windlab

Feral Predator Management Plan

Gawara Baya Wind Farm

Report prepared for: Windlab

Document Classification: Final for submission to the Department of Climate Change, Energy, the Environment and Water

Document Approval

Approval details		Date Approved
Shenna van Melick, Adam Pavitt	Environmental Resources Management (ERM)	November 2025
John Herron	ERM	November 2025
Approved by	Windlab	xxx

Revision History

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Abbreviations

EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FPMP	Feral Predator Management Plan
MNES	Matters of National Environmental Significance
NWDAP	National Wild Dog Action Plan
OMP	Offset Management Plan
PER	Public Environment Report
PMA	Predator Management Area
Windlab	Windlab Developments Pty Ltd

1 Introduction

1.1 PROJECT BACKGROUND

Windlab Developments Pty Ltd (the proponent, or Windlab) is proposing to build *Gawara Baya,* a wind energy Project on an operating cattle property within Gugu Badhun Country, approximately 65 km south-west of Ingham in North Queensland (the Project or Gawara Baya) (refer Figure 1-1). The site is within the Charters Towers Regional Council Local Government Area on Lot 3198 on SP344602.

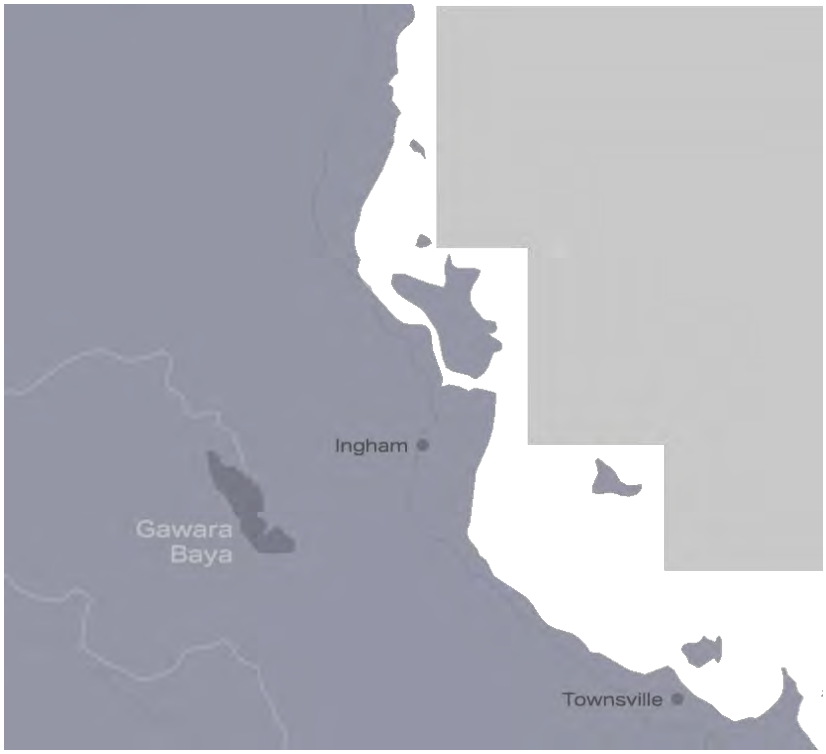
The Project includes the construction, operation and decommissioning of Gawara Baya. The Project will generate approximately 400 megawatts of renewable energy from up to 69 wind turbine generators. The Project also comprises associated ancillary infrastructure including access tracks, laydowns, electrical reticulation, collector sub-stations, concrete batching plants and construction offices.

The location and design of Gawara Baya has been determined and refined through careful consideration of the location, quality and profile of the wind energy resource, proximity to existing energy transmission infrastructure, established use of the land for cattle grazing, and the proponent's ability to appropriately and responsibly manage local-scale impacts associated with the Project.

On 23 August 2023, the former Department of State Development, Infrastructure, Local Government and Planning (now the Department of Housing, Local Government, Planning and Public Works), represented by the State Assessment and Referral Agency, approved a Development Permit for a Material Change of Use (Wind Farm and associated infrastructure) and Operational Work (Native Vegetation Clearing) for the Project, subject to conditions (SARA ref. 2211-32271 SDA). A negotiated decision notice was issued on 13 November 2023. On 24 April 2025 an Other Change Decision Notice was issued by the Department of Housing and Public Works, represented by SARA (SARA ref. 2408-42181 SDA) to align the proposed footprint with the Final Development Footprint submitted to the Department of Climate Change, Energy, the Environment and Water.

On the 17 June 2024, a delegate of the Minister of the Department of Climate Change, Energy, the Environment and Water approved Gawara Baya under sections 130(1) and 133(1) of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) (EPBC Act Approval 2021/9066).

Figure 1-1: Gawara Baya Project location



1.2 NOMENCLATURE

The 'Project' or 'Gawara Baya' nomenclature used throughout this plan refers to the construction, operation, and decommissioning of Gawara Baya.

The Project Area nomenclature used throughout this document refers to the 29,038 ha of land that has been subject to a variety of studies and surveys undertaken in the preparation of the Commonwealth referral and subsequent Public Environment Report (PER). The Project Area occurs across two properties, Kilclooney Station, Lot 3198 on Plan SP344602, and Seaview Station Lot 2 on Plan SP 205224 (refer Figure 1-2).

The Final Development Footprint nomenclature refers to the area in which all clearing, construction and infrastructure for the Project will occur (as defined in the EPBC Act Approval). The Final Development Footprint is shown on Figure 1-2. The Gawara Baya Predator Management Area (PMA) refers to an area encompassing the proposed clearing area and a 500 m buffer to the Final Development Footprint (within Kilclooney Station) as defined in the EPBC Act Approval. The location and extent of the PMA is illustrated in Figure 1-2.

The proposed clearing area nomenclature refers to the area within the Final Development Footprint that is proposed to be directly cleared to facilitate the construction of Gawara Baya.

1.3 PURPOSE AND SCOPE OF THIS DOCUMENT

This document is the Feral Predator Management Plan (FPMP) required by condition 61 of the EPBC Act Approval.

This document sets out the matters relating to feral predator management for the purposes of conditions 62 and 63 of the EPBC Act Approval.

The FPMP must be approved by the Minister in writing under condition 61 prior to commencement of the action (as defined in the EPBC Act Approval). Once approved, the FPMP will be implemented to its full intent as prescribed throughout this document.

Field surveys undertaken for the approvals process and baseline surveys have detected existing feral predator presence such as cats (*Felis catus*) and wild dogs / dingoes (*Canis familiaris*) in the Project Area. The Project Area also supports several Matters of National Environmental Significance (MNES) species that are vulnerable to predation by feral predators. An outline of MNES values that may be vulnerable to predation by feral species is provided in Appendix A.

The Project has the potential to increase predation by feral predators on several species through:

- Introduction of pests, including dogs, to the Project Area from Gawara Baya construction and operational personnel
- Waste materials, particularly food rubbish attracting pest species
- Construction of linear infrastructure improving access to pest species into the Project Area
- Construction earthworks resulting in entrapment leading to exposure to predators
- Build-up of felled timber from proposed clearing providing refuge for pest species
- Disturbance (flushing from shelter) of native fauna from clearing and construction.

The FPMP outlines the management measures to be implemented to avoid and minimise impacts to the native fauna, especially MNES, due to the construction and operation of Gawara Baya. Undertaking monitoring and control measures for feral predators will manage potential ongoing impacts of increasing predation on these species and negative pressure on species populations. Evidence has shown that increases in native animal population occurs at sites where foxes and cats have been excluded (Moseby, Stott and Cris 2009, Legge, et al. 2018) and/or cats have been reduced through broad-scale control (Robley, et al. 2014, Stobo-Wilson, et al. 2022).

The development of a FPMP is a commitment identified in the Gawara Baya PER. The FPMP expands on the measures outlined in the PER including:

- Establishing a framework for ongoing monitoring and reporting
- Creating management objectives
- Identifying methods to achieve the objectives
- Establishing an implementation schedule.

The FPMP objectives and actions will be implemented across the PMA. The location and extent of the PMA is illustrated in Figure 1-2.

An Offset Management Plan (OMP) has been developed for Gawara Baya in accordance with the EPBC Act conditions of approval. The Gawara Baya offset area is located to the south and north of the Gawara Baya PMA. The FPMP objectives and actions for the PMA are complementary to those proposed within the offset area. The objective of the FPMP is for implementation to be coordinated with the OMP feral predator control.

2 Environmental Objectives, Targets and Measurement Criteria

2.1 ENVIRONMENTAL OBJECTIVES AND COMMITMENTS

The FPMP has been developed to achieve, as far as practicable, the overarching objective to protect and mitigate harm to MNES throughout the lifecycle of the Project. This will be achieved through the realisation of the FPMP objectives. The objectives and Gawara Baya commitments to achieve the objectives are outlined in Table 2-1.

Table 2-1: FPMP objectives and commitments

Objective		FPMP Commitment	FPMP Section
1	Avoid the introduction of new species of feral predators into the PMA, relative to baseline data collected	Manage the construction and operation of Gawara Baya to avoid new feral predators from being introduced or becoming established in the PMA, as determined at key survey points	6 Feral Predator Monitoring Surveys 9.1 Site Management 9.3 Gawara Baya Control Strategy 10 Data Collection and Reporting
2	Progressively reduce the abundance of feral predators identified within the PMA relative to baseline data collected	Implement a repeatable feral predator monitoring program to track feral predator activity levels over the life of the Project Undertake feral predator control to reduce feral predator activity over the life of the Project Review feral predator monitoring control strategy regularly to ensure progress towards FPMP objectives and targets is being achieved	2.1.2 Targets and Measurement Criteria 9.1 Site Management 9.3 Gawara Baya Control Strategy 10 Data Collection and Reporting 11 FPMP Updates
3	Implement best practice control techniques to minimise impacts on non-target species (native species)	Develop and implement a control strategy based on a literature review of the ecology of the target species and recommended control methods and timing	2.1.2 Targets and Measurement Criteria 5.1 Target Species Descriptions 9.2.4 Design Considerations Summary 9.3 Gawara Baya Control Strategy
4	Minimise exposure of MNES to feral predators during construction	Identify impact risks to MNES fauna from construction activities and implement management to avoid or minimise impact	2.1.2 Targets and Measurement Criteria 9.1 Site Management 9.3 Gawara Baya Control Strategy
5	Share learnings from implementing the program with key stakeholders and management experts	Share learnings with regards to feral predator management with stakeholders and management experts	2.1.2 Targets and Measurement Criteria 10 Data Collection and Reporting

Objective		FPMP Commitment	FPMP Section
6	No Sharman's rock wallaby individuals killed by feral predators for the duration of the EPBC Act approval.	Implement a repeatable feral predator monitoring program to track feral predator activity levels over the life of the Project Undertake feral predator control to reduce feral predator activity over the life of the Project Undertake ongoing monitoring for Sharman's rock wallaby at 24 occupied rock piles within the Project Area. Review feral predator monitoring control strategy regularly to ensure progress towards FPMP objectives and targets is being achieved	6 Feral Predator Monitoring Surveys 7 Sharman's Rock Wallaby Monitoring 9 Feral Predator Management

2.1.1 Alignment with Approval Conditions

Table 2-2 provides an overview of how the environmental objectives align with the EPBC Act Approval (and other approvals, as relevant) and where this information is provided in this plan.

Table 2-2: Alignment of FPMP objectives with EPBC Act Approval

Approval	Condition	Extract	Relevant section of Plan
EPBC Act Approval	2	Prior to the commencement of the Action the Approval Holder must submit a Vegetation and Fauna Management Plan, Cleared Vegetation Management Plan, and Bushfire Management Plan to the Queensland Department of State Development, Infrastructure, Local Government and Planning, as required by the Queensland approval as it relates to the monitoring, managing, avoiding, mitigating, offsetting, recording, or reporting of impacts to protected matters.	2.2 Relationships with Other Documents
EPBC Act Approval	21	Prior to commencement of the Action and prior to the submission of a Final Development Footprint, a suitably qualified field ecologist must survey all areas within 500 metres of any proposed clearing to determine the number of Sharman's rock wallaby present, their distribution and the location of Sharman's rock wallaby breeding habitat, Sharman's rock wallaby foraging habitat and Sharman's rock wallaby dispersal habitat. Surveys must be consistent with the Sharman's rock wallaby Survey Guidelines.	7 Sharman's Rock Wallaby Monitoring
EPBC Act Approval	61	The Approval Holder must submit a Feral Predator Management Plan (FPMP) to the department for the Minister's approval to protect and mitigate harm to protected matters. The Approval Holder must implement the FPMP approved by the Minister in writing until the expiry date of this approval.	1.3 Purpose and Scope of this Document

Approval	Condition	Extract	Relevant section of Plan
EPBC Act Approval	62	By implementing the FPMP, the Approval Holder must achieve the following environmental objectives in the final Development Footprint and within 500-metres on all sides of the final development footprint:	Relevant sections listed below in Conditions of Approval 62 (a)-(2).
EPBC Act Approval	62 (a)	Relative to the baseline data collected in accordance with condition 63b, there will be:	
EPBC Act Approval	62 (a) (i)	no new species of feral predator for the duration of approval.	Table 2-3: Targets and measurement criteria Table 9-5: Triggers and corrective actions for feral predator management Table 10-1: Reporting and data requirements
EPBC Act Approval	62 (a) (ii)	a progressive reduction in the abundance of feral predators for the duration of the approval.	Table 2-3: Targets and measurement criteria Table 9-5: Triggers and corrective actions for feral predator management Table 10-1: Reporting and data requirements
EPBC Act Approval	62 (b)	No Sharman's rock wallaby individuals killed by feral predators for the duration of approval.	Table 9-5: Triggers and corrective actions for feral predator management Table 10-1: Reporting and data requirements
EPBC Act Approval	63	The FPMP must be consistent with the Environmental Management Plan Guidelines, and must include:	
EPBC Act Approval	63 (a)	Details of the relevant protected matters and a reference to EPBC Act approval conditions to which the plan refers,	2 Environmental Objectives, Targets and Measurement Criteria 2.1.1 Alignment with Approval Conditions Appendix A Table 2-4: Relationship with other documents
EPBC Act Approval	63 (b)	Baseline surveys of species, extent and abundance of feral predators in the Final Development footprint and within 500-metres on all sides of the Final Development footprint undertaken by a suitably qualified field ecologist to establish targets to achieve the outcomes of the FPMP,	6 Feral Predator Monitoring Surveys
EPBC Act Approval	63 (c)	The information on Sharman's rock wallaby provided under condition 22.	7.1 Background Appendix C

Approval	Condition	Extract	Relevant section of Plan
EPBC Act Approval	63 (d)	A table of commitments made in the plan to achieve the environmental objectives, and a reference to exactly where these commitments are detailed in the plan,	2.1 Environmental objectives and commitments
EPBC Act Approval	63 (e)	Commitments capable of ensuring that the environmental objectives are achieved,	Table 2-3: Targets and measurement criteria
EPBC Act Approval	63 (f)	Reporting and review mechanisms to demonstrate compliance with the commitments made in the plan,	9.3.1 Adaptive Management and Corrective Actions Table 10-1: Reporting and data requirements
EPBC Act Approval	63 (g)	An assessment of risks relating to achieving the environmental objectives and risk management strategies and/or mitigation measures that will be applied to address identified risks,	8 Risk Management Approach
EPBC Act Approval	63 (h)	Impact avoidance, mitigation and/or repair measures, and the timing of those measures,	8 Risk Management Approach 9.1 Site Management Table 9-5: Triggers and corrective actions for feral predator management
EPBC Act Approval	63 (i)	A monitoring program which must be undertaken by a suitably qualified field ecologist and which must include:	6 Feral Predator Monitoring Surveys
EPBC Act Approval	63 (i) (i)	measurable performance indicators,	2.1.2 Targets and Measurement Criteria
EPBC Act Approval	63 (i) (ii)	trigger values for corrective actions,	Table 9-5: Triggers and corrective actions for feral predator management
EPBC Act Approval	63 (i) (iii)	monitoring for Sharman's rock wallaby individuals within the Final Development Footprint and within 500-metres on all sides of the Final Development Footprint,	7 Sharman's Rock Wallaby Monitoring
EPBC Act Approval	63 (i) (iv)	the timing and frequency of monitoring, ensuring monitoring is capable of detecting trigger values and changes in the performance indicators, and	6.2.4 Timing and Frequency 7.5 Timing and Frequency Table 9-5: Triggers and corrective actions for feral predator management
EPBC Act Approval	63 (i) (v)	proposed corrective actions if trigger values are reached, and	9.3.1 Adaptive Management and Corrective Actions
EPBC Act Approval	63 (j)	Links to other relevant plans or conditions of approval (including state or territory approval conditions).	2.2 Relationships with Other Documents

2.1.2 Targets and Measurement Criteria

Environmental targets and measurement criteria have been prescribed in line with environmental objectives in Table 2-3.

