing inspection (man-made structures)	Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager Project Ecologist	Pre-clearing checklist completed by Construction Site Manager and Project Ecologist.	Diurnal search of cavities in structure by Project Ecologist undertaken Nocturnal emergence survey completed where cavities are not accessible	Short to medium-term	Undertake tool box talk with construction employees and contractors. Report any non-conformances as detailed in Section 6.2.1. Undertake a pre-clearing inspection of all man-made

				Pre-clearing inspection of man-made structures will be detailed in the Tree Clearing Report.		structures to ascertain contemporary use of remaining structures and compile interim pre-clearing checklist.
Vegetation clearing (maximise the salvage of habitat resources)	Clearing hold points implemented through CEMP ground disturbance permit process.	Construction Site Manager Project Ecologist	Where applicable, the salvage and relocation/storage of habitat resources for use in rehabilitation areas. Where applicable, maps of the salvage pile site(s) to be produced and included within the tree clearing report. Photographic evidence and documentation of habitat features salvaged included in the tree clearing report. Salvage of suitable topsoil inhabited by native flora species.	Tree Clearing Report will supply tree clearing and survey data for verification.	Short to medium-term	Where appropriate salvaged material is stockpiled incorrectly or removed from site, additional resources with similar specifications will be sourced from another local development or reputable landscaping business.
Vegetation clearing (Stage 1 and Stage 2 clearing)	Ground disturbance permit process implemented through the CEMP.	Project Ecologist	Tree clearing operations conducted in accordance with vegetation clearing and grubbing procedure detailed in Section 5.3.3. Project Ecologist present during Stage 1 and Stage 2 clearing.	Tree Clearing Report will supply tree clearing and survey data for verification.	Short to medium-term	Undertake tool box talk with construction employees and contractors. Report any non-conformances as detailed in Section 6.2.1. Project Ecologist to undertake immediate inspection of felled vegetation and implement fauna handling and rescue procedure (Section 5.4).

Frog-proof fencing	Weekly site inspection	Project Ecologist (or suitably qualified person) Construction Site Manager	Documentation of weekly site inspections. Appropriate preventative maintenance to fencing during project construction.	Monthly audits	Long-term – for duration of construction	Fix temporary frog-proof fence to comply with Section 5.3.2.
Fauna handling and rescue						
Vegetation clearing	Ground disturbance permit process implemented through the CEMP.	Project Ecologist	Tree clearing operations conducted in accordance with vegetation clearing and grubbing procedure detailed in Section 5.3.3 Fauna handling and rescue procedure implemented (Section 5.4). Project Ecologist present during Stage 1 and Stage 2 clearing. Fauna handling and rescue register compiled (where applicable).	Tree Clearing Report will supply tree clearing and survey data for verification.	Short to medium-term	Undertake tool box talk with construction employees and contractors.
General construction activities	Weekly site inspection	Construction Site Manager Project Ecologist (or suitably qualified person)	Species of fauna receive appropriate care and are managed as per the fauna handling and rescue procedure, where necessary (Section 5.4). Documentation of weekly site inspections. Fauna handling and rescue register compiled (where applicable).	Monthly audits	Long-term – for duration of construction	Undertake tool box talk with construction employees and contractors.

Weed, pest and pathogen management						
Weed and pest monitoring and prevention	Monthly site inspection	Project Ecologist (or suitably qualified person)	Weeds identified during pre-clearing inspection and management measures implemented to ensure no spread into new, disturbed or rehabilitated areas. Records of priority weed observations and pest observations documented in Site Environmental Inspection Checklist. Increases in weed densities in immediate adjacent natural bushland are monitored in consultation with relevant land managers.	Monthly audits	Long-term – for duration of construction	Where necessary, increase the frequency of biannual site inspections by the Bush Regeneration Contractor with treatment as necessary.
Weed control/ maintenance weeding	Biannual site inspection in early Spring and early Autumn	Bush Regeneration Contractor	Site inspection in early Autumn and early Spring by Bush Regeneration Contractor No incursion of weeds into adjacent habitat. Weed control undertaken in accordance with the relevant practices and guidelines specified in Section 0. Where significant or new weed infestations are identified, a review has been undertaken and appropriate control measures are implemented.	Bush Regeneration Contractor to provide concise letter report detailing results of inspection, weed observations, treatment and disposal, and adaptive management actions required.	Long-term – for duration of construction	Undertake follow-up or additional weed control/ maintenance weeding to control major weed incursions.
General construction activities (vehicle and machinery washdown)	Vehicle/machine hygiene inspections undertaken prior to commencement of works (free from	Construction Contractor Site Manager	Completed hygiene inspection forms are to be kept within the relevant vehicle/machine during the works and filed at completion of the works.	Monthly audits	Long-term – for duration of construction	Undertake tool box talk with construction employees and contractors.

