

Residential Development Project EPBC Act (2025/10110)

Preliminary Documentation Report (PART A)

HB QLD Pty Ltd

27 April 2026

Saunders Havill

PATHWAYS TO SUCCESS

Document Control

Document: South Ripley Residential Development – EPBC Act Preliminary Documentation Report (EPBC 2025/10110) (Part A), prepared by Saunders Havill for HB QLD Pty Ltd, dated 27 April 2026.

Document Issue

Issue	Date	Prepared By	Checked By
Issue A	19.09.2025	TM	LB
Issue B	27.04.2026	LB	SM

Prepared by
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Executive Summary

This Preliminary Documentation has been prepared on behalf of the proponent, **HB QLD Pty Ltd** in direct response to additional information requested by the **Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW)** as part of the 'controlled action' determination with assessment by 'preliminary documentation' for the residential development located at 103 – 175 Bayliss Road, South Ripley, made on 3 February 2025 (EPBC Reference: 2025/10110).

The controlled action decision is based on **DCCEEW's** assessment of the project as potentially resulting in a Significant Impact on the following Matters of National Environmental Significance (MNES):

- Listed Threatened Species & Communities (Sections 18 & 18A) more specifically defined in the request for further information on the:
    - Koala (*Phascolarctos cinereus*) combined populations of QLD, NSW and the ACT, listed as endangered, and
    - Grey-headed Flying-fox (*Pteropus poliocephalus*) listed as vulnerable.

Information provided within this report includes:

- A summary of the proposed development and a description of the assessment process;
- A description of the action including timeframes and staging;
- A description of MNES which may be affected by the proposal;
- Comments on 'critical habitat' for the Koala and suitable foraging habitat for the Grey-headed Flying-fox
- A discussion of empirical research about the impacts of development on MNES which may be affected by the proposal;
- Procedures to be implemented prior and during vegetation clearing and construction;
- Measures to avoid, minimise and mitigate potential impacts on MNES;
- Consideration of social and economic matters;
- Details of the proposed environmental offset for listed significant impacts, and;
- A number of preliminary mitigation and management measures for protection of MNES.

Impacts

The proposed action covers a total land area of 22 ha, of which 21.7 ha is considered to support vegetation defined by **DCCEEW** as 'critical habitat' for the Koala and 15.9 ha potential foraging habitat for the Grey-headed Flying-fox (GHFF).

Environmental Offsets

Environmental offsets for the clearing of critical habitat for the survival of the Koala and potential foraging habitat for the GHFF will be resolved by providing an environmental offset on land external to the referral area via a third party offset provider. Environmental offsets have been calculated and will be delivered in accordance with the EPBC Act Environmental Offset Policy. The offset area equates to **121.79%** of the impacted habitat for Koala and **243.29%** of impacted foraging habitat for Grey-headed Flying-fox.

Management Plans & Mitigation Measures

Numerous management plans, mitigation measures and controls will be adopted as part of mandatory requirements conditioned by Economic Development Queensland (EDQ) due to the referral area's location within the Ripley Valley Priority Development Area (RVPDA) and best practice management adopted by **HB QLD Pty Ltd**. This document includes a number of preliminary management measures relating specifically to Koala and Grey-headed Flying-fox. The management measures remain preliminary to provide the **DCCEEW** with a level of certainty that impacts can be mitigated and managed. Vegetation, Fauna, Stormwater, Erosion and Sediment Control issues will all be managed through a mandatory need to deliver management plans to EDQ for assessment, approval and implementation, although it is noted that best practice controls proposed by **HB QLD Pty Ltd** go above and beyond mandatory EDQ standards.

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Acronyms and Abbreviations

Legislation, Policies and Guidelines

EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
VMA	*Vegetation Management Act 1999* (Qld)

Government Departments

DAWE	Department of Agriculture, Water and the Environment (Cth) – superseded
DAF	Department of Agriculture and Fisheries (Qld) – superseded
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Cth), formally DAWE
DES	Department of Environment and Science (Qld) – superseded
DETSI	Department of Environment, Tourism, Science and Innovation, formerly DES
DPI	Department of Primary Industries, formerly DAF
DSDMIP	Department of State Development, Manufacturing, Infrastructure and Planning (Qld)
EDQ	Economic Development Queensland (as part of DSDIMP)
EHP	Department of Environmental and Heritage Protection (Qld) – superseded
ICC	Ipswich City Council
DNRME	Department of Natural Resources, Mines and Energy (Qld) – superseded
DOR	Department of Resources (Qld)
DTMR	Department of Transport and Main Road (Qld)

General Terms

KHAT	Koala Habitat Assessment Tool
KSAT	Koala Spot Assessment Technique Survey
MNES	Matters of National Environmental Significance
MHQA	Modified Habitat Quality Assessment Tool
MSES	Matters of State Environmental Significance
FHA	Foraging Habitat Assessment Tool
PD	Preliminary Documentation
PDA	Priority Development Area
PMST	Protected Matters Search Tool
RE	Regional Ecosystems
RVPDA	Ripley Valley Priority Development Area
SBMP	Site Based Management Plan
SH	Saunders Havill
TEC	Threatened Ecological Community
VCFMP	Vegetation Clearing and Fauna Management Plan
WPMP	Wildlife Protection and Management Plan
WHIMP	Wildlife Habitat Impact Mitigation Plan
ACR	Annual Compliance Report
The Project	Ripley Residential Development Project
The Proponent	HB QLD Pty Ltd

Reference Documents

Draft Code

Hanger, J & Nottidgem B., Queensland code of practice for the welfare of wild animals affected by land-clearing and other habitat impacts and wildlife spotter / catchers, Australia Wildlife Hospital, 2009.

EPBC Environmental Offsets Policy

Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (October 2012), Commonwealth of Australia, 2012.

EPBC Offsets Guide

Environment Protection and Biodiversity Conservation Act 1999 How to use the offsets assessment guide, (October 2012), Commonwealth of Australia, 2012.

FSRDM

Fauna Sensitive Road Design Manual Volume 2: Preferred Practices, State of Queensland (Department of Transport and Main Roads), 2010.

SI Guidelines

Matters of National Environmental Significance: Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999, Commonwealth of Australia, 2013.

1. Introduction

Saunders Havill (SH) act on behalf of HB QLD Pty Ltd (the Proponent) in the coordination and production of the response to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) controlled action determination assessment via Preliminary Documentation (PD) for the proposed residential development (the project) located at 103 – 175 Bayliss Road, South Ripley, Queensland (EPBC Reference: 2025/10110).

On 3 February 2025 a referral under the EPBC Act was made to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a controlled action assessment. The project was referred as a 'controlled action' with an assessment of the project against the applicable EPBC Act guidelines and policies, including the Significant Impact Guidelines 1.1 (SI Guidelines). The assessment concluded the project as having potential to have a significant residual impact on Matters of National Environmental Significance (MNES) (refer to **Part B** for a copy of the original Referral Application).

On 11 March 2025 this application was deemed a controlled action requiring assessment by "Preliminary Documentation." The Controlled Action Determination was based on consideration of the potential of the project to significantly impact on the following Matters of National Environmental Significance (MNES):

- Listed threatened species and communities (sections 18 & 18A) protected under Part 3 of the EPBC Act, specifically:
    - Koala (*Phascolarctos cinereus*) combined populations of Qld, NSW and the ACT, listed as endangered, and
    - Grey-headed Flying-fox (*Pteropus poliocephalus*), listed as vulnerable.

It is noted that the DCCEEW also considers there to be evidence that the following species listed under the EPBC Act may also be present, or have habitat present, on or within the vicinity of the referral area, and may also be impacted by the proposed action:

- Swift Parrot (*Lathamus discolor*), listed as critically endangered
- Regent Honeyeater (*Anthochaera phrygia*), listed as critically endangered

In receiving the March 2024 Controlled Action Determination, the DCCEEW provided a list of additional information required to be addressed within this Preliminary Documentation report. A copy of the request for additional information for assessment by PD is included as **Attachment A1**, and each item has been extracted as each subsequent chapter of this PD report. As part of this assessment processes, this PD must be published for public comment.

The purpose of this PD report is to provide requested additional information to the DCCEEW to facilitate the Preliminary Documentation assessment process to obtain formal approval for the referred project.

For readability of this document, the supporting information has been separated into two folders using the following structure:

- **Part A: Preliminary Documentation report.**

- **Part B: Referral Material and Technical Studies.**

The following sections within this PD report address the item requirements of the request for additional information, and have been numbered to correspond to each of the additional information item requests, specifically:

- Section 2: Description of the Action.
- Section 3: Description of the Environment and Matters of National Environment Significance.
- Section 4 and 5: Assessment of Impacts.
- Section 6: Avoidance and Mitigation.
- Section 7: Proposed Offsets.
- Section 8: Economic and Social Matters.
- Section 9: Ecological Sustainable Development.
- Section 10: Environmental Record

Part B: Referral Material and Technical Documents refers to a copy of the full referral material submitted for the controlled action assessment as well as any supporting studies and request for information responses. It is noted that relevant sections from Part B have been brought forward and incorporated into Part A of the PD for ease of reference and readability. It is also noted that changes to the referral material are not possible, and Part A of the PD supersedes the information in the referral.

1.1. Purpose

The purpose of this report is to provide information to the Department to facilitate the PD assessment process and ultimately obtain approval under the EPBC Act for the Residential Development Project.

1.2. Document Structure

Preliminary Documentation refers to this document. It includes relevant figures, plans and supporting material required to support full assessment of the action by the Department. These have been referenced with prefix A (*i.e.,* Figure A1, Plan A1, Attachment A1). Refer to the above Table of Contents for a consolidated list of the figures, plans, and attachments.

1.3. Reference Table

This section provides a reference table demonstrating where in the documentation the information requirements are addressed (refer **Table A1**). The information request is included as **Attachment A1**. Each item has been extracted and provided within the corresponding section of this PD.

Table A1: Reference table

Item		Response Section
1	**n/a – General content, format and style**	**n/a**
2	**Description of the action**	
2.1	a) A description of all components of the proposed action (such as preconstruction, construction and operational), including the staging, sequencing, duration and timing.	2.1.1
	b) A description of the anticipated start and completion dates of all actions such as the extent, staging and timing of clearing undertaken over the construction period. i. All infrastructure to be constructed and construction methods. ii. All temporary and permanent fencing used, including a description of each fencing type and location. Include a schematic diagram of fence types and a map of where fences are proposed to be located. iii. Ancillary and supporting infrastructure including (but not limited to): laydown areas, access tracks, temporary site office etc. iv. Mapped locations, including the size in hectares, of any proposed fire breaks/asset protection zones.	2.1.3
	c) The location, extent, and size (in hectares) of the total project footprint, disturbance/impact footprint, and of any adjoining areas (beyond the impact area) that may be subject to indirect or facilitated impacts, including edge effects, noise or light spill, vehicle access or other associated activities.	2.1.4
	d) A description, with supporting spatial information, detailing all site access roads and any other shared infrastructure with adjacent projects/areas to be constructed to facilitate the proposed action.	2.1.5
2.2	Provide a description of the intended land uses proposed as part of the completed development, including if any proposed open space and/or conservation areas and associated ongoing activities, and details of the intended party that would be responsible for future management activities.	2.2
2.3	Details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that applies or is likely to apply to the proposed action. Details should include (but are not limited to): a) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy? b) application/approval numbers for existing applications where relevant c) obtained approvals or additional approvals that are required.	2.3

3	Description of the environment and Matters of National Environmental Significance	
3.1	A description of the environment more broadly including previous and current land use within and surrounding the proposed action area.	3.1
3.2	A description of any potential listed threatened species or ecological community (including but not limited to those listed in this request for information) that occur in the project area and adjacent areas. *Please ensure that a recent Protected Matters Search Tool report is generated and used during the assessment before finalising the draft preliminary documentation to identify any additional species (listed at the time of the controlled action area) that may be affected by the proposal.*	3.1
3.3	For listed threatened species identified in section 4 of this request for information, please provide a likelihood of occurrence assessment including the following: a) Information on the abundance, distribution, ecology and habitat preference of the species or communities. b) Quantification of the extent of habitat (including maps identifying known or potential habitat) on site and, where feasible, in the broader landscape. c) Quality and importance of known or potential habitat for the species or communities. d) Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations. e) Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impacts outside the project site. Include a likelihood of occurrence assessment for all other listed threatened species and ecological communities that are identified in a recent Protected Matters Search Tool (PMST) report, and provide further assessment as directed above for other species are likely to occur within and adjacent to the project area.	3.4
3.4	Up to date baseline and survey data at the impact site(s), and if relevant, the proposed offset site(s), including: a) Information on the survey methodology or technique used (e.g., thermal detection, camera trapping, tree hollow search, SAT surveys etc) b) When surveys were conducted (e.g., dates, time of day, season, etc.) and survey effort (e.g., two hours for every one hectare within a 5-hectare area) c) Map/s of survey points or transects and how the survey points or transects were selected.	3.2/3.3

	d) An assessment of the adequacy of any surveys undertaken with reference to any relevant scientific literature and/or statutory documents. In particular, the extent to which these surveys were appropriate for the species and undertaken in accordance with relevant survey guidelines. e) Results of all surveys undertaken	
3.5	Based on survey data and with reference to relevant statutory documents, provide a clear description of the total extent and quality of habitat present within and surrounding the proposed action area for each species or ecological community potentially present or impacted by the action. For all species with residual significant impacts the method used to quantitatively assess the quality of habitat must be discussed and endorsed by the department before being applied.	3.2/3.3
4	**Impact Assessment**	
4.1	Include a clear description of the total extent and quality of the following: a) project footprint (including the total extent of habitat present for each relevant protected matter) b) direct and indirect impact areas (including the total extent of habitat for each relevant protected matter to be impacted) c) total areas proposed to be retained/avoided (including the total extent of habitat present for each relevant protected matter to be avoided).	4
4.2	For any threatened species or ecological communities which may be present or potentially significantly impacted, including the following threatened species in section 5 of this document, please: a) Complete a revised habitat suitability assessment of the referral area, considering specific habitat requirements of the species in accordance with relevant listing advices, conservation advices, recovery plans, Significant Impact Guidelines 1.1 and publicly available information. b) Provide mapping or revised and expanded mapping showing the extent of suitable habitat for the species in relation to the disturbance footprint and broader proposed action area. c) Demonstrate that previous and any additional or new surveys for the species have been completed in accordance with relevant Commonwealth, State or local council guidelines (or best available peer reviewed information). d) Provide information regarding the total area proposed to be retained/avoided (including the total extent of habitat present to be avoided) at the referral area.	5

e) Confirm the area of habitat that will be directly and indirectly impacted by the proposed action, including but not limited to areas where:

   i. Connectivity to surrounding habitat will be retained, removed or functionally compromised/lost.

   ii. Adjacent habitat will be subject to intensification of ongoing impacts (for example,

f) through increased vehicle movement and/hydrology changes). Ensure that all classification and quantification of habitat, and all references to the extent of impact to protected matters, are consistent throughout the preliminary documentation and supporting mapping.

4.3	To inform point 4.1 to 4.2, please provide an assessment of the direct, indirect, facilitated and cumulative impacts that may occur as a result of the proposed action at a local and regional scale. The assessment should include consideration of: a) the nature, likelihood, significance, and extent of impacts and whether any relevant impacts are likely to be unknown, unpredictable or irreversible. b) timing and whether the impact is temporary or permanent c) species specific habitat requirements such as hollow bearing trees, nest trees, refuge habitat, foraging and breeding habitat, sheltering or other microhabitat features relevant to the species within and surrounding the development footprint (if applicable). d) whether connectivity and movement opportunities in the surrounding area may be retained, removed or functionally lost or compromised. e) adjacent areas of habitat that may or will be subject to intensification of ongoing impacts (for example, through increased human and vehicle presence) f) indirect or facilitated impacts that may result from the proposed action, including but not limited to the following: i. Edge effects – including the potential for the introduction of weed species and pathogens in the referral area and adjacent environment. ii. Vehicle movement – potential increase of vehicles to strike fauna in the pre-construction, construction, and operation phase of the project. iii. Increased presence of dogs – pre-construction, construction and operation phases have the potential to increase dog presence in the referral area and adjacent environment.	4/5.6

	iv. Earthworks – potential to generate dust emissions from the removal of vegetation and movement of soil in the pre-construction and construction phase of the project. v. Disturbance from increased noise, artificial light, sediment generation and other relevant stressors during construction and operation of the residential development. g) cumulative impacts, where potential project impacts on MNES are in addition to existing impacts of other activities (including current or future developments by the proponent and other proponents in the region and vicinity)	
4.4	Include current maps and coordinates/shapefiles showing the total project footprint, total disturbance/direct and indirect impact areas, areas of habitat for MNES proposed to be retained.	N/A
4.5	Include details of any policy guidelines, relevant studies, surveys, or consultations with species experts/field specialists, which were not included in the referral or additional information provided in support of the referral.	N/A
5	**Species Specific Requirements**	
	In addition to the requirements in Sections 3 and 4, the following information is required for the assessment of impacts to the following species: 5.1 Koala (Phascolarctos cinereus (combined populations of Qld, NSW, and the ACT)) – Endangered a) The department notes the referral does not consider the cleared areas as Koala dispersal habitat. The department provides that more information is required on dispersal habitat in the proposed action area in accordance with statutory documents. b) Habitat descriptions should consider habitat use requirements (e.g., foraging, survival, growth, reproduction and movement) across the proposed action area and align with the habitat requirements for the species outlined in the statutory documents found on the department's Species Profile and Threats Database. c) Mitigation measures must be outlined in accordance with Section 6 below and if there is a residual significant impact then offsets must be proposed in accordance with Section 7 below. 5.2 Grey-headed Flying-fox (Pteropus poliocephalus) – Vulnerable a) The department notes the referral documentation does not consider there to be a significant impact to the Grey-headed Flying-Fox due to dominance of regrowth vegetation, cleared areas and locality to known roost sites. b) The department believes that habitat critical has not been adequately assessed in accordance with the Recovery Plan for the Grey-headed Flying-Fox. Habitat descriptions should consider habitat use requirements (e.g., foraging, survival, growth, reproduction and movement) across the proposed action area and align with the habitat	5

requirements for the species outlined in the statutory documents found on the department's Species Profile and Threats Database.

c) Mitigation measures must be outlined in accordance with Section 6 below and if there is a residual significant impact then offsets must be proposed in accordance with Section 7 and 8 below.

5.3) Swift Parrot (Lathamus discolor) - critically endangered

a) Referral documentation lists the likelihood of occurrence as low with suitable foraging habitat present on site however the species was not observed onsite during surveys. The referral documentation does not discuss the likelihood of significant impact for the species. The department believes that habitat critical to the survival of the species has not been adequately assessed in order to determine the likelihood of a significant impact. The department notes that failure to locate the species during surveys does not conclude that the species is not present or that habitat critical to the survival of the species is absent.

b) Survey methods of habitat on site needs to be documented and habitat adequately characterised and discussed in accordance with the "Conservation Advice Lathamus discolor swift parrot" and the "National Recovery Plan for the Swift Parrot (Lathamus discolor)". These documents and other relevant information can be found on the department's Species Profile and Threats Database.

c) Mitigation measures must be outlined in accordance with Section 6 below and if there is a residual significant impact then offsets must be proposed in accordance with Section 7 and 8 below.

5.4) Regent Honeyeater (Anthochaera phrygia) - critically endangered \

a) Referral documentation lists the likelihood of occurrence as moderate through desktop assessment with suitable foraging habitat present on site however the species was not observed onsite during surveys. The referral documentation concludes the likelihood of occurrence is low and no significant impact assessment is required. The department believes that habitat for the species has not been adequately assessed in order to determine the likelihood of a significant impact. The department notes that failure to locate the species during surveys does not conclude that the species is not present or that habitat critical to the survival of the species is absent.

b) Survey methods of habitat on site needs to be documented and habitat adequately characterised and discussed in accordance with the "Conservation Advice Anthochaera phrygia regent honeyeater" and the "National Recovery

	Plan for the Regent Honeyeater (Anthochaera phrygia)". These documents and other relevant information can be found on the Species Profile and Threats Database. c) Mitigation measures must be outlined in accordance with Section 6 below and if there is a residual significant impact then offsets must be proposed in accordance with Section 7 and 8 below. 5.5) Other species a) For any other species identified in the assessment that is likely to be significantly impacted by the proposed action, then the requirements outlined in Sections 3, 4, 6, 7 and 8 are required to be addressed.	
6	**Avoidance and Mitigation Measures**	
6.1	Demonstrate that you have applied the mitigation hierarchy and exhausted all options to avoid and mitigate harm to protected matters, before resorting to environmental offsets. In doing this, you must demonstrate that any avoidance or mitigation measures will provide ecological benefits to the species in the long-term. For example, on site avoidance/conservation areas must be connected or provide connectivity opportunities for species in the broader landscape, and must include enduring mitigation of impacts from adjacent development.	6.1
6.2	Provide details (including a summary list or table) of avoidance and mitigation measures proposed to be undertaken to prevent or minimise impacts on protected matters (or their habitat) from the proposed action area, including: a) a description of avoidance measures that have been considered and applied. For example, project site selection to avoid valuable habitat, micro-siting of infrastructure to avoid impacts on habitat on site, or avoidance of any activity that may indirectly impact on essential lifecycle processes for species. b) a description of proposed safeguards and mitigation measures to minimise and manage relevant impacts of the action, with reference to relevant statutory or policy documents at the Commonwealth and State level (e.g., Guideline: State Development Assessment Provisions (State Code 25)) c) pre-clearance and clearance procedures to ensure that species are detected and managed to minimise mortality, stress, injury, or introduction of disease. d) measures to address the risk of species, such as the koala, entering the residential area and becoming trapped/isolated without resources for shelter whilst in the residential area and safe movement opportunities to get out of the residential area, along with sufficient information on the location and design of these measures. e) Ongoing management of direct and indirect impacts due to increased likelihood of human presence, attacks by domestic dogs, and injury caused by negotiating various fence types.	6.2

	f) details of how speed reduction is to be achieved (e.g., traffic calming devices) and plans showing the locations of each of these features and the manner in which they will be implemented). g) information on safe road design and placement, including installation of crossing warning signs, wildlife threshold marking on road (include maps and imagery). h) the locations and size of any proposed fauna movement solutions, fire breaks, nogo or buffer zones (including buffers between the construction footprint or remaining habitat in the referral area and adjacent to the site), and potential fencing, including: i. the location of any movement solutions, fire breaks, buffer zones, or fencing. ii. the characteristics of the fauna movement solutions, fire breaks, buffer zones and fencing, (i.e., height, length, wildlife proof measures etc) iii. whether the proposed measures, such as fencing will provide a wildlife barrier to/from/within the proposed action area. i) a description of the environmental outcomes the measures are expected to achieve including details of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes. j) information on the timing, frequency, and duration of the measures to be implemented. k) an actual or estimated cost of the mitigation measures.	
6.3	Provide an assessment of the predicted effectiveness of each proposed avoidance or mitigation measure, noting that the effectiveness of a particular measure is a reflection of confidence in the anticipated outcome. The assessment of effectiveness should be evidence based and include examples of demonstrated success of a particular measure to achieve the desired avoidance/mitigation outcome.	6.3
6.4	For each measure proposed, indicate the: a) impacts that are being avoided and/or the significance of impacts being reduced through mitigation. b) Scientific basis for conclusions being drawn c) an evidence-based likelihood of success/risk assessment d) responsible party e) milestones / performance / completion criteria f) proposed monitoring and evaluation program.	6.3
6.5	Proposed management plans need to be consistent with the Environmental Management Plan Guidelines - DCCEEW, and must include:	

a) a table of commitments made in the plan to achieve the environmental outcomes, and a reference to exactly where these commitments are detailed in the plan,
b) commitments capable of ensuring that the environmental outcomes are achieved,
c) reporting and review mechanisms to demonstrate compliance with the commitments made in the plan,
d) an assessment of risks relating to achieving the environmental outcomes and risk management strategies and/or mitigation measures that will be applied to address identified risks,
e) impact avoidance, mitigation and/or repair measures, and the timing of those measures,
f) a monitoring program of the effects of management measures which must include:
    i. performance indicators,
    ii. trigger values for corrective actions,
    iii. the timing and frequency of monitoring, ensuring monitoring is capable of detecting trigger values and changes in the performance indicators,
    iv. proposed corrective actions if trigger values are reached, and
    v. links to other relevant plans or conditions of approval (including state or territory approval conditions).

6.6	Describe any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advice, recovery plan or threat abatement plan, and a discussion on how the proposed measures are not inconsistent with relevant plans. For example, the National Recovery Plan for the Grey-Headed Flying Fox states an objective: *'To improve the Grey-headed Flying-foxes national population trend by reducing the impact of the threats outlined in this plan on Grey-headed Flying-foxes through habitat identification, protection, restoration and monitoring'.* Please provide a discussion on how the proposed action is not inconsistent with relevant species' objectives or alternatively, how the proposed avoidance, mitigation/management and offsetting actions will compensate for any residual significant impacts, thereby ensuring consistency with the objective for relevant EPBC Act species.	7.0
6.7	All proposed measures must consider the 'S.M.A.R.T' principle: S – Specific (protected matter-specific objectives, methods, outcomes, and repeatability) M – Measurable (baseline information, quantifiable, auditable) A – Achievable (timeframes, financial and human resources) R – Relevant (conservation advice, recovery plans, threat abatement plans)	6.3

T – Time-bound (set implementation, performance and completion timeframes).