Table 2-3: Targets and measurement criteria

Environmental Objectives	Target	Measurement Criteria
1. Avoid the introduction of new species of feral predators into the PMA	• No new species of feral predator species detected in the PMA. • Compliance with the Biosecurity Act 2014 (Qld) (Biosecurity Act).	• Species of feral predators recorded in the PMA, relative to Year 1 baseline data collected (refer to Section 6.2) • No feral predator related non-compliance with Biosecurity Act.
2. Progressively reduce the abundance of feral predators identified within the PMA	• A reduction in feral predator activity within the PMA relative to preceding monitoring interval. • Successful design and implementation of control program • Compliance with the Biosecurity Act.	• Relative abundance – for each feral predator, the percentage of camera trap sites[1] from which at least one camera trap detection was recorded • Activity level[2] - is a ratio of detections to survey effort – namely, number of detections per 100 camera trap nights (scaled to number per 100 trap nights for comparability[3]
3. Implement best practice control techniques to minimise impacts on non-target species (native species).	• Control techniques are properly implemented and there are no side effects that result in injury or death of MNES	• Records of feral predator management activities being implemented as per FPMP • Interactions with native species recorded and included in reporting
4. Key learnings from implementing the program will be shared with key stakeholders and pest management experts.	• Key learnings included in the annual monitoring report	• Monitoring report provided to key stakeholders
5. Minimise exposure of MNES to feral predators during construction	• Management actions, monitoring and reporting requirements of the Gawara Baya Vegetation Fauna Management Plan (VFMP) are implemented	• Refer to VFMP
6. No Sharman's rock wallaby individuals killed by feral predators for the duration of approval	• Control techniques are properly implemented and there are no side effects that result in death of Sharman's rock wallaby	• Declining trend in Sharman's rock wallaby relative abundance resulting from feral predators

[1] For example, if there are 26 traps in place for 14 nights – total trap nights = 364
[2] The estimation of relative abundance inferred from camera data, assumes a positive relationship between the lower rate of detection and a lower number of animals at a site
[3] To account for less or more trap nights at different monitoring campaigns – for e.g., camera failure, access issues, potential requirement to increase number of monitoring sites in response to monitoring results.

2.2 Relationships with Other Documents

The FPMP is to be read in conjunction with the other relevant management plans as to ensure avoidance and minimisation of impacts during the construction and operation of the windfarm. Table 2-4 lists the relevant documentation and relevance to feral predator management.

Table 2-4: Relationship with other documents

Documents	Overview
Vegetation and Fauna Management Plan	• Requirement of Condition 15 of the State Development Permit • To ensure a holistic approach to managing all fauna species onsite to protect from feral predator interaction, as far as reasonably practicable.
Clearing Vegetation Management Plan	• Requirement of Condition 18 of the State Development Permit • Outlines the procedures for storing cleared vegetation to minimise impact to retained vegetation and minimise bushfire risk.
Construction Environment Management Plan	• Requirement of Condition 28 of the State Development Permit • Includes a requirement to provide appropriate weed and pest management in accordance with the Queensland Department of Agriculture and Fisheries principles of pest management.
Report on Sharman's rock wallaby population estimate and observations	• In 2024, dedicated surveys were undertaken to identify individuals and their associated rock pile habitats. • The ERM report attached at Appendix C (ERM, 2025) contains a profile of the Sharman's rock wallaby, previous surveys, a description of the dedicated field surveys undertaken and an estimate of the population size and age structure of Sharman's rock wallaby within 500m of any proposed clearing. • The previous surveys will inform the focus of FPMP management
Revegetation Management Plan	• All areas cleared for development that are not required for permanent infrastructure are revegetated to reflect the species composition and density of pre-existing vegetation
OMP	• Offset area feral predator management intent is for implementation to be coordinated with Gawara Baya feral predator control (i.e., as described in this FPMP). • Detail how any proposed offset site will be protected, and ecological benefits maintained, at least until the expiry of the approval.

3 Methodology

3.1 Literature Review

The FPMP monitoring program and control strategy has been developed through undertaking a literature review of:

- Ecology, prevalence and impacts of feral predator species recorded in the Project Area during previous ecological field surveys
- Terrestrial vertebrate monitoring techniques and control measures.

Relevant documentation and literature consulted includes:

- Peer-reviewed scientific literature regarding pest management strategies, species-specific guidance for breeding patterns, impacts, prevalence, distributions, and measuring relative abundance (Mitchell and Balogh 2007, Moseby, Stott and Cris 2009, Meek, Ballard and Fleming 2012, Legge, et al. 2018, Raiter et al. 2018, Lavery et al. 2025, Stobo-Wilson et al. 2020)
- Terrestrial vertebrate monitoring guidelines and techniques (Johnston and Algar 2020, Allen and Harris 2020)
- Relevant Threat Abatement Plan established by the Department of Climate Change, Energy, the Environment, and Water (DCCEEW)
- National Wild Dog Action Plan (NWDAP) 2020-2030 (AWI 2020).

The most appropriate monitoring and control techniques were chosen based on the above documentation for the relevant feral species – cats, wild dogs, and foxes and the environmental features of the PMA.

3.2 Desktop Assessment

A desktop assessment was undertaken to identify feral predator movement corridors or gathering places, which would better inform the design of the monitoring and control program. The desktop assessment involved an initial GIS task was undertaken to identify any relevant geographic features in the PMA and surrounding landscape. A 1 km buffer distance was applied to incorporate movement corridors which may be used by feral predators to access the Project. Movement corridors include existing roads, access tracks, rail lines, watercourses, cleared easements, fence lines, and future linear infrastructure clearing. Due to data availability, not all potential movement corridors are identified in Figure 3-1, for example the location of fence lines and every dam.

OAK HILLS ROAD
Garrawalt Creek
Stony Creek
Ironstone Creek
Blue Water Creek
Poverty Creek
JOHNNYS ROAD
GRANTS ROAD
WATTS ROAD
LAGOON CREEK ROAD
Michael Creek
BOUNDARY ROAD
MOUNT FOX ROAD
THE CRATER ROAD
KNUCKLEDOWN ROAD
Black Cow Creek
KILGLOONEY ROAD
LAVA PLAINS MOUNT FOX ROAD
Creek
KANGAROO HILLS ROAD
KALLANDA ROAD
Four Mile Creek

Legend

- Project Area
- Predator Management Area
- Proposed Offset Area
- Proposed Clearing Area
- Cadastre
- Cat
- Wild dog
- Dams

Movement Corridors

- Local Road
- Unconstructed Road
- Watercourse (order 3 or greater)

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 55
Date: 08/10/2025
Created By: CS / MB
Drawing Size: A3
0 0.75 1.5Km
1:75,000

F3.1 Feral Predator Sightings and Potential Movement Corridors

Gawara Baya Wind Farm
Feral Predator Monitoring
Client: Windlab

ERM

0722230_GawBaya_FPM_R3.aprx

3.3 LANDHOLDER CONSULTATION

Consultation and collaboration with the landholder throughout the feral predator management process, and for the duration of the lifecycle of the Project is critical to ensure a holistic and coordinated approach to feral predator control across the area. In instances where the Landholder's preferred Feral Predator Management techniques or methods do not meet best practice requirements, Windlab will implement alternative methods within the PMA and other Project Areas as required to meet the FPMP objectives. The management approach to feral predators as defined in the plan, as well as associated management plans such as the OMP, and Farm Management Plan are succinct in their objectives to monitoring, management and reduction in the abundance of feral predators as far as reasonably practicable.

4 MNES Vulnerable to Predation

Numerous listed threatened species under the EPBC Act, that occur within the Project Area, are known to be threatened by the predation by feral predators, including Sharman's rock wallaby (*Petrogale sharmani*), koala (Phascolarctos cinereus), greater glider (northern) (*Petauroides minor*) and greater large-eared horseshoe bat (*Rhinolophus robertsi*). While other MNES values may occur in the Project Area, the Conservation Advices or Recovery Plans do not list feral predators as a known threat, and therefore, these are not discussed below.

Table 12-2 in Appendix A provides a summary of the relevant MNES values and their risk from predation by feral species.

4.1 SHARMAN'S ROCK WALLABY

Sharman's rock wallaby (*Petrogale sharmani*) is known to occur within the Project Area and is threatened by the predation of feral predators, particularly feral cats (TSSC, 2016a). According to the species conservation advice (TSSC, 2016a), the predation by feral cats is not demonstrated by primary evidence; however, is plausible based on data for other *Petrogale* spp. The species is not thought to be threatened by other feral predators.

Habitat for the Sharman's rock wallaby is present across the Project Area, in the form of occupied breeding habitat, foraging habitat and dispersal habitat (ERM, 2025). Targeted Sharman's rock wallaby field surveys within the Project Area confirmed the presence of the species in an abundance, with a minimum 8 – 14 individuals per breeding habitat. The abundance of Sharman's rock-wallaby has therefore conservatively been estimated to be between 200 – 330 individuals across the breeding habitats surveyed within the Project Area, with estimates undertaken in 2024 (ERM, 2025).

4.2 KOALA

Koala (*Phascolarctos cinereus*) is known to occur within the Project Area. The koala is threatened by the predation by wild dogs (DAWE, 2022). Wild dogs are a leading cause of death and injury to koalas within and adjacent to peri-urban and residential areas (DAWE, 2022).

Habitat for the koala is present within the Project Area including foraging and breeding habitat and dispersal habitat. Within these habitats, koalas utilise the ground to move between trees and habitat types, posing a risk of attack by wild dogs.

4.3 GREATER GLIDER (NORTHERN)

Greater glider (northern) (*Petauroides minor*) has been recorded within the Project Area. Habitat for the greater glider predominantly consists of eucalypt forests and woodlands for denning, foraging and dispersal functions. Greater glider (northern) is vulnerable to predation by feral cats, with remains of the species found in stomachs of feral cats (DCCEEW, 2022). It is noted that the predation by feral cats is unclear whether cats are the leading cause to killing before ingestion, or whether they are consumed as carrion (DCCEEW, 2022). Regardless, feral cats are listed as a threatening cause to greater glider (northern) across parts of the species range.

4.4 GREATER LARGE-EARED HORSESHOE BAT

Greater large-eared horseshoe bat (*Rhinolophus robertsi*) has been recorded in association with major watercourses and within the wetter areas of the Project Area. Feral cats are listed as a threat factor within the species Conservation Advice (TSSC, 2016c); however, the threat has not been demonstrated and is noted for the possibility of predation at roost sites and/or at roost entrances.

5 Target Pest Species

A key component of the program to manage feral predators will be to first understand how these may be impacting Project Area fauna, particularly MNES species. Feral predators, including feral dogs and cats that are known to occur (or have potential to occur, i.e., foxes), in the Project Area may pose threats to native wildlife (including MNES species[4]) either via predation or degradation of habitat. Description of each feral predator's ecology / behaviour and the threats they pose is detailed in the section below.

5.1 TARGET SPECIES DESCRIPTIONS

5.1.1 Cats

5.1.1.1 Ecology and behaviour

Feral cats are individuals that are not kept and fed by humans, with a true feral cat not reliant on humans at all and able to obtain all food and shelter from the natural environment (DAF 2023). Feral cats differ little in appearance from domestic cats, however feral individuals can display increased overall muscle development, especially noticeable around the head, neck, and shoulders, which gives the animal a more robust appearance (DAF 2023).

Feral cats are widely distributed through Queensland and have a near ubiquitous presence throughout Australia (Legge et al. 2017). Individuals are known to inhabit most terrestrial environments including forests, woodlands, grasslands, wetlands, and arid areas (DCCEEW 2023). They are highly adaptable animals that can survive and reproduce in all habitats, with few environmental factors limiting their distribution (Johnston and Algar 2020).

The species are opportunistic predators known to take many native animals as prey, including mammals, birds, reptiles, amphibians, and fish (DAF 2004). Although considered predominantly nocturnal, some feral cats may be crepuscular (active during the twilight hours), or diurnal (active during the day) in colder areas or periods of the year. During the day, time is spent in burrows, logs, and rock piles. Home ranges for cats can vary greatly from 0.5km^2 to 132km^2 (Moseby, Stott and Cris 2009). These ranges can be dependent on several factors including sex, vegetation community, availability of suitable den sites, access to food, and geographic features; however, even within similar

[4] Noting there may also be predation on native species by native fauna, e.g., wedge-tailed eagle

conditions there can be a high intra-specific variability in activity patterns and home ranges (Moseby, Stott and Cris 2009). Home ranges within Gawara Baya are expected to be at the smaller end of the range due to availability of resources.

During periods of hunting, cats are more likely to be solitary; however, at other times they will display a degree of social interaction which peaks during the breeding period. Male cats are sexually mature at 12 months, with females capable of reproduction at seven months (DAF 2023). Breeding instinct is triggered by the increasing length of daylight and consequently litters are less frequent in winter. Most reproduction occurs during the spring and summer months and is generally limited to two litters per year (DAF 2023). Annually or under ideal conditions an adult female can produce up to three litters—each of usually four kittens but varying from two to seven. The female's ability to bear litters does not decrease with age, so reproduction continues for the course of her life (DAF 2023).

Feral cats do not show as strong an association with roads and tracks for movement as wild dogs do, with a 2018 Great Western Woodlands study (Raiter et al 2018) recording cats in only 21% of camera trap images along roads.

5.1.1.2 National and regional threat context

Under the Biosecurity Act, the feral cat is a Category 3, 4 and 6 restricted invasive animal and must not be moved, fed, given away, sold, or released into the environment. The Biosecurity Act requires everyone to take all reasonable and practical measures to minimise the biosecurity risks associated with invasive animals under their control.

Predation by feral cats has been listed as a key threatening process under the EPBC Act. Presently, feral cat populations cover 99.8% of Australia (Legge et al. 2017) and kill an estimated 272 million birds, 470 million reptiles, and 815 million mammals yearly (Johnston 2020). Consequently, the survival of over 100 native species is at risk (DCCEEW 2023). Feral cats are carnivorous, predominantly solitary, and nocturnal hunters who prey on species smaller than themselves, including small mammals, birds, reptiles, amphibians, fish, and insects.

Current estimates suggest a population fluctuation of 1.4 – 5.6 million feral cats in non-urban areas of Australia (Legge, et al. 2017). This variation is a consequence of climatic disparity as widespread and extensive rainfall will lead to an increase in population, whereas extended dry periods will lead to a decline. The median population is likely around 2.1 million (Legge et al. 2017).

Through predation, feral cats can cause disruption to ecosystems and are implicated in the elimination of some species from remote areas such as islands. They are frequently infected with the diseases toxoplasmosis (which can be transmitted to domestic stock, native animals and humans) and sarcosporidiosis. Feral cats also have the potential to act as a rabies vector or reservoir should the disease enter Australia (DAF 2004).

5.1.2 Wild Dogs

5.1.2.1 Ecology and behaviour

The predominate environmental threat caused by wild dogs is predation. Mostly carnivorous, they prefer to prey on smaller mammals (under 15 kg) but will go after smaller livestock such as sheep, goats, calves, or small cattle. Additionally, they will prey on birds and reptiles and scavenge on carrion, vegetation, fruits, eggs, and rubbish. They will consume up to 20% of their body weight in food and 12% in water/fluids, although they can survive several days without water (Allen and Harris 2020). An additional threat is disease transmission which includes distemper, hepatitis, hydatids, mange,

Neospora caninum, parvovirus, and sheep measles (Allen and Harris 2020). Notably effecting livestock, transmission of these diseases can also occur to native species and humans.

Wild dog breeding often occurs during May and April with a gestation period of two months and a litter size between 1-11 pups (Allen and Harris 2020). These periods can change depending on regional, social, and climatic conditions. Individuals tend to be more active during the start of the breeding season, and least active in late winter as they are raising pups (Allen and Harris 2020).

Dogs are known to travel significant distances, more than 100 km in a week (Mifsud 2021) but tend to stay within a home range which can vary from hectares to kilometres (Allen and Harris 2020). Home range extent tends to decrease with the availability of resources. Resources at Gawara Baya would be expected to be reasonably plentiful, and home ranges of wild dogs likely smaller (i.e., not 100's km^2). Certain features in the environment can be the focal points in the home range, notably, waterbodies, den sites, or carcasses.