	soil and plant material).					
General construction activities (landscaping materials)	Prior to, or on delivery of landscape material.	Construction Contractor Site Manager	Certificate (or similar) detailing disease free material or virgin excavated natural material.	Monthly audits (where applicable)	Long-term – for duration of construction	Undertake tool box talk with construction employees and contractors.
Rehabilitation and microbat boxes						
Rehabilitation of temporary disturbance areas	Quarterly for the first-year post rehabilitation planting. Biannually for the second and third year post rehabilitation planting.	Construction Site Manager/ Akaysha Energy Bush Regeneration Contractor Suitably qualified ecologist	Evidence of locally endemic species used in rehabilitation. Greater than (or equal to) 80 % of planted tube stock successfully established at the end of year three monitoring. Priority weeds are controlled. Exotic species diversity does not exceed that recorded from the reference sites.	Concise monitoring reports following each monitoring installment.	Long-term	Replant tube stock to meet minimum planting requirements Retreat priority weeds until performance criteria is met.
Microbat structure installation (where necessary)	Quarterly for the first-year post installation. Biannually for the second and third year post installation.	Akaysha Energy Suitably qualified ecologist	Microbat boxes installed as detailed in Section 5.3.3.1. Observations of pest species use recorded. Observations of structural integrity recorded.	Concise monitoring reports following each monitoring installment.	Long-term	Pest species occupying nest boxes should be treated (if applicable) or the microbat box replaced. Microbat boxes with poor structural integrity will be replaced.

6.4 Records management and reporting

Accurate and complete compliance records must be maintained throughout the construction period. The following records and reports must be kept on-site:

- All environmental training records, including signed and dated:
  - Environmental education inductions.
  - Environmental toolbox talks.
  - Pre-start meetings.
- All fauna pre-clearing records.
- Weekly environmental inspection reports.
- All incident reports.

6.5 Infrastructure Approval Reporting, Notification and Publication Submissions

The Infrastructure Approval reporting, notification and publication submissions specified within the Infrastructure Approval will be actioned by EnergyCo.

7 EMERGENCY CONTACTS

Emergency contacts are shown in Table 11. The wildlife injury procedure is in Section 5.2.6.

Table 11: Emergency Contact Information

Issue	Staff/organisation	Contact name	Contact number
Construction-related	Project Manager	Stephen Brannigan	0429 964 659
	Site Manager	Peter Martin	0408 819 725
Wildlife injury	Project Ecologist		
	WIRES	-	1300 094 737
	Doyalson Animal Hospital	-	(02) 4399 2129
Fire and other emergencies	Fire and Rescue NSW, Ambulance, police	-	000

8 BIODIVERSITY CREDIT OBLIGATIONS

The biodiversity credits for the Project are shown in Table 12 and Table 13**Error! Reference source not found.** and **Error! Reference source not found.**have been retired via a Biodiversity Stewardship Agreement. In accordance with Conditions B9 and B10 of the Infrastructure Approval, the Biodiversity Offset requirements are outside of the scope of the FFMP.

The retirement of these credits by EnergyCo must be carried out in accordance with the NSW Biodiversity Offset Scheme (BOS) and can be achieved by:

a. acquiring or retiring ‘biodiversity credits’ within the meaning of the BC Act 2016;

b. making payments into an offset fund that has been developed by the NSW Government; or

c. funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the BOS.