7	**Proposed offset** a) Offset Proposal b) Offset Management Plan	7 (Attachment A4 - OMP)
8	**Habitat Quality Assessment** a) Details on the Modified Habitat Quality Assessment (MHQA) method utilised	
9	**Economic and Social Matters**	
9.1	Provide details on the social and economic costs and/or benefits of undertaking the proposed action, including the basis for any estimations of costs and/or benefits. Where possible, please include the total economic capital investment and economic ongoing value of the project.	8
9.2	Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place.	
9.3	Provide details of any public stakeholder consultation activities, including the outcomes of those consultations.	8.1.3
9.4	Provide details of any consultation with Indigenous stakeholders.	8.1.4
10	**Ecologically Sustainable Development**	
10.1	Provide a description of how the proposed action meets the principles of ecologically sustainable development, as defined in section 3A of the EPBC Act, which are as follows: a) decision making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations. b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. c) the principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making	9
11	**Environmental record of the person proposing to take the action**	
11.1	the person proposing to take the action;	
11.2	for an action for which a person has applied for a permit, the person making the application;	10
11.3	if the person is a body corporate—the history of its executive officers in relation to environmental matters; and	

11.4	if the person is a body corporate that is a subsidiary of another body or company (the parent body)—the history in relation to environmental matters of the parent body and its executive officers.	
12	**Ecological Data Provisions** The preliminary documentation must include an appendix of occurrence records (both sightings and evidence of presence) for all listed threatened and migratory species identified during field surveys for the proposed action. This data may be used by the department to update the relevant species distribution models that underpin the publicly available Protected Matters Search Tool (PMST).	**13**

1.4. Site Description and Details

The Proponent seeks to develop the referral area, described as Lot 7 on RP836942 and Lot 78 on SP308008, for residential uses (refer **Plan A1**). This land parcel occupies a central property within the RVPDA and is zoned as 'urban living' as is land to the north, south and west. Under the RVPDA development scheme, 'urban living' zoning is land earmarked for development (refer **Plan A2** and **Plan A3**). RVPDA is a key development area in SEQ specifically utilised to cater for the increased population growth in the region. The referral area is shown in **Figure A1** and **Figure A2** and key property details are presented in **Table A2**.

The referral area is located in South Ripley approximately 14.5 km south-east of Ipswich and 34 km south-west of Brisbane. The referral area is a 22 ha property with a mixture of cleared and regrowth vegetation bound by Bayliss Round to the north and rural properties to the south, east and west.

The development layout is shown as **Plan A1**. Key site details are presented in **Section 1.1.**

Table A2: Property summary

Address	103 – 175 Bayliss Road, South Ripley, Queensland, 4306
RPD	Lot 78 on SP308008 Lot 7 on RP836942
Area	22 ha
Protected Plants	Partially within high-risk area
VMA 1999	Category X (non-remnant)
Fisheries 1994	Nil
MSES	MSES – Regulated Vegetation (intersecting a watercourse)
PDA	Ripley Valley Priority Development Area (RVPDA)
Local Government Authority (LGA)	Ipswich City Council (as administrator for Economic Development Queensland)
Planning Scheme / Local Plan	Ripley Valley Priority Development Area (RVPDA) Development Scheme
Zoning	Urban Living
Existing Land Use	Rural
Proposed Land Use	Residential Development

2. Description of the Action

This section responds to Item 2 of the PD request which requires the proponent to provide a description of the action.

The proponent is proposing a residential development including approximately 375 residential allotments, district park, pedestrian links, internal roads, and detention/drainage areas on freehold land located at 103 – 175 Bayliss Road, South Ripley, Queensland described as Lot 7 on RP836942 and Lot 78 on SP308008 (refer **Plan A1**).

The referral area is zoned as 'urban living' under the RVPDA (refer **Plan A2**) with the entire area proposed to be impacted to facilitate the development (refer **Table A3**).

Table A3: Details on impact area

Address	103 – 175 Bayliss Road, South Ripley, Queensland
RPD	Lot 7 on RP836942 and Lot 78 on SP308008
Referral Area	22 ha
Impact Area	22 ha
MNES habitat (Koala and GHFF)	21.7 ha (Koala habitat) 15.9 ha (Grey-headed Flying-fox)

2.1. Components of action, staging, sequencing, duration and timing

Item 2.1(a) of the PD Request asks for "***A description of all components of the proposed action (such as preconstruction, construction and operational), including the staging, sequencing, duration and timing.***"

2.1.1 Components of the action

The proposed action is for a residential development which will provide approximately 375 dwellings for future residents in South Ripley.

The project will involve the following uses and activities:

- Residential living
- Pedestrian links
- Stormwater infrastructure including bio-retention basins.
- Internal access roads
- District Park
- Landscape architecture including feature planting, footpaths and lighting

To achieve the proposed outcome of the project, the following activities will occur across the referral area which are considered typical of an urban development project:

- Pre-clearance fauna surveys and clearing of vegetation only under the supervision of fauna spotter catchers that holds a permit issued by the Queensland Government Department of Environment, Tourism, Science and Innovation (DETSI);
- Bulk earthworks to achieve the required grades across the referral area;
- Installation of utility services (potable water services, sewerage linking and electricity) and stormwater devices and water quality management;
- Creation of residential lots and internal access roads as per the development layout (refer **Plan A1**);
- Construction of dwellings;
- Landscape works including the installation of street trees, footpaths, seating areas and path/streetlights.
- Design and creation of district park

Pre-clearing

Prior to clearing, the extent of vegetation to be cleared will be marked with tree protection fencing. No vegetation is proposed to be retained within the referral area with fencing utilised to differentiate clearing stages and neighbouring vegetation. Access to the referral area is already available through existing adjacent roads.

Construction

The construction phase of the project will involve bulk earthworks, installing utility services and roads and construction of residential lots and dwellings. Following the completion of vegetation clearing, temporary fauna exclusion fencing is proposed along the east, west, and south site boundaries to prevent fauna from re-entering the civil works area (**Plan A4**).

Operation

The operational phase of the project will see the referral area utilised for residential uses typical of an urban development.

2.1.2 Stage and sequencing

Activities necessary to deliver this project include vegetation clearing, construction of residential dwellings and internal roads, pathways, and infrastructure including for stormwater and drainage, and ongoing standard maintenance of the associated roads, pathways, and infrastructure. Clearing of vegetation involves a total referral area of 22 ha.

The reconfiguration of the lots into approximately 375 allotments and construction of a new road network, district park and drainage reserve will be delivered over 8). The ultimate, staging sequence, lot layout and number of lots is subject to the detail final design. Approximate staging sequence and layout provided in **Table A4** and **Plan A1**.

Table A4: Construction staging of the development

Stage	Area (ha)	No. of Lots
1	3.39	50

2	2.53	56
3	2.43	43
4	2.63	40
5	2.22	48
6	2.44	49
7	2.69	60
8	1.88	29

2.1.3 Timeframes and duration

Item 2.1(b) of the PD Request asks for ***"a description of the anticipated start and completion dates of all actions such as the extent, staging and timing of clearing undertaken over the construction period."***

The start date and completion date of the proposed development are as follows:

Start Date: 01/2026
End Date: 12/2029

The proposed development intends to commence clearing and civil works in 2026 with works completed by the end of 2029 (approximately 4 years).

2.1.4 Location, extent and size of project

Item 2.1(c) of the PD Request asks for "***The location, extent, and size (in hectares) of the total project footprint, disturbance/impact footprint, and of any adjoining areas (beyond the impact area) that may be subject to indirect or facilitated impacts, including edge effects, noise or light spill, vehicle access or other associated activities."***

The referral area is located within the central portion of the RVPDA, approximately 14.5 km south-east of Ipswich and 34 km south-west of Brisbane. The referral area is 22 ha in size and is bound by Bayliss Road to the north. Further north of the referral area is 'Providence Central' which is a large, mostly completed development as an 'urban centre' of RVPDA. To the north-west of the referral area is a development site under construction (the 'Alcove') with roads and lot parcels completed. To the west of the referral area is a partially vegetated land parcel that is zoned wholly as 'urban living' and has been recently referred under the EPBC Act (2025/10117) proposing complete development over the lot. To the east is a similarly sized rural lot while to the south-west is a large rural property that consists of almost completely cleared paddocks. This site is currently being assessed under the EPBC Act (EPBC 2023/09690) for a master planned community. To the south of the referral area is another large lot under assessment with the EPBC Act (EPBC 2021/9061) (refer **Plan A2** and **Plan A3**).

Land adjoining all sides of the referral area hold current development applications and propose development adjacent to the project site as per the planning intent of RVPDA. The exception being to the east of the referral area, Lot 216 on S311037 is predominantly vegetated with mapping showing a mixture of Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant) vegetation. This lot is zoned as 'environmental protection' under the RVPDA development scheme.

Indirect impacts may occur where project related activities affect vegetation or habitats in a manner other than a direct loss or clearing, such as for example, soil erosion, sedimentation of waterways, dust inhibiting plant pollination, provision of suitable seed bed for invasive plants, or increased noise/light activity within or directly adjacent to sensitive habitat areas.

The potential for indirect impacts is considered unlikely given the referral area is primarily surrounded by properties with current development applications and EPBC assessments with high levels of disturbance from historical rural uses reflected in vegetation mapping. To the east, vegetation is likely to be retained in the future as per the 'environmental protection' zoning of RVPDA development scheme. The potential for indirect impacts that may result from construction activities and/or the operational phase of the project are included below with a full assessment provided in **Section 4**:

- Weeds
- Vehicle Movement
- Earthworks
- Light Emissions During Construction
- Noise and Vibration
- Waste Disposal
- Hazardous and Dangerous Goods
- Increased Human Presence

2.1.5 Adjacent projects to be constructed

Item 2.1(d) of the PD Request asks for "***A description, with supporting spatial information, detailing all site access roads and any other shared infrastructure with adjacent projects/areas to be constructed to facilitate the proposed action.'***

The referral area is situated in a landscape that has seen rapid urbanisation following the designation of the RVPDA in 2011 with large lot rural residential properties progressing to small lot developments and further development anticipated with EPBC and EDQ Approved sites present throughout the landscape. Vegetation clearing has steadily occurred to facilitate urban developments associated with planning intent of RVPDA (refer **Plan A5**).

Neighbouring properties on three sides of the referral area are under EPBC assessment. The referral area itself is accessed by Bayliss Road to the north, which is partially constructed. This road will be upgraded to facilitate development in the regions, specifically 'Providence East' which is an approved residential development already commenced to the east of the referral area. Future trunk roads will form part of the future urban network. As part of this action, a portion of the trunk road will be delivered by the proponent and is incorporated into the impact area of the project (refer **Plan A1**).

2.2. Land Uses

Item 2.2 of the PD Request asks for provision of a "***A description of the intended land uses proposed as part of the completed development, including of any proposed open space and/or conservation areas and associated ongoing activities, and details of the intended party that would be responsible for future management activities."***

The referral area is situated within the RVPDA and is zoned 100% as 'urban living' which is also present on three sides of the referral area (refer **Plan A2**). The purpose of this zoning is to utilise areas of high disturbance and minimal ecological context for development, ultimately alleviating the housing pressure in SEQ and minimising development within vegetated areas identified to contribute to landscape level connectivity. The majority of the surrounding land is roads and existing/future developments where 'urban living' zoning is present. To the east of the referral area, the neighbouring property is zoned as 'environmental protection' with the intention that these areas maximise landscape levels connectivity by retaining high value vegetation. The referral area itself is not strategically positioned to contribute to these higher value areas. It is not considered appropriate to retain vegetation within the referral area as this will promote movement towards existing developed sites (Providence Central to the North) and future sites that are proposing complete development (west and south-west). Therefore, the referral area is not strategically positioned to provide any ecological linkages at present or in the future where connectivity potential will only lessen and retention of vegetation will promote movement to areas where threats are present.

Development is proposed over the entire 22 ha referral area with land used for housing lots, internal access roads, drainage services and district park (refer **Plan A1**). No vegetation is proposed to be retained as open space or conservation.

2.3. Local and/or State Planning Scheme, Plans and/or Policies

Item 2.3 of the PD Request asks for, ***"Details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that applies or is likely to apply to the proposed action. Details should include (but are not limited to):***

a) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy?

b) application/approval numbers for existing applications where relevant

c) obtained approvals or additional approvals that are required."

Ripley Valley Priority Development Area Development Scheme

At the Local level, the referral area is located within the RVPDA as part of the Ipswich City Council Local Government Area (LGA), the former of which was declared under the *Urban Land Development Authority Act 2007* (ULDA Act). This legislation supersedes the requirements of Local Government planning provisions (in this case, the *Ipswich City Council Planning Scheme*) and selective other state legislation (e.g., *Vegetation Management Act 1999*, and others).

The ULDA has now been replaced by Economic Development Queensland (EDQ) and the UDA renamed as a Priority Development Area (PDA), with the meaning defined in the *Economic Development Act 2012* (EDQ Act).

The RVPDA development scheme was approved in October 2011 and regulates development within the PDA. The Scheme identifies that the site occurs as wholly 'urban living.' Within the urban living zone of the PDA, residential development is planned for neighbourhoods and focused on accessible centres comprising a mix of residential including houses, multiple residential and other residential and live work opportunities through home-based business.

A development application has been lodged to EDQ for assessment against the RVPDA Development Scheme (7251/2018/MAPDA/A), which is being assessed by ICC against EDQ's Implementation Guidelines. Specifically, the applicable guideline is Guideline 14 – Environment and Natural Resource Sustainability (IG14). A Significant Biodiversity Assessment Report (SBAR) will be developed to inform the development application and provide background data and rationale for the development proposal.

Nature Conservation Act 1992

Under the *Nature Conservation Act 1992* (NCA) Protected Plants Flora Trigger Survey Map, the referral area is partly mapped as 'High Risk.' Prior to clearing, a flora survey and associated report will be completed in accordance with the Flora Survey Guidelines – Protected Plants provided by the Department of Environment, Tourism, Science, and Innovation (DETSI).

3. Description of the Environment and Matters of National Environmental Significance

This section responds to Item 3 of the PD request which requires the proponent to provide a description of the environment affected by and surrounding the proposed action area, over both the short and long term. Specific matters to which this section addresses are detailed in the following subsections.

3.1. Description of potential MNES that occur on, and adjacent to, the Project

Item 3.1 of the PD Request asks for, ***"A description of the environment more broadly including the previous and current land use within and surrounding the proposed action area".***

Site Context

The referral area is located at Bayliss Road, South Ripley, Queensland described as Lot 7 on RP836942 and Lot 78 on SP308008. The referral area is located within the central portion of the RVPDA, approximately 14.5 km south-east of Ipswich and 34 km south-west of Brisbane. The referral area, and majority of the surrounding landscape, is zoned for 'urban living' under the RVPDA.

Current land use

The referral area was predominantly cleared from at least the 1960's with a dominance of grass paddocks maintained through the 1980s and 1990s. The promotion of grass paddocks is likely to have been to facilitate rural land uses such as cattle agistment. Some regrowth vegetation has occurred in the 2010s indicating juvenile aged vegetation. Historic land-uses on the referral area are consistent with the broader landscape where surrounding properties have also been historically cleared and maintained for >40 years. Following the designation of the RVPDA in 2011, a significant amount of development has occurred within the immediate vicinity of the referral area (refer **Plan A5**). The existing land use of the referral area as a vacant rural property is proposed to be changed to residential development as per the planning intent of the region.

Bayliss Road adjoins the northern boundary of the referral area which partially exists as a dirt access track. This road is to be upgraded to facilitate approved residential developments in the region 'Providence East' to the east of the referral area. Further north is a large predominantly completed development, 'Providence Central' while to the south, two larger properties hold current EPBC applications (2023/09690 and 2021/9061) with a similarly sized property to the west also under assessment with the EPBC act (2025/10117) (refer **Plan A3**). Ripley Road is present further west of the referral area which is due to be upgraded following catalyst funding from Queensland Government, providing significant transport

connection within the RVPDA by linking approved developments to the north and east. To the east of the referral area is a land parcel zoned as 'environmental protection' under the RVPDA development scheme and adjoins approved and under assessment developments to the south/south-east. The 'environmental protection' zoning of RVDPA development scheme strategically links areas of high ecological value (remnant vegetation and waterways) and promotes large functional corridors to be established across the region. Approved developments (EPBC 20118/8347) and under assessment developments align with this zoning and provide connection to White Rock Conservation Park further east (refer **Plan A2**).

At present, surrounding vegetation values vary from Category X (non-remnant) cleared areas to Category C (high-value regrowth) and pockets of Category B (remnant) further east.

Topography and soils

The referral area is on a gentle undulating topography from 30 m AHD in the south-west to 90 m AHD in the south-east (refer **Plan A6**). The referral area is mapped as having Sodosol soils under the Australian Soil Classification (ASC) which are generally found in poorly drained sites with low agricultural potential and have low to moderate chemical fertility (refer **Part B – Figure 5**).

Vegetation Communities

The referral area is mapped entirely as Category X (non-remnant) vegetation as a result of historical clearing and rural land management. A review of pre-clear vegetation mapping indicates the majority of the referral area as historically being 'least concern' RE12.9-10.7 with a composite community of RE12.9-10.2/RE12.9-10.7/RE12.9-10.19 in the eastern extent.

Field surveys identified vegetation across the referral area to contain predominantly regrowth vegetation with some scattered larger native trees. Indicator species within the referral area were broadly reflective of RE12.9-10.7 being *Eucalyptus crebra* (Narrow-leaved Ironbark) dominated. In the east of the referral area, field surveys identified a dominance of *Corymbia citriodora* (Spotted Gum) within regrowth vegetation which more closely aligns with RE12.9-10.2. No evidence of RE12.9-10.19 was observed (refer **Section 3.3** for further details).

AU1 – Non-remnant vegetation indicative of RE12.9-10.2

The majority of the referral area was recognised as containing trees species indicative of RE12.9-10.7 being *Eucalyptus crebra* (Narrow-leaved Ironbark), *Corymbia citriodora* (Spotted Gum) *Eucalyptus tereticornis* (Forest Red Gum), *Corymbia tessellaris* (Moreton Bay Ash) and *Eucalyptus melanophloia* (Silver-leaf Ironbark). In the south-east of the referral area *Corymbia citriodora* (Spotted Gum) was observed to be the dominant canopy species and therefore vegetation in this area was more reflective of 'Least Concern' RE 12.9-10.2. As a result of historical and continued rural pursuits, the understory consisted of predominantly regrowth acacia species and dense patches of exotic *Lantana camara* (Lantana). Native and exotic grasses were present throughout.

AU2 – Non-remnant vegetation indicative of RE12.9-10.7

The majority of the referral area was observed to reflect RE12.9-10.7 being *Eucalyptus crebra* (Narrow-leaved Ironbark) dominant. (refer **Section 3.3** for further details). The understory was equally highly disturbed in this area with *Lantana camara* (Lantana) dominant and acacia regrowth.

AU3 - Cleared areas

The balance of the referral area was identified as cleared areas with no native canopy present and only regrowth acacia and weeds observed. Two historical stockpiles are present within AU3 which were

identified on-ground as being almost completely devoid of native vegetation, instead consisting of only exposed ground, weeds and some acacia regrowth.

Item 3.2. of the PD Request asks for ***"A description of any potential listed threatened species or ecological community (including but not limited to those listed in this request for information) that occur in the project area and adjacent areas."***

As part of the original referral material (included in **Part B** of this PD), a Likelihood of Occurrence Assessment was completed for MNES identified in the *EPBC Act* Protected Matters Search as having the potential to occur within 5 km of the referral area.

The likelihood of occurrence is two tiered, first a desktop assessment is conducted to ascertain any local records and potential habitat within the referral area. The result of this assessment drives the field survey methodology where on-ground detail surveys are completed to re-evaluate the likelihood of occurrence assessment. Several species where identified as having the potential to occur based on the desktop assessment. Following field survey several species were downgraded given the lack of suitable habitat.

Table A5 provides an extract of the Likelihood of Occurrence Assessment for Regent Honeyeater, South-eastern Glossy Black-cockatoo, Swift Parrot, Greater Glider, Koala, Grey-headed Flying-fox and White-throated Needletail from **Appendix C** of **Part B** of this PD. This extract has been amended to provide additional detail relevant to the species reviewed and their potential occurrence within the referral area and on land adjacent.

Further detailed literature review of preferred species habitat and assessment of the referral area for the additional species identified by the DCCEEW is contained in the sections below, to demonstrate justification as to why the Likelihood of Occurrence Assessment identified these species as highly unlikely to occur.

Table A5: Extract of Likelihood of Occurrence Assessment for relevant MNES from Appendix D of Part B of this PD which has been updated.

Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Regent Honeyeaters mostly occur in dry Box-Ironbark Eucalypt woodland and dry sclerophyll forest associations in areas of low to moderate relief, wherein they prefer moister, more fertile sites. These areas are generally associated with creek flats and river valleys and foothills. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes (DoE, 2016). They are a generalist forager, which mainly feed on nectar from a wide range of eucalypts and mistletoes, particularly in areas with box-ironbark associations, preferring more fertile sites with higher soil water content, more typical of Land Zone 3. They have also been found to prefer large diameter eucalypt trees for foraging as they typically produce more nectar. The Regent Honeyeater's preferred foraging species is *Corymbia maculata* which is primarily found in southern NSW. Similar species, *Corymbia citriodora* and *C. henryi* are	**Low** The Regent Honeyeater mostly inhabits slopes of the Great Dividing Range, in areas of low to moderate relief with moist, fertile soils. It is most commonly associated with box-ironbark eucalypt woodland and dry sclerophyll forest, but also inhabits riparian vegetation such as She-oak (Casuarina spp.) where it feeds on needle-leaved mistletoe and sometimes breeds. Principally a canopy bird, it is reliant on select species of eucalypt and mistletoe which provide rich nectar flows. It sometimes utilises lowland coastal forest which may act as refuge when its usual habitat is affected by drought. It also uses a range of other habitats including remnant patches in farmland and urban areas, roadside reserves and travelling stock routes. The referral area was confirmed to contain winter flowering tree species, including *Corymbia citriodora* (Spotted Gum) and *Eucalyptus tereticornis* (Forest Red Gum). However, the referral area has been historically cleared and predominantly consists of regrowth vegetation values as reflected in the non-remnant vegetation mapping. The referral area therefore lacks large mature trees which are considered suitable habitat for the species. A detailed tree plot showed that the site lacks large mature trees (≥ 500mm DBH) with only 41 specimens recorded across the referral area with the majority in the north of the area adjacent to major development 'Providence Central.' Furthermore, the referral area lacks high canopy cover and an abundance of mistletoes resulting in limited foraging habitat.

Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
			more common in south-east Queensland.	During surveys, aggressive honeyeater species *Philemon corniculatus* (Noisy Friarbird) were recorded which further reduces the overall suitability of the referral area. Additionally, the species has not been recorded within the referral area, and there are no records within 5 km. Given the lack of suitable habitat, lack of records there is considered a low likelihood that the species would utilise the referral area.
Calyptorhynchus lathami lathami	South-eastern Glossy Black-cockatoo	Vulnerable	This species prefers woodland areas dominated by she-oak Allocasuarina, or open sclerophyll forests and woodlands with a stratum of Allocasuarina beneath Eucalyptus, Corymbia or Angophora. Glossy black-cockatoos have also been observed in mixed Allocasuarina, Casuarina, cypress Callitris and brigalow *Acacia harpophylla* woodland assemblages. In SEQ west of the Great Dividing Range, they have been observed feeding in remnant belah *Casuarina cristata* and bulloak *Allocasuarina luehmannii* forests. This species is also known to utilise appropriate remnant woodlands, and individual or small pockets of Allocasuarina and Casuarina feed trees in urban areas.	**Unlikely** The South-eastern Glossy Black-cockatoo relies on two specific habitat types for foraging and breeding. Foraging habitat is defined as vegetation containing Casuarina or Allocasuarina species. In South-east Queensland these are usually *Allocasuarina littoralis* (Black She-oak) and *Allocasuarina torulosa* (Forest She-oak). The South-eastern Glossy Black-cockatoo is known to be highly selective of individual feed trees, and a dense subcanopy of Casuarina or Allocasuarina species is required to provide suitable foraging habitat. Breeding habitat is understood to be equally selective with a preference for specific hollow characteristics, notably a minimum entrance diameter >15 cm. The referral area has been historically cleared and continually modified for rural uses. As a result, vegetation within the referral area is reflective of non-remnant mapping and dominated by regrowth vegetation and scattered larger trees. Trees species present include by *Corymbia citriodora* (Spotted Gum) with *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus tereticornis* (Forest Red Gum) however the sub-canopy was sparse as a result of on-going rural uses. Therefore, Allocasuarina specimens were confined to only a



Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
				handful of scattered individuals. The species is highly selective of individual food trees and therefore require a dense stand of Allocasuarina for foraging. Given the lack of individual specimens, the referral area is unlikely to provide adequate foraging habitat for the species. Furthermore, the ample availability of large areas of foraging habitat within White Rock Conservation Park, where the species is known to occur, is far more likely to be utilised than low-value habitat within the referral area. Field surveys recorded all hollow-bearing trees across the referral area with only four (4) hollow bearing trees observed. Of these trees, only two hollows were identified as providing the minimum size requirement (>15cm diameter) for the species. The species is considered unlikely to occur due to lack of both foraging and breeding habitat and lack of evidence of occurrence.
Lathamus discolour	Swift Parrot	Critically Endangered	Swift Parrots breed in Tasmania during spring to early summer. During autumn and winter the species migrates to the mainland where it follows a nomadic existence linked to the availability and timing of flowering of trees in various locations.	**Low** The Swift Parrot migrates to the mainland where it follows a nomadic existence linked to the availability and timing of flowering trees. The species has a specific preference of large mature trees for feeding. The referral area is mapped entirely as Category X (non-remnant) vegetation as a result of historical land-clearing and on-going rural land-uses. Field surveys identified vegetation within the referral area to consist of a mixture of scattered mature trees, regrowth vegetation and cleared areas. While eucalypt species were recorded within the referral area which are broadly considered foraging species for the Swift Parrot, the lack of maturity of these species impacts the reliability of flowering events

Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
				The population was estimated to be only 750 (range 300 to 1,000) mature individuals in 2020 (Webb et al. 2021). Since 1964 there have been 313 dated (ALA 2025) records of Swift Parrot in Queensland. There have been no WildNet records (since 1980) of Swift Parrot reported from directly within the referral area, or within 10 km of the referral area. A 20 km radius Atlas of Living Australia (ALA) search recovered a total of 26 Swift Parrot records, including: 23 records associated with a single event at Springfield Lakes (June 2019; 11 km north-east of the referral area). The remaining records include three sightings from 2010 approximately 18 km east of the site and an iNaturlist record from 2024 approximately 16 km north of the referral area. All other records within 20 km of the site shown on ALA are dated records (1975). The value of vegetation within the referral area to the species is limited by a lack of mature trees. There is a very low probability of the species occurring, given its limited and highly sporadic presence within the local area. There are no publicly accessible records (from 2025) for Queensland.
Petauroides volans	Greater Glider	Vulnerable	The Greater Glider is a nocturnal gliding marsupial with a broad distribution throughout mainland eastern Australia, mostly restricted to eucalypt forests and woodlands with abundant (large) hollow-bearing trees for shelter and a variety of eucalypt species for feeding. Diet consists of eucalypt leaves, and occasionally flowers.	**Low** The Greater Glider is largely restricted to eucalypt forests and woodlands of eastern Australia. It is typically found in highest abundance in taller, montane, moist eucalypt forests on fertile soils, with old trees and abundant hollows associated with Category B (remnant) vegetation. The referral area is entirely mapped as Category X (non-remnant) vegetation as a result of historical clearing. On-ground surveys identified largely regrowth vegetation and a lack of large mature hollow-bearing trees. A detailed tree plot across the

Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
			Six tree species were identified as dominant or co-dominant species to the majority of greater glider habitat; *Corymbia citriodora, Eucalyptus moluccana, E. tereticornis, E. crebra, C. intermedia* and *E. portuensis*. Additionally, a list of 503 regional ecosystems with a known or possible association with Queensland 'Guide to Greater Glider Habitat in Queensland' (DES 2022). Habitat identified as critical habitat in the Conservation Advice for Petauroides volans (DCCEEW, 2022) can be described as: • large contiguous areas of eucalypt forest, which contain mature hollow-bearing trees and a diverse range of the species' preferred food species in a particular region; and • smaller or fragmented habitat patches connected to larger patches of habitat, that can facilitate dispersal of the species	referral area recorded only four (4) trees containing hollows and only 2 hollows considered of a suitable size for the species (≥100 mm diameter). This represents a hollow density of approximately 0.09 hollows per ha, far below the 2-4 hollows per 2 ha required by the species as stated in the *Conservation Advice for Petauroides volans (greater glider (southern and central)) (2022).* The referral area is also situated adjacent to established and emerging residential developments and high levels of disturbance. Nocturnal surveys (spotlighting) were conducted across the referral area, with no sighting of the species recorded. The Greater Glider's distinctive bright eye shine and inactive nature means that the likelihood of detecting the species during spotlighting is high. Furthermore, no sightings of Greater Glider have been recorded by ALA within 5 km of the referral area. The evidence suggests that the referral area is not currently utilised by Greater Glider and is considered poor habitat for the species. As stated in the *Conservation Advice for Petauroides volans (Greater Glider (southern and central)) 2022*, the species is particularly sensitive to disturbance associated with forest clearance and fragmentation and disperse poorly. The referral area has been subject to modification for past and on-going land-uses resulting in a highly disturbed environment. The referral area lacks suitable habitat for the species and is located adjacent to highly modified areas.

Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
			and/or that enable recolonisation; and • cool microclimate forest/woodland areas (e.g. protected gullies, sheltered high elevation areas, coastal lowland areas, southern slopes); and • areas identified as refuges under future climate changes scenarios; and • short-term or long-term post-fire refuges (i.e. unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonise burnt areas.	
Phascolarctos cinereus	Koala	Endangered	They are found in a range of habitats, from coastal islands and tall eucalypt forests to low woodlands inland. The species is known from the surrounding area and evidence has been recorded on-site.	**Moderate** The Koala occurs in a range of environments containing eucalypt forest or woodland. Despite historical clearing occurring over the entire referral area and Category X (non-remnant) status, Non-juvenile Koala Habitat Trees (NJKHTs) are present including *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus siderophloia* (Grey Ironbark), *Corymbia citriodora* (Spotted Gum) and *Corymbia tessellaris* (Moreton Bay Ash). Several detailed surveys were completed including spotlighting and SAT assessments. SAT assessments were utilised to detect indirect evidence of Koala activity across the referral area, to determine the likelihood of occurrence. A total of six (6) SAT

Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
				assessments were completed as well as incidental and targeted nocturnal surveys across the referral area. Detailed surveys failed to directly detect Koala however indirect evidence in the form of scats were recorded only at 'SAT 1' which indicates 'low' usage. This evidence suggests that the referral area is not currently utilised by a population of Koala and is more likely to be used sporadically by transient individuals. Koalas are known to occur within the local area with several sightings recorded on publicly available databases (ALA and biomaps). Notably, no sightings of the species have been recorded within the referral area with the majority of records west of Ripley Road, north of the Centenary Highway and in White Rock Conservation Park to the east. The referral area is located within a highly modified landscape that has been subject to extensive historical modification for rural purposes and more recent residential and infrastructure developments. The strategic planning of the area has resulted in 100% 'urban living' zoning with much of the surrounding land zoned the same. The referral area does retain some local level connectivity to the east and the referral area does contain vegetation that would be considered Koala habitat. Therefore, there is potential for the species to occur as a transient individual.
Pteropus poliocephalus	Grey-headed Flying Fox	Vulnerable	Species generally roosts in camps in trees adjacent to larger permanent watercourse. The Grey-headed flying fox requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises	**Moderate** Grey-headed Flying-fox requires foraging resources and roosting sites to persist. The species is known to use a wide variety of habitats including subtropical and temperate rainforests, tall sclerophyll forest and woodlands, heaths, swamps and also urban and agricultural areas where food trees have been cultivated.

Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
			vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. It also feeds on commercial fruit crops. The primary food source is blossom from *Eucalyptus sp*. and related genera.	The species is highly adaptive with its diverse native diet, which it can supplement with introduced species. It is known to forage within a variety of habitat areas as each resource does not produce food throughout the entire year. There are no observed roosts on-site, with the nearest roost located 8.6 km north-west of the site in Yamanto (479). This roost was last surveyed in 2020 where GHFF were present. There are several scattered sightings within the broader locality with most records observed close to the Yamanto camp. Notably, two recent records (2023) are present approximately 5km east of the site within White Rock Conservation Park. The referral area does contain potential foraging species however, given the extensive historical clearing, vegetation is largely of regrowth value and does not contain vegetation density reflective or remnant vegetation. Additionally, the referral area contains larger cleared areas that do not provide any foraging resources for the species. Therefore, foraging habitat within the referral area is considered low value, particularly given the availability of large areas of suitable habitat within White Rock Conservation Park to the east. The high mobility of the species and presence of forging species indicates there is potential for the species to utilise the referral area in a foraging capacity.
Hirundapus caudacutus	White-throated Needletail	Vulnerable	Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly	**Unlikely** The White-throated Needletail is a migratory species and is almost exclusively aerial which affects the ease of conventional habitat descriptions. Although they occur over most types of habitats, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings,

Species	Common Name	Status	Description of Community / Habitat	Likelihood of Occurrence
			recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps.	below the canopy. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps. White-throated Needletails almost always forage aerially, primarily on insects, at heights up to 'cloud level', above a wide variety of habitats ranging from heavily treed forests to open habitats, such as farmland, heathland or mudflats. White-throated Needletails are known to roost in woodland and forest habitat, amongst canopy or in hollows. The species breeds in the northern hemisphere in wooded lowlands and sparsely vegetated hills, as well as mountains covered with coniferous forests. The referral area is mapped entirely as Category X (non-remnant) vegetation with on-ground surveys identifying historical clearing across the site. Historical clearing and contemporary rural land-uses has resulted in limited mature trees and hollows required by the species. Only four (4) hollow bearing trees were recorded cross the entire referral area and only 41 trees were considered mature specimens (i.e ≥ 500mm DBH) Additionally, the species has not been observed within the referral area. While there are several records of the species within 5 km of the referral area, the high mobility of the species and lack of suitable habitat indicates it is unlikely for the species to utilise the referral area, particularly given the availability of suitable habitat in the broader locality.

3.2. Field Survey Effort

Item 3.4 of the PD Request asks for ***'Up to date baseline and survey data at the impact site(s), and if relevant, the proposed offset site(s) site, including:***

a. Information on the survey methodology or technique used (e.g., thermal image detection, dog detection, eDNA methods, camera trapping, tree hollow search, SAT surveys etc)
b. When surveys were conducted (e.g., dates, time of day, season, etc.) and survey effort (e.g., two hours for every one hectare within a 5-hectare area)
c. Map/s of survey points or transects and how the survey points or transects were selected.
d. An assessment of the adequacy of any surveys undertaken with reference to any relevant scientific literature and/or statutory documents. In particular, the extent to which these surveys were appropriate for the species and undertaken in accordance with relevant survey guidelines.
e. Results of all surveys undertaken.

This PD provides all literature reviewed and cited within a reference list. The source of survey methods, guidelines and historical records are also provided. All survey methods undertaken have been guided by best practice and where applicable, Commonwealth and State survey guidelines for threatened species. This includes the following methodologies:

- *Survey guidelines for Australia's threatened bats.*
- *Terrestrial Vertebrate Fauna Survey Guidelines.*
- *Survey Guidelines for Australia's Threatened Mammals.*
- *EPBC Act significant impact guidelines*

Ecological field surveys were completed across the referral area in the attempt to confirm presence of potential MNES. Fauna surveys were conducted under the following permits held by SH:

- Scientific Purposes Permit **P-SPP-100794835** granted under Research / Education Application issued under the provisions of the Nature Conservation (Animals) Regulation 2020
- Department of Agriculture and Fisheries (DAF) Ethics clearance **CA 2020/02/1355**
- Scientific User Registration **SUR000451**

3.2.1 Desktop Analysis

Prior to the commencement of field surveys, a desktop analysis was conducted of Commonwealth, State and Local environmental databases and overlay mapping to identify potential MNES and included the following:

- Commonwealth MNES protected under the EPBC Act on and around the referral area using the protected matters search tool with a 5 km radius
- *Nature Conservation Act 1992* (NCA) listed threatened species on and around the referral area using the wildlife online database search tool with a 5 km radius
- Public environmental databases including Atlas of Living Australia and BioMaps;
- State regulated vegetation management and vegetation supporting maps under the VMA including essential habitat mapping; and
- Local government records where MNES threatened species and communities are known to occur in the area.

Additionally, a review of aerial photography history was undertaken via QImagery to assist with the broad delineation of vegetation communities and to determine historical patterns to local vegetation communities.

3.2.2 MNES Surveys

Field surveys utilising the methods outlined in the following subsections (provided in **Part B - Referral MNES Report**) were conducted to describe ecological value of the referral area (refer **Plan A7**). Field surveys were undertaken during seasonal conditions generally favourable to the detection and identification of flora and fauna species. Field survey methods were determined based on target species and communities and EPBC Act listed species guidelines. Field surveys were completed between May and September 2024.

These surveys involved the following:

- Validation of desktop findings;
- Verification of the floristic structure and composition of vegetation communities present;
- Fauna surveys including diurnal bird surveys, nocturnal searches (spotlighting), camera trap deployment, tree and hollow recording and targeted searches for conservation-significant species include Koala SATs;
- Describing the fauna habitat present and recording any incidental fauna sightings;
- Identifying weed species and documenting vegetation disturbance; and
- Assessment of the ecological values on site with respect to the mapped environmental values on the site.
- Assessment of the Quantity and Quality of habitat for threatened species

Over 91 person hours have been spent completing surveys across the referral area as well as 15 days of remote fauna camera traps by suitably qualified Ecologists. Consideration was also given to the ecological significance of the referral area in the context of the local area and the broader region. No specific surveys for reptiles (e.g. pitfall traps) were undertaken during field surveys based on the likelihood of occurrence assessment. A summary of field surveys completed is provided in **Table A6** with details of specific survey methods and suitable qualified personnel provided in **Table A7**.

Table A6: Contemporary Field Survey Methods Summary

Date	Weather Conditions	Methods
28.05.2024	Clear, 9.0°C min - 23.9°C max, 0 mm rainfall	- Preliminary surveys - Incidental diurnal surveys - Habitat quality transects
03.09.2024	Clear, 5.1°C min – 26.7°C max, 0 mm rainfall	- Tree plotting - incidental diurnal surveys - install motion camera traps
04.09.2024	Overcast, 4.0°C min – 24.0°C max, 0 mm rainfall	- Tree plotting - incidental diurnal surveys
05.09.2024	Clear, 6.5°C min - 24.7°C max, 0 mm rainfall	- Dawn bird surveys

		- Tree plotting - SATs
16.09.2024	Clear, 8.6°C min – 24.8°C max, 0 mm rainfall	- Habitat quality transects - SATs - Incidental diurnal surveys
17.09.2024	Clear, 5.4°C min – 25.3°C max, 0 mm rainfall	- Dawn bird surveys
18.09.2024	Clear, 9.4°C min – 27.5°C max, 0 mm rainfall	- Collect motion cameras - Incidental diurnal surveys - Dusk bird surveys - Spotlighting

Bureau of Meteorology (Station Number 040004) (BOM 2024)

Source: *Combination of Amberely (040004) and Greenbank (Defence) QLD (140009), BOM 2024.*

Table A7: Survey guidelines and field personnel

Survey guidelines	Techniques Implemented and survey effort	Field personnel qualifications
Survey guidelines for Australia's threatened mammals **Phillips and Callaghan (2011)**	• Six (6) Spot Assessment Technique surveys • Assessment of dispersal, foraging and breeding values (habitat suitability) • Spotlighting (4 person hours) • Five (5) remote motion activated fauna camera (15 nights) • Incidental diurnal surveys (91 person hours)	**Principle Ecologist** • 20 years of relevant experience • Bachelor of Applied Science (Natural Systems and Wildlife Management) **Senior Ecologist** • 4 years of relevant experience • Bachelor of Science (Ecology and Conservation Biology) **Ecologist** • 13 years of relevant experience • Bachelor of Science (Ecology and Conservation Biology)
Survey Guidelines for Australia's threatened bats	• Spotlighting (4 person hours)	
Survey Guidelines for Australia's threatened birds	• Crepuscular bird surveys (12 person hours) • Incidental diurnal surveys (91 person hours)	**Ecologist** • 2 years of relevant experience • Bachelor of Environmental Science (Ecology and Conservation) **Graduate Ecologist** • 1 year of relevant experience • Bachelor of Environmental Science

Incidental surveys (diurnal)

The referral area was walked several times to ensure all species (flora and fauna) were recorded and identified. Particular attention was paid to any threatened species that were listed as possibly occurring on or within the vicinity of the application area and specific micro-assemblages which may support these threatened species. This included observations for vertebrate fauna present on or that may utilise the study area, including faunal lists and significance status of species under the EPBC Act including the JAMBA, CAMBA, ROKAMBA and the Bonn Convention, and Queensland's NCA.

The incidental survey included identification of ecological features and values such as broad vegetation communities, fauna habitats and contextual assessment. Incidental surveys included observing and recording flora and fauna species through either direct observation or indirect evidence (calls, tracks, scats)

Motion Detection Camera

Camera trapping involves setting up a fixed digital camera to capture images or video of animals that pass in front of a camera with an infrared trigger. It is a non-invasive technique designed to detect medium to large sized animals as they pass, although it is possible to detect smaller animals depending on the set-up. This method identifies fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts. Five (5) camera traps were set up across the referral area and remained active for 15 days. Cameras were attached 30-100 cm from the ground on a tree trunk and directed towards landscape features. Traps targeted mammals and were baited with chicken.

Spot Assessment Technique

Tools for determining localised levels of use by *Phascolarctos cinereus* (Koala) included the Spot Assessment Technique (SAT), scat meanders, as well as direct observations for Koala and Koala activity throughout the field survey period. These surveys were completed in May – September 2024. Additional general observations and habitat features across the referral area were also recorded. SAT surveys were undertaken in accordance with the methodology developed by the AKF and specified in the EPBC Act Referral Guidance for the Endangered Koala (specifically, the *Survey Guidelines for Australia's Threatened Mammals* was incorporated where relevant).

SAT surveys follow the methodology designed by Phillips and Callaghan (2011). It involves a single Ecologist combing the ground under Koala food plant trees (or non-food plant trees if necessary) for a 1-metre radius around the trunk searching for scats. Each tree searched must be greater or equal to 100 mm diameter at breast height (DBH) and search of each tree continues for up to 2 minutes. The search can cease prior to the 2-minute limit if scats are detected. Thirty trees meeting the specifications are analysed during each SAT survey.

A total of six (6) SATs were completed across the referral area where Koala habitat trees were present.

Nocturnal Spotlighting

This non-intrusive technique is the most effective method to obtain estimates of nocturnal arboreal mammal incidence and abundance in wooded habitats. Spotlighting also targets medium to large terrestrial nocturnal mammals, and can detect other nocturnal taxon groups (e.g. frogs, geckoes, nocturnal snakes, nocturnal birds, spiders).

Spotlight searches were conducted on one night (18 September 2024) between 1800hrs to 2100hrs by two Ecologists. High-powered spotlights (Fenix HP25R Rechargeable LED Headlamp – 1000 lumens) were

used to detect cryptic and nocturnal fauna. Surveys were completed on foot was preferred (vehicle access was not possible). A total of 4 person hours of spotlighting meanders were completed across the referral area.

Modified Habitat Quality Assessment

The Modified Habitat Quality Assessment (MHQA) methodology was utilised to assess the referral area condition, site context and species stocking rate. Refer to **Section 4** for more detail on methodology.

The referral area was recognised as three assessment units (AUs). In order to determine the quantum and quality of the habitat suitable for koala within the referral area, vegetation/habitat quality was derived from the Modified Habitat Quality Assessment tool.

Tree plot of potential habitat trees

Recognising that the presence of hollows and large mature trees is a key limiting factor for the presence of threatened arboreal mammal species such as Greater Glider as well as relevant for foarging recurves for Regent Honeyeater and Swift Parrot. A survey of large trees and hollow bearing trees was completed across the referral area to locate habitat features (i.e., potential den trees). All mature (>500mm DBH) and hollow-bearing trees were recorded across the referral area from the ground by experienced Ecologists which is considered the standard methodology of hollow recording (Woolley et al. 2018). Additionally, trees of the species *Corymbia citriodora* (Spotted Gum) and *Eucalyptus tereticornis* (Forest Red Gum) were recorded ≥300mm DBH for their specific relevance to Regent Honeyeater and Swift Parrot.

Both dead and alive trees were recorded where necessary. Hollow sizes were recorded to provide specific suitability assessments (i.e Greater Glider and South-eastern Glossy Black-cockatoo require larger hollows, >100 mm diameter).

Hollows were separated into the following size categories:

- Small (0-99 mm diameter),
- Medium (100-299 mm diameter) and
- Large (>300 mm diameter).

Bird survey

All threatened bird species were considered to have a low/unlikely lowlihood of occurrence based on the existing state of vegetation and limited habitat. Nevertheless, specific crepuscular bird surveys were carried out during dawn and dusk periods where bird activity is typically high. Surveys were completed across the referral area utilising a combination of static point assessments and line transects as referenced in the *Survey Guidelines for Australia's threatened Birds*, all bird species were then recorded. These surveys totalled 12 person hours over three days. In addition to targeted surveys, incidental diurnal surveys were completed by Ecologists across all days with all fauna recorded. This totalled 91 person hours over 7 days.

Summary

The total field survey effort is provided as **Plan A7.**

- For Koala specific field survey effort refer **Plan A7.1**
- For GHFF specific field survey effort refer **Plan A7.2**
- For bird specific field survey effort refer **Plan A7.3**

- For Greater Glider specific field survey effort refer **Plan A7.4.**

3.3. Field survey results

3.3.1 Vegetation Communities and Assessment Units

The following sections discuss the results of the contemporary field verification surveys of vegetation communities within the referral area. This referral area has been historically cleared and highly modified for rural uses. Scattered vegetation values are present including cleared open areas, regrowth and scattered larger trees. Pre-clear RE mapping indicates the site was historically comprised of predominantly Of Concern RE12.9-10.7 with composite RE12.9-10.2/12.9-10.7/12.9-10.19 in the east. A small polygon of pre-clear RE12.3.3 is mapped along a cleared portion of the western boundary. On-ground vegetation characteristics were utilised to delineate vegetation communities and assessment units. Three vegetation communities were identified within the referral area (refer **Table A8**).

AU1 - Non-remnant vegetation indicative of RE12.9-10.2 (5.5 ha)

This vegetation community in the south-east of the referral area was observed as being dominated by *Corymbia citriodora* (Spotted Gum) and therefore vegetation in this area was more reflective of 'Least Concern' RE 12.9-10.2. The understory is equally disturbed access the referral area with patches of dense weed infestations and regrowth cleared understory as a result of historical and contemporary rural land uses.



Photo set 1: AU1 – Vegetation indicative of historically cleared RE12.9-10.2

AU2 - Non-remnant vegetation indicative of RE12.9-10.7 (10.4 ha)

Field surveys identified the majority of the referral area as containing tree species, where present, indicative of 'Of Concern' RE12.9-10.7 being *Eucalyptus crebra* (Narrow-leaved Ironbark), *Eucalyptus tereticornis* (Forest Red Gum), *Corymbia tessellaris* (Moreton Bay Ash) and *Eucalyptus melanophloia* (Silver-leaf Ironbark). Where *Eucalyptus crebra* (Narrow-leaved Ironbark) is the dominant canopy species, vegetation is reflective of RE12.9-10.7.



Photo set 2: AU2 – vegetation indicative of historically cleared RE12.9-10.7

AU3 – Cleared Areas (5.8 ha)

The balance of the referral area was identified as being highly disturbed cleared areas which includes historical stockpile locations. These areas include exposed ground dominated by exotic grasses and other ground cover weeds with some acacia regrowth.



Photo set 3: Historical stockpiles on-site with only regrowth present

Table A8: Assessment units within referral area

Assessment Unit	VMA Category	Vegetation Status	Regional Ecosystem	Area (ha)
AU1	Category X	Non-remnant	Of Concern RE12.9-10.2	5.5
AU2	Category X	Non-remnant	Least Concern RE12.9-10.9	10.4
AU3	Category X	Non-remnant	N/A	5.8

3.3.2 Koala occurrence surveys and results

Six (6) SAT surveys were conducted across the referral area in May and September 2024. The Australian Koala Foundation Koala activity level classification table (following Philips and Callaghan 2011) provides an estimate of Koala utilisation based on defined activity categories (refer **Table A9**). The East Coast (medium to high) category is considered appropriate for the site. The evidence suggests that levels of Koala usage at the site can be classified as 'Low' according to the Phillips and Callaghan Koala activity level classifications, due to only two (2) trees recorded as containing scats across all six (6) SAT sites. The low Koala usage of the site may be a result of major changes in the immediate landscape including the development of 'Providence Central' to the north and presence of main roads. Additionally, the site retains low value habitat through historical clearing and maintenance as a result of rural uses. Refer **Plan A7.1** for locations.

Results of SAT are summarised in **Table A10**. Raw SAT survey data is provided in **Attachment A2**.