Wild dogs are most active during the periods around dusk and dawn, and moderately active during the evening (Allen and Harris 2020). A proportion of the population are known to be active during the day; however, this is dependent upon region, temperature, wild dog abundance, and availability of resources. When travelling, they prefer to use natural features which allow for the easiest means of movement, notably ridges, dry watercourses, tree lines, stock routes, roads, or railway lines (Allen and Harris 2020).

5.1.2.2 National and regional threat context

At present there is no nationally approved Threat Abatement Plan for wild dogs; however, there are nationally agreed upon strategies and frameworks; the Australian Pest Animal Strategy and the NWDAP. The NWDAP was developed, in accordance with the Australian Pest Animal Strategy and the Intergovernmental Agreement on Biosecurity, to define best practice management and ensure a national coordinated effort is undertaken.

Under the Biosecurity Act, feral dogs are a Category 3, 4 and 6 restricted invasive animal and must not be moved, fed, given away, sold, or released into the environment. The Biosecurity Act requires everyone to take all reasonable and practical measures to minimise the biosecurity risks associated with invasive animals under their control. Dogs are considered a known or potential threat to at least 14 endangered or vulnerable native mammals, reptiles and bird species listed under the EPBC Act 1999 (AWI 2020).

Wild dogs are conservatively estimated to cost Australia's economy between $64 million and $111 million annually through predominantly lost livestock by predation and disease transmission (McLeod 2016).

5.1.3 Foxes

5.1.3.1 Ecology and behaviour

Foxes are adaptable to a range of habitats, including urban, forested and arid regions (DSEWPC 2010). They are widespread across Queensland, with recorded sightings in a vast majority of the State since the mid-1980s (Gentle 2006). However, they are not typically found in the northern most tropical areas and distribution fluctuates according to climatic conditions and prey or predator abundance (Gentle 2006). This species is most abundant in low density woodland and agricultural regions, due to food and shelter availability (DSEWPC 2010).

Foxes are scavengers, primarily relying on a carnivorous diet. Although they may also feed opportunistically on fruits and insects (DAF 2024). Prey species include rabbits, rodents, birds and many small marsupials (DAF 2024). Foxes are typically solitary hunters and most active during the night. They then rest and shelter in dens during daylight hours (DAF 2024).

5.1.3.2 National and regional threat context

Since foxes were introduced to Australia in the 1850s, they have continued to spread across 76% of the nation, including more recent introduction to Tasmania (Centre for Invasive Species Solutions 2011). The far tropical north and some islands are the only the exceptions to this spread (National Land & Water Resources Audit 2008).

Foxes are a significant economic and environmental threat, particularly in high concentrations. Predation on lambs, kids and poultry can be detrimental to regional agriculture (Gentle 2006). Foxes can also cause damage to infrastructure, such as irrigation systems and fruit crops (Gentle 2006). The estimated costs for these impacts are $227.5 million per year (Centre for Invasive Species Solutions 2011).

Under the Biosecurity Act, foxes are a Category 3, 4, 5 and 6 restricted invasive animal. Fox predation is listed under the EPBC Act as a key threatening process. Whilst it is difficult to establish the level of fox predation on native species, many endangered species within Queensland are under known or perceived threat from foxes (Gentle 2006). Foxes are also prominent disease vectors, posing risk to humans, native wildlife and pets (Centre for Invasive Species Solutions 2011). Disease vectors can also include the spread of plant pathogens, like phytophthora cinnamomic, which cause plant dieback.

6 Feral Predator Monitoring Surveys

To effectively track the success of the management actions and the progress towards management objectives, a comprehensive monitoring and evaluation program of feral predators at Gawara Baya has been developed.

The following monitoring program identifies a baseline of feral predator presence and outlines ongoing monitoring to measure the success of the FPMP implementation. A key component of the program to manage feral predators will be to first understand how these may be impacting Project Area fauna, in particular MNES species. Establishing a baseline of feral predator activity prior to implementing control measures will inform the control program design and allow the success of the program to be measured. All programs will be undertaken by qualified ecologists to ensure appropriate methods are being implemented.

6.1 Preliminary Feral Predator Baseline (Year 0)

To provide insight into feral predator activity within the PMA prior to construction commencing, with a focus of Sharman's rock wallaby breeding habitat, a preliminary baseline survey has been undertaken by ecological consultants ERM. The preliminary baseline (Year 0), and other surveys for feral fauna species completed during the Commonwealth approvals process, has been used to inform the design of the feral predator monitoring program (refer to Section 6.2) and provide an understanding of the existing threat to MNES values within the PMA.

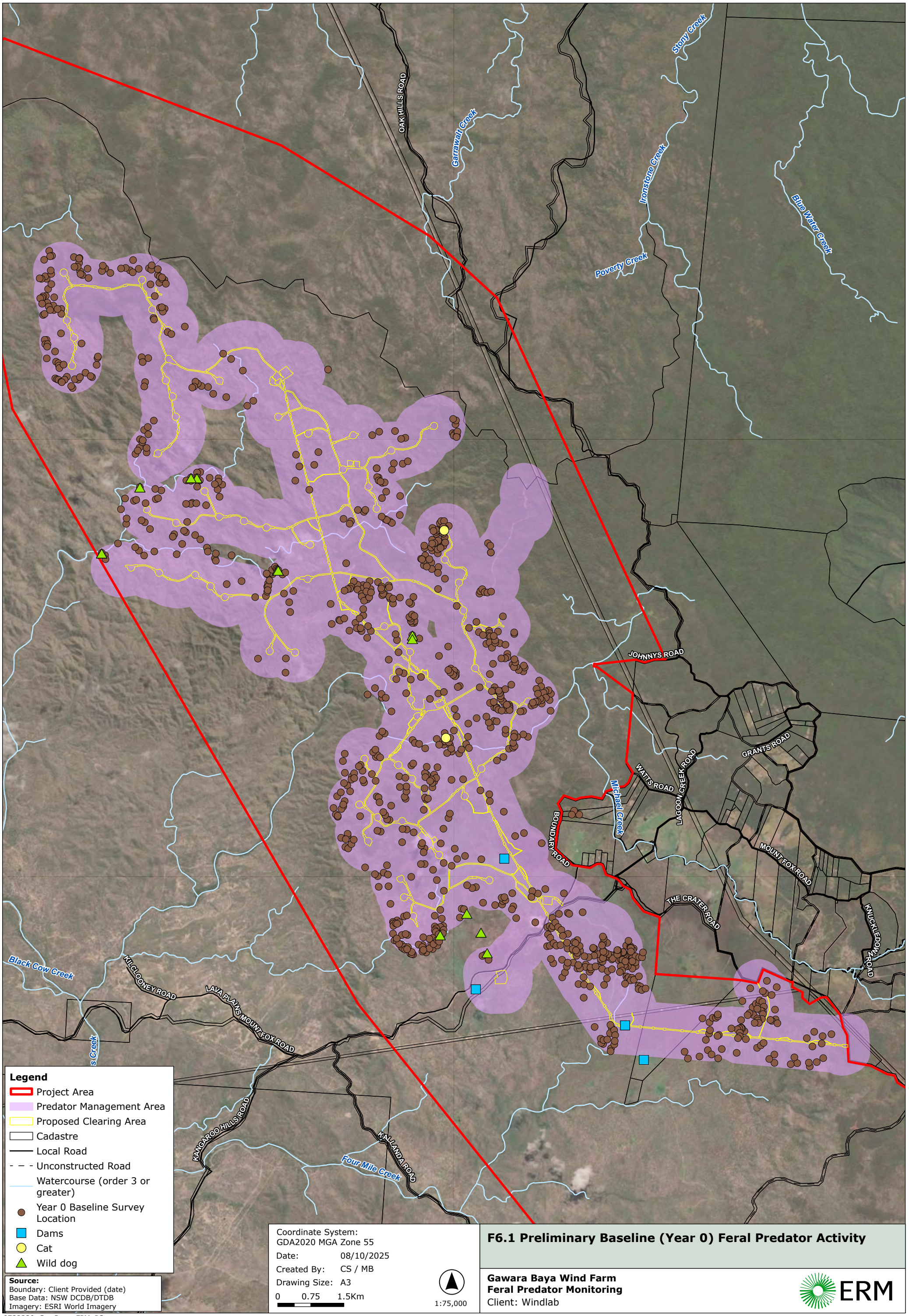
Both direct and indirect evidence of feral predators was observed during the preliminary field surveys in the Project Area. A total of 1,025 feral predator assessments were conducted, by suitably qualified field ecologists (ERM), throughout the Project Area during the 18 surveys. The field survey effort is detailed in Table 6-1 below.

Table 6-1: Preliminary feral predator baseline survey effort

Survey Dates	Summary of Effort
26 February – 1 March 2024	Four ecologists. 5-day survey (Total 190 hours)
11 – 15 March 2024	Six ecologists. 5-day survey (Total 300 hours)
24 – 28 March 2024	Four ecologists. 5-day survey (Total 190 hours)
2 – 5 April 2024	Five ecologists. 4-day survey (Total 200 hours)
8 – 12 April 2024	Four ecologists. 5-day survey (Total 190 hours)
15 – 19 April 2024	Four ecologists. 5-day survey (Total 190 hours)
29 April – 3 May 2024	Eight ecologists. 5-day survey (Total 400 hours)
10 – 15 June 2024	Eight ecologists. 6-day survey (Total 480 hours)
17 – 21 June 2024	Eight ecologists. 5-day survey Total 400 hours)
24 – 26 June 2024	Nine ecologists. 3-day survey (Total 200 hours)
1 – 5 July 2024	Six ecologists. 5-day survey (Total 300 hours)
15 – 19 July 2024	Eight ecologists. 5-day survey (Total 400 hours)

Out of the 1,025 assessments conducted, six returned a positive detection (direct and/or indirect) of feral predator species. Dingoes/wild dogs and feral cats were recorded within the Project Area, and more specifically, the PMA. Additional evidence of predation on macropod species (carcass found), and potential European red fox scats, was also observed in the PMA; however, positive identification of the carcass and scats could not be confirmed.

Figure 6-1 illustrates the results of the preliminary baseline survey. This includes the locations of the feral predator surveys completed and where feral fauna species (including feral predators) observed, or signs of presence were recorded.



0722230_GawBaya_FPM_R3.aprx

6.2 Feral Predator Monitoring Program (Year 1 Onwards)

To measure the performance of feral predator management at Gawara Baya, a repeatable survey methodology has been developed with consideration of the Year 0 indicative baseline survey. The Year 1 Gawara Baya Feral Predator Monitoring Program will measure feral predator activity (and report as relative abundance for each target pest species across the Project Area) prior to the implementation of feral predator management or the commencement of clearing and construction. Successive feral predator monitoring after species management and site development will be assessed against the preceding monitoring event.

6.2.1 Monitoring Objectives and Measurement Criteria

To allow the development of a robust feral predator monitoring program, the following objectives are nominated:

1. Avoid the introduction of new species of feral predators into the PMA, relative to baseline data collected
2. Progressively reduce the abundance of feral predators identified within the PMA relative to baseline data collected.

An overview of the feral predator monitoring program is provided in Table 6-2.

Table 6-2: Feral predator monitoring overview

Monitoring aspect	Detail
Feral predator monitoring sites	35 indicative targeted feral pest baseline monitoring sites (Feral Predator monitoring sites) were selected which intersected a movement corridor, or are in proximity to a dam, and maximised separation between locations (refer Figure 6-2). As Feral Predator monitoring sites will include baited camera traps, all Feral Predator monitoring sites are placed > 450 m from Sharman's rock wallaby occupied breeding habitat to minimise risk of attracting feral predators to these sensitive areas. The additional 30 camera trap sites at Sharman's rock wallaby occupied rock piles may also detect feral predators. This data will be utilised as part of the total feral predator monitoring program.
Monitoring techniques	Several methods could be utilised throughout the PMA; however, the optimal option for ongoing monitoring for the target species (cats, dogs and foxes) is deploying baited camera traps, which have proven successful at capturing the targeted animals at the Project Area during previous ecology surveys.
Feral predator abundance	Feral predator abundance will be assessed and monitored by relative abundance determined from camera trap imagery. Relative abundance will be calculated as the ratio of detections to survey effort (i.e. number of detections per 100 camera trap nights). Relative abundance has been shown to provide a more precise baseline than estimates of absolute abundance, as demonstrated by Lavery et al. (2025) and Stobo-Wilson et al. (2020). For consistency, only the data from the baited camera traps deployed at the 35 Feral Predator monitoring sites will be used for relative abundance calculations, as incorporating data from the un-baited cameras deployed at Sharman's rock wallaby occupied rock piles may lead to less reliable estimates. Presence/absence data from these additional 30 camera trap sites will still be utilised, particularly in regard to triggers and corrective actions for feral predator management (see Table 9-5).

Monitoring timing	Following the baseline survey, annual monitoring surveys will be undertaken during construction and for the first five years following completion of construction. After the initial monitoring period, feral predator abundance monitoring will be undertaken every 5 years until the rehabilitation criteria, required by condition 56 of the approval, have been met. However, if a survey year finds the average feral predator relative abundance equal or greater than the baseline survey average, annual feral predator monitoring surveys will be undertaken for the proceeding five years.
Feral predator management	Where feral predators are detected in areas previously uninhabited by feral predators, or have increased in abundance, or in greater abundance, as determined by baseline monitoring, strategic treatment of feral predators will occur as a priority in these areas as part of the feral predator management program.

6.2.2 Monitoring Techniques

In order to increase the likelihood of a successful monitoring program, consideration is given to temporal and spatial factors in the program design including:

- Species behaviours and ecological preferences of target species
- The logistical limitations, especially access at a large, remote, undeveloped site
- The monitoring cost relative to the likelihood of capturing a presence record
- Monitoring objectives and timeframes.

Table 6-3 below outlines a range of monitoring techniques options and benefits and limitations of the method for use at Gawara Baya.

Table 6-3: Feral predator monitoring program design considerations

Method	Applicable species	Positives	Negatives
Camera trap (including baited camera trap)	All	• Applicable to all species, but highly applicable for dogs (Verbeek and McLeod 2018), and good for capturing more elusive species like cats (A Cole Burton 2015, Fisher et al. 2015) • Is more sensitive to population changes relative to the other monitoring methods • A strong repeatability allowing for improved long-term assessment results • Can be deployed for a longer period and in more difficult to access regions • Minimal disturbance to non-target species	Camera trap • Requires one-off return to site for collection • Possibility of technical failure Baited camera trap • Requires return to site for collection and to relay bait • Possibility of technical failure • Can lead to overinflated counts
Acoustic camera trap	All	• Applicable to all species, but highly applicable for dogs (Verbeek and McLeod 2018) • Is more sensitive to population changes relative to the other monitoring methods • A strong repeatability allowing for improved long-term assessment results • Has a greater chance of capturing elusive species such as cats (Fisher et al. 2015) • Can be deployed for a longer period and in more difficult to access regions • **Minimal disturbance to non-target species**	• Can lead to overinflated counts • Possibility of technical failure • Requires more battery capacity
Baited traps	All	• Requires very frequent checks to ensure ethical treatment of anything trapped	• Can elevate stress levels in species captured and any of its dependents • Can impact non-target predator species

Method	Applicable species	Positives	Negatives
Spotlighting	Cats and foxes	• Can cover a greater area than a camera alone • For foxes, can be done at any time of night (Saunders and McLeod, 2007)	• Due to the high mobility of the species, it may be difficult to spot or confirm the sighting of a species • Limited use in highly vegetated areas • Must be done overnight and limits the survey time • Safety and WHS considerations for observers
Sand pads	All	• Can be laid on potential tracks to identify species transience	• Requires frequent checks and resetting • Difficult to move and place • Can be impacted by weather or non-target species

Several methods could be utilised throughout the PMA; however, the optimal option for an ongoing monitoring for the target species (cats, dogs and foxes) is deploying baited camera traps, which have proven successful at capturing the targeted animals at the Project Area during previous ecology surveys. Infra-red camera traps are considered most appropriate as they have a lesser effect on animal behaviours compared with white-flash cameras (Meek, Ballard and Fleming 2012). Passive infra-red (PIR) sensors aid in identifying when a moving heat source moves across the PIR thereby triggering the photo. Detailed considerations for setting of cameras are outlined in *Guide for camera trapping wild dogs, foxes and feral cats* (DPI 2018).

The additional monitoring methods listed in Table 6-3 could be undertaken later in the monitoring program where specific monitoring efforts may be required to identify individuals or den locations.