Table 12: Ecosystem Credit Requirements

Vegetation Community	PCT ID	Credits Required
Scribbly Gum – Red Bloodwood – *Angophora inopina* heathy woodland on lowlands of the Central Coast	1636	4
Broad-leaved Paperbark – Swamp Oak – Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast	1724	3

Table 13: Species Credit Requirements

Credit Species	Credits Required
Charmhaven Apple *(Angophora inopina)*	4
Eastern Pygmy-possum *(Cercartetus nanus)*	4
Large-eared Pied Bat *(Chalinolobus dwyeri)*	11
Wallum Froglet *(Crinia tinnula)*	5
Giant Burrowing Frog *(Heleioporus australiacus)*	3
Pale-headed Snake *(Hoplocephalus bitorquatus)*	7
Green and Golden Bell Frog *(Litoria aurea)*	7
Green-thighed Frog *(Litoria brevipalmata)*	5
Squirrel Glider *(Petaurus norfolcensis)*	7
Brush-tailed Phascogale *(Phascogale tapoatafa)*	7
Common Planigale *(Planigale maculate)*	7
Mahony's Toadlet *(Uperoleia mahonyi)*	7

9 DOCUMENT REVIEW AND REVISIONS

The Project Manager will be responsible for coordinating the review and if necessary a revision of the FFMP to the satisfaction of the Secretary within one month in response to:

- Submission of an incident report under Condition C10.
- Submission of an audit report under Condition C14 where the audit indicates performance targets/completion criteria may not be achieved.
- Modification to the conditions of the Infrastructure Approval.

The Project Ecologist will support the revision of the FFMP to ensure suitable adaptive management measures are incorporated for protected matters, and to ensure they are appropriately managed.

A review of the BMP will be undertaken at a period of no greater than every six (6) months during construction (should none of the above triggers occur).

Where the review results in the necessary revision to the FFMP, consultation with the BCS and DPE will be undertaken as relevant, and the revised BMP submitted to each department to confirm their satisfaction with the revisions. Updates to the plan will be made available via the Waratah Super Battery Energy Storage System maintained by DPE (https://www.planningportal.nsw.gov.au/major-projects/projects/waratah-super-battery-energy-storage-system).

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APPENDICES

Appendix 1 - Vegetation Clearing Protocol

This protocol provides methodologies aimed at minimising impacts to native fauna during vegetation removal. Vegetation removal would be undertaken following a staged habitat removal process considered best practice. An ecologist will be required to undertake/supervise various aspects of the process.

Stage 1 Pre-clearing surveys

Ground fauna (within 48 hours of clearing)

The goal of this task is to relocate as many ground animals as possible prior to clearing. This will be achieved by an ecologist checking for small ground mammals, lizards and frogs by rock and timber rolling. This method basically involves lifting rocks and timber on the ground and catching any animals by hand as they are uncovered. Snakes are very mobile and will relocate when disturbed. Trapping native fauna to relocate is not recommended due to the small size of the site and limited area of vegetation.

The release site for the animals will be finalised closer to the scheduled clearing. Ideally, the residual land to the south east and south west will be available for fauna release.

Stag watching/spotlighting surveys (within 48 hours of clearing)

The goal of this task is to detect any nocturnal native fauna activity prior to clearing. Stag watching is a method of using a spotlight at dusk to observe animals leaving their hollows. Dusk is generally the time-dependent fauna emerge from their hollow. Additionally, a hand-held Anabat and/or thermal scope to detect the presence of microbats will be used. Man-made structures should also be checked for roosting microbats.

Ideally, this survey is conducted between September and April when animals are more mobile. In addition to the stag watching survey, the ecologist will also check for any nesting birds and possum dreys.

Amphibian surveys (within 48 hours of clearing)

Prior to construction, the site should be surveyed for appropriate frog habitat during the day, with active searches for egg masses, tadpoles, and adults. A nocturnal survey for threatened frogs will be conducted. A qualified ecologist will perform an active search of wet areas (dams, drains, etc) using a head torch and spotlight. Other survey techniques include call-playback and active listening which can be utilised at the ecologist's discretion.