Table A9: Koala Activity Level Classification (Phillips and Callaghan 2011)

Usage	East Coastal (low)	East Coastal (med-high)	Western (med-high)
Low	<3.33%	<22.5%	<35.8
Moderate	3.33-12.6%	22.5-32.8%	35.8-46.7
High	>12.6%	>32.8	>46.7

Table A10: Summary of SAT Results

SAT Site Number	SAT Score	Evidence of Koala Use (%)	Koala Use (High/Medium/Low)
AU1			
SAT 1	2/30	6.67%	Low
SAT 5	0/30	0%	No Use
SAT 6	0/30	0%	No Use
AU2			
SAT 2	0/30	0%	No Use
SAT 3	0/30	0%	No Use
SAT 4	0/30	0%	No Use
AU3			
N/A – No SAT undertaken due to lack of Koala habitat trees (i.e <30 trees per 1 ha)			
N/A – No SAT undertaken due to lack of Koala habitat trees (i.e <30 trees per 1 ha)			

3.3.3 Fauna assessment results

Fauna species were recorded by utilising several different survey techniques as described in **Section 3.2.2**. All fauna species recorded are considered common to the local area and where predominantly defined as avi-fauna. All fauna species recorded within the referral area, or as fly-over, and the method of detection are provided in **Table A12**.

3.3.4 Tree plot of potential habitat trees

Mature trees and hollow bearing trees were recorded across the referral area. Hollow bearing trees were observed to be significantly limited across the referral area with only four (4) trees recorded as contain hollows with only two (2) hollows recorded >100 mm diameter. Therefore, the density of hollows within the referral area is 0.09 hollows per ha. The lack of hollow bearing trees reflects that lack of mature specimens across the referral area. Trees of a DBH >500 mm, including dead stags, were recorded across the referral area and observed to be of low abundance (41 across 22 ha referral area, refer **Plan A8**). Further detailed assessments of the vegetation condition were utilised to compare results within the referral area against the benchmark values for RE12.9-10.2 and RE 12.9-10.7. The benchmark value for total number of large trees per ha for RE12.9-10.2 is 38 (utilising 390 mm DBH) while the benchmark of total number of large trees for RE12.9-10.7 is 18 (utilising 390 mm DBH). When comparing on-ground results with the relevant benchmark values, AU1 meets only 5.26% of the benchmark value (RE12.9-10.2) while AU2 meets only 22.22% of the benchmark value (RE12.9-10.7).

3.3.5 Assessment of Survey Adequacy

Koala

Overall, across the survey period (May and September 2024) a combination of survey methodologies to detect the presence of Koalas within the referral area were utilised. These included incidental diurnal searches across seven (7) days, six (6) activity SAT surveys, one (1) night of spotlighting, deployment of five (5) motion sensing cameras and habitat assessment. It is anticipated the combination of these methodologies, which were undertaken in accordance with departmental survey guidelines, provides an adequate survey effort across the referral area to determine the presence / absence of Koala. Specifically, surveys utilised a mix of direct and indirect methods over multiple days (refer **Plan A7.1** for Koala survey effort).

Grey-headed Flying Fox

Spotlighting surveys were completed on one night in September 2024 with two observers in accordance with the *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (2022). Targeted surveys covered the entire referral area, no Grey-headed Flying-fox individuals were identified foraging within the referral area and no roosts were identified during diurnal surveys over multiple survey days (refer **Plan A7.2** for GHFF survey effort).

Swift Parrot and Regent Honeyeater

Both Swift Parrot and Regent Honeyeater were considered to have a 'low' likelihood of occurrence based on the lack of surrounding contemporary records and low-value habitat within the referral area. Both the Regent Honeyeater and Swift Parrot are observed infrequently in Queensland with little evidence suggesting they return to the same foraging locations year on year, *National Recovery Plan for the Swift Parrot (Lathamus discolor)* (DCCEEW 2024). Both species relay on the flowering of key foraging species which are opportunistically utilised. For these reasons survey effort alone is not adequate to provide an assessment on potential for action to impact the species (DCCEEW 2024).

Nevertheless, specific crepuscular bird surveys were carried out during dawn and dusk periods where bird activity is typically high. Surveys were completed across the referral area utilising a combination of static point assessments and line transects as referenced in the *Survey Guidelines for Australia's threatened Birds*, all bird species were then recorded. These surveys totalled 12 person hours over three days. In addition to targeted surveys, incidental diurnal surveys were completed by Ecologists across all days with all fauna recorded (refer **Plan A7.3** for Birds survey effort).

Further assessment is provided in **Section 3.4.3** and **Section 3.4.4**.

Greater Glider

Survey requirements for the Greater Glider were driven by an assessment of the suitability of habitat and thus the likelihood of occurrence. The species is known to have specific habitat requirements being an abundance of large hollows at a density of 2-4 hollows per 2 ha (Eyre and Smith *et al.* 2022). Therefore, a key component of the survey was to locate all hollow bearing trees within the referral area as a direct metric for likelihood of occurrence/absence. Hollows were recorded from the ground by suitably qualified field Ecologists. While there a recorded limitations of these methods for surveying the abundance of hollows, notably the potential for hollows to be missed if not visible, the literature suggests that the presence of hollows is typically over estimated utilising this method (Rayner et al. 2011, Kelly et al. 2011 and Penton et al. 2020) and therefore is considered suitable for the purposes of this assessment.

The referral area was considered to contain unsuitable habitat for the Greater Glider as a result of significantly limited hollow-bearing trees. Therefore, the species was considered unlikely to occur (refer **Section 3.4.5** for further detail). Nevertheless, a nocturnal survey was completed targeting Greater Glider. The Greater Glider has a high detection rate utilising spotlighting surveys due to bright eye shine and low mobility. Research into the effectiveness of spotlighting in detection for Greater Glider indicated that where the species is present and sufficient survey effort has been given, detection is highly likely (Eyre 2006, Lindenmayer et al. 2001a; Kavanagh 1984). Targeted Greater Glider surveys involved spotlighting on-foot by two (2) Ecologists as per recommended survey guidelines (refer **Plan A7.4** for Greater Glider survey effort and **Table A11**).

It is considered that the survey effort, timing, and equipment used was appropriate for surveying for Greater Glider and assessing habitat. Given the lack of suitable habitat for the species and high detection rate utilis spotlighting surveys, it is considered unlikely that the species would occur.

Table A11: Glider Survey Guidelines compared to SH Survey Effort

Transect	Date	Time	Duration	Observers	Distance
Transect 1	18th September 2024	6:30 pm – 8:30 pm	120 minutes	Two (360-person minutes)	1.90 km
Survey Guidelines (Queensland)			30-person minutes		100 m x 100 m survey site, 100 m per transect

Table A12: Recorded fauna within the referral area

Species				Observations				
Scientific Name	**Common Name**	**Native/Introduced**	**Status**	**Incidental diurnal surveys**	**Cameras 03 - 18.09.2024**	**Spotlighting 18.09.2024**	**Dusk bird survey 18.09.2024**	**Dawn bird survey 17.09.2024**
BIRDS								
Acridotheres tristis	Common Myna	Introduced	N/A	x				x
Alisterus scapularis	Australian King-Parrot	Native	Least Concern	x			x	
Anas superciliosa	Pacific Black Duck	Native	Least Concern	x	x	x		
Apus nipalensis	House Swift	Native	Least Concern	x				
Aquila audax	Wedge-tail Eagle	Native	Least Concern	x				
Ardea intermedia	Intermediate Egret	Native	Least Concern	x				
Cacatua galerita	Sulphur-crested Cockatoo	Native	Least Concern	x	x		x	x
Cacatua sanguinea	Little Corella	Native	Least Concern	x				
Chenonetta jubata	Australian Wood Duck	Native	Least Concern		x	x	x	x
Chrysococcyx basalis	Horsefield's Bronze Cuckoo	Native	Least Concern					x
Cisticola exilis	Golden-headed cisticola	Native	Least Concern	x				

Species				Observations				
Scientific Name	**Common Name**	**Native/Introduced**	**Status**	**Incidental diurnal surveys**	**Cameras 03 - 18.09.2024**	**Spotlighting 18.09.2024**	**Dusk bird survey 18.09.2024**	**Dawn bird survey 17.09.2024**
Coracina novaehollandiae	Black-faced Cuckoo-shrike	Native	Least Concern	x				x
Corvus orru	Torresian Crow	Native	Least Concern	x	x		x	x
Cracticus nigrogularis	Pied Butcherbird	Native	Least Concern	x				x
Cracticus tibicen	Australian Magpie	Native	Least Concern	x	x		x	x
Cracticus torquatus	Grey Butcherbird	Native	Least Concern			x	x	x
Cuculus variolosus	Brush Cuckoo	Native	Least Concern					x
Dacelo novaeguineae	Laughing Kookaburra	Native	Least Concern	x	x	x		x
Egretta novaehollandiae	White-faced Heron	Native	Least Concern		x			
Entomyzon cyanotis	Blue-faced Honeyeater	Native	Least Concern	x			x	
Eolophus roseicapilla	Galah	Native	Least Concern	x				
Eopsaltria australis	Eastern Yellow Robin	Native	Least Concern	x				
Gerygone olivacea	White-throated Gerygone	Native	Least Concern	x				
Grallina cyanoleuca	Magpie-lark	Native	Least Concern			x	x	x

Species				Observations				
Scientific Name	**Common Name**	**Native/Introduced**	**Status**	**Incidental surveys**	**diurnal Cameras 03 - 18.09.2024**	**Spotlighting 18.09.2024**	**Dusk bird survey 18.09.2024**	**Dawn bird survey 17.09.2024**
Hirundo neoxena	Welcome Swallow	Native	Least Concern	x				x
Lichmera indistincta	Brown Honeyeater	Native	Least Concern	x			x	x
Malurus cyaneus	Superb Fairy-wren	Native	Least Concern		x			x
Malurus melanocephalus	Red-backed Fairy Wren	Native	Least Concern	x			x	x
Manorina melanocephala	Noisy Miner	Native	Least Concern	x				x
Meliphaga lewinii	Lewin's Honeyeater	Native	Least Concern	x				
Merops ornatus	Rainbow Bee-eater	Native	Least Concern				x	
Ocyphaps lophotes	Crested Pigeon	Native	Least Concern	x				x
Pardalotus striatus	Striated Paradalote	Native	Least Concern	x			x	x
Phalacrocorax varius	Pied Cormorant	Native	Least Concern	x				
Phaps chalcoptera	Common Bronzewing	Native	Least Concern		x			x
Philemon citreogularis	Little Friarbird	Native	Least Concern	x			x	
Philemon corniculatus	Noisy Friarbird	Native	Least Concern	x				x

Scientific Name	Species Common Name	Native/Introduced	Status	Observations Incidental surveys diurnal	Cameras 03 - 18.09.2024	Spotlighting 18.09.2024	Dusk bird survey 18.09.2024	Dawn bird survey 17.09.2024
Platycercus adscitus	Pale-headed Rosella	Native	Least Concern	x	x			
Podargus strigoides	Tawny Frogmouth	Native	Least Concern		x			
Rhipidura leucophrys	Willie Wagtail	Native	Least Concern	x			x	x
Streptopelia chinensis	Spotted Turtle-dove	Introduced	N/A					x
Trichoglossus chlorolepidotus	Scaly-breasted Lorikeet	Native	Least Concern					x
Trichoglossus haematodus moluccanus	Rainbow Lorikeet	Native	Least Concern	x			x	x
Vanellus miles	Masked Lapwing	Native	Least Concern	x				
Porphyrio melanotus	Australasian Swamp Hen	Native	Least Concern		x			
MAMMALS								
Lepus europaeus	European Hare	Introduced	N/A		x			
Macropus giganteus	Eastern Grey Kangaroo	Native	Least Concern	x	x			
Macropus rufogriseus	Red-necked Wallaby	Native	Least Concern		x	x		
Mus musculus	House Mouse	Introduced	N/A		x			
Rattus rattus	Black Rat	Introduced	N/A		x			

Species Scientific Name	Common Name	Native/Introduced	Status	Observations Incidental surveys	diurnal Cameras 03 - 18.09.2024	Spotlighting 18.09.2024	Dusk bird survey 18.09.2024	Dawn bird survey 17.09.2024
Trichosurus vulpecula	Common Brushtail Possum	Native	Least Concern		x	x		
Vulpes vulpes	Fox	Introduced (refer **Photo set 4**)	N/A		x			
REPTILES								
Pogona barbata	Bearded Dragon	Native	Least Concern		x			
Lampropholis delicata	Grass Skink	Native	Least Concern	x				
AMPHIBIANS								
Rhinella marina	Cane Toad	Invasive	N/A	x		x		
Limnodynastes peronii	Striped Marsh Frog	Native	Least Concern			x		
Litoria fallax	Eastern Sedgefrog	Native	Least Concern			x		
Litoria nasuta	Striped Rocket Frog	Native	Least Concern			x		



Photo set 4: Invasive Vulpes vulpes (Red Fox) recorded across the referral area

3.4. Technical detail on MNES present at, or in the vicinity to, the project site

Item 3.3 of the PD Request asks for, ***"For listed threatened species and ecological communities that have the potential, or are likely, to be present at and in the vicinity of the project site, including but not limited to those listed above, this section must provide the following:***

- ***a. Information on the abundance, distribution, ecology and habitat preference of the species or communities.***
- ***b. Quantification of the extent of habitat (including maps identifying known or unknown potential habitat) on site and, where feasible, in the broader landscape.***
- ***c. Quality and importance of known or potential habitat for the species or communities.***
- ***d. Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations.***
- ***e. Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impacts outside the project site.***

3.4.1 Koala (*Phascolarctos cinereus*)

a. Information on the abundance, distribution, ecology and habitat preference of the species or communities.

Distribution

The Koala is found from north-east Queensland to the south-east corner of South Australia. Due to translocations, Koala are found outside their historic range, for example, Kangaroo Island. The distribution of Koala is influenced by altitude, temperature and leaf moisture, avoiding arid climates due to physiological stress. Thus, the density of the Koala population in coastal regions is generally greater than inland areas.

Habitat and Ecology

In South-east Queensland, a recent study completed by Rhodes *et al.* (2015) indicates that the average koala density across the region is estimated to be 0.04 koalas/ha. The majority of the region is predicted to have low population densities, suggesting that koalas in SEQ may be relatively widely distributed, but of low density in most areas (Cork & Sanson 1990). Rhodes *et al*. (2015) found a negative relationship between temperature and koala densities, which is associated with low koala densities in Ipswich and west Logan, where temperatures are relatively high. Data presented by Rhodes *et al*. (2015) indicates that the average koala density In Ipswich LGA from 1996 to 2015 is approximately 0.03 koalas/ha which is below the average koala density for SEQ.

Koala population estimates are carried out annually by the Commonwealth Scientific and Industrial Organisation (CSIRO) through the National Koala Monitoring Program (NKMP). As at March 2024:

- The latest data-driven estimate of population size for the EPBC Act listed koala population (combined populations of Queensland, New South Wales and the Australian Capital Territory) is between 95,000 and 238,000.
- This broadly aligns with the Threatened Species Scientific Committee (TSSC) estimate of 92,184 koalas in the combined Queensland, New South Wales and Australian Capital Territory population, based on best available information and expert elicitation in 2021.

- The latest population estimate for the koala populations not listed under the EPBC Act is between 129,000 and 286,000.

A recent study published by Law et. al. (2024) carried out over seven years also indicated a large population of koalas are present in NSW public forests. Occupancy levels have remained stable over a long period of time including during high-severity fires in 2019.

b. Quantification of the extent of habitat (including maps identifying known or unknown potential habitat) on site and, where feasible, in the broader landscape.

The entire referral area is mapped as Category X (non-remnant) vegetation as a result of historical and contemporary rural land-uses. Regrowth vegetation was observed throughout, however vegetation on-ground was identified to be consistent with critical habitat for the Koala due to the presence of non-juvenile Koala habitat trees (NJKHTs) including *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Corymbia citriodora* (Spotted Gum).

The referral area is recognised as three (3) assessment units to reflect significant changes in vegetation composition and value. AU1 and AU2 are differentiated by species composition with both areas contains Koala habitat trees. AU3 is reflective of highly modified areas within the referral area, indicated by cleared historical stockpiles with no native canopy species or NJKHTs and only regrowth acacia and weeds. For the purposes of this assessment, it is recognised the AU1 and AU2 provide potential foraging habitat for the Koala and AU3 can only provide a dispersal role for the species. The DCCEEW definition of habitat critical to the survival of the Koala includes all areas that provide dispersal, foraging or breeding habitat. Therefore, the entire 22 ha referral area is considered habitat critical to the survival of the Koala.

The following vegetation communities have been delineated on-ground (refer **Plan A8**).

1. AU1 – Non-remnant vegetation indicative of RE12.9-10.2 (5.5 ha)
2. AU2 – Non-remnant vegetation indicative of RE12.9-10.7 (10.4 ha)
3. AU3 - Cleared areas (5.8 ha)

A review of previous ecological assessments results within the RVPDA region concluded that for the Koala:

- Low usage generally recorded by scats
- In general, the RVPDA provides relatively low to moderate value habitat;
- Vehicle strike and dog predation is a significant risk factor in more developed areas; and
- Areas of ecological significance and preferred Koala habitat are associated with the White Rock-Spring Mountain Conservation Estate, Flinders-Goolman Conservation Estate and remnant vegetation within RAAF Base Amberley.

Further details regarding anticipated impacts on the Koala as a result of the proposed development are discussed in **Section 4**, avoidance, management and mitigation measures are discussed in **Section 6,** and proposed offsets are discussed in **Section 7**.

c. Quality and importance of known or potential habitat for the species or communities.

Under the *Queensland Vegetation Management Act 1999,* the referral area is mapped entirely as Category X (non-remnant) vegetation through historical clearing and on-going rural land-uses. Field surveys identified the referral area to be highly modified with scattered mature trees, regrowth and cleared areas.

Field surveys identified the presence of NJKHTs including *Eucalyptus crebra* (Narrow-leaved Ironbark), *Eucalyptus tereticornis* (Forest Red Gum) and *Corymbia citriodora* (Spotted Gum). Native species within the site broadly reflected pre-clear RE mapping being RE12.9-10.2 and RE12.9-10.7.

A review of ALA indicates that local Koala sightings have been recorded in locations surrounding the referral area, predominantly west of Ripley Road and within nature reserves such as Goolman Conservation Estate to the south-west and White Rock Conservation Park to the east. From these records it is noted that the nearest contemporary record to the referral area is from 2007, approximately 1 km west at Ripley Road (refer **Plan A10**). Field assessments within the referral area detected indirect evidence of Koala in the form of scats at one of the six (6) SAT assessments completed, no direct observations were recorded.

Despite largely regrowth and cleared areas within the referral area, Koala habitat trees are present which would provide foraging habitat for the Koala. The referral area at present retains some connectivity to the east, south and west however all neighbouring land parcels with the exception of the property to the west hold development applications and are under assessment with the EPBC act. Following the expected delivery of these developments, connectivity to the referral area would only be possible from the east. At present, the referral area reflects low usage by Koala as a result of SAT surveys and targeted surveys recording only low-level indirect usage. The delivery of neighbouring properties to the west and south is only going to reduce the value of vegetation within the referral area and likelihood of the species occurring.

d. Information detailing known populations or recorded within at least five kilometres of the development footprint and (if known) the size of these populations.

A search of the Atlas of Living Australia returned 218 records for the species using a 10 km search radius from the referral area (refer **Plan A10**). A further assessment into the location of these records indicates the majority are between 5 km and 10 km from the referral area. Records within 5 km of the referral area are primarily located within larger areas of contiguous vegetation associated with White Rock Conservation Park to the east and Flinders Goolman Conservation Estate to the south-west. The nearest contemporary sighting is located approximately 1 km west of the referral area, recorded adjacent to Ripley Road.

Field assessments within the referral area detected indirect evidence of Koala at 1 of the 6 SAT locations with no direct observations recorded. Koala scats were recorded at only two trees at SAT 1, indicating a low level of Koala activity according to the East Coast Low threshold outlined in Phillips & Callaghan (2011).

e. Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impacts outside the project site.

Vegetation within the referral area is considered to meet the broad definition of habitat critical to the survival of the Koala through the presence of recognised Koala habitat trees and evidence of use. Several field surveys including nocturnal/diurnal surveys (targeting direct usage) and SATs (targeting indirect usage) were completed across the referral area with only low usage detected at 1 of the 6 SAT locations. The field survey results indicate that the referral area at present is only opportunistically utilised by Koala and there is no evidence that a population are present within the referral area. Following the expected delivery of development to the west and south, the referral area is anticipated to become less connected



and further reducing the likelihood of occurrence. Nevertheless, there is potential for Koala to utilise the referral area.

3.4.2 Grey Headed Flying Fox (*Pteropus poliocephalus*)

a. Information on the abundance, distribution, ecology and habitat preference of the species or communities.

Distribution

The Grey-headed Flying-fox occurs between Rockhampton in Queensland to Melbourne in Victoria. The species will usually selectively forage where food is available and as such, its patterns of occurrence and relative abundance vary between seasons and years. There are no separate or distinct populations due to the constant genetic exchange and movement between camps throughout its geographic range.

Habitat and Ecology

Grey-headed Flying Fox requires foraging resources and roosting sites to persist. The species is known to use a wide variety of habitats including subtropical and temperate rainforests, tall sclerophyll forest and woodlands, heaths, swamps and also urban and agricultural areas where food trees have been cultivated. The species is highly adaptive with its diverse native diet, which it can supplement with introduced species. It is known to forage within a variety of habitat areas as each resource does not produce food throughout the entire year.

Population numbers

While the national Grey-headed Flying-fox population was thought to be in decline, counts carried out by CSIRO since 2012 as part of the National Flying-fox Monitoring Program (NFFMP) have shown GHFF numbers have been stable over that period. A recent paper published by Vanderduys et. al. (2024) noted 'Despite the general perception that the species is in decline, raw data and the modelled population trend suggest the grey-headed flying-fox population has remained stable during the NFFMP period, with the range also stable. These results indicate that the species' extreme mobility and broad diet bestow it with a high level of resilience to various disturbance events.' Counts suggest a stable or slightly increasing national GHFF population of between 622,000 and 692,000 individuals.

In addition to the positive count numbers, the study suggest surveys may have missed populations between central and northern Queensland as count data has been provided for sites near Rockhampton and Ingham but nothing in between. There is potential that populations may exist in remote or difficult to access areas, such as mangrove forests, that have not been included in the national survey.

Listing information for the GHFF was based on an inferred population decline to 467,000 GHFF in 2019. Vanderduys et. al. (2024) suggests the listing should be reconsidered based on more than a decade worth of data from the NFFMP.

b. Quantification of the extent of habitat (including maps identifying known or unknown potential habitat) on site and, where feasible, in the broader landscape.

SEQ has a permanent and abundant population of Grey-headed Flying-fox and available habitat is spread throughout the region given the high prevalence of eucalypt woodland. The referral area was confirmed to contain a number of eucalypt species from the *Eucalyptus*, *Corymbia* and *Lophostemon* genera which provide year-round foraging resources. The species include *Corymbia citriodora (Spotted Gum), Corymbia intermedia (Pink Bloodwood), Corymbia tessellaris (Moreton Bay Ash), Eucalyptus melanophloia (Silver-leaf Ironbark), and Eucalyptus crebra (Narrow-leaved Ironbark)*. Potential foraging habitat within the referral is limited by regrowth vegetation and cleared areas with 15.9 ha of vegetation identified as potentially providing foraging resources for the species.

c. Quality and importance of known or potential habitat for the species or communities.

Surveys did not record GHFF foraging within or adjacent to the referral area nor as fly-over. Additionally, no roosts are present within or directly adjacent to the referral area. A review of data provided by CSIRO on flying-fox roosts (McKeown et al 2026) identifies the nearest GHFF roost approximately 7.7 km north-west (Yamanto (479)). The nearest roost of national significance (Inala, Lilac Street (1219)) is located approximately 19 km north-east of the referral area (refer **Plan A11**).

Potentially suitable habitat is present within the referral area in the form of regrowth *Corymbia citriodora* (Spotted Gum), *Corymbia intermedia* (Pink Bloodwood), *Corymbia tessellaris* (Moreton Bay Ash), *Eucalyptus melanophloia* (Silver-leaf Ironbark), and *Eucalyptus crebra* (Narrow-leaved Ironbark). The availability of potential foraging habitat is limited by cleared areas and regrowth vegetation as a result of historical and on-going rural land-uses. Notably, large areas of contiguous vegetation known to provide suitable habitat to the species is present within the broader locality, specifically White Rock Conservation Area to the east and Flinders-Golman Conservation Estate to the south-west. There is potential that the species would utilise the 15.9 ha of foraging resources within the referral area, however it is unlikely that this vegetation significantly contributes to the availability of habitat within the broader locality. It is unlikely that the referral area provides critical habitat supporting an important population of the species.

d. Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations.