6.2.3 Spatial Design

6.2.3.1 Feral predators

As highlighted in Section 6.2.2 above, the recommended (Year 1 and onwards) feral predator monitoring technique for Gawara Baya is through the installation of camera traps. The spatial design for the installation of camera traps for Year 1 baseline monitoring has been informed by:

- Ecology and behaviour of the target species to maximise capture (species movement corridors, areas of congregation/habitat)
- The logistics of establishing a baseline of predator activity prior to construction of access tracks
- Location of Sharman's rock wallaby occupied breeding habitat.

Movement corridors and areas of congregation for the target species include roads, tracks, watercourses, dams and permanent water sources. Wild dogs show a strong preference for moving along roads (Raiter et.al 2018). Cats have a lower preference than wild dogs for movement along roads, however the chances of observing cat activity along roads is greater than off-road (Raiter et. al 2018). Camera placement will therefore be located along existing tracks, watercourses where they intersect existing tracks, and other sources of permanent water (e.g., water troughs and dams). Moreover, these corridors allow for increased accessibility for placement of cameras. DPI (2018) recommend that a robust monitoring program will have at least 20 – 30 camera traps, spaced ~ 1 km apart, depending on the question being asked.

To design the Year 1 baseline monitoring program, an initial GIS task was performed placing a grid with a cell size of 1 km^2 over the PMA. From this grid, 35 indicative baseline monitoring sites (Feral Predator monitoring sites) were selected which intersected a movement corridor, or are in proximity to a dam, and maximised separation between locations[5] (refer Figure 6-2). As feral predator monitoring will include baited camera traps, all monitoring sites are placed > 450 m from Sharman's rock wallaby occupied breeding habitat to minimise risk of attracting feral predators to these sensitive areas. Several monitoring sites have been placed between 500 m – < 1 km of Sharman's rock wallaby occupied breeding habitat monitoring sites to inform Sharman's rock wallaby monitoring data analysis. For further detail on monitoring Sharman's rock wallaby occupied breeding habitat, refer Section 7. Additionally, the location of monitoring sites will be stratified according to their position within the landscape and environmental characteristics that may influence pest presence, and detectability. By grouping locations with similar environmental characteristics, the variability of

[5] Where possible, i.e., targeting existing roads, within 500m buffer to development footprint and >450m to occupied Sharman's rock wallaby habitat

relative abundance within each assessment group will be reduced, resulting in more precise relative abundance with smaller confidence intervals.

The GPS co-ordinates of the monitoring sites are provided in Appendix D. While these coordinates are indicative, the location of Feral Predator monitoring points established in the field are to follow the spatial guidelines set out in the FPMP, in particular, as they relate to Sharman's rock wallaby occupied breeding habitat constraints. Additional or alternate Year 1 baseline Feral Predator monitoring sites may be selected through ground-truthing. This may identify water troughs, dams and permanent waterholes that are not immediately evident through aerial imagery review.

On-going Feral Predator monitoring sites (i.e., after completion of construction) will mirror the Year 1 baseline monitoring sites. Where on-going monitoring indicates an increase in feral predator presence, additional monitoring sites may be required (refer Section 9.3.1). Additional monitoring sites may also include:

- Newly constructed access tracks to monitor for use by feral predators as movement corridors
- 500 m – < 1 km from Sharman's rock wallaby occupied breeding habitat monitoring sites (refer Section 7).

6.2.4 Timing and Frequency

To establish a feral predator activity baseline (Year 1), monitoring is required to be undertaken prior to the commencement of Garawa Baya construction, including any vegetation clearing. Ongoing monitoring surveys will be required annually throughout Years 1-5. After the initial monitoring period, feral predator abundance monitoring will be undertaken every 5 years until the rehabilitation criteria, required by condition 56 of the approval, have been met. However, if a survey year finds the average feral predator relative abundance equal to or greater than the baseline survey average, annual feral predator monitoring surveys will be undertaken for the proceeding five years.

Any monitoring survey efforts must be undertaken post control measures being actioned, as to not unduly fluctuate the survey numbers. The duration of the monitoring program should be between two and four weeks (Kays et al. 2011), noting improved results can come from leaving the cameras for longer.

7 Sharman's Rock Wallaby Monitoring

7.1 Background

A desktop review and rock pile mapping Project has been completed to identify potential complex rock piles and breeding habitat for Sharman's rock wallaby (desktop rock pile mapping). Under Condition 21 of the Commonwealth Approval, additional field surveys were required to ground-truth desktop rock pile mapping within 500 m of the proposed clearing to validate location of complex rock piles and assess if they are currently being utilised by Sharman's rock wallaby (i.e., map 'occupied breeding habitat'). Further detail is provided in Appendix A. The ground-truthing assessment identified 30 occupied rock piles that provide breeding habitat within a ~ 500m buffer of the proposed clearing area.

7.2 Monitoring Objectives and Measurement Criteria

In accordance with Condition 63i) iii), ongoing monitoring for Sharman's rock wallaby individuals will be undertaken, as outlined within the FPMP. To allow the development of a robust monitoring program, the following Sharman's rock wallaby monitoring objectives are nominated:

1. Detect any changes in the presence and abundance of Sharman's rock wallaby at 'occupied breeding habitat' within the PMA through the construction and operation phases of Gawara Baya
2. Understand if changes in presence and abundance at occupied breeding habitat within the PMA may be attributable to feral predators and/or factors other than feral predators.

Factors other than feral predator abundance increase that may influence the continued presence of Sharman's rock wallaby at occupied breeding habitat include habitat condition and human presence. To understand if a change in relative abundance can be attributed to these factors, Sharman's rock wallaby monitoring will include habitat condition monitoring.

As all proposed clearing is located a minimum of 450 m from occupied rock piles and a number of construction impact mitigation measures specific to Sharman's rock wallaby habitat have been identified in the VPMP (Windlab 2025), the potential for human activity as a causal factor is considered low. As a precaution, actions with regards to human presence are considered within Table 9-5.

An overview of the Sharman's rock wallaby monitoring program is provided in Table 7-1.

Table 7-1: Sharman's rock wallaby monitoring overview

Monitoring aspect	Detail
Sharman's rock wallaby monitoring site	Twenty-four occupied rock piles have been selected for on-going monitoring, herein referred to as the Sharman's rock wallaby Project monitoring sites (refer Figure 71 and Appendix D). A total of 30 camera traps will be used, with at least two camera traps at six of the larger rock piles (> 0.5 ha in area) and a single camera trap at 18 rock piles.
Monitoring timing	Following the baseline survey, annual monitoring surveys will be undertaken during construction and for the first five years following completion of construction. After the initial monitoring period, Sharman's rock wallaby abundance monitoring will be undertaken every 5 years until the rehabilitation criteria, required by condition 56 of the approval, have been met. However, if a survey year finds at any of the clusters of occupied rock piles* either: • the relative abundance is lower than the baseline survey; then annual Sharman's rock wallaby abundance surveys will be undertaken until the relative abundance is equal to or greater than the baseline survey, or • a feral predator is detected at a relevant occupied rock pile (or cluster of occupied rock piles*), then annual Sharman's rock wallaby abundance surveys will be undertaken at the relevant rock pile (or cluster of rock piles*) until no feral predator(s) are detected.
Sharman's rock wallaby presence and abundance	Includes observations of individuals in the field, signs of presence, or camera trap captures (refer Section 7.4 for methodology).
Sharman's rock wallaby habitat condition	Condition of foraging habitat within 220 m Sharman's rock wallaby monitoring site (refer Section 7.4.2 for methodology). For the purposes of the habitat condition surveys, foraging habitat is considered to be grassy woodlands and open forest where a ground layer of native grasses and forbs provide food resources. For each Sharman's rock wallaby monitoring site, there will be an associated habitat condition survey site.
Feral predator presence	Record signs of feral predator presence and captures on camera traps (refer Section 6.2). Where feral predators are detected in areas previously uninhabited by feral predators, as determined by baseline monitoring, strategic treatment of feral predators will occur as priority in these areas as part of the feral predator management program.

*Clusters of rock piles as described in Section 7.3 below and illustrated on Figures F7.1.02 - F7.1.11

7.3 SPATIAL DESIGN

A total of 24 occupied rock piles have been selected for the monitoring program, as shown in Figure 7-1 and specific locations detailed in Appendix D. Of the 30 occupied rock piles present within the Project Area, 24 were selected as the required number for representative sampling (with 95% confidence level and ± 10 % margin of error). Occupied rock piles not selected for monitoring are within very close proximity to those that are, and as such relative abundance changes in these occupied rock piles will be represented by those that are monitored.

While indicative Project monitoring locations are not proposed on all separate occupied rock piles, the proposed Sharman's rock wallaby Project monitoring sites have been strategically selected based on their spatial distribution across the landscape. That is, each 'cluster' of rock piles will be monitored, with stratification required to maximise precision of relative abundance. For the purpose of the monitoring program, any selected monitoring rock piles that fall within a continuous merged 450 m buffer of Occupied SRW Habitat (see Figure 7-1) are considered a 'cluster'. For example: SRW_9, SRW_14, SRW_15, SRW_16 and SRW_17 form one 'cluster'. By contrast, SRW_1 and SRW_2 each form two separate 'clusters'. This approach ensures temporal and spatial coverage that reflects the broader extent of Sharman's rock wallaby breeding habitat and the species' population dynamics in relation to the Project Area. The layout of these monitoring locations is expected to provide an appropriate level of representative sampling, allowing for reliable quantification of Sharman's rock wallaby relative abundance trends and accurate detection of feral predator activity within occupied breeding habitat.

The maps confirm that the monitoring locations are well distributed across the identified occupied breeding habitat. Camera placements within these areas have been designed to maximise detection of Sharman's rock wallaby so that precise measures of relative abundance are obtained. In instances where specific breeding habitat areas are not directly monitored, adjacent monitoring locations provide adequate coverage to detect Sharman's rock wallaby activity. This ensures high confidence in the accuracy of relative abundance and supports the integrity of the overall monitoring program.

As some occupied breeding habitat is along watercourses and some are setback from watercourses, monitoring includes:

- 14 occupied breeding habitat locations with proximity to a watercourse (~100m)
- 10 occupied breeding habitat locations not with proximity to watercourse (> 100m).

Monitoring sites selected also favour sites that are between 500 - < 1km of existing tracks and clearings, to enable for the placement of some Feral Predator monitoring sites within general proximity[6] to Sharman's rock wallaby monitoring sites. Changes in the presence of Sharman's rock wallaby at Sharman's rock wallaby monitoring sites can be analysed against any changes in feral predator activity at Feral Predator monitoring within general proximity.

Locations of monitoring sites will be stratified according to rock pile size, rock pile position within the landscape and any additional environmental characteristics that may influence species presence and detectability. By grouping sites with similar environmental characteristics, the variability in relative abundance measured will be reduced, resulting in more precise relative abundance with smaller confidence intervals.

[6] As close to SRW monitoring site as possible while maintaining a >450 m setback

The locations of monitoring sites are illustrated in Figure 7-1 and detailed in Appendix D. Each monitoring site is to be allocated a unique ID.

7.4 MONITORING TECHNIQUES

7.4.1 Presence Survey Methodology

Presence surveys will be undertaken in accordance with targeted survey guidelines for Sharman's rock-wallaby (Venz and Rowland 2013). The methodology for determining Sharman's rock wallaby presence at Project monitoring sites will be:

1. One or more individuals observed utilising the rock pile (especially if recorded in the middle of the day when Sharman's rock wallaby are likely to be resting). Examples of utilisation behaviour may include use of a complex rock pile outside of peak foraging times, and behaviour traits that are not associated with foraging or dispersal activity (such as periods of resting and social activity); If no individuals are observed then
2. An abundance >10 combination of old and fresh scats; or
3. Tracks or other signs of Sharman's rock wallaby (smooth worn rock ledges and tracks in sand on rock ledges)
4. Surveys should be conducted at dawn and/or dusk, with cooler months increasing the potential for species to be observed while sunbathing (Venz and Rowland 2013)
5. Surveys are to be undertaken where possible during fine weather and avoid the hotter months[7] to maximise observation of the species.

Where no individuals or signs of presence are recorded at Sharman's rock wallaby Project monitoring site:

1. Further targeted survey will be undertaken through the deployment of multiple motion-sensitive cameras baited with lucerne, at relevant sites, for 14 days will be undertaken[8]
2. A subsequent search for individuals and signs of presence on collection of cameras at end of 14 days survey.

7.4.2 Detecting Abundance at Occupied Rock Piles

Sharman's rock wallaby abundance will be measured through monitoring a relative abundance value using camera traps at all clusters of occupied rock piles for the duration of the action. A study published by the Threatened Species Recovery Hub on *'threats to Australia's rock-wallabies (Petrogale spp.) with key directions for effective monitoring*' concluded that:

1. Wallaby relative abundance can be measured from camera trap data without the need to recognise individuals (Lavery et al. 2025); and
2. The potential for unmarked spatial capture-recapture models using camera-trap data to monitor rock-wallabies and infer their population abundance.

The case study further notes that while faecal pellet counts may be suitable to determine presence/absence, this method requires extensive monitoring. Regular monitoring of fixed faecal pellet plots can detect population change but requires very repetitious sampling to generate robust data. Therefore, the case study recommends the use of camera traps to determine species abundance.

Thus, monitoring of Sharman's rock wallaby relative abundance for the duration of the action will be undertaken using camera traps across 24 selected occupied rock piles, at high activity locations, within the PMA. Studies undertaken within the Mount Zeo-Taravale Wildlife Sanctuary suggest Sharman's rock wallaby travel an average of 220 m from their shelter sites while foraging (see Chapter 6, p.160

[7] Hotter months also to be avoided for habitat condition assessment
[8] Multiple cameras at the one rock pile stack is considered to be a single monitoring site

of Hayes, 2019). Each occupied rock pile selected for monitoring will be monitored using at least one un-baited camera trap at the most obvious entry/exit point. However, at least two camera traps will be placed at six of the larger rock piles (>0.5 ha in size) to increase the probablility of Sharman's rock wallaby detection. Locations of camera traps will be determined by a suitably qualified ecologist during the first camera trap deployment mobilisation, to ensure deployment in optimal locations for achieving the outcomes required for assessment.

Camera traps will be deployed for a total of 4 weeks per monitoring event, with monitoring to be undertaken annually throughout the construction phase. Post-construction, the frequency of surveys will be dependent on performance analysis. Where the analysis demonstrates feral predator relative abundance is declining, and Sharman's rock wallaby relative abundance is stable, monitoring of Sharman's rock wallaby can be reduced to every 5 years following the initial 5 year annual monitoring, for the EPBC Act approval. This monitoring timeframe is consistent with feral predator monitoring (refer to Section 6). Conversely, where feral predator relative abundance has an increase and Sharman's rock wallaby relative abundance has a decrease between two monitoring events, then monitoring will remain annual following the initial 5-year annual monitoring period until the Sharman's rock wallaby relative abundance stabilises and feral predator relative abundance is in decline.

7.4.3 Foraging Habitat Condition Survey

7.4.3.1 Habitat Condition Survey Sites

The condition of foraging habitat in proximity to the Sharman's rock wallaby monitoring sites will be monitored during the Year 1 baseline surveys, and repeated as required under Section 9.3.1. For the purposes of the habitat condition surveys, foraging habitat is considered to be grassy woodlands and open forest where a ground layer of native grasses and forbs provide food resources. The average maximum foraging distance is 220 m from occupied breeding habitat. For each Sharman's rock wallaby Project monitoring site rock pile, there will be an associated habitat condition survey site.

Each survey site is to be allocated a unique ID which includes the associated rock pile ID.

7.4.3.2 Habitat Condition Survey Methodology

The focus of the monitoring is to assess native perennial grass cover; weed presence, to allow for the detection of change in condition. Habitat condition monitoring is to be undertaken as a series of shorter transects along a survey line running ~ 220 m perpendicular from the rock pile (refer Figure 7-2), as follows:

1. At survey line start (the base of rock pile) install a star picket and capture location with GPS
2. At survey line end, at ~220 m from survey line start and rock pile, install a start picket and capture location with GPS
3. Record native grass/forb cover and weed cover along the survey line, within a series of shorter transects using the line intercept sampling method. Intervals are to be 0 – 30 m, 60 – 90 m, 120 – 150 m, 180 – 210 m, or as conditions allow. Where an alternative interval is required due to terrain, the survey intervals employed are to be documented for repeat surveys. The intent of the habitat monitoring is to survey a minimum of 100m combined total, at range of distances up to 220 m from rock pile.