The target species are Wallum Froglet, Giant Burrowing Frog, Green and Golden Bell frog, Green-thighed Frog and Mahony's Toadlet. Ideally, these surveys are conducted during the calling period, which varies for each species.

Stage 2 clearing (removal of habitat trees)

The goal of this task is to physically check the main habitat features across the site for live native arboreal fauna. The results of the stag/spotlighting survey will assist in determining if any hollow bearing trees are present and if they contain native fauna.

The priority species for relocation are the Squirrel Glider, Brush-tailed Phascogale, Eastern Pygmy-possum, Common Planigale and Large-eared Pied Bat, all of which are assumed present on the site.

If an animal is injured during these works, the ecologist will ensure that they receive the appropriate level of care. Depending on the level of injury, WIRES and/or the nearest veterinary clinic will be contacted to retrieve or take the animal into care (Section 7).

The Project ecologist is to write a brief report on the trees removed and detail any fauna seen/relocated/injuries etc. Photos of fauna should be taken (where possible) and included within the report.

Retention of timber

Suitable native timber felled from the development footprint will be retained for use as habitat for ground dwelling reptiles and mammals within the residual land.

Qualifications of ecologist

A suitably qualified fauna ecologist with experience relating to microchiropteran bats (micro-bats) and arboreal fauna will be required to be on site to supervise the felling of any hollow bearing trees. The ecologist must have a current Lyssavirus vaccination and hold relevant Animal Ethics license and scientific licences from NSW Department of Planning and Environment to conduct flora and fauna surveys. This licence requires that all survey and incidental records are submitted to the DPE for inclusion in their databases (primarily the Atlas of NSW Wildlife/BioNet).

The Project ecologist is to take all appropriate hygiene pre-cautions before handling any fauna to prevent spreading diseases such as Chytrid disease or Beak and Feather disease.

Appendix 2 – Incidental Threatened Species Finds Protocol

In the event an unexpected threatened species is encountered during site works, the following procedure must be followed.

1. Stop work immediately.
    - The worker/contractor is to notify the Site Manager and other workers in the immediate area.
    - Site Manager to notify the Project Manager.
    - Project Manager to notify the Client and Project Ecologist accordingly.
2. Site manager to demarcate and prevent access to the area to reduce impact on the species and redirect works to an alternate area where practicable.
3. Project Ecologist to record/document the unexpected find (i.e. species, number and location).
4. Capture the individual(s) by a qualified person.
5. For fauna in trees or shrub habitat, encourage the individual to vacate the development footprint through minor disturbance to the habitat, e.g., shaking of the tree by construction machinery. If the individual(s) does not vacate the area, the individual may be captured and relocated by a suitably qualified person, before the habitat may be “soft felled” or lowered gently under supervision of an arborist so that injury or death to the individual(s) is unlikely.
6. Delay the clearance related works within the immediate vicinity by half day or full day to allow the species to naturally vacate the area.
7. The Project Manager to assess the situation with the Site Manager and Project Ecologist;
    - Project Manager to arrange for the Project Ecologist to determine the significance of the likely impact to the threatened species and appropriate management options, such as relocation measures, developed in consultation with the Client
    - If an impact is likely to occur, consultation will be undertaken with DPE as appropriate
    - Obtain any relevant licences, permits or approvals required if the threatened species is likely to be impacted.
8. Implement all management measures as recommended by the Project Ecologist and in accordance with any relevant licenses, permits or approvals.
9. Following confirmation that the demarcated area is deemed safe, all safety and environmental controls will be removed before work recommences. Once confirmed, the Project Manager to release hold on work.
10. The following actions will be undertaken following the incident.
    - Maintain regular inspections.
    - Relevant information on the species will be included in the induction and a toolbox talk will be given to discuss the outcome.
    - Obtain any relevant licences, permits or approvals required if the threatened species is likely to be impacted.