SEQ has a permanent and abundant population of Grey-headed Flying-fox and available habitat is spread throughout the region given the high prevalence of eucalypt woodland. Surveys did not record GHFF foraging within or adjacent to the site nor as a fly-over species. Additionally, no roosts are present within the referral area or directly adjacent. A review of data provided by CSIRO on flying-fox roosts (McKeown et al 2026) identified a GHFF roost approximately 7.7 km north-west of the referral area (Yamanto (479)). The nearest roost of national significance (Inala, Lilac Street (1219)) is located approximately 19 km north-east (refer **Plan A11**).

e. Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impacts outside the project site.

Surveys conducted across the referral area to determine presence including diurnal meanders targeting roost presence and nocturnal surveys targeting foraging individuals. No GHFF individuals were recorded within, or adjacent to, the referral area. While surveys did not identify any GHFF individuals, the potential for occurrence within the referral area cannot be excluded due to the presence of suitable foraging habitat and high mobility of the species. Given that field surveys failed to locate the species or any roosts, it is anticipated that if GHFF were to occur, they would only occur in a transitional foraging capacity.

3.4.3 Swift Parrot (*Lathamus discolor*)

a. Information on the abundance, distribution, ecology and habitat preference of the species or communities.

Distribution

The Swift Parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter. The broad distribution is approximately 1,250,000 km^2. They occupy habitats across all tenures, with the majority of habitats occurring outside formal conservation reserves. The breeding range of the Swift Parrot is largely restricted to the east and south-east coast of Tasmania and closely mirrors the distribution of blue gum (*Eucalyptus globulus*). The species breeds in the north-west of the state between Launceston and Smithton, however, the number of birds involved, and frequency of these breeding events is not well understood. Potential breeding habitat remaining in the northwest is scarce and highly fragmented. Whilst on the mainland the Swift Parrot disperses widely, foraging on flowers and lerps in *Eucalyptus spp.* mainly in Victoria and New South Wales. Only a small number of Swift Parrots are observed in Queensland on a regular basis. Within Queensland, the preferred foraging species include *Eucalyptus macrocarpa, Eucalyptus melliodora, Eucalyptus robusta, Eucalyptus tereticornis* and *Corymbia citriodora*. The species prefers large trees which flower consistently and abundantly.

Habitat and Ecology

Swift Parrots are usually seen in small parties of up to 30 birds, or occasionally in flagger flocks (of several hundred birds) around sources of abundant food. Swift Parrots breed in Tasmania and then move to mainland Australia in Autumn for the non-breeding season.

They feed preferentially in the largest trees available. Their distribution fluctuates with food availability as they feed on psyllid lerps, seeds and fruit. Non-breeding birds preferentially feed in inland box-ironbark and grassy woodlands, and coastal swamp mahogany (*Eucalyptus robusta*) and spotted gum (*Corymbia maculata*) woodland when in flower. The species prefers large trees which flower consistently. *Key foraging species includes Eucalyptus leucoxylon (yellow gum), Eucalyptus tricarpa (red ironbark), Eucalyptus sideroxylon (mugga ironbark), Eucalyptus macrocarpa (grey box), Eucalyptus albens (white box), Eucalyptus melliodora (yellow box), Eucalyptus robusta (swamp mahogany), Eucalyptus tereticornis (forest red gum), Eucalyptus pilularis (blackbutt), Corymbia maculata (spotted gum) (DCCEEW 2024).*

b. Quantification of the extent of habitat (including maps identifying known or unknown potential habitat) on site and, where feasible, in the broader landscape.

Habitat for Swift Parrot incudes recognised foraging species with large mature specimens of greater value to the species due to abundant flowering potential as noted in the National Recovery Plan for the Swift Parrot (DCCEEW 2024). Brereton et al. (2004) demonstrated a greater flowering frequency and intensity in larger Blue Gums and a preference by Swift Parrots to forage in these larger trees. Vegetation within the referral area is non-remnant vegetation as a result of historical clearing and on-going rural land-uses. Potential foraging species were recorded within the referral area including *Corymbia citriodora* (Spotted Gum) and *Eucalyptus tereticornis* (Forest Red Gum) however the referral area does not contain a large number of mature specimens that are of higher value for the species.

Tree plotting showed that the referral area lacks large mature trees (≥ 500mm DBH) with only 41 specimens recorded across the referral area with the majority in the north of the referral area adjacent to

major development 'Providence Central.' Furthermore, the referral area lacks high canopy cover and an abundance of mistletoes resulting in limited foraging habitat for the species.

Additionally, when comparing the large tree density within the referral area with the biocondion benchmarks for AU1 (RE12.9-10.2) the area reaches only 5.26% of the benchmark value for large trees utilising the lower threshold of 380 mm DBH. Within AU2, where RE12.9-10.7 is utilised as the benchmark, the vegetation reaches only 22.22 % of the benchmark value utilising 390 mm DBH. There were no large trees recorded within AU3 which is cleared land. The lack of records and significant lack of large mature trees across the referral area limits the potential for the species to utilise the referral area.

Plan A12 demonstrates the potential habitat for Swift Parrot within the context of the impact site using preferred foraging species as detailed within the Swift Parrot Recovery Plan (Saunders and Tzaros, 2011)

c. Quality and importance of known or potential habitat for the species or communities.

The referral area is mapped entirely as Category X (non-remnant) vegetation as a result of historical land-clearing and on-going rural land-uses. Field surveys identified vegetation within the referral area to consist of a mixture of scattered mature trees, regrowth vegetation and cleared areas. While tree species were recorded within the referral area which are considered foraging species for the Swift Parrot (*Corymbia citriodora* and *Eucalyptus tereticornis*), the lack of maturity of these specimens impacts the reliability of flowering events. The 2024 National Recovery Plan for the Swift Parrot emphasizes that for areas where Swift Parrots might occasionally appear, local survey data and historical records must be factored into assessing the habitat's importance. Given the extremely infrequent sightings of Swift Parrots in Queensland, and low value vegetation, the referral area is not considered to provide habitat for the Swift Parrot. Crucially, the definition of 'habitat critical for survival' encompasses areas essential for a range of activities, such as foraging, breeding, roosting, and dispersal. Since the habitat within the referral area is at best opportunistic, it does not meet the criteria for being considered "necessary habitat" and, therefore, is not likely to represent 'habitat critical for survival.'

d. Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations.

The population was estimated to be only 750 (range 300 to 1,000) mature individuals in 2020 (Webb et al. 2021). Since 1964 there have been 313 dated (ALA 2025) records of Swift Parrot in Queensland. There have been no WildNet records (since 1980) of Swift Parrot reported from directly within the referral area, or within 10 km of the referral area. A 20 km radius Atlas of Living Australia (ALA) search recovered a total of 26 Swift Parrot records, including: 23 records associated with a single event at Springfield Lakes (June 2019; 11 km north-east of the referral area). The remaining records include three sightings from 2010 approximately 18 km east of the referral area and an iNaturlist record from 2024 approximately 16 km north of the referral area. All other records within 20 km of the referral area shown on ALA are dated records (1975).

There are no contemporary records of Swift Parrot within 10 km of the referral area. There have also been no publicly accessible Swift Parrot records in Queensland during 2025 (updated to August 2025) (refer **Plan A12**).

e. Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impacts outside the project site.

There have been no previous records of Swift Parrot reported from directly within the referral area, or within 10 km, according to ALA data (2025). Based on a 10 km buffer two records were recovered from WildNet, the most recent was 31 July 1991. Within a 20 km radius of the study area a total of 26 Swift Parrot records were recovered by ALA (within the past 20 years). This included 23 records associated with a single event at Springfield Lakes (June 2019; 11 km east of study area). The behavioural response of birdwatchers to site reports of Swift Parrot is testament to the highly irregular visitation of the species to southeast Queensland. Potentially suitable foraging species are present within the referral area however the specific value of vegetation to the species is limited by a lack of mature trees and limited number of key foraging species. There is a very low probability of the species occurring, given its limited and highly sporadic presence within the local area. There are no publicly accessible records (from 2025) for Queensland.



3.4.4 Regent Honeyeater (*Anthochaera phrygi*a)

a. Information on the abundance, distribution, ecology and habitat preference of the species or communities.

Distribution

The Regent Honeyeater is endemic to mainland south-eastern Australia. It has a patchy distribution which extends from south-east Queensland, through NSW and the ACT, to central Victoria. Records are widely distributed across its range, but it is only found regularly at a few localities in NSW and Victoria where most of the sightings have been recorded. There are four known key breeding areas; three in NSW and one in Victoria (Garnett *et al.,* 2011; Higgens *et al.,* 2001; Webster and Menkhorst, 1992).

Habitat and Ecology

The species mostly inhabits slopes of the Great Dividing Range, in areas of low to moderate relief with moist, fertile soils. It is most commonly associated with box-ironbark eucalypt woodland and dry sclerophyll forest, but also inhabits riparian vegetation such as She-oak (*Casuarina spp.*) where it feeds on needle-leaved mistletoe and sometimes breeds (Webster and Menkhorst, 1992). It sometimes utilises lowland coastal forest which may act as refuge when its usual habitat is affected by drought. It also uses a range of other habitats including remnant patches in farmland and urban areas, roadside reserves and travelling stock routes (Higgens *et al.,* 2001).

The Regent Honeyeater's movement patterns are thought to be governed by flowing of select eucalypt species. The species is nomadic and partly migratory, with some predictable seasonal movements observed. The species is highly mobile and capable of travelling large distances; however, the regularity and extent of long-distance movements are unknown. It obtains nectar mainly from eucalypts and mistletoe and is reliant on species with reliable nectar flows. The species prefers mature trees that are taller and larger in diameter. As per the relevant recovery plan, key eucalypt and mistletoe species include Mugga (or Red) Ironbark (*Eucalyptus sideroxylon*), Yellow Box (*E. melliodora*), White Box (*E. albens*), Yellow Gum (*E. leucoxylon*), Spotted Gum (*Corymbia maculata*), Swamp Mahogany (*E. robusta*), Needle-leaf Mistletoe (*Amyema cambagei* on River Sheoak, *Casuarina cunninghamiana*), Box Mistletoe (*A. miquelii*) and Long-flower Mistletoe (*Dendropthoe vitellina*). Other tree species may be regionally important. For example, the Lower Hunter Spotted Gum forests have recently been demonstrated to support regular breeding events of Regent Honeyeaters. Flowering of associated species such as thin-leaved stringybark (*E. eugenioides*) and other stringybark species, and broad-leaved ironbark (*E. fibrosa*) can also contribute important nectar flows at times.

Aggregations historically occurred at nectar sources, mostly during autumn and winter, but these events are now rare. When nectar is scarce, lerp and honeydew can comprise a large proportion of the diet. Insects make up about 15% of the total diet and are important components of the diet of nestlings.

The species roosts communally in small groups or large flocks, in trees with dense foliage. Foraging trees are rarely used as roosting sites.

b. Quantification of the extent of habitat (including maps identifying known or unknown potential habitat) on site and, where feasible, in the broader landscape.

The referral area contains modified vegetation values as a result of historical and on-going land management. Native species considered potential foraging resources for the Regent Honeyeater including *Corymbia citriodora* (Spotted Gum) are present within the referral area.

However, Regent Honeyeaters show a strong preference for box-ironbark forests and woodlands located on the inland slopes of the Great Dividing Range. The National Recovery Plan for the Regent Honeyeater (DoE 2016) identifies 'habitat critical to survival' as any foraging habitat within areas where the species is likely to occur, referencing a provided distribution map. Although the referral area falls within this 'may occur' distribution mapping, the map's methodology notes that its distribution is indicative, based on suitable or preferred habitat from recent observations. However, the map's low resolution (approximately 1:7,500,000) significantly limits its utility at a project-level scale, especially in urban environments where the preferred eucalypt woodland and forest habitats are highly fragmented, degraded, or entirely absent. The broader locality does likely provide greater habitat suitability for the species in associate with large contiguous areas of retained vegetation including White Rock Conservation Park to the east and Flinders Goolman Conservation Estate to the south-west.

c. Quality and importance of known or potential habitat for the species or communities.

While the referral area contains potentially suitable foraging resources, the value of vegetation is associated with dense canopy cover. Dense canopy cover is often associated with larger mature trees which are significantly limited from the referral area where immature tree specimens are dominant and well below the benchmark value for the associated vegetation communities. Furthermore, canopy cover of the T1 layer was significantly reduced reaching only 47% of the benchmark value for AU1 and 30.25% of the benchmark value for AU2. No canopy cover was recorded in AU3.

Foraging habitat representing habitat critical for the survival of the species includes preferred foraging species within known and likely foraging habitat. There are three independent sighting events from within 20 km of the study area in the last 20 years all from 2019. Some of these records have occurred within 5 km of the referral area, it is important to note that records are generalised to a grid-based system with a spatial uncertainty of 29.7 km (refer **Plan A13**).

The lack of selectivity in sites where Regent Honeyeater is recorded in southeast Queensland (e.g. urban parks) and the absence of recorded repeat visits to sites in multiple years indicates the referral area not containing critical habitat for the species. Hence, vegetation within the study area is not considered known or likely foraging habitat.

d. Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations.

There are no records of the species within 5 km of the referral area utilising a wildnet search. A search of ALA returns 183 records of the species within 20 km of the referral area. Due to the sensitivity of this species, records are generalised to a grid-based system with up to 29.7 km uncertainty buffer applied. Further examination of eBird and iNaturalist data revealed that the majority of stemmed from a single event attended by numerous bird watchers/citizen scientists. Of the 183 Regent Honeyeater records within 20 km of the study area, only three were independent events in the last decade, and significantly, there have been no recorded sightings within 20 km since 2019. There are no publicly accessible records for Queensland during 2025 (up to August 2025).

e. Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impacts outside the project site.

The referral area is recognised as a highly modified rural property consisting of degraded vegetation values as a result of historical land clearing and on-going land-uses. There are no records of the species within the referral area with records in the broader 20 km landscape sporadic and with a high level of spatial uncertainty. While some low value potential foraging specimens are present within the referral area, there is a very low probability of the species occurring, given its limited and highly sporadic presence within the local area.

3.4.5 Greater Glider (*Petauroides volans*)

a. Information on the abundance, distribution, ecology and habitat preference of the species or communities.

Distribution

The Greater Glider is restricted to eastern Australia, occurring from the Windsor Tableland in north Queensland through to central Victoria (Wombat State Forest), with an elevational range from sea level to 1200 m above sea level.

Habitat and Ecology

The Greater Glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forest and woodlands. It is primarily folivorous with a diet mostly comprising of eucalypt leaves and occasionally flowers. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The species favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.

During the day it shelters in tree hollows, with a particular preference for large hollows in large, old growth trees (Smith *et al.,* 2007). The species is considered to be particularly sensitive to forest clearance and intensive logging practices due to requirement for old growth forests and contiguous bushland (Kavanagh and Wheeler, 2004). Greater Gliders have relatively low persistence in small forest fragments and disperse poorly across vegetation that is not native forest. Modelling suggest that they require native forest patches of at least 160 km^2 to maintain viable populations (Eyre 2002).

b. Quantification of the extent of habitat (including maps identifying known or unknown potential habitat) on site and, where feasible, in the broader landscape.

Delineating the extent of potential habitat for the Greater Glider in Queensland is dependent on a number of habitat factors including the presence of suitable regional ecosystems, confirmed records, hollow-bearing trees for denning and habitat connectivity (Eyre et al., 2022).

Furthermore, the Conservation Advice for Greater Glider states that habitat critical to the survival of the Greater Glider is broadly defined as:

- *large contiguous areas of eucalypt forest, which contain mature hollow-bearing trees and a diverse range of the species' preferred food species in a particular region,*
- *smaller or fragmented habitat patches connected to larger patches of habitat, that can facilitate dispersal of the species and/or that enable recolonisation*
- *Cool microclimate forest/woodland areas (e.g protected gullies, sheltered high elevation areas, coastal lowland areas, southern slopes); and*
- *Area identified as refuges under future climate change scenarios; and*
- *Shorth-term or long-term post-fire refuges (i.e unburnt habitat within of adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonise burnt areas.*

The referral area is wholly mapped as Category X (non-remnant) vegetation as a result of historical clearing and on-going rural land-uses. On-ground field surveys confirmed the referral area to reflect a modified rural property with cleared open areas and regrowth vegetation throughout. While native canopy species were present that broadly align with pre-clear mapping including RE12.9-10.2 and RE12.9-10.7,

Ecologists recorded a limited number of hollow-bearing trees. Only four (4) trees containing hollows were identified within the referral area, with only two (2) hollows considered of a suitable size for the species (≥100 mm diameter). This represents a hollow density of approximately 0.09 hollows per ha, far below the 2-4 hollows per 2 ha required by the species as stated in the *Conservation Advice for Petauroides volans (greater glider (southern and central)) (2022).*

Contextually, the referral area is located within a landscape rapidly transitioning from rural to urban uses as evident by the predominantly completed development directly north (Providence Central). The referral area is zoned as 'urban living' under the RVPDA development scheme with all properties to the north, west and south zoned the same. The intent of this zoning is to maintain and enhance areas of contiguous vegetation and focus development within isolated highly modified areas. Environmental Protection zoning is present to the east of the referral area with large areas of remnant vegetation approximately 3 km east. This area contains mature aged, contiguous remnant vegetation with a mixture of vegetation communities and therefore diverse foraging species for the Greater Glider. The referral area does not contribute to this area and does not facilitate dispersal opportunists for the species due to limited connectivity potential (refer **Plan A15**). Furthermore, the referral area itself lacks an abundance of hollow-bearing trees, and no cool/microclimate forests are present.

c. Quality and importance of known potential habitat for the species or communities.

In addition to the details provide above, the referral area is not considered to provide habitat for the Greater Glider.

Firstly, at a broad scale the referral area does not contribute to areas of known habitat for the species. The presence of several approved and future developments surrounding the referral area and the planning intent significantly limits the potential for the referral area to be utilised by the species. Habitat for the species is available in the broader locality with large areas of mature vegetation associated with White Rock Conservation Park to the east and Flinders Goolman Conservation Estate to the south-west (refer **Plan A15**). These areas provide ample resources and minimal disturbance from neighbouring land-uses. Secondly, at a site scale the referral area significantly lacks the specific habitat requirements for the species, being an abundance of hollow-bearing trees or presence of cool microclimate forest/woodland area.

d. Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations.

There are no records of the species within 5 km of the referral area utilising publicly available datasets. Sightings of the species have been recorded recently (2023) approximately 8.2 km south-east of the referral area (refer **Plan A14**). This record exists within White Rock Conservation Park, which along with adjacent bushland, encompasses an area >2000 ha. This area represents mature, suitable vegetation for the species that has seen minimal historical disturbance.

e. Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impact outside the project site.

The vegetation within the referral area does not contain the necessary habitat requirements to support the species, being an abundance of hollows indicative of mature aged vegetation. Contextually, the referral area is not located in a landscape that contributes to the dispersal opportunity for the species nor does



the referral area contain linkages to other areas of suitable habitat as a result of existing and future land-uses (refer **Plan A15**).

There are no records of the species within 5 km of the referral area (refer **Plan A14**), the referral area does not contain suitable habitat for the species and the species was not recorded despite targeted surveys. A combination of these factors indicates it is highly unlikely that the species will utilise the referral area at present or in the future.

4. Quantification of Impacts

This section responds to Item 4 of the PD request which requires the proponent to provide an assessment of potential impacts on the listed threatened species and ecological communities. Based on the information available in the referral, the proposed action is likely to have a significant impact on the following matters of national environmental significance, including but not limited to:

- Koala (*Phascolarctos cinereus*) combined populations of Qld, NSW and the ACT, listed as endangered; and
- Grey-headed Flying-fox (*Pteropus poliocephalus*), listed as vulnerable.

It is noted that the DCCEEW also considers there is evidence that the following species listed under the EPBC Act may also be present, or have habitat present, on or within the vicinity of the impact site, and may also be impacted by the proposed action:

- Swift Parrot (*Lathamus discolor*), listed as critically endangered, and
- Regent Honeyeater (*Anthochaera phrygia*), listed as critically endangered.

Item 4.1 of the PD request asks to ***"Include a clear description of the total extent and quality of the following:***

a) project footprint (including the total extent of habitat present for each relevant protected matter)
b) direct and indirect impact areas (including the total extent of habitat for each relevant protected matter to be impacted)
c) total areas proposed to be retained/avoided (including the total extent of habitat present for each relevant protected matter to be avoided)."

Project Footprint

The project footprint is over the entire 22 ha referral area with no areas proposed to be retained.

Direct Impact

The vegetation communities represented within the referral area are identified on **Plan A9** and have been based on on-ground values and contextual relevance. All vegetation communities identified within the referral area (AU1, AU2 and AU3) have been considered as Koala habitat and are proposed to be impacted (with the exemption of constructed dams). The proposed action will result in the removal of 21.7 ha of critical Koala habitat. Grey-headed Flying-fox foraging habitat excludes cleared areas of the referral area and equates to 15.9 ha (refer **Table A13**).

Table A13: Impacted habitat for MNES

Referral area	22 ha
Impact area	22 ha
Retained area	0 ha
Impacted Critical Koala habitat	21.7 ha
Impacted Grey-headed Flying-fox habitat	15.9 ha

Indirect Impact

The referral area is located within a highly modified environment that is rapidly transitioning from rural to urban land-uses as reflected in the RVPDA zoning and surrounding development application. All sides of the referral area have been subjected to historical land management practices with the local area seeing an influx in population as surrounding developments are completed. Impacts associated with the development are all direct impacts contained within the referral area. Minor indirect impacts have been considered (refer **Section 5.6**), largely during the construction phase, however these impacts are negligible with the implementation of standard mitigation measures. Ongoing indirect impacts are not considered to exacerbate existing impacts within the broader locality.

5. MNES impact Assessment

Item 4.2 of the PD request asks for ***'any threatened species or ecological communities which may be present or potentially significantly impacted, including the following threatened species in section 5 of this document, please:***

- ***a) Complete a revised habitat suitability assessment of the referral area, considering specific habitat requirements of the species in accordance with relevant listing advices, conservation advices, recovery plans, Significant Impact Guidelines 1.1 and publicly available information.***
- ***b) Provide mapping or revised and expanded mapping showing the extent of suitable habitat for the species in relation to the disturbance footprint and broader proposed action area.***
- ***c) Demonstrate that previous and any additional or new surveys for the species have been completed in accordance with relevant Commonwealth, State or local council guidelines (or best available peer reviewed information).***
- ***d) Provide information regarding the total area proposed to be retained/avoided (including the total extent of habitat present to be avoided) at the referral area.***
- ***e) Confirm the area of habitat that will be directly and indirectly impacted by the proposed action, including but not limited to areas where:***
  - ***a. Connectivity to surrounding habitat will be retained, removed or functionally compromised/lost.***
  - ***b. Adjacent habitat will be subject to intensification of ongoing impacts (for example, through increased vehicle movement and/hydrology changes).***
- ***f) Ensure that all classification and quantification of habitat, and all references to the extent of impact to protected matters, are consistent throughout the preliminary documentation and supporting mapping.'***

Section 5 details the extent and quality of habitat to be impacted and provides a significant impact assessment of those species with the potential to occur on or adjacent to the referral area. **Table A14** provides relevant definitions as they pertain to the the significant impact assessment for MNES species.

Table A14: Significant Impact Guidelines 1.1 definitions

Term	Species Listing Status applicable	Definition
Important population	Vulnerable species	An **'important population'** is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and / or that are: • key source populations either for breeding or dispersal • populations that are necessary for maintaining genetic diversity, and/or • populations that are near the limit of the species range.
Population of a species	Critically Endangered and	A **'population of a species'** is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to

Term	Species Listing Status applicable	Definition
	Endangered species	critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to: • a geographically distinct regional population, or collection of local populations, or • a population, or collection of local populations, that occurs within a particular bioregion.
Invasive species	Critically Endangered and Endangered species	An **'invasive species'** is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation.
Habitat critical to the survival of a species of ecological community	Critically Endangered and Endangered species	**'Habitat critical to the survival of a species or ecological community'** refers to areas that are necessary: • for activities such as foraging, breeding, roosting, or dispersal • for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators) • to maintain genetic diversity and long-term evolutionary development, or • for the reintroduction of populations or recovery of the species or ecological community. Such habitat may be but is not limited to: habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.
Significant Impact	Critically Endangered, Endangered and Vulnerable species	A **'significant impact'** is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. A proponent should consider all of these factors when determining whether an action is likely to have a significant impact on matters of national environmental significance

Term	Species Listing Status applicable	Definition
		In order to decide whether an action is likely to have a significant impact, it is necessary to take into account the nature and magnitude of potential impacts. In determining the nature and magnitude of an action's impacts, it is important to consider matters such as: • the sensitivity of the environment which will be impacted • the timing, duration and frequency of the proposed development and its impacts • all on-site and off-site impacts • all direct and indirect impacts • the total impact which can be attributed to the proposed development over the entire geographic area affected, and over time • existing levels of impact from other sources, and • the degree of confidence with which the impacts of the proposed development are known and understood.