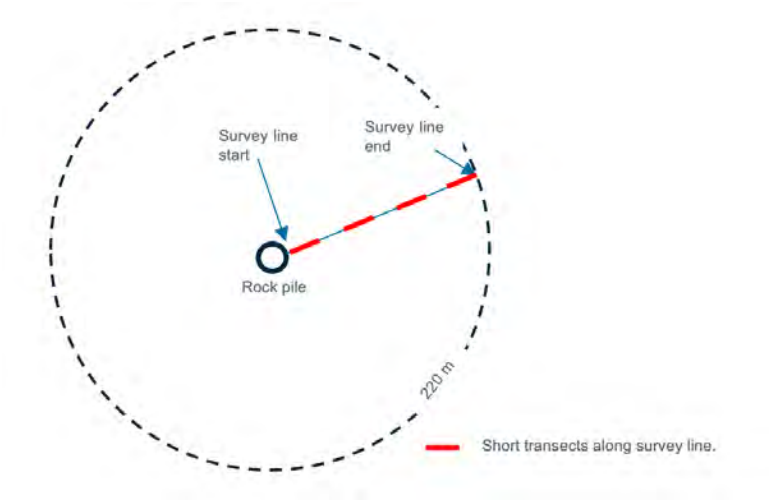


Figure 7-2: Habitat monitoring survey design

7.5 TIMING AND FREQUENCY

Sharman's rock wallaby monitoring surveys will be undertaken:

- At least one survey prior to construction commencing
- For habitat condition surveys, at Year 1 baseline monitoring, and then as required under Section 9.3.1, within same season
- Avoiding the hottest months of the year
- For species relative abundance and habitat condition surveys, annually during construction and for the first five years following completion of construction.
- After the initial monitoring period, Sharman's rock wallaby abundance monitoring will be undertaken every 5 years until the rehabilitation criteria, required by condition 56 of the approval, have been met.
- However, if a survey year finds at any of the clusters of occupied rock piles either:
    - the relative abundance is lower than the baseline survey, then annual Sharman's rock wallaby abundance surveys will be undertaken until the relative abundance is equal to or greater than the baseline survey,
      or
    - a feral predator is detected at a relevant occupied rock pile (or cluster of occupied rock piles), then annual Sharman's rock wallaby abundance surveys will be undertaken at the relevant rock pile (or cluster of rock piles) until no feral predator(s) are detected.

7.6 DATA COLLECTION AND ASSESSMENT

Data to be recorded at each Sharman's rock wallaby monitoring site includes:

- Monitoring site type – Proximity to watercourse
- Unique survey site ID
- Project Phase
- Time and date of survey/photo captured
- Survey method
- Where available - number of Sharman's rock wallaby, breeding evidence (i.e., offspring), Sharman's rock wallaby behaviour
- Weed cover (%)
- Native grass and forb cover (%)
- Evidence of any predation on Sharman's rock wallaby
- Other noteworthy observations.

Data captured are to be presented in a report and attached to the Feral Predator Monitoring Report (refer Section 10). The survey report is to be provided as a live document that is updated with new survey data after each survey campaign (e.g. at conclusion of Q3 2026 campaign).

Each Sharman's rock wallaby monitoring report will include a current overview of presence and habitat condition, including spreadsheet of summarised field data, mapping and GPS coordinates.

Windlab is to share data captured to-date, along with data collected as part of ongoing Project studies, with sanctioned conservation groups so the Project contributes to the scientific understanding of the Sharman's rock wallaby.

An analysis of the summarised data is to be undertaken, at a minimum, at the following five check points:

1. 1 year after construction commences
2. 2 years after construction commences
3. 1 year after construction is completed
4. 3 years after construction is completed
5. 5 years after construction is completed.

Data analysis will seek to:

1. Detect change in Sharman's rock wallaby abundance at occupied breeding habitat (i.e., individual or signs of presence recorded/not recorded)
2. Determine if this is an ongoing trend over subsequent surveys, or if there is fluctuation related to natural variability
3. Determine if there is evidence of predation by feral predators and/or presence of predators in the vicinity of occupied rock piles
4. Review construction management reporting data (refer VFMP, Section 6.3.3) and determine if change has any correlation with VFMP non-compliance
5. Review habitat condition data[9] and determine if there has been substantial change[10] in habitat condition and causal factors (e.g., climatic, fire)

[9] Section 8.3.1 Adaptive management and corrective actions provides an outline for when habitat condition monitoring is to be repeated

[10] Substantial change is considered to be greater than 10% change in condition

6. Review feral predator monitoring data for increasing feral predator abundance trends across the PMA and in particular in proximity to Sharman's rock wallaby monitoring sites
7. Determine if presence change has any correlation with substantial change in habitat condition and/or feral predator activity.

Refer to Section 9.3.1 Adaptive Management for corrective actions.

8 Risk Management Approach

8.1 METHOD

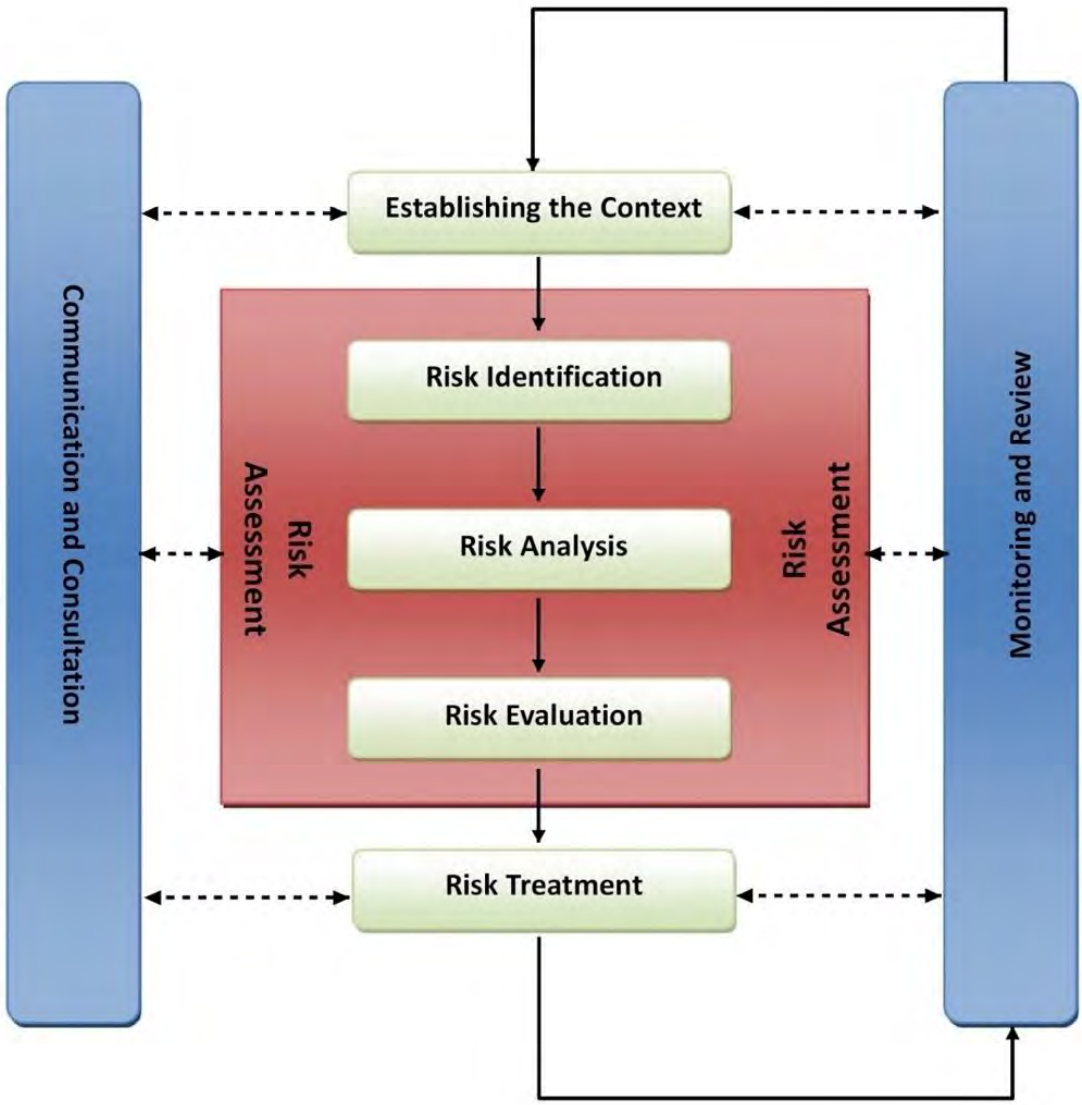
A risk assessment for the Project was undertaken to determine the effect environmental activities may have on feral predator impacts. The purpose of this assessment was to guide the focus of feral predator management and evaluate the expected efficacy of proposed management efforts.

The risk assessment was undertaken using a systematic risk-based approach based on international best practice standards, including:

- AS/NZS ISO 31000:2018: Risk management - Principles and Guidelines (Standard).
- SA HB 436.1:2020: Managing environment-related risk (Handbook) Companion to ISO31000:2018.
- HB 436.1:2020: Risk Management Guidelines Companion to AS/NZS 4360:2004 (Handbook).

The risk assessment is depicted conceptually in Figure 8-1 below.

Figure 8-1: Risk assessment process



The risk assessment was conducted collaboratively between the consultants (2rog Consulting) and Windlab to identify the objectives, scope and risk criteria for the Project.

The scope of the risk assessment included all activities directly related to threats from feral predators during the construction, operation and decommissioning of the Project. Environmental activities relevant to the Project and considered in the risk assessment were:

- Vegetation clearing (including stockpiling of felled timber)
- Excavation
- Vehicle movements
- Waste deposition
- Physical presence of infrastructure
- Increased human presence (including waste and domestic pets).

The risk ratings were determined for each combination of environmental receptor and Project activity, using the definitions of consequence and likelihood detailed in Appendix B and applying the risk matrix (Table 8-1).

Table 8-1: Risk matrix

		Consequence	1	2	3	4	5
			Trivial	Minor	Severe	Major	Catastrophic
Likelihood	A	Almost Certain	**Low**	**Intermediate**	**High**	**Extreme**	**Extreme**
	B	Likely	**Low**	**Low**	**Intermediate**	**High**	**Extreme**
	C	Possible	**Negligible**	**Low**	**Intermediate**	**High**	**High**
	D	Unlikely	**Negligible**	**Negligible**	**Low**	**Intermediate**	**High**
	E	Rare	**Negligible**	**Negligible**	**Negligible**	**Low**	**Intermediate**

Inherent risk ratings were determined with the assumption that minimum standards would be met without the implementation of additional management controls or risk assessment. Minimum standards would include compliance with legislative and corporate requirements or with operating practices commonly used for construction and operation of wind farm in Australia. Knowledge of the likely occurrence of feral predators and native fauna species (particularly threatened species) was addressed in the initial (pre-mitigation) risk assessment.

Management controls relevant to each inherent risk were identified, applying the management response criteria (Table 8-2) and particularly focussing on those inherent risks rated as 'intermediate' and above. Standard controls employed by the proponent in their other operations were applied initially to determine initial residual risk ratings. These ratings were further informed by impact analysis and specific Project controls developed within the VFMP. The ratings were revised iteratively to reduce the residual risks to as low as reasonably possible.

Table 8-2: Risk rating, risk class and associated risk management response

Rating	Risk management response
Extreme	Risks that significantly exceed the risk acceptance threshold and need urgent and immediate attention. Modify the threat, likelihood or consequence so that the risk is reduced to 'Intermediate' or lower.
High	Risks that exceed the risk acceptance threshold and require proactive management. Modify the threat, likelihood or consequence so that the risk is reduced to 'Intermediate' or lower.
Intermediate	Risks that lie on the risk acceptance threshold and require active monitoring. The implementation of additional measures could be used to reduce the risk further. Modify the threat, the likelihood or consequence to reduce the risk to 'Low' or 'Negligible' if practicable
Low	Determine the management plan for the threat to prevent occurrence and monitor changes that could affect the classification.
Negligible	Review at the next review interval Manage by routine procedures – reassess at the next review

Further details of the risk assessment methodology, and the mitigated and unmitigated risk rankings are provided in a risk register under Appendix B.

8.2 OUTCOMES

Outcomes of the risk assessment are provided in Appendix B. Inherent risks were highest for vegetation clearing. Vegetation clearing has the potential to result in severe consequences for threatened species if left unmanaged. Unmanaged vegetation clearing can result in over clearing, soil erosion and sedimentation of waterways. Aswell as injury and mortality to fauna, and significant degradation of habitat. Of particular relevance to the FPMP, vegetation clearing can result in the linear fragmentation of habitat representing vectors (roads / tracks) for predators to access greater areas of the Project Area.

With the application of the management controls, residual impacts from vegetation clearance decreased to intermediate. As per Table 8-2 above, this means it lies on the risk acceptance threshold and requires active monitoring.

These impacts are considered to have intermediate residual risk because:

- Even with the application of appropriate controls, fragmentation of habitat will occur via vegetation clearance
- The implementation of the FPMP will not prevent the repopulation of feral predators from outside the Gawara Baya feral predator management area.

These outcomes have been factored into the feral predator management program below. Extra vigilance and awareness of these risks is required by all staff working on the Project.

9 Feral Predator Management

Feral predator management at Gawara Baya includes site management during both the construction and operation of the wind farm. A comprehensive management scheme is detailed below.

9.1 SITE MANAGEMENT

Management of the Project during construction and operation of the wind farm will be undertaken to further the objectives of the FPMP, in particular:

- Objective 1 - Avoid the introduction of new species of feral predators into the PMA, relative to baseline data collected
- Objective 4 - Minimise exposure of MNES to feral predators during construction.

The Gawara Baya VFMP (Windlab 2025) management actions relevant to avoiding and minimising the threat to MNES from predation by feral predators are outlined in Table 9-1. For details on the management responsibility, timing, reporting and triggers/ corrective actions, refer to VFMP.

Table 9-1: Site management measures (Windlab 2025)

VPMP Performance criteria	VFMP Management actions	Site management aim	FPMP Objective
Clearing will not exceed approved disturbance limits	• Microsite and optimise the placement of infrastructure • Trees immediately adjacent to work areas are to be trimmed rather than cleared • Vegetation clearing and clearing of fauna habitat features are to be kept to the minimum required to facilitate construction activities • All activities including site access, laydown of plant and equipment and construction activities must be contained within the finalised Development Footprint	Minimise fragmentation and vectors for movement into MNES habitat	1
Maintain vegetation (including canopy trees) where the transmission line crosses a major riparian zone (e.g., Douglas Creek and Michael Creek).	• Removal of riparian vegetation at creek and crossing will be minimised and vegetation connectivity across riparian zones will be maintained where possible.		
Clearing is contained within the Development Footprint.	• No-go' areas, including clearing limits will be clearly demarcated using visual aids (i.e. flagging tape, barricade webbing, signage or similar, depending on the duration of the disturbance		
Rehabilitate and restore all areas of temporary use.	• Progressively rehabilitate and revegetate work areas as soon as reasonably practicable to avoid extended periods of soil exposure, as per the Preliminary Rehabilitation Plan (Umwelt, 2025).	Mitigate fragmentation	
No increase in weed and pest presence and abundance within and adjacent to the Development Footprint. No new weeds or pests becoming established.	• Weed, pest and pathogen management and control practices will be implemented throughout construction to minimise the risk of spread into and out of the Project and between construction sites. • All management objectives, management measures, monitoring and recording, and corrective actions from the potential spread of weeds and pests from construction activities will be detailed in a Weed and Pest Management sub-plan as part of a Construction Environmental Management Plan prepared in accordance with the State development approval.	Avoid the introduction of new pest species	

VPMP Performance criteria	VFMP Management actions	Site management aim	FPMP Objective
Minimise mortality of native fauna from excavation and trenches	• Trenches must be filled as soon as reasonably practicable. • Where trenches are required to remain open for more than 24 hours, inspections of the trenches must be completed minimum of twice daily (more on hot days) and any fauna that are trapped will be relocated in a safe and suitable relocation area • No trenches are to be backfilled without the completion of a fauna check prior to backfilling • Where trenches are required to remain open for more than 72 hours, fauna egress points (ramps) and fauna respite points (e.g. a wet hessian sack) are to be established every 50m of open trench.	Minimise exposure of MNES to feral predation	4

In addition to the measures identified in Table 9-1, the following additional controls will be in place throughout construction and operation of the wind farm:

- Pets (i.e., belonging to construction and operational personnel) including dogs will be prohibited on site
- Feeding of wild dogs and feral cats is prohibited.