5.1. Koala

5.1.1 Modified Habitat Quality Assessment Methodology

The referral area reflects varying vegetation values as a result of historical clearing and on-going rural uses and was delineated into three (3) AUs. AU1 and AU2 do contain Koala habitat trees while AU3 contains only cleared areas and regrowth acacia species. As part of the original referral material only AU1 and AU2 were considered to provided habitat critical to the survival of the Koala owing to limited value in cleared areas for the species (refer Part B). While it is recognised that Koalas will utilise the ground to move between areas of vegetation, recent studies indicate that Koalas spend very little time on-ground and movement between trees is limited to small distances (<30m) (Barth et al 2019). Nevertheless, it is recognised that the Koala may use parts of the referral area mapped as AU3 in a dispersal capacity and therefore all three AUs have been included as habitat. Therefore, the project will result in the clearing and functional loss of **21.7 ha** of habitat critical to the survival of the Koala (refer **Plan A16**).

In order to determine the quantum and quality of the habitat suitable for Koala on-site, the vegetation has been assessed using a modified version of the Queensland State Governments *'Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy'* Version 1.2 April 2017. This assessment approach utilises the *Queensland BioCondition Assessment* method combined with site context and species stocking rate assessments to determine the habitat quality of the impact area.

The purpose of this guideline is to provide a methodology for proponents to determine the habitat quality of a site under the Queensland Environmental Offsets framework. The guideline is a step-by-step methodology explaining how to measure habitat quality for land-based offsets. This methodology has been adopted and tailored/modified to assess the impacts and offsets relating to Matters of National Environmental Significance (MNES). BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland V2.2 February 2015 provides the base methodology for the Guide to determining terrestrial habitat quality and in some cases the scoring and methods from BioCondition have been used within our Modified Habitat Quality Assessment Tool. These instances are identified within the methodology.

Modified Habitat Quality Assessment

The following section details the methodology utilised to assess the site condition, site context and species stocking rate under the MHQA.

Site Condition (30%)

Assessing site condition is an integral step in determining specific quantification of impacts, while also determining whether an offset site is suitable to establish a desired capacity to support the prescribed environmental matters being offset. The on-site condition is a key element of habitat quality and has a direct influence on the biodiversity it supports. Site condition is assessed using a suite of attributes to describe the structure and function of the vegetation community and is benchmarked against the expected range for a relatively undisturbed community.

The site condition assessment under the MHQA is assessed using 15 condition characteristics. Each condition characteristic and the relevant scoring and benchmark percentage is provided in **Table A15**

Table A15: Koala site condition scoring attributes (BioCondition Manual)

Site condition attribute	*Scoring and benchmark percentage*				
*(1) Recruitment of woody perennial species in ecologically dominant layer in EDL**	Score	0	3		5
	Benchmark	<20%	≥20-75%		≥75%
(2) Native plant species richness – trees	Score	0	2.5		5
	Benchmark	<25%	≥25-90%		≥90%
(3) Native plant species richness – shrubs	Score	0	2.5		5
	Benchmark	<25%	≥25-90%		≥90%
(4) Native plant species richness – grasses	Score	0	2.5		5
	Benchmark	<25%	≥25-90%		≥90%
(5) Native plant species richness – forbs	Score	0	2.5		5
	Benchmark	<25%	≥25-90%		≥90%
(6) Tree canopy height	Score	0	3		5
	Benchmark	<25%	≥25-70%		≥70%
(7) Tree canopy cover	Score	0	2	3	5
	Benchmark	<10%	≥10%-<50%	≥200%	≥50-200%
(8) Shrub canopy cover	Score	0	3		5
	Benchmark	<10%	≥10%-<50% or ≥200%		≥50-<200%
(9) Native perennial grass cover	Score	0	1	3	5
	Benchmark	<10%	≥10-50%	≥50-90%	≥90%
(10) Organic litter	Score	0	3		5
	Benchmark	<10%	≥10%-50% or ≥200%		≥50-<200%
(11) Large trees	Score	0	5	10	15
	Benchmark	0%	0-50%	≥50-100%	≥100%
(12) Coarse woody debris	Score	0	2		5
	Benchmark	<10%	<50% or ≥200%		≥50% or <200%
(13) Non-native plant cover	Score	0	3	5	10
	Benchmark	>50%	≥25-50%	≥5-25%	<5%

Assessment methodology of the above condition characteristics mostly do not differ from the traditional terrestrial habitat quality assessment. In developing the MHQA to better incorporate MNES, two (2) species habitat index characteristics, being (1) 'quality and availability of food and foraging habitat', and (2) 'quality and availability of shelter', have been added to the site condition indicator.

Quality and Availability of Food and Foraging Habitat

Food-tree availability is consistently identified as one of the most important determinants of koala population dynamics, owing to their highly specialised folivorous diet and dependence on a narrow subset of Eucalyptus species (Kavanagh et al., 2007).

To reflect the importance of food trees to koala habitat, the quality and availability of foraging habitat has been assessed using two parameters:

- Abundance of koala food trees
- Tree canopy cover

These two parameters provide an indication of the number of trees available for koalas to forage in and the amount of resource available from those trees. Weighting of the parameters in the assessment is 80% for food tree abundance and 20% for canopy cover as koalas are known to graze on trees of any size and established smaller trees will grow to provide a larger canopy area over time.

All koala food trees (eucalypt, corymbia and angophora species) with a DBH >100mm were counted within a 100m x 20m plot at each habitat transect to estimate abundance. The count is multiplied by 5 to produce a stem density per hectare which is averaged across the assessment unit. The count is then compared to the average stem density per hectare identified in the regional ecosystem technical descriptions (Ryan 2019 - additional description for RE 12.9-10.2 provided by the Queensland Herbarium). Where the technical description provides stem densities for multiple tree stratums, T1 and T2 are combined to provide benchmark stem density as this will encompass all non-juvenile koala food tress (>100mm DBH).

A score out of 8 is calculated as follows:

- <1% – 0/8
- 1%-24.99% of benchmark – 2/8
- 25% - 49.99% of benchmark – 4/8
- 50% - 74.99% of benchmark – 6/8
- 75% - 100%+ of benchmark – 8/8

Canopy in Southeast Queensland Eucalypt woodland is dominated by koala food tree species, therefore, the tree canopy cover collected a part of the site condition assessment provides an accurate estimate of food source availability, and if anything would overestimate food availability giving a conservative baseline score. Canopy cover has been averaged and compared to the benchmark for the regional ecosystem.

A score out of 2 has been calculated as follows:

- <1% – 0/2
- 1%-24.99% of benchmark – 0.5/2
- 25% - 49.99% of benchmark – 1/2
- 50% - 74.99% of benchmark – 1.5/2
- 75% - 100%+ of benchmark – 2/2

The scores for food tree abundance and canopy cover are then added together to provide an overall score out of 10 for quality and availability of food sources. For the purposes of the MHQA condition assessment, scores will be categorised as follows:

- 0-2.99/10 will be given a 1 in the MHQA
- 3-6.99/10 will be given a 5 in the MHQA
- 7-10/10 will be given a 10 in the MHQA

Quality and Availability of Shelter Habitat

Koalas choose shelter in trees that provide thermal protection, safety from predators, and access to preferred food trees (Briscoe et al 2014; Ellis et al 2012; Law et al 2022). Studies have found shelter trees are not necessarily food species such as eucalypts with a range of ancillary species used as long as they are near a food source. Trees selected are often larger with a DBH 0f 30cm – 60cm.
Two parameters have been used to assess shelter habitat values at the impact and offset sites:

- Abundance of koala food trees and ancillary trees (hereby referred to as shelter trees)
- Abundance of large shelter trees (food and ancillary species)

These two parameters provide an indication of the number of koala shelter trees available on the impact and offset sites as well as existing larger trees that can be preferred while resting through the day. Weighting of the parameters in the assessment is 60% for shelter tree abundance and 40% for large trees.

All shelter trees with a DBH >100mm were counted within a 100m x 20m plot at each MHQA transect completed at the impact and offset sites to estimate abundance. The count is multiplied by 5 to produce a stem density per hectare which is averaged across the assessment unit. The count is then compared to the average stem density per hectare identified in the regional ecosystem technical descriptions (Ryan 2019 - additional description for RE 12.9-10.2 provided by the Queensland Herbarium). Where the technical description provides stem densities for multiple tree stratums, T1 and T2 are combined to provide benchmark stem density as this will encompass all non-juvenile koala food tress (>100mm DBH).

A score out of 6 calculated as follows:

- <1% – 0/6
- 1%-24.99% of benchmark – 1.5/6
- 25% - 49.99% of benchmark – 3/6
- 50% - 74.99% of benchmark – 4.5/6
- 75% - 100%+ of benchmark – 6/6

Large shelter trees are counted over a 100m x 50m plot at each MHQA transect completed at the impact and offset sites to estimate abundance of large trees. The count is multiplied by 2 to produce a density per hectare which is averaged across the assessment unit and compared to the benchmark for the regional ecosystem.

A score out of 4 is calculated as follows:

- <1% – 0/4
- 1%-24.99% of benchmark – 1/4
- 25% - 49.99% of benchmark – 2/4
- 50% - 74.99% of benchmark – 3/4
- 75% - 100%+ of benchmark – 4/4

The scores for shelter tree abundance and large trees are then added together to provide an overall score out of 10 for quality and availability of shelter. For the purposes of the MHQA condition assessment, scores will be categorised as follows:

- 0-2.99/10 will be given a 1 in the MHQA
- 3-6.99/10 will be given a 5 in the MHQA
- 7-10/10 will be given a 10 in the MHQA

Site Context (30%)

The site context assessment considers the landscape characteristics adjoining the site. Site context is measured using a suite of attributes to describe the location of the habitat within the surrounding landscape and the influence of its associated threats. This assessment also considers the influence of adjacent vegetated areas and ecological corridors. Under the MHQA, site context is measured using seven characteristics. In developing the MHQA, three species habitat index characteristics were nominated to



form part of the site context characteristics: role of site location to overall species population in the state, threats to the species, and species mobility capacity. The seven characteristics are listed below with details of how each are measured in accordance with the *Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy* (version 1.2).

- Size of patch – Measured as the area of vegetation in which the assessment unit(s) is contained, and add on all other directly connecting areas of koala habitat. The calculation of the area of the patch size uses the method outlined in the BioCondition assessment manual v2.2 that considers the patch to be areas connected by corridors greater than 200 m wide within a 1 km radius of the site. This methodology includes use of a "segmentation" process that removes areas connected to the assessment area by narrow corridors)
- Connectedness and Context – Connectedness relates to the capacity that the species have to disperse through the landscape. This attribute is calculated using GIS by measuring the length koala habitat along the boundary of the site, calculated as a percentage. The context score is calculated by GIS to quantify the amount of vegetation immediately surrounding the assessment site. It is measured as the percentage of koala habitat within a 1 km radius of the site.

  Unlike the traditional habitat quality assessment methodology where site connectedness are assessed against the surrounding remnant vegetation only, the MHQA site connectedness is assessed against the surrounding MNES habitat, in this instance, Koala habitat. While remnant eucalypt forest vegetation is critical habitat for Koala, equally Koalas can utilise areas of non-remnant vegetation or high value regrowth vegetation that does not yet achieve remnant status. Therefore, site context under the MHQA accounts for surrounding Koala habitat rather than remnant vegetation.

  Habitat critical to the survival of the Koala was determined using the combination of the Unsupervised Classification tool within ESRI's ArcGIS software and the most recently available aerial photograph from Nearmap.com. The Unsupervised Classification tool is able to determine vegetation areas through the near infrared (NIR) composite band of the Landsat 8 imagery available online. The tool is able to create a dataset of vegetation areas without the analyst's intervention providing a rapid method for mapping habitat critical to the survival of the Koala over large regions such as South East Queensland. Nearmap.com aerial image is used for calibration purposes, particularly when dealing with smaller scale EPBC assessment areas. The dataset created by the Unsupervised Classification tool is revised using the latest aerial imagery available from Nearmap.com at scale of 1:40,000 and provides a more accurate depiction of habitat critical to the survival of the Koala at the assessment scale for EPBC referrals.
- Ecological corridors – This attribute is as per the methods of the Guide to determining terrestrial habitat quality V1.2 and is used to determine if a site is located within or shares a boundary with an ecological corridor that facilitates long term ecosystem function by connecting large patches of remnant vegetation with sufficient tract size (corridor width in relation to the fragmentation of the landscape) (EHP 2014). These corridors support the habitat of MNES by providing opportunity for long term dispersal of habitat species following landscape level changes in climate. Although the ecological corridors allow for the dispersal of MNES themselves, for example, Koala, this is not their primary function when assessing the attribute. An 'ecological corridor' is represented as any 'Riparian' or 'Terrestrial' feature within the 'CORR_TYPE' attribute table of the 'Queensland biodiversity and vegetation offsets special features' map. The mapping can also be viewed on Queensland Globe in the 'Statewide Biodiversity Corridors' layer



- Role of site location to species overall population in the state – This attribute is based on the observed role of the site in relation to the overall population of the species. The scoring table considers the species' use of the site – such as whether it is used for feeding and/or nesting and the effect that damage to or removal of the site would have to the likelihood of the species' overall population survival.
- Threats to the species – This attribute identifies the presence and severity of threatening processes observed at or adjacent to the site. Key threats impacting the koala identified in the *Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory* include:
    - Clearing for development;
    - Creation of a barrier to movement;
    - Introduction or spread of disease or pathogens;
    - Risk of high-intensity fires;
    - Degradation of habitat from hydrological change; and
    - Introducing or increasing mortality attributed to vehicle strike or dog attacks.
- The highest threat level is given to a site if it isolated from other Koala habitat, or if major roads without exclusion measures, or residential encroachment is within 1500 m of the site boundary. A risk matrix relative to the conservation advice for the Koala was applied to determine threats to species:
    - Habitat loss is considered 'Very High Risk' under the Koala conservation advice. Clearing and degradation of habitat is scored Low, Moderate and High and weighted according to risk factor relative to the expected threat score for each (summed vertically as 15 for Low, 7 for Moderate or 1 for High).
    - High intensity bushfire is considered 'Very High Risk' under the Koala conservation advice. Inappropriate fire regimes is scored Low, Moderate and High relative to the implementation of an endorsed bushfire management plan and fuel load weighted according to risk factor relative to the expected threat score for each (15, 7 or 1).
    - Vehicle strike is considered 'Moderate Risk' under the Koala conservation advice. Vehicle strike is scored Low, Moderate and High relative to the presence and severity of road use within 1 km of the site and weighted according to risk factor relative to the expected threat score for each (15, 7 or 1).
    - Dog attack is considered 'Moderate Risk' under the Koala conservation advice. Dog attack is scored Low, Moderate and High relative to the presence of dogs and level of cover available and weighted according to risk factor relative to the expected threat score for each (15, 7 or 1).
- Species mobility capacity - Species mobility is scored based on the presence and severity of factors that would contribute to a reduction in the mobility of the species. This can include barrier that would result in a long-term reduction in genetic fitness or access to important resources.

The Guide to Determining Terrestrial Habitat Quality version 1.2 scores this attribute based on the presence and severity of factors that would contribute to a reduction in the mobility of the species. The scoring is based on a percentage reduction of mobility ranging from minor restriction (0-25% reduction) to severely

restricted (76-100%). A score of 1, 4, 7 or 10 may be attributed depending on the level of restriction. Score categories are summarised below (**Table A16**):

Table A16: Species mobility scoring metric (BioCondition Manual)

Restriction	Score
Severely restricted (76–100% reduction)	1
Highly restricted (51–75% reduction)	4
Moderately restricted (26–50% reduction)	7
Minor restriction (0–25% reduction)	10

The Guideline references the presence of barriers that would result in a long-term reduction in genetic fitness or access to important resources as an example of how mobility can be reduced. However, it is noted that the presence or absence of barriers alone do not exclusively determine the percentage reduction in mobility.

Factors that may limit or impede mobility for the koala used to inform this assessment include:

- The presence of large stretches of cleared land where uses are incompatible with koala movement. This may include intensive agriculture (e.g. cropping) or commercial uses (e.g. hardstand or carparks).
- The presence of thick lantana infestations in woodland or gullies.
- Waterways larger than 40m wide.
- Roads such as 4-lane arterial roads or smaller connectors that are highly trafficked and safe koala movement features such as underpasses are not present.
- The presence of a non-climbable fences and other small-scale infrastructure.
- The presence of a rail corridor or other linear infrastructure with regular anthropogenic uses.

While the guideline identifies features that restrict mobility, they are not attributed a category of restriction. A literature review has been completed to identify which features would be considered to have the potential to be a severe, high or moderate restrictions to dispersal. The outcomes are summarised below.

Potential severity assumes a 'worst case' scenario and site-specific conditions need to be considered for the assessment. For example, a rural property surrounded by barbed wire fencing with small infrastructure littered throughout the property may only provide a moderate impediment to koala movement whereas residential areas with a mosaic of timber and colour bond fencing site would be considered a high or severe impediment (**Table A17**).

Table A17: Attributes contributing to reduced species mobility capacity for the Koala

Potential Severity	Impediment	Primary Effect on Mobility	References
Severe	Habitat Loss & Fragmentation	Isolates habitat patches; reduces canopy connectivity; forces ground travel. The site must be isolated from any other vegetation cleared land with uses incompatible to koala movement.	Rhodes et al. 2006 McAlpine et al. 2006 Youngentob 2021



Potential Severity	Impediment	Primary Effect on Mobility	References
Severe	Roads & Vehicle Traffic	Roads act as hard physical barriers; vehicle strikes kill dispersing koalas. Dual lane or high trafficked roads with no or limited koala movement features such as underpasses are considered a high barrier to dispersal.	Rhodes et al. 2006 Lunney et al. 2002
Highly	Fencing & Small-Scale Infrastructure	Fences can prevent koalas from reaching adjacent habitat patches, particularly when too high or lacking climbable surfaces.	NSW Department of Planning and Environment (2022) McAlpine et al. 2006
Highly	Human Disturbance	Koalas and other small mammals tend to avoid habitats close to construction sites, recreational areas such as bike paths and parks and other human activities. If major anthropogenic disturbance is located adjacent the site, it is considered a high barrier to dispersal.	McAlpine et al. 2006 Blickley and Patricelli 2010
Moderate	Dense weed infestation	Weed invasion alters vegetation structure, reduces habitat quality, and can significantly influence how koalas move through the landscape. A dense weed infestation is defined as at least 50% cover.	NSW Department of Planning and Environment (2022)
Moderate	Waterways	Waterways can impede koala movement primarily by creating physical gaps in canopy connectivity, forcing koalas to travel on the ground where they are more vulnerable to predation and vehicle strikes. Large waterways (>40 m wide) are considered a significant barrier because they isolate habitat patches and reduce safe dispersal routes.	Rhodes et al. 2006 McAlpine et al. 2006

Species mobility capacity is calculated using the following method:

- The site is split into four quadrants (north, east, south and west).
- Each quadrant will be reviewed using a combination of desktop and field assessment to identify if any restriction to mobility.
- Restriction in each quadrant will be allotted a percentage score based on severity as follows:
    - No or any minor restriction not listed in **Table A17** – 0%
    - Any moderate restriction as listed in **Table A17** – 40%
    - Any high restriction as listed in **Table A17** – 65%
    - Any severe restriction as listed in **Table A17** – 90%

The restriction percentages for each quadrant are added together and divided by 4 to obtain an overall reduction in mobility for the site. A score is then allotted according to the mobility restriction severity scoring from the Guide to Determining Terrestrial Habitat Quality version 1.2.

Scoring attributes extracted from the Habitat Quality Guideline are provided in **Table A18**.

Table A18: Koala site context scoring attributes



Site context attribute	*Scoring and benchmark percentage*				
Size of patch	0	2	5	7	10
	<5 ha	5-25 ha	26-100 ha	101-200 ha	>200 ha
Connectedness	0	2	4		5
	0-10%	>10-<50%	50-75%		>75% or >500 ha
Context	0	2	4		5
	<10% habitat	>10-30% habitat	>30-75% habitat		>75% habitat
Ecological corridors	0	4	6		
	Not within	Sharing a common boundary	Within (whole or part)		
Role of the site location to species overall population in the state	1	4	5		
	Not or unlikely to be critical to survival of the koala	Likely to be critical to survival of the koala	Critical to the survival of the koala		
Threats to the species	1	7	15		
	High threat level	Moderate threat level	Low threat level		
Species mobility capacity	1	4	7	10	
	Severely restricted (76-100% reduction)	High restricted (51-75% reduction)	Moderately restricted (26-50% reduction)	Minor restriction (0-25% reduction)	

Species Stocking Rate (40%)

The MHQA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment methodology. Species stocking rates are estimates of the koala carrying capacity of the site at the time of undertaking the survey. Given the discreet nature of the koala and limited to no published literature on habitat carrying capacity of the species, the species stocking rate scoring methodology has been derived through the collation of site-specific surveys and surrounding contextual habitat analysis. Species stocking rate is calculated using the following parameters:

- Species presence on or adjacent to the site – whether or not evidence of Koala has been recorded within or adjoining the site. Evidence may be direct in the form of observation of Koalas, or indirect via the presence of scats.
- Species usage of the site (habitat type and evidenced usage) – the type of habitat includes vegetation structure such as whether it contains remnant, regrowth or non-remnant vegetation values, and evidenced usage is the confirmed presence or use of the species within the habitat. While habitat type for the Koala does not differ between foraging and breeding, both factors

(habitat type and evidence of usage) are used to inform the species usage of the site. Depending on the level of variability in vegetation and usage patterns across the site, this characteristic may be scored differently for assessment units.

- Approximate density of the species on the site – measured through the use of Spot Assessment Technique (SAT) (Phillips *et al.* 2011) and targeted searches with a high probability of detection. The combination of methods produces a higher reliability of data when extrapolating koala density. The SAT method is an industry recognised technique for identifying presence/absence of koala and measuring activity. SAT survey results are interpreted using the broad population categories provided in the Australian Koala Foundation Koala activity level classification table to infer an activity level or approximate density. These categories being 'East Coast (low)', 'East Coast (med-high)' and 'Western (med-high)' are shown in **Table A9**. Depending on the population category applied, koala activity is described as 0%, 'low', 'moderate', or 'high'.
- Role/importance of species population on site – the extent to which the site is considered a key source population for breeding, dispersal, is necessary for maintaining genetic diversity or near the limit of the species' range.

For subjective criteria where it is unclear whether a particular attribute score is achieved, the precautionary approach is applied to favour the higher score. **Table A19** outlines the attributes utilised to assess species stocking rate.

Table A19: Koala Species Stocking Rate Scoring

Attribute	*Scoring and criteria*				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score (/10)	0	5	10	
		No	Yes – adjacent to site	Yes – on-site	
Species usage of the site (habitat type and evidenced usage)	Score (/15)	0	5	10	15
		Not habitat	Dispersal habitat	Foraging habitat	Breeding habitat
Approximate density (per ha)	Score (/30)	0	10	20	30
		0%	Low	Medium	High
*Role/importance of species population on site**	Score (/15)	0	5	10	15
		0	5-15	20-35	40-45
Total SSR	/70				
SSR Score	/4				

**Species Stocking Rate supplementary table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15*			
Key source population for breeding	Score (/10)	0	10
		No	Yes/Possibly
Key source population for dispersal	Score (/5)	0	5
		No	Yes/Possibly
	Score (/15)	0	15

Necessary for maintaining genetic diversity		No	Yes/Possibly
Near the limit of the species range	Score (/15)	0	15
		No	Yes

Scoring Weight Justification

For this project, site condition was given a weighted score out of 3, site context was given a weighted score out of 3, while species stocking rate was given a weighted score out of 4. The species stocking rate is an important component when assessing the overall habitat quality of a site as it indicates species usage and the capacity of a given area to support the koala therefore was weighted more heavily.

Site condition was weighted with a score out of 3. The koala is known to occupy a variety of habitats, ranging from non-remnant regrowth eucalypt forest / woodland through to old growth remnant forest / woodland. However, the site condition of the habitat is considered to directly influence the long-term koala carrying capacity.

Site context was weighted with a score out of 3. Site context is considered an important component when assessing the koala as it directly relates to the long-term survival rate of the species. The proximity of the site to other areas of suitable habitat, the movement pattern through the landscape of the koala (and / or barriers inhibiting movement), and threats to the species are important attributes to assess when considering the overall functionality of the site.

It is considered that the provision of this weighted scoring most accurately quantifies the ecological requirements of the koala, which will then assist in determining whether an offset site is suitable to establish a desired capacity to support the prescribed environmental matters being offset.

5.1.2 Discussion

Three (3) AUs were defined across the referral to reflect the differing states of in situ vegetation composition. Transects were completed within each assessment unit (refer **Plan A9**). The AUs were delineated based upon aerial imagery and field survey ground-truthing of vegetation communities. It was determined through this approach that quantifying the vegetation condition of these three vegetation communities separately would provide the most accurate insight into the differing state of the vegetation across the AUs.

The two AUs and associated transects site numbers are as follows:

- AU1 represents non-remnant RE12.9-10.2 (Transects 3 and 4).
- AU2 represents non-remnant RE12.9-10.7 (Transects 1 and 2).
- AU3 represents cleared areas (Transects 5 and 6)

The averages of the transects were taken to score each AU (refer). The complete raw data is located at **Attachment A3**.