9.2 CONTROL OPTIONS

There are three main options for feral predator control at Gawara Baya - baiting, trapping and shooting. Detailed information on undertaking feral predator control has been produced by the Centre for Invasive Species Solutions through their pestSMART Standard Operating Procedures. In consideration of the neighbouring properties and other sensitive animals which may access the property, the feral predator management shall follow a hierarchy of control as follows:

- Baiting – to encourage the natural behaviour of feral predators to take baited substances with minimal impact to other fauna species.
- Trapping – dependant on the target feral predator species but enable the animal to be moved offsite and humanly euthanised.
- Shooting - use as mass culling (via Helicopter) or individual identified feral predators, where no other control mechanism is effective. (Note: a shot must only be taken where it safe to do so, and when a shooter can clearly identify the species and a kill shot can be achieved).

All control options must be communicated to the landholder to ensure effective precautions can be taken to minimise impact to non-target animals.

Sections 9.2.1 to 9.2.3 below provide a snapshot of some key considerations for planning a control program using one or more of these three methods.

9.2.1 Baiting

Baiting is very effective for wild dogs as it can be implemented at a large scale, useful for control of a species which can travel many 100’s of kilometres per week and can be coordinated across neighbouring properties. Key factors in designing a baiting program for wild dogs includes the following (Mifsud 2016):

- Wild dogs habitually use the same paths
- Aircraft deployment with GPS technology is good for rugged areas and can delivered with accuracy
- Research indicates in mountainous eastern Australia aerial baiting 40 baits per kilometre is effective
- Ground baiting should be undertaken at the same time as aerial baiting
- Wild dogs readily scavenge and eat baits
- Targeting ridgelines, drainage lines, soft sandy country and tracks is most effective (especially where leading to watering points
- Physical barriers such as electric fence lines are also good baiting locations
- Baits can be buried just below surface or placed on ground – placed just off ground like on a log preferable to avoid non-target animals

- Place at least 500 m apart to avoid one dog eating more than one bait
- Mark the location of the bait for monitoring take.

Key factors in designing a baiting program for feral cats at Gawara Baya includes the following (Basnett, Nelson & Hugo 2023a, and Basnett, Nelson & Hugo 2023b):

- Poison baiting is the only effective control over large areas
- CURIOSITY® contains the toxin para aminopropiophenone (PAPP) which is currently nationally registered for use on feral cats with the Australian Pesticides and Veterinary Medicines Authority and is permitted for use by Authorised Control Officers and authorised persons for feral cat control
- Hisstorey® and Eradicat® contain the toxin 1080 (Sodium Fluoroacetate) manufactured as meat-based sausages
- Delivery of CURIOSITY® and Hisstorey® is via capsule (incorporated into a meat bait), designed to limit impacts to non-target species
- Baits can be delivered aerially or on ground at a density of 50 baits / km2 on surface (not buried).

Presently only the substances 1080 and PAPP are permitted for fox baiting in Queensland (DAF 2024, DAFF 2014). Key considerations when designing a baiting program for foxes includes (Sharp and Saunders 2012, DAF 2024, Sharp and Saunders 2016):

- PAPP is only supplied as a shelf-stable bait product
- 1080 may be sold as a shelf-stable product, within fresh meat baits or the poison alone
- Baiting may only be effective in the short term unless widespread and consistent
- Ground baiting (1080 or PAPP)
  - Ideal for rural areas accessible by road
  - Buried and unpoisoned baits should be used to establish risk to non-target native carnivores, monitored using sand pads
  - Single bait lethal dose must be used, e.g. 3 mg of 1080 in 100 g of bait material. Fox-Off® baits contain 3 mg of 1080 in either a 30 g or 60 g bait. FOXECUTE® baits contain 400mg of PAPP in a 35 g bait
  - Baits can be spread 100-1000 m apart along tracks or fence lines frequented by foxes
  - Fresh bait should be shallow buried, but dried meat baits may be tethered to fences
  - Bait sites should be marked and GPS located
- Aerial baiting (only 1080)
  - Recommended for large, remote areas
  - Dried baits ensure better target accuracy as foxes prefer this consistency
  - Larger bait size ensures smaller mammals could not consume enough to be lethal
  - Larger distance between baits minimises risk of native animals finding them
  - Timing baiting when non-target food sources are abundant may lessen exposure.

Cross species considerations for baiting programs include (Mifsud 2016 & 2021; Basnett, Nelson & Hugo 2023a & 2023b; Sharp 2012d):

- Feral predators will travel (and consequently take baits) on the easiest and softest country
- Avoid laying 1080 in wet areas as poison will breakdown

- Periods of extreme dry may be a good time to undertake baiting when animal is nutritionally stressed
- Include laying baits between 450 – 500 m of Sharman's rock wallaby occupied breeding habitat (to control any feral predators in the vicinity of Sharman's rock wallaby, while not encouraging further encroachment of habitat).

9.2.2 Trapping

As highlighted in Section 9.2.4 below, trapping (restricted to and considers only use of soft-jaw traps) is time consuming and there are ethical considerations to limit pain and suffering. Key considerations for wild dog trapping (Sharp 2012a) include:

- May be required where prey species are abundant, and baiting is less effective
- Considered an inefficient method of wild dog general population control, but may be useful after a baiting program to target individual animals
- Traps used are generally leg-hold traps which will often result in injury and pain.

Key considerations for cage or leg hold trapping of feral cats includes (Sharp 2005a):

- Cage or leg hold traps can be used but are considered ineffective over larger areas
- Cats are cautious of enclosed spaces like a cage trap and may not enter unless hungry enough
- For cage traps, lures or meat baits can be used, however effectiveness / attractiveness will vary with season
- Cage traps should be placed clear of vegetation to allow animal to walk completely around trap before entering.

The Felixer® grooming trap is an ideal solution for targeting feral cats. It has an adaptive system that analyses any species that walks in front of the device, lasers are used to identify whether the target is a cat based on its height, shape, and pace[11]. If it is a cat, a toxic gel is shot at the target which due to cats innate grooming practices will consume the poison (Thylation 2020). Trial results indicate Felixer® provide a target specific and safe tool for feral cat management in many Australian habitats[11].

Trapping can be an effective, yet time consuming, control mechanism for foxes. The three main methods applied to foxes are padded jaw traps, cages and soft net traps (Sharp 2012c, 2012f, 2012g). Key considerations for fox trapping (Gentle 2006, Sharp 2012c, 2012f, 2012g):

- Trapping foxes often requires highly skilled operators
- Labour and time required often makes trapping unsuitable for large areas
- Cage traps cause fewer injuries than leg holds for captured species and allow non-target animals to be released unharmed
- Lures (scents such as fox urine) or meat baits may increase success
- Traps should be set along tracks and fences frequented by foxes
- Cage traps can be less effective in rural areas as foxes are more wary of foreign objects
- Soft nets may draw animals that are more reluctant to enter the enclosed cages

Collarum® and Ecotrap® have been proven as effective devices (Gentle 2006). Collarum® uses a trigger mechanism to throw a loop around the animal's head, snaring it. The Ecotrap® also uses a

[11] Refer https://thylation.com/felixer-faqs/

trigger. Although this collapses a soft netting over the animal and can reduce risk of injury once it is inside the metal frame.

Cross species considerations for trapping (Sharp 2012a; Sharp 2005a):

- Should be inspected daily
- Ideally located where there is shade/shelter
- For wild dogs and feral cats, do not set traps near waterholes/gullies to avoid non-target captures
- Captured animals should euthanised quickly at site of capture by shooting, or for cats, an overdose of barbiturate
- Location of traps must be recorded
- Steel jaw traps are not permitted in Queensland.

9.2.3 Shooting

Feral predator control by shooting is more of an opportunistic control method, and ineffective for large areas (Sharp 2012b). However, for the FPMP target species, shooting is a humane method of control when performed by experienced skilled and responsible shooters (Sharp 2012e; Sharp 2005b). Shooting is most effective when the target species is most active, at dawn and dusk for wild dogs, and at night for feral cats. Ground shooting of foxes is predominantly done at night with the aid of a spotlight (Sharp, 2012e).

For all species, a shot must only be taken when a shooter can clearly identify the species and a kill shot (refer Sharp 2012b; Sharp 2005b) can be achieved.

Shooting within 500 m of Sharman's rock wallaby occupied breeding habitat is not permitted.

9.2.4 Design Considerations Summary

As highlighted above, there are several considerations in designing a feral predator control strategy, including risks, benefits and seasonal timing. A consolidated summary of these considerations is presented below in Section 9.2.4.1 and Section 9.2.4.2.

9.2.4.1 Risks and benefits

Table 9-2 provides an overview of the considerations for selecting control options with regards to animal ethics, effectiveness, logistics, and non-target species deaths.

Table 9-2: Control considerations

Method		Risks/Negatives	Benefits
Trapping	Cage trap	• Non-target species impacts • Time consuming - increased monitoring required • Only capable of capturing single targets	• Non-lethal • Reduced likelihood of non-target species deaths • Individuals are less stressed, compared to a leg trap • Can provide food and water

Method		Risks/Negatives	Benefits
	Leg hold traps[12]	• Non-target species impacts • Time consuming - increased monitoring required • Animal ethics considerations - elevated stress of captured individual • Only capable of capturing single targets (inefficient)	• Non-lethal • Reduced likelihood of non-target species deaths • Effective for all species
	Grooming traps	• Non-target species impacts, though less than the above traps	• Ideal for cats • Less stress for the target • Reduced likelihood of non-target species deaths
	Padded jaw traps	• Not target specific • Inexperienced operators can result in 'trap-shy' foxes that evade capture • Time consuming • Labour intensive	• Useful alternative in urban areas where poison baiting is unacceptable • Non-lethal
	Soft net traps	• Not target specific • Time consuming - increased monitoring required	• Useful alternative for animals reluctant to enter enclosed cages • Reduced likelihood of target injury compared to leg hold traps
Baiting		• Non-target species impacts • Risk of secondary poisoning from soil leeching or carcass scavenging • Danger of handling poisons • Deterioration of poison is common	• Less monitoring required • Very cost effective compared to other control methods • Can be deployed more easily over a large area
Shooting		• Increased risk of injury/non-lethal shot • Requires a skilled operator • Labour intensive • Unsuitable in areas of dense cover	• Good for targeting individual animals

9.2.4.2 Seasonal considerations

The seasonal timing of control also needs to be considered for ethical reasons and effectiveness. It is recommended to avoid undertaking control when:

- Dependant offspring can be left orphaned
- Target species are less active
- Target species have an abundance of food resources.

Mating and breeding season for wild dogs occurs during winter. It is deemed unethical to implement control measures in this June to August period due to the risk of pups being orphaned. Moreover, these periods see reduced activity in mothers. Control of wild dogs during late autumn can limit numbers of offspring, and during spring can target young dogs as they disperse from parents – baiting at this time can be very effective as young dogs more likely to scavenge (Mifsud 2016).

For cats, to minimise the animal welfare implications, it is preferable not to undertake feral cat control when females are lactating during September to March. Additionally, control can be more effective for cats when resources are low during late autumn and early winter.

[12] Will not be used at Gawara Baya

Foxes typically breed over winter, producing small litters in early spring (DAF 2024). Control during spring at this time may be highly effective (DAF 2024). However, ethical considerations promote a delayed control period towards late spring to reduce abandoned cubs (Sharp 2012f). The October to December period is reportedly a peak energy gain period for foxes which can boost uptake of bait (Saunders and McLeod 2007). Therefore, early summer period is more suitable on both accounts.

For baiting, the wet season (summer in the Project Area) sees an increase in rainfall, which produces increases soil moisture which degrades the baits quicker and is not optimal.

Optimal timing for control across feral predators for improved success and for animal welfare considerations is during the months of October and November, as highlighted in Table 9-3.

Table 9-3: Implementation control schedule for animal welfare, seasonal and effectiveness considerations

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wild dog												
Cat												
Fox												

9.3 GAWARA BAYA CONTROL STRATEGY

No one method of control will be used in isolation or relied upon, rather an integrated approach is to be implemented in line with best practice and recommended by relevant government and research organisations (as referred to in Section 3.1 and Table 9-4 below). All control is to be undertaken in accordance with appropriate standards, codes of practice and legislation. Feral predator control in the PMA is to be co-ordinated with the control implemented within the Gawara Baya offset areas (refer Figure 1-2). Control will also be most effective when co-ordinated with control on neighbouring properties. Feral predator control at Gawara Baya will be undertaken annually for the life of the Project in support of a conservation gain.

Locations for undertaking control in the PMA will be informed by the results of the feral predator surveys and ongoing monitoring (refer Section 6.2). The Gawara Baya feral predator control strategy is outlined in Table 9-4.

Table 9-4: Gawara Baya feral predator control strategy[13]

Species	Status (Biosecurity Act Qld)	Control method	Responsibility	Frequency and timing
Wild dog	Category 3,4,6	Suitable control methods for the species include: • Baiting – targeted ground-based approach using legally approved poisons (1080, strychnine and para-aminopropiophenone) o Selected bait must be used in accordance with product label directions or the conditions of an Australian Pesticides and Veterinary Medicines Authority minor use permit. o Design and deployment of baits to be undertaken in accordance with the Centre for Invasive Species Solutions Field Guide to Poison Baiting14 and associated standard operating procedures. • Trapping – using padded jaw traps, in accordance with Centre for Invasive Species Solutions Standard Operating Procedure[15] o Traps to be set at the end of each day and must checked the following morning. o Traps cannot be left unchecked for greater than 24 hours. o Trapping is best supported by a trap alert system is preferred to allow prompt response to a capture. o Trapped animals should be destroyed promptly via shooting by a skilled operator. • Shooting – by skilled operator only in accordance with firearm regulations and Centre for Invasive Species Solutions Standard Operating Procedure[16] o Lactating female dogs should not be targeted for destruction unless follow up destruction of pups and juveniles is achievable.	Gawara Baya in partnership with the Traditional Owners Gugu Badhun and other pest management experts where required	Control methods to be implemented in either: • Baiting – October - November • Shooting/trapping – May, September – November Control methods are to be undertaken at least annually for the duration of the action.

[13] To be undertaken in coordination and consultation with landholder
[14] Available from: https://www.feralscan.org.au/docs/CISS-Glovebox-Guide-Wilddog-baiting-web.pdf
[15] Available from: https://pestsmart.org.au/wp-content/uploads/sites/3/2021/03/DOG001-SOP.pdf
[16] Available from: https://pestsmart.org.au/wp-content/uploads/sites/3/2020/12/DOG003-SOP.pdf

Species	Status (Biosecurity Act Qld)	Control method	Responsibility	Frequency and timing
Feral cat	Category 3,4,6	Suitable control methods for the species include: o Baiting – targeted approach using legally approved poisons (1080 and para-aminopropiophenone)) o Selected bait must be used in accordance with product label directions or the conditions of an Australian Pesticides and Veterinary Medicines Authority minor use permit. o Design and deployment of baits to be undertaken in accordance with the Centre for Invasive Species Solutions Standard Operating Procedures[17] o Trapping – using cage traps or padded jaw traps in accordance with Centre for Invasive Species Solutions Standard Operating Procedures[18] o Traps to be set at the end of each day and must checked the following morning. o Traps cannot be left unchecked for greater than 24 hours. o Trapping supported by a trap alert system is preferred to allow prompt response to a capture. o Trapped animals should be destroyed promptly via shooting by a skilled operator. o Shooting – by skilled operator only in accordance with local firearm laws and Centre for Invasive Species Solutions Standard Operating Procedure[19] o Lactating female cats should not be targeted for destruction unless follow up destruction of kittens and juveniles is achievable.		Control methods to be implemented in either: • Baiting – October-November • Shooting/trapping – May – July; December Control methods are to be undertaken at least annually for the duration of the action.
Fox	Category 3, 4, 5, 6	Suitable control methods for the species include: o Baiting – targeted approach using legally approved poisons (1080 and PAPP)		Control methods to be implemented in either: • Baiting – October-November

[17] Available from: https://pestsmart.org.au/toolkit-resource/baiting-of-feral-cats-with-papp/ and https://pestsmart.org.au/toolkit-resource/baiting-of-feral-cats-with-1080/
[18] Available from: https://pestsmart.org.au/wp-content/uploads/sites/3/2020/12/CAT002-SOP.pdf and https://pestsmart.org.au/wp-content/uploads/sites/3/2020/12/CAT003-SOP.pdf
[19] Available from: https://pestsmart.org.au/wp-content/uploads/sites/3/2020/12/CAT001-SOP.pdf

Species	Status (Biosecurity Act Qld)	Control method	Responsibility	Frequency and timing
		○ Selected bait must be used in accordance with product label directions or the conditions of an Australian Pesticides and Veterinary Medicines Authority minor use permit. ○ Design and deployment of baits to be undertaken in accordance with the Centre for Invasive Species Solutions Standard Operating Procedures[20] ○ Trapping – using cage traps, padded jaw traps or soft net traps in accordance with Centre for Invasive Species Solutions Standard Operating Procedures[21] ○ Traps should be set by experiences operators to reduce 'trap-shy' fox behaviours ○ Traps cannot be left unchecked for greater than 24 hours. ○ Trapping supported by a trap alert system is preferred to allow prompt response to a capture. ○ Trapped animals should be destroyed promptly via shooting by a skilled operator. • Shooting – by skilled operator only in accordance with local firearm laws and Centre for Invasive Species Solutions Standard Operating Procedure[22] ○ Lactating vixens should not be targeted for destruction unless follow up destruction of cubs is achievable.		• Shooting/trapping – October - December Control methods are to be undertaken at least annually for the duration of the action.

[20] Available from: https://pestsmart.org.au/toolkit-resource/ground-baiting-of-foxes-with-sodium-fluoroacetate/ and https://pestsmart.org.au/toolkit-resource/aerial-baiting-of-foxes-with-sodium-fluoroacetate-1080

[21] Available from: https://pestsmart.org.au/toolkit-resource/trapping-of-foxes-using-padded-jaw-traps/, https://pestsmart.org.au/toolkit-resource/trapping-of-foxes-using-cage-traps/ and https://pestsmart.org.au/toolkit-resource/trapping-using-soft-net-traps/

[22] Available from: https://pestsmart.org.au/toolkit-resource/ground-shooting-of-foxes/

9.3.1 Adaptive Management and Corrective Actions

Adaptive management and corrective actions are used to achieve the FPMP management objectives and targets for feral predator presence. Adaptive management relies on a clear process for gathering data, evaluating the data and responding according to what the results indicate.

Achieving the FPMP management objectives involves correctly implementing the management actions and then monitoring to ensure those actions translate into the desired outcomes for feral predator management. Monitoring as described in Section 6 and Section 7 is used to firstly ensure the management actions are being implemented correctly. If the desired management objectives are not being realised and monitoring identifies that actions are not being implemented correctly, the first step is to fix the implementation of the action. If the actions are being implemented properly and the management objectives still are not being realised, the next step it to assess what is happening on the ground and identify changes/additions required to management actions to achieve the outcomes. Table 9-5 provides guidance about what corrective actions are required at the PMA and in what circumstances, to meet the management objectives. Data collection and evaluation protocols are described in Section 10.

If on-going monitoring indicates that management objectives and targets for feral predators are not being achieved, contingency actions will be enacted, as indicated in Table 9-5 below. It is important to note that the threshold for determining an increase in predator activity will be established following the first year of monitoring. This threshold will remain adaptive throughout the life of the Project, informed by ongoing site-specific data on predator abundance and the effectiveness of management interventions.

Table 9-5: Triggers and corrective actions for feral predator management

Trigger	Action
• Monitoring data indicates that the average relative abundance of feral predators has an increase from the preceding monitoring interval, or is equal to or greater than the baseline relative abundance. • Anecdotal or direct evidence of predation of MNES fauna. • Detection of feral predators at Sharman's rock wallaby occupied rock piles or clusters of occupied rock piles.	• Investigate the reason for the increasing trend of feral predator relative abundance 1. Corrective actions will be implemented and will include the following: a) Reviewing adherence to feral predator control measures • Increase in monitoring program intensity (additional methods and/or locations)[23] b) Increase the monitoring frequency when a trigger is reached c) Increase the frequency and intensity of feral predator control • Revising methods of feral predator control in accordance with industry standards, guidelines or research • Assessment of site management including waste control methods at works site and implement corrective action where required d) Consideration of fire control as a potential management measure for mitigating impacts of feral predators on Sharman's rock wallaby.
• Monitoring data indicates that the relative abundance of Sharman's rock	1. Repeat habitat condition survey at the relevant Sharman's rock wallaby monitoring site

[23] Where monitoring analysis indicates feral predator presence is increasing after construction commences, additional monitoring sites should be installed. Additional monitoring sites could include new movement corridors associated with Gawara Baya linear infrastructure constructed, to inform the FPMP including increasing/amending control in targeted areas, especially within the vicinity of Sharman's rock wallaby colonies.

Trigger	Action
wallaby has a decrease from the preceding monitoring interval.	2. Where a decline in abundance occurs (and cannot be attributed to habitat condition or an environmental change* such as a significant wild fire or prolonged drought event or similar), increase the monitoring frequency when the trigger is reached to annually until the relative abundance is equal to or greater than the preceding monitoring interval (see Table 7-1). 3. Increase the monitoring intensity at the relevant rock pile cluster when the trigger is reached. Options include: a. Increasing the number of cameras at each monitoring site b. Increasing the duration of monitoring events, or c. Introducing methods in addition to the camera trap survey program such to provide more robust population monitoring (e.g., mark-recapture or scat plot surveys). 4. Investigate potential causal factors for decrease in relative abundance a. Review habitat condition survey data for decrease in available foraging resources b. Review site management for adherence to site management controls (e.g., clearing within 'no-go zones' human presence within no-go zones) 5. If change in abundance cannot be attributed to habitat condition, human disturbance or an environmental change (e.g. wild fire, drought, heat wave etc), review feral predator control for timing, frequency and intensity and undertake an increase in targeted feral predator control in and around Sharman's rock wallaby occupied breeding habitat illustrated Figure 7-1.

*Observed variation in Sharman's Rock Wallaby abundance may at times reflect natural environmental stressors rather than changes in feral predator activity. For the purpose of interpreting monitoring results, a significant habitat condition or environmental change is defined as any naturally occurring event that materially affects the structure, function, or availability of Sharman's rock wallaby habitat to a degree that would reasonably influence short term or seasonal abundance. Such events include wildfire, prolonged drought, extreme heat, cyclone damage, or other large scale natural disturbances that alter habitat carrying capacity or movement patterns. These events are discussed further below.

A naturally occurring event is considered significant where it results in measurable loss of vegetation cover, reduced resource availability, or structural damage to rock pile complexes that support both foraging and shelter requirements. Evidence will be derived from documented site observations, remote sensing datasets, and relevant climate records. This approach ensures that natural environmental drivers of short-term declines in abundance are distinguished from predator related pressures and avoids unnecessary escalation of feral predator control where observed declines are attributable to habitat or climatic conditions. Event types, thresholds for significance and evidence sources are defined in Table 9-6 below.

Table 9-6 Event types, thresholds for significance and evidence sources

Event type	Threshold for significance	Evidence sources
Wildfire	More than 30 percent reduction in vegetation cover or ground layer complexity within SRW foraging or shelter habitat, or more than 20 percent of mapped rock pile complexes affected by scorch or loss of adjacent vegetation	Site environmental manager reports, field photographs, satellite fire scar or fire severity mapping, aerial imagery
Drought	Rainfall deficits within the lowest tenth percentile for a minimum three month period, or documented reduction in palatable groundcover or shrub productivity within the site	Bureau of Meteorology rainfall anomaly data and drought indices, vegetation condition assessments, vegetation index trend analysis
Extreme heat	Three or more consecutive days exceeding the regional ninety fifth percentile maximum temperature, or observable vegetation stress affecting the nutritional quality of browse species	Bureau of Meteorology temperature anomaly data, field-based vegetation condition records
Cyclone or severe storm damage	Structural damage to more than 25 percent of rock pile complexes or adjacent shelter and foraging vegetation, or debris movement that alters access routes	Cyclone track and wind speed data, post event site inspections, aerial imagery
Other natural landscape disturbance	Any naturally occurring event resulting in a measurable reduction in habitat condition persisting for a minimum of two months	Combined field observations, remote sensing analyses, and site environmental manager documentation

10 Data Collection and Reporting

The monitoring program (methods and timeframes) will involve the collection of data to inform the feral predator management strategy and to provide a comparison to measure the success of feral predator management. This will be done via:

- Collection of data on occurrence of wild dogs, cats and foxes across Gawara Baya, including a buffer zone of 500 m surrounding the Project, prior to the commencement of construction
- Collection of data on the presence of wild dogs, cats and foxes across Gawara Baya, including a buffer zone of 500 m surrounding the Project, during construction and immediately after construction is completed
- Recording of personnel, time, location and control measures implemented and results (e.g. no. of baits taken).

Data will be collected in a standardised and consistent way across all monitoring events (commencing at the baseline). This will allow for temporal comparison/evaluation of the information collected. Standardised data collection protocols (e.g. proformas) will be produced prior to Year 1 baseline monitoring and utilised for all monitoring events. Upon collection, data (and metadata) will immediately be curated and saved in a central repository.

At the end of the construction phase, the feral predator control program will be reviewed to measure the success of the control strategy. This will be done via:

- Collating presence data collected during and immediately after construction
- Comparing Year 1 baseline feral predator monitoring data with the yearly monitoring data/data collected immediately following construction completion
- Compiling other signs of presence recorded during implementation of feral predator control (e.g. no. of baits taken, no. of cats captured).

Analysis will include interrogation of trends at each monitoring and control location and collectively across Gawara Baya, i.e., is there more or less, or no difference in, feral predator presence. Taken together, the monitoring program has been designed to answer several key questions, all of which are fundamental to the success of the FPMP. Namely:

- Are key management actions being implemented at the required frequency and intensity, and in the right locations?
- Are management actions reducing the abundance of feral predators within the Project site, and its 500 m buffer zone surrounding the Project?

A monitoring report is to be prepared annually to present the results of the data collection and analysis. The monitoring report will provide an overview of the performance of the feral predator control strategy and against the management objectives, and any adaptive management measures undertaken.

Feral predator monitoring is to be undertaken immediately following construction completion, and a final monitoring report will be produced. The final monitoring report will provide:

- An assessment of how the Gawara Baya feral predator control strategy is performing against the objectives and targets of the FPMP
- An outline of what management actions have worked well and what have not

- An overview of adaptive management implemented
- Provide recommendations on how the strategy can be updated for the operational phase.

Table 10-1 below provides:

- Reporting and data requirements
- Required reporting time frames associated with the feral management strategy
- Who is responsible for coordinating the delivery of each requirement.

Table 10-1: Reporting and data requirements

Reporting focus	Details	Reporting timeframe	Responsibility	Records
Year 1 Baseline feral predator presence surveys	• Dedicated field survey of feral predator distribution and abundance	• Prior to construction commencing	• Gawara Baya construction manager • Project ecologist	• Feral predator monitoring report
Sharman's rock wallaby presence	• Dedicated field survey to detect Sharman's rock wallaby continued presence at occupied habitat	• One yearly after monitoring	• Gawara Baya construction manager • Project ecologist	• Feral predator monitoring report
Sharman's rock wallaby foraging habitat condition	• Dedicated field survey to monitor the condition of foraging habitat associated with Sharman's rock wallaby occupied breeding habitat	• Prior to construction commencing • Further surveys as required (refer Section 9.3.1)	• Gawara Baya Project Construction / Operation managers • Project Environmental Advisor	• Feral predator monitoring report
Feral predator control	• Record personnel, time, location and control measures implemented • Record no. of baits taken, captures etc • Record any interactions with native species	• With every control action	• Gawara Baya Project Construction / Operation managers • Project Environmental Advisor	• Feral predator control register
Feral predator incidental sightings	• Record any incidental sightings of feral cats and wild dogs (known presence) or other feral predator species	• Day of sighting	• Gawara Baya Project Construction / Operation managers Manager • All personnel	• Incident report- New Feral Predators, not previously found on site • Register of sightings
Ongoing monitoring - construction feral predator targeted surveys	• Dedicated field survey of feral predator distribution, relative abundance and density to assess control program success in comparison to baseline	• Annually post implementation of control measures • Immediately post-construction	• Gawara Baya Project Construction manager • Project ecologist	• Monitoring report, to be updated annually • Update to incorporate incidental sighting records

Reporting focus	Details	Reporting timeframe	Responsibility	Records
Review construction control program	• Learnings from construction control program and new technologies informs updates to program for operational phase where appropriate and shared with stakeholders.	• Immediately following concluding construction phase feral predator targeted survey	• Gawara Baya Project Construction manager • Project ecologist	• Final construction monitoring report
On going monitoring - operational feral predator targeted surveys	• Dedicated field survey of feral predator distribution, abundance and density to assess control program success in comparison to baseline	• After predator control annually for the first six years post-construction, then every five years	• Gawara Baya Operations Manager • Project ecologist	• Monitoring report, to be updated in line with monitoring frequency • Update to incorporate incidental sighting records

11 FPMP Updates

The FPMP is to be implemented through the construction phase and the operation of Gawara Baya. The potential for impacts from feral predators during operation is not considered to be any greater than for construction, and the pest control strategy will continue to be relevant to the operational phase.

At the end of the FPMP construction, and results of monitoring and control will be reviewed for performance. Where required, an updated FPMP is to be prepared for the operational phase that incorporates learnings from the construction control program and the final construction monitoring report recommendations.

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Appendix A. MNES Values

Table 12-1: Overview of MNES values within the Project Area

Assemblage	Description
World Heritage Properties	Not present. The Wet Tropics World Heritage Area (WTWHA) boundary is 4.5 km from the closest part of the development footprint.
National Heritage Places	Not present. There are two National Heritage Places associated with the Wet Tropics.
Wetland of International Importance (Ramsar sites)	Not present
Great Barrier Reef Marine Park	Not present
Commonwealth Marine Areas	Not present
Threatened Ecological Communities	Not present
Threatened fauna	Present as: • Known habitat for Sharman's rock-wallaby *(Petrogale sharmani),* koala *(Phascolarctos cinereus),* greater glider *(Petauroides minor),* spectacled flying-fox *(Pteropus conspicillatus),* greater large-eared horseshoe bat *(Rhinolophus philippinensis),* bare-rumped sheathtail bat *(Saccolaimus saccolaimus nudicluniatus),* red goshawk *(Erythrotriorchis radiatus)* and masked owl *(Tyto novaehollandiae kimberli),* white-throated needletail *(Hirundapus caudacutus)* • Potential habitat for additional endangered and vulnerable species: grey-headed flying fox *(Pteropus poliocephalus)* and magnificent brood frog (*Pseudophryne covacevichae*), Atherton delma (*Delma mitella*), southern cassowary (*Casuarius casuarius johnsonii*)
Threatened flora	Present as: • Potential habitat for endangered and vulnerable species: *Aristida granitica*, *Corymbia leptoloma*, *Cycas platyphylla*, *Dichanthium setosum*, *Homoranthus porteri*, *Marsdenia brevifolia*, *Phaius pictus*, *Phalaenopsis amabilis* subsp. *rosenstromii*, *Rhomboda polygonoides*., *Solanum graniticum*
Migratory species	Present as: • Known habitat for Oriental cuckoo (*Cuculus optatus),* eastern osprey (*Pandion haliaetus*), fork-tailed swift (*Apus pacificus*), rufous fantail (*Rhipidura rufifrons),* satin flycatcher (*Myiagra cyanoleuca*) • Potential habitat for various migratory species: barn swallow (*Hirundo rustica*), black-faced monarch (*Monarcha melanopsis*), spectacled monarch (*Symposiachrus trivirgatus*), Latham's snipe (*Gallinago hardwickii*)
Commonwealth marine areas	Not present

Assemblage	Description
The Great Barrier Reef Marine Park	Not present
Nuclear actions (including uranium mining)	Not applicable

Despite the avoidance and minimisation measures undertaken throughout development of Gawara Baya, the Project has the potential to impact several threatened and migratory species listed under the EPBC Act. A detailed impact assessment using relevant policy guidance has been undertaken for two flying foxes, three marsupials, two microbats, three birds, two migratory bird species and one frog. Table 12-2Table 12-2 provides an overview of these species, the result of the impact assessment, and identifies species for which feral predators has been identified as a threat in Commonwealth conservation advices and recovery plans.