The habitat quality scores for each assessment unit, combining site condition, site context and species stocking rate are reported in **Table A29** to **Table A34**. The scores for site condition are derived directly from the MHQA tool data. These scores are then used to determine the scores for quality and availability of food and foraging habitat, and quality and availability of shelter. The site was given an overall weighted Koala habitat quality score of **5.74 (rounded to 6)** out of the total of 10 which is considered a moderate to high habitat quality score. This score is calculated based on the combined weighted habitat quality scores for each assessment unit summarised in .

Table A20: MHQA final weighted scores

MHQA Final Weighting	AU 1	AU 2	AU3
Site condition (/3)	1.86	1.49	0.84
Site Context (/3)	2.20	2.20	2.20
Species Stocking rate (/4)	2.29	2.29	1.71
Assessment Unit Area (Impact) (ha)	5.50	10.40	5.80
Total Impact Area (ha)	21.70	21.70	21.70
Size Weighting	0.253	0.479	0.267
AU Weighted Score	1.61	2.86	1.27
Total Weighted Score	**5.74 (rounded to 6.00)**		

Site Condition

AU1 and AU2 showed similar site condition scores of 1.86 and 1.49 out of 3 respectively (refer). AU3 showed a significantly lower score reflecting cleared areas (0.84 out of 3).

AU2 makes up a proportionally larger size of the referral area (10.4 ha out of a total of 21.7 ha) therefore contributing to a size weighting of 0.479 in the final MHQA. AU1 and AU3 are similarly sized (5.50 ha and 5.80 ha out of 21.70 ha respectively) and therefore contribute to 0.253 and 0.267).

The scores for the two habitat index characteristics being quality and availability of food and foraging habitat and quality and availability of shelter are discussed below (refer **Table A21** to **Table A26**). As detailed in **Section 5.1.1**, these scores are derived from the relevant site condition attributes.

Table A21: Koala Food Tree Abundance – Impact site

Assessment Unit	RE	Benchmark (trees/ha)	Site Count (trees/ha)	Benchmark Percentile	Score
Impact AU1	12.9-10.2	240	290	120.83%	8/8
Impact AU2	12.9-10.7	480	163	33.95%	4/8
Impact AU3	12.9-10.7	480	0	0%	0/8

Table A22: Canopy Cover – Impact Site

Assessment Unit	RE	Benchmark (% cover)	Site (% cover)	Benchmark Percentile	Score
Impact AU1	12.9-10.2	64	30.1	47.03%	1/2
Impact AU2	12.9-10.7	40	12.1	30.25%	1/2
Impact AU3	12.9-10.7	40	0	0%	0/2

Table A23: Quality and availability of food and foraging habitat score – Impact Site

Assessment Unit	Total Score	MHQA score
Impact AU1	9/10	10/10
Impact AU2	5/10	5/10
Impact AU3	0/10	1/10

Table A24: Koala Shelter Tree Abundance – Impact Site

Assessment Unit	RE	Benchmark (trees/ha)	Site Count (trees/ha)	Benchmark Percentile	Score
Impact AU1	12.9-10.2	240	290	120.83%	6/6
Impact AU2	12.9-10.7	480	163	33.95%	3/6
Impact AU3	12.9-10.7	480	0	0%	0/6



Table A25: Large Trees abundance – Impact Site

Assessment Unit	RE	Benchmark (trees/ha)	Site (trees/ha)	Benchmark Percentile	Score
Impact AU1	12.9-10.2	38	2	5.26%	1/4
Impact AU2	12.9-10.7	18	4	22.22%	1/4
Impact AU3	12.9-10.7	18	0	0%	0/4

Table A26: Quality and availability of shelter score – Impact Site

Assessment Unit	Total Score	MHQA score
Impact AU1	7/10	10/10
Impact AU2	4/10	5/10
Impact AU3	0/10	1/10

Site Context

Size of patch

This attribute is a measure of the size of the patch of vegetation in which the assessment unit is located. The scoring reflects the importance of large patches in the landscape and is based on the size of the patch of critical koala habitat connected to the site in this instance. This attribute is scored such that is reflects the fact that larger patches are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller patches. The size of patch attribute was calculated using GIS, and achieved a score of **10 out of 10** as the critical koala habitat patch on-site is connected to a vegetated corridor of greater than 5000 ha (as per the *Guideline to determining terrestrial habitat quality methodology* (refer **Plan A18**).

Connectedness

As a landscape level attribute, connectedness aims to assess the degree to which the site is connected with adjacent Koala habitat. Connectedness relates to the capacity of the species to disperse through the landscape between sustainable patches of habitat, and therefore has important implications for species persistence. Connectedness was calculated using GIS, with the percentage of referral area boundary length supporting a koala critical habitat connection off and on site which was calculated at 61.4%, and consequently this attribute scored a **4 out of 5** as per the Guide to determining terrestrial habitat quality methodology (refer **Plan A18**).

Context

The context attribute refers to the amount of critical Koala habitat that is retained within a 1 km buffer of the site being assessed and is calculated using GIS. Retained critical koala habitat within a 1 km buffer of the site was calculated at 35%, and therefore the context attribute achieved a score of **4 out of 5** as per the Queensland BioCondition Assessment methodology (refer **Plan A18**).

State Mapped Ecological Corridors

GIS was utilised to identify the sites' role in any ecological corridors on or adjacent to the site (refer **Plan A19**). The site is not mapped as containing any ecological corridors or mapped as sharing a common boundary. The context of the referral area including existing and future developments significantly reduces the opportunity for functional ecological corridors. Further wests of the referral area where 'environmental protection' zoning is present aligns with ecological corridor as this are combines existing retained vegetation and future conservation areas. This corridor is anticipated to provide habitat and opportunity for fauna presence and movement with minimised risk of threats (such as vehicle strike).

The site is mapped as sharing a common boundary with an ecological corridor (refer **Plan A19**). A score of **4 out of 6** was given to the State Mapped Ecological Corridors component of Site Context.

Role of site location to species overall population in the State

This attribute aims to quantify the geographical importance of the site for koala populations across the broader state. The referral area contains Koala habitat and evidence of the species was recorded, therefore a score of **5 out of 5** was considered appropriate.

Threats to the species

The 'threats to the species' attribute aims to quantify potential risks to the survival of Koala existing within and adjacent to the referral area. Key known threats to the survival of the Koala include proximity to main roads increasing the risk of motor vehicle strike, as well as predation by wild or domestic dogs as reference in the conservation advice for the species.

provides a risk matrix relative to the conservation advice for the Koala to determine threats to species. Essentially, each of the threats identified within the conservation advice is weighted relative to the identified level of risk, with the weighted scores summed to provide the threat score, noting the MHQA allows for only scores of 1 (high), 7 (moderate) or 15 (low) for threats. An analysis of the scoring attributes for the site is provided below which supports an assessment of a score of **7 out of 15 or 'moderate risk'** as appropriate for the site.

- Clearing and degradation of habitat – the referral area is zone completely as 'urban living' within the Ripley Valley Priority Development Area. The RVPDA is major growth area within the western corridor of SEQ. The zoning intent of 'urban living' is to focus development within strategic areas of high disturbance and modification with high value vegetation retained as large contiguous corridors. This site is highly likely to be developed as part of this zoning. A high-level review of surrounding land indicates at least 50% degraded land within 5 km primarily a result of development to the north and existing cleared rural land to the south (refer **Insert A1**). Degraded land includes vegetation that has been cleared or modified for rural or urban uses. Therefore, a weighted score of **0.4** or 'high risk' is appropriate.
- Inappropriate fire regimes – The RVPDA development scheme identifies the referral area as 'transitional bushfire risk area.' This mapping recognises an existing threat from bushfire which may reduce following the expected completion of surrounding development. A non-Koala specific Bushfire Management Plan is not in place for the referral area which is considered to have moderate fuel loads as the subcanopy has been thinned out for rural uses and cattle grazing. Therefore, a weighted score of **2.8** or 'moderate risk' is appropriate.
- Vehicle strike – Existing residential developments are present to the north and north-west which include new roads. Bayliss Road is present along the entire northern boundary of the referral area

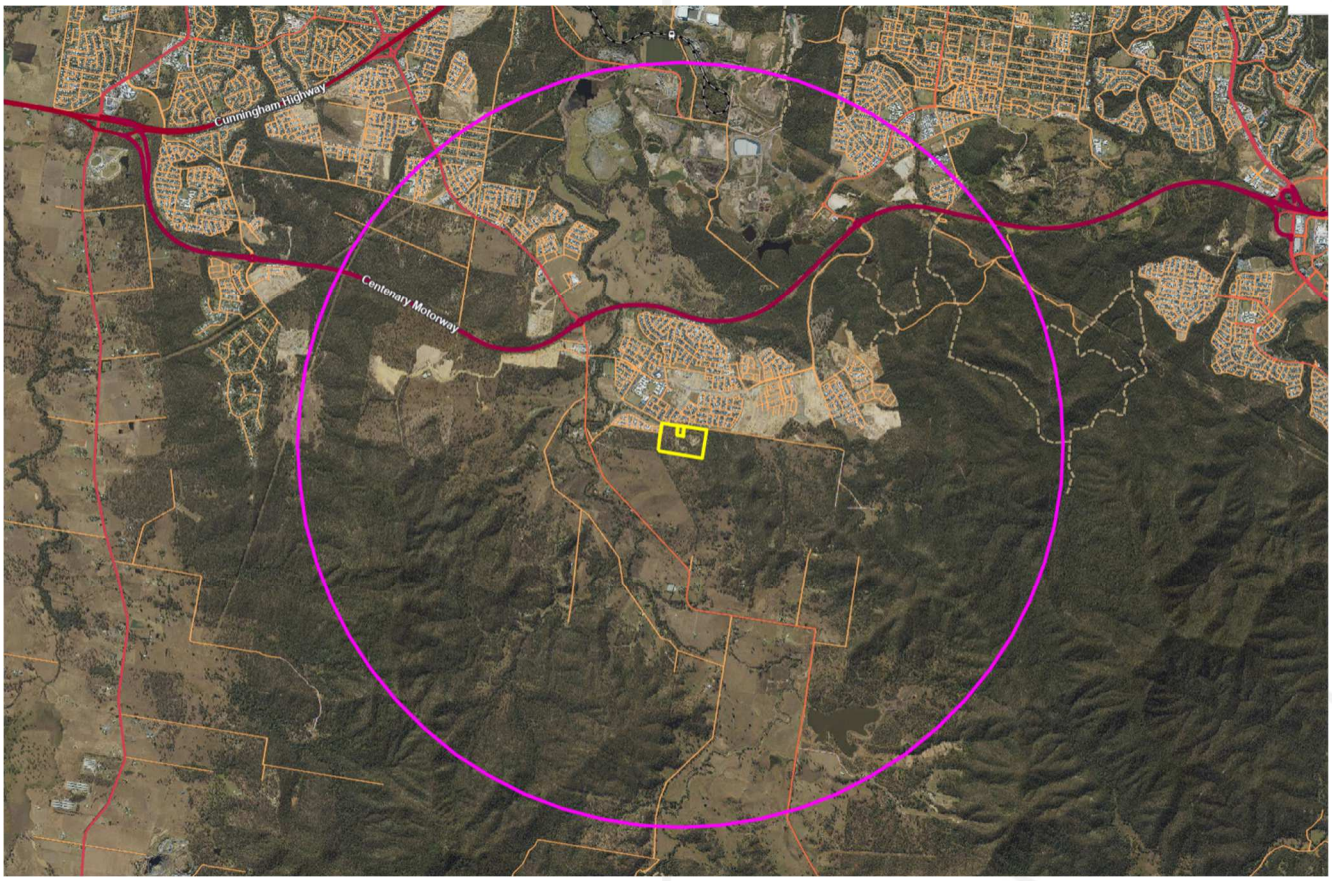
which at present existing as an unsealed road. This road is proposed to be upgraded to facilitate existing developments further east. Main roads such as Ripley Road are present approximately 860 m to the west which has a posted speed limit of 80 km/h and no Koala mitigation measures. This road is the primary linkage to the South Ripley area and is proposed to be upgraded following expected development in the region. At present, there is considered to be a moderate risk of vehicle strike, therefore, a weighted score of **0.7** is appropriate.

- Dog attack – While the threat of dogs is known to be present through Wild Dogs and domestic dogs as have been recorded across the area, no dogs were recorded within the referral area during site surveys. Therefore, a weighted score of **1.5** or 'low risk' is considered appropriate.

Table A27: Koala Threat Scoring Matrix (green shading indicates applicable scores for the site)

Metric	Low	Moderate	High
Threat Thresholds			
Clearing and Degradation of Habitat	Apply one of the following options in order of priority: 1. Apply a current legal protective mechanism. 2. The site is zoned for conservation purposes or clearing is not permitted. 3. If ≤30% of the area within a 5 km buffer of the site is cleared or disturbed land.	In the absence of justification for scoring as high or low and if: >30% and <70% of the area within a 5km buffer of the site is cleared or disturbed land.	Apply one of the following options in order of priority: 1. The site is zoned for development. 2. If ≥ 70% of the area within a 5 km buffer of the site is cleared or disturbed land.
Score Weighting	**6**	**2.8**	**0.4**
Inappropriate Fire Regimes Very High Risk	Current Government endorsed Bushfire Management Plan (BMP) to protect the Koala is in effect.	Non-Koala specific BMP in effect. or; Low fuel load and low fire risk.	Site has a high fuel load and/or high fire risk.
Score Weighting	**6**	**2.8**	**0.4**
Vehicle Strike Moderate Risk	Located more than 1km from a major road AND Minor roads servicing residential or industrial areas located within 500m contain some safe design features	Located <500m from a major road with fauna safe design features) OR Located <1km from a major road accessible for koalas (minimal fauna safe design) AND Minor roads servicing residential or industrial areas are located within 500m	Located <500m from a major road with minimal fauna safe design AND Minor roads servicing residential or industrial areas are located within 500m
Score Weighting	**1.5**	**0.7**	**0.1**
Dog Attack Moderate Risk	No dogs recorded on site.	Dogs recorded on site and adequate refuge for	Dogs recorded on site and limited refuge for

Metric	Low	Moderate	High
		Koalas (>70% canopy cover).	Koalas (<70% canopy cover)
Score Weighting	**1.5**	**0.7**	**0.1**
Threats to Species			
Threshold Analysis	>10	>5 and ≤10	≤5
Score	**15**	**7**	**1**



Insert A1: High level assessment of degraded land within 5 km of the referral area (~50%)

Species mobility capacity

Species mobility capacity is used to quantify the ability of the species to move from the site and through the surrounding landscape to meet survival needs. Species mobility capacity is considered particularly important in response to rapid changes to the surrounding environment, such as the commencement of land clearing. Assessment has been carried out in accordance with method outlined in **Section 5.1.1** with outcomes provided below (refer **Table A28**). The site is considered highly restricted giving it a score of **7 out of 10**.

Table A28: Analysis of species mobility capacity for the referral area

Direction	Description of restriction	Restriction score
North	Land immediately north of the referral area has been cleared and developed as low to medium density residential (Providence Central)	Severe – 90%
East	Land to the east exists as a vegetated property	No restriction
South	Areas south of the referral area are proposed for development but at present exist as a mixture of regrowth and remnant vegetation	No restriction
West	At least part of the western boundary is an existing development and associated road access. The balance exists as a vegetated lot	Severe (90%)/no restriction (0%) 45%
	Total restriction score	**135 / 4 = 33.75% (moderately restricted)**

Species stocking rate

The final component of the MHQA technique is species stocking rate. The species stocking rate provides an estimation of the landscape's capacity to support Koala and their range of life cycle requirements including dispersal, foraging and breeding as well as population-level dynamics. A species stocking rate score of **40 out of 70** was attributed to AU1 and AU2 reflecting foraging and breeding activities and **30 out of 70** for AU3 to reflect cleared portions of the site that only provide dispersal opportunity. Refer **Table A30**, **Table A32** and **Table A34** for results.

Further details on the justification for the scoring of each attribute is provided below:

- Presence – No direct sighting of Koala was recorded within the referral area despite several days of surveys. Indirect evidence (scats) was recorded at one of the 6 SAT locations. Therefore, therefore 'presence detected on site' was assigned a score of **10 out of 10**
- Species usage of the site (habitat type and evidenced usage) – This attribute was scored a **15 out of 15** for AU1 and AU2 indicating foraging/breeding habitat due to the presence of Koala evidence and Koala habitat trees. AU3 is highly modified cleared land with no canopy coverage or Koala habitat trees. This AU is only capable of providing a dispersal capacity for the species as no foraging or breeding resources are present. AU3 scored a **5 out 15**
- Approximate density – This attribute was scored as **10 out of 30** for the whole site indicating low usage within the site as supported by on-site data from SAT surveys
- Role/importance of species population on site – the extent to which the site is considered a key source population for breeding, dispersal, is necessary for maintaining genetic diversity or near the limit of the species' range. The site is not considered to be a key source population for breeding or genetic diversity based on low usage recorded and is not near the limit of the species range. There is potential that the site is a key source population for dispersal and therefore scores a **5 out of 15**.

To summarise, the proposed action will impact on degraded vegetation values that are considered to provide habitat to the Koala. The contextual value of the vegetation on-site is limited by the presence of

existing, under construction and future developments with recognised threats occurring on-site and adjacent.

Table A29: Assessment Unit 1 –Remnant (Least Concern RE12.9-10.2) – MHQA results

Assessment Unit - Regional Ecosystem	AU1 Cat X (RE12.9-10.2)					
	RE12.9-10.2 Benchmark	Transect 3	Transect 4	Average of transects	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	33	33	33.00	33.00	3
Native plant species richness - trees	6	4	5	4.50	75.00	2.5
Native plant species richness - shrubs	7	2	5	3.50	50.00	2.5
Native plant species richness - grasses	7	5	3	4.00	57.14	2.5
Native plant species richness - forbs	13	2	0	1.00	7.69	0
Tree canopy height (Canopy)*	21	18	18	18	85.71	5
Tree canopy height (Sub-canopy)*	12	13	12	12.5	104.1666667	5
					*Average tree canopy height	5
Tree canopy cover (Canopy)**	64	26.3	33.9	30.1	47.03	2
Tree canopy cover (Sub-canopy)**	20	36.6	16	26.30	131.50	5
					**Average tree canopy cover	3.5
Shrub canopy cover	6	6.5	9.7	8.10	135.00	5
Native grass cover*	21	74	62	68.00	323.81	5
Organic litter*	48	14	18	16.00	33.33	3
Large trees (euc plus non-euc) (per ha)	38	0	4	2.00	5.26	5
Coarse woody debris (per ha)	506	148	202	175.00	34.58	2
Non-native plant cover	0	45	35	40.00	40.00	3
Quality and availability of food and foraging habitat	NA			10	-	10
Quality and availability of shelter	NA			10	-	10
					Site Condition Score (/100)	62
					Overall Site Condition Score - out of 3	1.86
SITE CONTEXT						
Size of patch	10					10

Connectedness	**5**					4
Context	**5**					4
Ecological Corridors	**6**					4
Role of site location to species overall population in the state	**5**					5
Threats to the species	**15**					7
Species mobility capacity	**10**					7
					Site Context Score (/56)	**41**
					Overall Site Context Score - out of 3	**2.20**
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	**70**					**40**
					Species Stocking Rate Score (/70)	**0.57**
					Overall Species Stocking Rate Score - out of 4	**2.29**
					Overall Assessment Unit Score	**6.34**

Table A30: Assessment Unit 1 – Remnant (Least Concern RE12.9-10.2) – Species Stocking Rate Results

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10/10
Species usage of the site (habitat type and evidenced usage)	15/15
Approximate density (per ha)	10/30
Role/importance of species population on site*	5/15
Total Species Stocking Rate Score	40/70
Species Stocking Rate Score – out of 4	**2.29**

***SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15**	
Key source population for breeding	0/10
Key source population for dispersal	5/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

Table A31: AU2 MHQA results

Assessment Unit - Regional Ecosystem	AU2 Cat X (RE12.9-10.7)					
	RE12.9-10.7 Benchmark	Transect 1	Transect 2	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	100	100.00	100	5
Native plant species richness - trees	3	5	7	6.00	200.00	5
Native plant species richness - shrubs	5	4	5	4.50	90.00	2.5
Native plant species richness - grasses	8	6	4	5.00	62.50	2.5
Native plant species richness - forbs	26	2	4	3.00	11.54	0
Tree canopy height (Canopy)*	21	24	19	21.50	102.38	5
Tree canopy height (Sub-canopy)*	10	8	10	9.00	90.00	5
					*Average tree canopy height	5
Tree canopy cover (Canopy)**	40	17.8	6.4	12.10	30.25	2
Tree canopy cover (Sub-canopy)**	8	14.6	45.5	30.05	375.63	3
					**Average tree canopy cover	2.5
Shrub canopy cover	3	10.6	5.9	8.25	275.00	3
Native grass cover*	61	20	5	12.50	20.49	1
Organic litter*	20	5	12	8.50	42.50	3
Large trees (euc plus non-euc) (per ha)	18	4	4	4.00	22.22	5
Coarse woody debris (per ha)	272	27	256	141.50	52.02	5
Non-native plant cover	0	80	80	80.00	80.00	0
Quality and availability of food and foraging habitat	N/A			5	-	5
Quality and availability of shelter	N/A			5	-	5
					Site Condition Score (/100)	49.5
					Overall Site Condition Score - out of 3	1.49
SITE CONTEXT						
Size of patch	10			10		10
Connectedness	5			4		4

Context	**5**			4		4
Ecological Corridors	**6**			4		4
Role of site location to species overall population in the state	**5**			5		5
Threats to the species	**15**			7		7
Species mobility capacity	**10**			7		7
					Site Context Score (/56)	**41**
					Overall Site Context Score - out of 3	**2.20**
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	**70**					**40**
					Species Stocking Rate Score (/70)	**0.57**
					Overall Species Stocking Rate Score - out of 4	**2.29**
					Overall Assessment Unit Score	**5.97**

Table A32: AU2 SSR Results

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10/10
Species usage of the site (habitat type and evidenced usage)	15/15
Approximate density (per ha)	10/30
Role/importance of species population on site*	5/15
Total Species Stocking Rate Score	40/70
Species Stocking Rate Score – out of 4	**2.29**

***SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15**	
Key source population for breeding	0/10
Key source population for dispersal	5/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

Table A33: AU3 MHQA Results

Assessment Unit - Regional Ecosystem	AU3 - Cleared areas					
	RE12.9-10.7 Benchmark	Transect 5	Transect 6	Average of transects	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	0	100	50	50	3
Native plant species richness - trees	3	0	2	1	33.33333333	2.5
Native plant species richness - shrubs	5	4	2	3	60	2.5
Native plant species richness - grasses	8	2	3	2.5	31.25	2.5
Native plant species richness - forbs	26	3	0	1.5	5.769230769	0
Tree canopy height (Canopy)*	21	0	0	0	0	0
Tree canopy height (Sub-canopy)*	10	4	4	4	40	3
					*Average tree canopy height	1.5
Tree canopy cover (Canopy)**	40	0	0	0	0.00	0
Tree canopy cover (Sub-canopy)**	8	0	0	0	0.00	0
					**Average tree canopy cover	0
Shrub canopy cover	3	14	17.6	15.8	526.67	3
Native grass cover*	61	29	17	23	37.70	1
Organic litter*	20	48	10	29	145.00	5
Large trees (euc plus non-euc) (per ha)	18	0	0	0	0.00	0
Coarse woody debris (per ha)	272	0	0	0	0.00	0
Non-native plant cover	0	35	5	20	20.00	5
Quality and availability of food and foraging habitat	NA			1	-	1
Quality and availability of shelter	NA			1	-	1
					Site Condition Score (/100)	28
					Overall Site Condition Score - out of 3	0.84
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					4

Context	**5**					4
Ecological Corridors	**6**					4
Role of site location to species overall population in the state	**5**					5
Threats to the species	**15**					7
Species mobility capacity	**10**					7
					Site Context Score (/56)	**41**
					Overall Site Context Score - out of 3	**2.20**
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	**70**					**30**
					Species Stocking Rate Score (/70)	**0.43**
					Overall Species Stocking Rate Score - out of 4	**1.71**
					Overall Assessment Unit Score	**4.75**

Table A34: AU3 SSR Results

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10/10
Species usage of the site (habitat type and evidenced usage)	5/15
Approximate density (per ha)	10/30
Role/importance of species population on site*	5/15
Total Species Stocking Rate Score	30/70
Species Stocking Rate Score – out of 4	**1.71**

***SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15**	
Key source population for breeding	0/10
Key source population for dispersal	5/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

5.2. GHFF

5.2.1 Assessment Methodology

The proposal results in the clearing of 15.9 ha of vegetation that is identified as providing suitable foraging habitat for the Grey-headed Flying-fox (refer **Plan A17**). AU3 was excluded as providing potential foraging habitat for the GHFF given this area is cleared and does not contain any foraging species. The GHFF is highly mobile and therefore cleared areas are not considered to provide a dispersal role for the species. The referral area has been assessed using a GHFF Foraging Habitat Assessment (GHFF FHA) tool developed by Saunders Havill which adopts characteristics of the Queensland State Governments *"Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy"* Version 1.2 April 2017, while also integrating published scientific literature on GHFF foraging habitat.