Table 12-2: MNES values at risk from predation by feral species

Species	EPBC Act Conservation Status	Description	Significant Residual Impact	Feral predator threat/objective/action noted in Commonwealth Recovery plan/conservation advice
Sharman's rock wallaby *(Petrogale sharmani)*	Vulnerable	Sharman's rock wallabies are a colonial species that are most active at night. This herbivorous species prefers rocky habitats for shelter and feed in nearby grassy woodlands (TSSC 2016a). Several colonies have been recorded in the Project Area, primarily in the central and south-western extent.	Potential	Implement control measures for feral cats, that minimise the adverse impacts on Sharman's rock wallaby (conservation advice)
Koala *(Phascolarctos cinereus)*	Endangered	Koalas inhabit a range of forest and woodland habitats. They rely on a variety of woodland vegetation, such as eucalyptus spp. for feeding and shrubs or vine thickets for shelter in the day (Melzer et al. 2014 and Crowther et al. 2014). Koalas are widespread in the Project Area, recorded on 20 occasions in multiple habitat types.	Potential	Avoid activities that will expose Koalas to additional threats (e.g. dogs, cars) in places where Koalas must use the ground to move between resting and feeding trees (recovery plan)
Greater glider (Petauroides minor)	Vulnerable	Greater gliders predominantly inhabit eucalypt forests and woodlands. This species relies on eucalyptus spp as a food source and utilise hollows for shelter (Comport et al. 1996). Greater gliders are widespread across the Project Area, recorded on 22 occasions. This is spread between two large centres of occurrence in the northern and southern areas.	Potential	Implement control measures particularly for feral cats in burnt areas post bushfires; Develop and implement longer-term strategies to control predation by feral cat (conservation advice)
Magnificent brood frog *(Pseudophryne covacevichae)*	Vulnerable	Magnificent brood frogs are a small species that rely on cooler upland areas with a subtropical climate (TSSC 2017). Preferred habitats consist of extensive leaf litter, damp soil and proximity to more persistent water, such as main streams (McDonald et al. 2000; Anstis 2013). This species has been observed in the north-east portion of the Project Area. Population size is yet unknown. Although known occurrences are typically in small areas, less than 0.1ha.	Unlikely	Not noted

Species	EPBC Act Conservation Status	Description	Significant Residual Impact	Feral predator threat/objective/action noted in Commonwealth Recovery plan/conservation advice
Spectacled flying-fox *(Pteropus conspicillatus)*	Endangered	The spectacled flying-fox predominantly inhabits the wet tropics (DERM 2010; TSSC 2019a). This species roosts in rainforest habitats and often travels significant distances to open forests for night foraging (TSSC 2019a). Individuals have been recorded in two locations within the Project Area.	Unlikely	Not noted
Grey-headed flying-fox *(Pteropus poliocephalus)*	Vulnerable	The grey-headed flying-fox is a megabat that inhabits a variety of wooded habitats, including rainforests, open forests and various woodlands. This species feeds mostly on fruits, with food availability dictating species distribution (TSSC 2001). This species has not been recorded in the Project Area.	Unlikely	Not noted
Bare-rumped sheathtail bat *(Saccolaimus saccolaimus nudicluniatus)*	Vulnerable	The bare-rumped sheathtail bat typically inhabits a range of forest and swamp environments. This species roosts in tree hollows or caves and hunts insects from above the canopy (Schulz & Thomson 2007; Milne et al. 2009; TSSC 2016b). These bats have been detected by ultrasonic recorders in two locations in the Project Area. However, the Project Area is beyond the species' known occurrence zone, and no roosting sites have been observed.	Unlikely	Not noted
Greater large-eared horseshoe bat (*Rhinolophus robertsi*)	Vulnerable	The greater large-eared horseshoe bat is a poorly understood and generally an uncommon species, probably occurring at low densities even in core habitat (TSSC 2016c). It occurs in rainforest, riparian forests, eucalypt forests, and woodlands. Recorded in association with major watercourses and within the wetter portions of the Project Area.	Unlikely	No evidence of predation by cats but noted as having potential at roost sites and cave entrances (conservation advice)
Red goshawk *(Erythrotriorchis radiatus)*	Endangered	Red goshawks are a bird of prey that inhabit open forest and woodlands near permanent waterbodies or wetlands for hunting (TSSC 2015a). Only one individual has been observed in the north-east Project Area.	Potential	Not noted

Species	EPBC Act Conservation Status	Description	Significant Residual Impact	Feral predator threat/objective/action noted in Commonwealth Recovery plan/conservation advice
		One likely nest was also observed in the Project Area, within ideal riparian habitat.		
Masked owl *(Tyto novaehollandiae kimberli)*	Vulnerable	Masked owls utilise riparian and open forests for both hunting on small terrestrial mammals and nesting in larger trees (TSSC 2015b). This species has been observed in multiple locations across the Project Area. High site fidelity and typically large home ranges suggest the Project Area is only occupied by one pair or family group.	Potential	NA
White-throated needletail *(Hirundapus caudacutus)*	Vulnerable and migratory	The white-throated needletail migrates through the Project Area southward in September to October and northward in March to April (TSSC 2019b). This species is predominantly aerial and preferentially forages over large tracts of open forest and rainforest habitat (Taburton 2015). Bird and bat surveys have shown counts of 1 to 47 birds, with an average flock size of 7 in the Project Area.	Unlikely	NA
Fork-tailed swift *(Apus pacificus)*	Migratory	Fork-tailed swifts are non-breeding visitors to QLD between September to January (Taburton 2009). Almost exclusively airborne, this species occurs over open or dry habitats and forages in woodlands and swamps (DoE 2021). A total of 140 have been recorded in the Project Area by bird utilisation and roaming bird surveys.	Unlikely	NA

Appendix B. Risk Assessment

The risk assessment was undertaken as described in Section 88. Criteria and outcomes of the risk assessment are provided below.

Table 12-3: Definition of terms

Factor	Definition
Long-term	More than 10 years
Short-term	1-10 years
Seasonal	<1 year
Local	Within wind farm development footprint and 100 m buffer
Widespread	Outside and beyond (up to 10 km from) development footprint
Regional	Across the entire southern Upper Burdekin region
Species habitat	Includes preferred species habitat, habitat where the species is located and habitat that has the potential to support the species (but the species may not currently occur there)

Table 12-4: Definition of likelihood

Likelihood/Probability		
A	**Almost certain**	Common repeating occurrence that is ongoing Is expected to occur with wind farm developments of this scale
B	**Likely**	Will probably occur at some time and in most circumstances. Known to occur with wind farm developments
C	**Possible**	Could occur at some time but not often Sometimes occurs with wind farm developments
D	**Unlikely**	Could potentially occur at some time Uncommonly occurs in wind farm developments
E	**Rare**	Practically impossible Will only occur in very rare circumstances Not known to occur in wind farm developments

Table 12-5: Consequence definitions for terrestrial and arboreal fauna

1	2	3	4	5
Trivial	**Minor**	**Severe**	**Major**	**Catastrophic**
Minor local habitat modification[24] and/or lifecycle disruption[25] for a threatened species	Moderate local habitat modification[24] above and/or lifecycle disruption[25] for a threatened species	Substantial local habitat modification[24] and/or lifecycle disruption [25]for a threatened species	Moderate regional habitat modification[24] and/or lifecycle disruption[25] for a threatened species	Substantial regional habitat modification[24] and/or lifecycle disruption[25] for a threatened species
No loss of individuals of threatened fauna species	Minor local decrease in size of population(s) of threatened fauna species	Moderate local decrease in size of population(s) of threatened fauna species	Substantial local decrease in size of population(s) of threatened fauna species	Moderate or substantial regional decrease in size of population(s) of threatened fauna species

Table 12-6: Risk matrix

		Consequence	1	2	3	4	5
			Trivial	Minor	Severe	Major	Catastrophic
Likelihood	A	Almost Certain	Low	Intermediate	High	Extreme	Extreme
	B	Likely	Low	Low	Intermediate	High	Extreme
	C	Possible	Negligible	Low	Intermediate	High	High
	D	Unlikely	Negligible	Negligible	Low	Intermediate	High
	E	Rare	Negligible	Negligible	Negligible	Low	Intermediate

[24] Habitat modification can include fragmentation, and alteration of fire regimes, nutrient cycles and/or hydrological cycles
[25] Lifecycle disruptions can include disruption of breeding, feeding, migration, resting behaviour, etc

Table 12-7: Risk rating, risk class and associated risk management response

Rating	Risk management response
Extreme	Risks that significantly exceed the risk acceptance threshold and need urgent and immediate attention. Modify the threat, likelihood or consequence so that the risk is reduced to 'Intermediate' or lower.
High	Risks that exceed the risk acceptance threshold and require proactive management. Modify the threat, likelihood or consequence so that the risk is reduced to 'Intermediate' or lower.
Intermediate	Risks that lie on the risk acceptance threshold and require active monitoring. The implementation of additional measures could be used to reduce the risk further. Modify the threat, the likelihood or consequence to reduce the risk to 'Low' or 'Negligible' if practicable
Low	Determine the management plan for the threat to prevent occurrence and monitor changes that could affect the classification.
Negligible	Review at the next review interval Manage by routine procedures – reassess at the next review

Table 12-8: Certainty level matrix

Level	1	2	3	4	5
Certainty	**Uncertain**	**Low**	**Moderate**	**High**	**Certain**
Description	Perception only; No information or knowledge forms the basis of the opinion.	Perception based; Some Information known on process but not directly relevant to region, or information at a regional level has significant limitations.	Limited information is known; Expert knowledge would lead to this outcome, some differences in opinion.	Information is known; Process has been described and documented at a regional level and experts can verify this position.	Information is known and well represents the specific nature of the process; Described and documented at a regional level and experts would be expected to agree on this position.

Construction Phase

Table 12-9: Construction Phase Risk Assessment

Environmental Aspect (Activity)	Environmental Factor (Receptor)	Potential Impact (Change/ Effect)	Consequence	Likelihood	Inherent Risk	Assumptions/ Comments	Management Controls	Consequence	Likelihood	Residual Risk	Certainty
Vegetation clearing	Terrestrial and arboreal fauna	Fragmentation of habitat	3	A	H	Access tracks to be collocated with existing tracks where possible Project is sited within a large area of remnant vegetation and habitat Clearing causes a linear fragmentation representing a minor barrier for fauna species, or additional vectors (roads / tracks) for predators New tracks will be collocated with clearing for transmission lines where practically possible to minimise clearing Where practically possible transmission lines can be strung over gullies to avoid clearing in sections	Avoidance through design and micro siting infrastructure to maximise use of disturbed areas and the need for vegetation clearing minimised. Detailed design Section 6 (this plan) Vegetation and Fauna Management Plan	3	A	I	H
Excavation	Terrestrial fauna	Mortality of individuals due to capture in trenching where undertaken and exposed to predation by feral predators	2	C	L	Trenching associated with laying underground cables for ~7 km The majority of trenches will run alongside existing access tracks	Vegetation and Fauna Management Plan	1	C	N	H
Waste	Terrestrial flora and vegetation / Terrestrial fauna	Attraction of feral predators to development footprint from construction waste materials	2	C	L	Construction waste will be disposed of at a licensed waste management facility Debris from clearing vegetation will be managed according to the Clearing Vegetation Management Plan	Vegetation and Fauna Management Plan Clearing Vegetation Management Plan	1	C	N	H
Light emissions	Terrestrial arboreal fauna	Attraction of exotic fauna such as cane toads / dogs / cats	2	C	L	Construction will not be undertaken past dusk for most of the construction period. No lighting for aviation safety required Lighting will be restricted to offices and compound areas for security	Generally, no nighttime work on the Project is envisaged Vegetation and Fauna Management Plan	2	D	N	H

Operational Phase

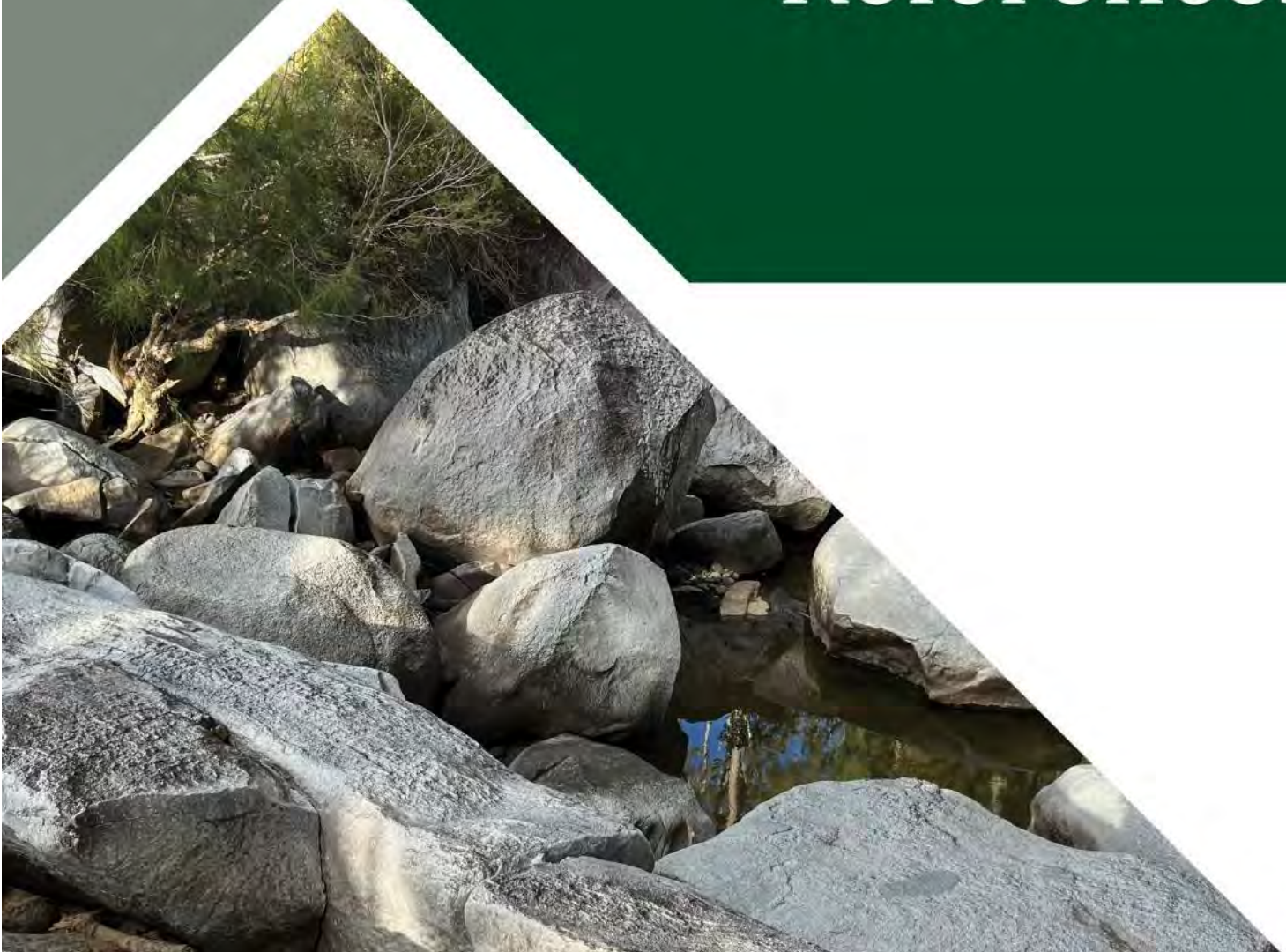
Table 12-10: Operational Phase Risk Assessment

Environmental Aspect (Activity)	Environmental Factor (Receptor)	Potential Impact (Change/ Effect)	Consequence	Likelihood	Inherent Risk	Assumptions/ Comments	Management Controls	Consequence	Likelihood	Residual Risk	Certainty
Physical presence of infrastructure	Terrestrial fauna	Degradation of fauna habitat and loss of individuals due to access / predation by feral animals	3	C	I	Feral animals known to exist in Project Area	Feral Predator Management Plan	2	D	N	H
Increased presence of people	Terrestrial and arboreal fauna	Degradation and disturbance of fauna habitat from rubbish and presence of domestic pets	2	B	L	Number of people regularly on site during operational phase will be limited to 1 -2 people People presence will largely be restricted to undertaking maintenance activities, and implements environmental management and monitoring activities	Feral Predator Management Plan	2	D	N	H
Light emissions	Terrestrial and arboreal fauna	Attraction of exotic fauna such as cane toads / dogs / cats	3	B	I	No lighting for aviation safety required Lighting will be restricted to offices and compound areas for security	Vehicles are unlikely to be on-site between dusk and dawn. Vegetation and Fauna Management Plan	1	D	N	H

Section

06

References



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About Windlab

Windlab is a global renewable energy development company. It was established to commercialise world leading atmospheric modelling and wind energy assessment technology, developed by Australia's premier scientific research institute, the CSIRO. Windlab owns and exclusively utilises this suite of industry best practice tools to identify and efficiently develop, finance, construct and operate high quality wind farms around the world, with considerably greater certainty and substantially less risk.

This technological advantage has enabled Windlab to amass a large portfolio of high quality wind farm development sites across North America, Australia, New Zealand and Southern Africa.

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