The traditional terrestrial habitat quality assessment assesses three (3) core indicators—site condition, site context and species habitat index.

The GHFF FHA tool combines the aspects of the three (3) core indicators and published scientific literature into two (site condition and site context) with site condition being weighted with 40% and site context weighted at 30% of the final score. The balance of the weighting (30%) has been attributed to the third indicator which is independent of the traditional habitat quality assessment, being species stocking rate. The species stocking rate assessment incorporated in the GHFF FHA tool is focussed on 'foraging habitat' for GHFF rather than GHFF stocking rates (presence/absence of the species). This assessment of 'foraging habitat' for species stocking rate has been incorporated in the GHFF FHA tool as GHFF roosting camp or species presence was not observed on-site, however, suitable foraging habitat for the species was evident. Therefore, the density of foraging habitat available on-site is considered an appropriate assessment benchmark for species stocking rate.

The following section details the methodology utilised to assess the site condition, site context and species stocking rate under the GHFF FHA.

Site Condition (40%)

Assessing site condition is an integral step in determining specific quantification of impacts, while also determining whether an offset site is suitable to establish a desired capacity to support the prescribed environmental matters being offset. The on-site condition is a key element of habitat quality and has a direct influence on the biodiversity it supports. Site condition is assessed using a suite of attributes to describe the structure and function of the vegetation community and is benchmarked against the expected range for a relatively undisturbed community.

The site condition assessment under the GHFF FHA is assessed using six condition characteristics being:

- Vegetation condition;
- Species richness (canopy trees);
- Flower scores (average);
- Timing of biological shortages;
- Quality of foraging habitat (trees >0.65 wt p*r); and
- Non-native plant cover.

Assessment methodology of the above condition characteristics is outlined below:

- *Vegetation condition* – This condition characteristic is assessed using the Queensland *Vegetation Management Act 1999* vegetation community status definition, being Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant). This characteristic is scored from a desktop mapping perspective and verified on-ground during assessment. Refer to **Table A35** for the benchmark scoring values for this condition characteristic.
- *Species richness (canopy trees)* – This condition characteristic is assessed using a 100 m X 20 m plot following the contour of the land when possible. Within the plot, all canopy tree and subcanopy tree specimens are recorded. The species richness of canopy trees is the average number of GHFF foraging trees for the assessment unit (GHFF foraging trees identified as species from the genus *Eucalyptus*, *Corymbia*, *Angophora*, *Melaleuca* and *Syncarpia*). The number or species recorded per transect within the assessment unit is divided by the number of transects to produce an average number of GHFF foraging species. It should be noted that non-GHFF foraging species are also documented but only GHFF foraging trees are included for the species richness attribute. Refer to **Table A36** for the benchmark scoring values for this condition characteristic.
- *Flower scores (average)* – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within Ranking the feeding habitat of Grey-headed flying foxes for conservation management (Eby and Law 2008) and the National Recovery Plan for the Grey-headed Flying-fox (DAWE, 2021). Each GHFF foraging trees recorded within each transect is assigned a flower score. Productivity is based on abundance and spatial synchrony, and reliability is based on the consistency with which a species flowers from year to year.

  Flower scores of foraging species are derived from Table 4.1 of Eby and Law (2008) which calculates the flower score as:

  $$\text{Wt p* r} = (\text{productivity})^{0.7} * (\text{reliability})^{0.3}$$

  An average flower score is then calculated for each transect which is averaged across the assessment unit (multiple transects) producing a Average flower score. Should a tree species be present that does not have a referenced flower score in Eby and Law (2008) a flower score will be determined based on the species relative importance to the species. For example Eucalyptus crebra (Narrow-leaved Ironbark) is not referenced in Eby and Law (2008) however has been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the National Recovery Plan for the Grey-headed Flying-fox (DAWE, 2021). Refer to **Table A37** for the benchmark scoring values for this condition characteristic.
- *Timing of biological shortages* – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining the ability of the canopy species in the vegetation community to produce foraging habitat during biological shortages (food shortages, pregnancy and birthing, lactation, mating and conception, migration paths and fruit industries). Each biological shortage is assigned a bi-monthly period. Bi-monthly flowering phenologies for GHFF foraging species are derived from Table 4.5 of Eby and Law (2008). Winter food resources is considered a limiting factor for GHFFs in South East Queensland (Eby and Law 2008), therefore, winter foraging species such as *E. crebra*, *E. siderophloia* and *C. citriodora* are generally weighted



with a higher flower score than other species. Each biological shortage within this condition characteristic is weighted and 'food shortages' has been weighted heavier than the balance of the characteristics which are equal, as 'food shortages' is recognised as a major issue. Species recorded within transects of each AU are then compared to the bi-monthly flowering phenology and provision of biological shortage and scored against the values in **Table A38**.

- *Quality of foraging habitat* – This condition characteristic is the number of significant GHFF flower species within the site, taken from the 'species richness (canopy trees)' condition characteristic of all vegetation plots. A significant food plant is a species with a weighted flower score of 0.65 or greater, as listed in Table 4.1 in Eby and Law (2008). It should be noted that species recorded that are not prescribed a value by Eby and Law (2008) but are recognised as GHFF foraging trees, have been given an average weighted value of related species or, in the case of *Eucalyptus crebra* (Narrow-leaved Ironbark) been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017). Refer to **Table A39** for the benchmark scoring values for this condition characteristic.
- *Non-native plant cover* – This condition characteristic overlaps with the on-ground condition characteristics of the Koala MHQA. Refer to for the benchmark scoring values for this condition characteristic.

Site Context (30%)

The site context assessment deals with the site and its adjacent surroundings. Site context is measured using a suite of attributes to describe the location of the habitat within the surrounding landscape and the influence of its associated threats. This assessment also considers the influence of adjacent vegetated areas and State mapped ecological corridors. Under the GHFF FHA, site context is measured using the following six characteristics:

- Size of patch;
- Connectedness (active GHFF roost camps in a 20 km radius);
- Context (percentage of GHFF foraging habitat in a 20 km radius);
- State mapped ecological corridors;
- Role of site location to species overall population in the state (active GHFF CSIRO flying-focx roost data (McKeown et al 2026) 'level 3' roost camps in a 20 km radius); and
- Threats to the species.

Assessment methodology of the above context characteristics is outlined below:

- *Size of patch* – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the directly connected patch of GHFF foraging habitat to site measured. This context characteristic is measured using GIS. Refer to **Table A41** for the benchmark scoring values for this context characteristic.
- *Connectedness* – This context characteristic is assessed by counting the number of active GHFF roosts within a 20 km radius of the site. For consistency purposes this assessment is to utilise the data provided by CSIRO (McKeown et al 2026). Refer to **Table A42** for the benchmark scoring values for this context characteristic.

- *Context* – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the percentage of GHFF foraging habitat within a 20 km buffer of the site measured. This context characteristic is measured using GIS. Refer to **Table A43** for the benchmark scoring values for this context characteristic.
- *State Mapped Ecological corridors* – This context characteristic is assessed using the traditional habitat quality assessment methodology which involves determining the proximity of the site to state, bioregional, regional or sub-regional corridors. Refer to for the benchmark scoring values for this context characteristic.
- *Threats to species* – This context characteristic is assessed by analysing the published scientific literature regarding threats to GHFF and determining the number and severity of the threatening processes observed at or adjacent to the site. Known threatening processes to the GHFF are detailed in the *National Recovery Plan for the Grey-headed Flying-fox 'Pteropus poliocephalus'* (DAWE, 2021). The key threat to GHFF is habitat loss with other threats including camp disturbance, mortality in commercial fruit crops, heat stress, entanglement in netting and barbed wire fencing, climate change, bushfires, electrocution on power lines and public misunderstanding of disease risk. This attribute considers processes occurring on-site that may threaten the species rather than broad processes such as climate change and bushfires. A high level of threat is considered any activity that is currently modifying the habitat on-site or is disturbing an on-site roost. A moderate level of threat is considered any interaction that may be harming or interfering with a GHFF individual such as net entanglement. A low level of threat is the absence of processes that may actively threaten GHFF or a low likelihood that a GHFF may be negatively impacted through interacting with the site. Refer to **Table A45** for the benchmark scoring values for this context characteristic.
- *Role of site location to species overall population in the state (active GHFF CSIRO data (McKeown et al 2026) 'level 3' roost camps in a 20 km radius)* – This context characteristic is assessed by considering the number of active GHFF roost camps level 3 or greater within a 20 km radius of the site and the presence of critical foraging habitat on-site. For consistency purposes this assessment is to utilise the data provided by CSIRO (McKeown et al 2026). Refer to **Table A46** for the benchmark scoring values for this context characteristic.

Species Stocking Rate (30%)

The GHFF FHA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment methodology. As discussed above, species stocking rate for GHFF associated with this proposed action is related to the density of GHFF foraging habitat at the site at the time of undertaking the survey. The stem density is calculated as the number of foraging tree species stems per hectare.

Baseline GHFF foraging tree surveys were undertaken by utilising the stem count methodology provided in the *Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland (version 5.0)* (Neldner *et al.* 2019).

Table A35: GHFF FHA Vegetation Condition Scoring

Score	Description
5	Category X / non-remnant
10	Category C / regrowth
20	Category B / remnant

Table A36: GHFF FHA Canopy Species Richness Scoring

Score	Description
0	0 GHFF foraging species
5	1 – 3 GHFF foraging species
10	4 – 6 GHFF foraging species
20	> 6 GHFF foraging species

Table A37: GHFF FHA Flower Score (average) Scoring

Score	Description
2	0.01 – 0.25
5	0.26 – 0.50
8	0.51 – 0.75
10	0.76 – 1.00

Table A38: GHFF FHA Timing of Biological Shortages Scoring

Score	Description
2.5	Food shortages
1.5	Pregnancy and birthing
1.5	Lactation
1.5	Mating and conception
1.5	Migration paths
1.5	Fruit industries
Total (/10)	Combine total of above

Table A39: GHFF FHA Quality of Foraging Habitat (trees >0.65 wt p*r) Scoring

Score	Description
0	0 significant GHFF foraging tree species
5	1 – 3 significant GHFF foraging tree species
10	4 – 6 significant GHFF foraging tree species
20	> 6 significant GHFF foraging tree species



Table A40: GHFF FHA Non-Native Plant Cover Scoring

Score	Description
1	> 50 % non-native plant cover
5	25 – 50 % non-native plant cover
10	5 – 25 % non-native plant cover
20	< 5 % non-native plant cover

Table A41 GHFF FHA Size of Patch Scoring

Score	Description
0	< 5 hectares
2	5 – 25 hectares
5	26 – 100 hectares
7	101 – 200 hectares
10	> 200 hectares

Table A42: GHFF FHA Connectedness Scoring

Score	Description
0	< 1 active Grey-headed Flying-fox camp within a 20 km radius
3	1 – 3 active Grey-headed Flying-fox camp within a 20 km radius
6	4 – 6 active Grey-headed Flying-fox camp within a 20 km radius
10	> 6 active Grey-headed Flying-fox camp within a 20 km radius

Table A43: GHFF FHA Context Scoring

Score	Description
0	< 10 % Grey-headed Flying-fox foraging habitat within a 20 km radius
3	10 – 30 % Grey-headed Flying-fox foraging habitat within a 20 km radius
6	31 – 75 % Grey-headed Flying-fox foraging habitat within a 20 km radius
10	> 75 % Grey-headed Flying-fox foraging habitat within a 20 km radius

Table A44: GHFF FHA State Mapped Ecological Corridors Scoring

Score	Description
0	Not within an ecological corridor
6	Sharing a common boundary with an ecological corridor



10	Within an ecological corridor

Table A45: Threats to species (GHFF) scoring

Score	Description
1	High level threat to the species
5	Moderate level threat to the species
10	Low level threat to the species

Table A46: Role of site location to GHFF overall population in the State scoring

Score	Description
0	<1 active level 3 Grey-headed Flying-fox camp within a 20 km radius
6	1 – 3 active level 3 Grey-headed Flying-fox camp within a 20 km radius
10	>3 active level 3 Grey-headed Flying-fox camp within a 20 km radius

Table A47: GHFF Species Stocking Rate Scoring

Score	AU1 (RE12.9-10.2)	AU2 (RE12.9-10.7)
2	0 - 30	0 - 60
4	31 - 130	61 - 260
6	131 - 220	261 - 440
8	221 - 235	441 - 470
10	236 - 245	471 - 490
8	246 - 260	491 - 520
6	261 - 350	521 - 700
4	351 - 450	701 - 900
2	>451	>901

Source – Queensland Herbarium Regional Ecosystem Technical Descriptions https://www.publications.qld.gov.au/dataset/re-technical-descriptions/resource/1771f391-44b9-4d25-8315-f92033610a9b

5.2.2 Discussion

Results of the GHFF FHA using methodology detailed in **Section 5.2.1** are shown in **Table A48** and **Table A49**. A total weighted score of **5.22 (rounded to 5) out of 10** was assigned to the referral area.

Table A48: AU1 GHFF FHA

Assessment Unit - Regional Ecosystem	AU 1 - RE12.9-10.2				
Site Reference	Transect 3	Transect 4	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	5.0	5.0	5.00	5	20
Species Richness	4.0	4.0	4.00	10	20
Flower Score	0.581	0.548	0.5645	8	10
Timing of Biological Shortages	10	10	10.00	10	10
Quality of Foraging Habitat	3	2	2.50	5	20
Non-native Plant Cover	45.00	35.00	40.00	5	20
Site Condition Score				44	*X*
MAX Site Condition Score				*100*	*X*
Site Condition Score - out of 4				1.72	*X*
Size of patch	10	10	10	10	10
Connectedness	6	6	6	6	10
Context	6	6	6	6	10
Ecological Corridors	6	6	6	6	10
Role of site location to species overall population in the state	6	6	6	6	10
Threats to the species	10	10	10	10	10
Site Context Score				44	*X*
MAX Site Context Score				*60*	*X*
Site Context Score - out of 3				2.20	*X*
GHFF Foraging Tree Density - Recorded	69	47	58.00		
GHFF Foraging Tree Density - per hectare	345	235	290.00	6	10
Species Stocking Rate Score				*6*	*X*
MAX Species Stocking Rate Score				*10*	*X*
Species Stocking Rate Score - out of 3				1.80	*X*
Total				5.72	

Table A49: AU2 GHFF FHA

Assessment Unit - Regional Ecosystem	AU 2 - RE12.9-10.7				
Site Reference	Transect 1	Transect 2	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	5.0	5.0	5.00	5	20
Species Richness	4.0	5.0	4.50	10	20
Flower Score	0.634	0.605	0.6195	8	10
Timing of Biological Shortages	10	10	10.00	10	10
Quality of Foraging Habitat	3	3	3.00	5	20
Non-native Plant Cover	80.00	80.00	80.00	1	20
Site Condition Score				39	*X*
MAX Site Condition Score				*100*	*X*
Site Condition Score - out of 4				1.56	*X*
Size of patch	10	10	10	10	10
Connectedness	6	6	6	6	10
Context	6	6	6	6	10
Ecological Corridors	6	6	6	6	10
Role of site location to species overall population in the state	6	6	6	6	10
Threats to the species	10	10	10	10	10
Site Context Score				44	*X*
MAX Site Context Score				*60*	*X*
Site Context Score - out of 3				2.20	*X*
GHFF Foraging Tree Density - Recorded	25	39	32.00		
GHFF Foraging Tree Density - per hectare	125	195	160.00	4	10
Species Stocking Rate Score				*4*	*X*
MAX Species Stocking Rate Score				*10*	*X*
Species Stocking Rate Score - out of 3				1.20	*X*
Total				4.96	

5.3. Swift Parrot

5.3.1 Assessment

As discussed in **Section 3**, Swift Parrot was identified in the desktop assessment as a threatened species with potential to be impacted by the development. **Section 3.4.3** details how the species is unlikely to occur based on the outcomes of field surveys showing a lack of suitable habitat and minimal recorded sightings of the species. Further detail on the specific habitat requirements for the species, notably the presence of Key Foraging species, is discussed in this section.

A habitat feature for the Swift Parrot has been defined as a preferred foraging species with a size ≥300 mm DBH. Preferred foraging species have been identified under the National Recovery Plan for Swift Parrot (DCCEEW, 2024) which includes:

- *Eucalyptus leucoxylon* (yellow gum)
- *Eucalyptus tricarpa* (red ironbark)
- *Eucalyptus sideroxylon* (mugga ironbark)
- *Eucalyptus macrocarpa* (grey box)
- *Eucalyptus albens* (white box)
- *Eucalyptus melliodora* (yellow box)
- *Eucalyptus robusta* (swamp mahogany)
- *Eucalyptus tereticornis* (forest red gum)
- *Eucalyptus pilularis* (blackbutt)
- *Corymbia maculata* (spotted gum). It is noted that in Queensland *Corymbia citriodora* is recognised synonymously with *Corymbia maculata*.

In South-East Queensland *Corymbia citriodora* (Spotted Gum) is considered a preferred foraging species. Results of the field surveys completed across the referral area recorded two (2) preferred foraging species, being *Eucalyptus tereticornis* (Forest Red Gum) and *Corymbia citriodora* (Spotted Gum) specimens.

The number of preferred foraging trees within the referral area was captured on-ground whereby each tree meeting the criteria was identified and recorded. A size threshold of 300mm DBH was considered an appropriate size metric. A total of 111 specimens of *Eucalyptus tereticornis* (Forest Red Gum) and 99 *Corymbia citridora (synonym, Corymbia maculata* – Spotted Gum) were recorded across the referral area (≥300 mm DBH). A total of 210 habitat trees were recorded as potentially providing foraging habitat for the Swift Parrot.

Significant Impact Assessment

A significant impact assessment was not completed as part of the original referral following the assessment that the species is unlikely to occur as a result of lack of records of the species and lack of potential habitat within the referral area. As required by this information request, a significant impact assessment has been provided for the Swift Parrot (refer **Table A40**).

Table A50: Significant impact assessment – Swift Parrot (critically endangered)

Significant Impact Criteria	Assessment	Impact
An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:		
Lead to a long-term decrease in the size of a population	According to the National Recovery Plan, key considerations in assessing environmental impacts are to avoid the destruction of habitat critical to survival of the species, and to protect Key Biodiversity Areas (KBAs) - targeting enhancement and restoration measures at these productive sites. The global KBA partnership currently recognises 18 KBAs as important for Swift Parrot conservation and to support the long-term persistence of the species, all of which occur in New South Wales, Victoria and Tasmania. Foraging habitat on the mainland representing habitat critical for the survival of the species includes preferred foraging species within known and likely foraging habitat. While the foraging species for the Swift Parrot area present within the referral area (*Eucalyptus tereticornis* and *Corymbia citriodora*) the vast majority of these are immature specimens (i.e 100-200 mm DBH) as a result of historical land clearing. Key foraging species measuring ≥300 mm DBH equate to 210 trees across the 22 ha referral area. Notably, larger mature trees (≥ 500 mm DBH), which are of greater foraging value to the species, equates to only 1.63 trees per ha. Potential foraging habitat within the referral area is limited by the dominance of regrowth vegetation and cleared areas. Furthermore, there are no records of the species within the referral area or within 10 km. Therefore, the referral area is not considered known or likely foraging habitat and is not considered critical habitat to the species. The Swift Parrot is not expected to occur within the local area or utilise the vegetation currently available in the referral area to an extent where the proposed action would lead to a long-term decrease in the size of the population.	**Significant impact not likely**
Reduce the area of occupancy of the species	The Swift Parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter. Whilst on the mainland, they disperse widely to forage on flowers and psyllid lerps in eucalypt species. Small numbers from the broader population are observed in	**Significant impact not likely**

Significant Impact Criteria	Assessment	Impact
	south-eastern Queensland on a regular basis, where they are considered likely to occur from the coast to as far west as Chinchilla and Inglewood and as far north as Gin Gin. There are no records of the species within the referral area of within 10 km. Given the extent of potential habitat within their known/expected range in south-east Queensland and limited value foraging habitat with the referral area, the proposed action will not reduce the area of occupancy of the species.	
Fragment an existing population into two or more populations	The Swift Parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter. Whilst on the mainland, they disperse widely to forage on flowers and psyllid lerps in eucalypt species. Small numbers from the broader population are observed in south-eastern Queensland on a regular basis, where they are considered likely to occur form the coast to as far west as Chinchilla and Inglewood and as far north as Gin Gin. There are no records of the species within the referral area of within 10 km. The proposed action will not fragment an existing population into two or more populations.	**Significant impact not likely**
Adversely affect habitat critical to the survival of a species	The value of the vegetation within the referral area has been assessed in the above sub-section. While potential foraging trees are present, the dominance of immature specimens and cleared areas and lack of mature preferred foraging specimens significantly reduces the value of potential foraging habitat within the referral area. The 2024 National Recovery Plan for the Swift Parrot emphasizes that for areas where Swift Parrots might occasionally appear, local survey data and historical records must be factored into assessing the habitat's importance. Given the extremely infrequent sightings of Swift Parrots in Queensland, the low value vegetation within the referral area could only be considered opportunistic habitat. There are no records of the Swift Parrot utilising the referral area and no records within 10 km of the referral area. Crucially, the definition of "habitat critical for survival" encompasses areas essential for a range of activities, such as foraging, breeding, roosting, and dispersal. Since the vegetation within the referral area is only opportunistic, it does not meet the criteria for being considered "necessary habitat" and, therefore, does not represent "habitat critical for survival."	**Significant impact not likely**
Disrupt the breeding cycle of a population	The Swift Parrot breeds in Tasmania during the austral summer. Therefore, the proposed action will not disrupt the breeding cycle due to the location of the action being located in Queensland.	**Significant impact not likely**

Significant Impact Criteria	Assessment	Impact
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The Swift Parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter. Whilst on the mainland, they disperse widely to forage on flowers and psyllid lerps in eucalypt species. Small numbers from the broader population are observed in south-eastern Queensland on a regular basis. There are no records of the species utilising the referral area and no records of the species within 10 km of the referral area. As previously detailed, the referral area lacks suitable foraging habitat for the Swift Parrot as a result of immature regrowth vegetation and cleared areas. Given the lack of evidence of occurrence, lack of habitat value within the referral area and the high mobility of the species it is highly unlikely that the proposed action will modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	**Significant impact not likely**
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	There are no invasive species that are recognised as a threat to the long-term survival or recovery of this species on mainland Australia.	**Significant impact not likely**
Introduce disease that may cause the species to decline	There are no diseases that are recognised as a threat to the long-term survival or recovery of this species.	**Significant impact not likely**
Interfere with the recovery of the species.	Under to the National Recovery Plan, strategies to achieve recovery objectives include maintaining known Swift Parrot breeding and foraging habitat at the local, regional and landscape scales, protecting KBAs – targeting enhancement and restoration measures at these productive sites, and avoiding the destruction of habitat critical to the survival of the species. The global KBA partnership currently recognises 18 KBAs as important for Swift Parrot conservation and to support the long-term persistence of the species, all of which occur in New South Wales, Victoria and Tasmania.	**Significant impact not likely**

Significant Impact Criteria	Assessment	Impact
	Foraging habitat on the mainland representing habitat critical for the survival of the species includes preferred foraging species within known and likely foraging habitat. There are no records within 10 km of the referral with the nearest contemporary records approximately 13 km north-east of the referral area from 1991. Hence, vegetation within the referral area is not considered known or likely foraging habitat. Further, preferential habitat exists in the wider locality within larger tracts of intact remnant vegetation, including White Rock Conservation Park Swift Parrot is not expected to occur within the local area or utilise the habitats currently available in the referral area to an extent where the proposed action would interfere with the recovery of the species.	

5.4. Regent Honeyeater

5.4.1 Assessment

As discussed in **Section 3**, Regent Honeyeater was identified in the desktop assessment as a threatened species with potential to be impacted by the development. **Section 3.4.4** details how the species is unlikely to occur based on the outcomes of field surveys showing a lack of suitable habitat and the lack of recorded sightings in the locality. Further detail on the specific habitat requirements for the species, notably the presence of Key Foraging species, is discussed in this section.

Broadly, the National Recovery Plan for the Regent Honeyeater (Department of the Environment 2016) lists Critical Habitat for the Regent Honeyeater as:

- Any breeding or foraging areas where the species is likely to occur.
- Any newly discovered breeding or foraging locations.

To ascertain the potential for Regent Honeyeaters to forage within the referral area, an assessment of preferred foraging species has been completed.

A habitat feature for the Regent Honeyeater has been defined as a tree identified as a preferred foraging species, listed under the National Recovery Plan for the Regent Honeyeater (DoE, 2016), that is ≥300 mm DBH to account for the greater value in large trees with a greater abundance of flowering the.

The Regent Honeyeater's preferred food species include:

- *Eucalyptus leucoxylon* (yellow gum)
- *Eucalyptus sideroxylon* (mugga ironbark)
- *Eucalyptus albens* (white box)
- *Eucalyptus melliodora* (yellow box)
- *Eucalyptus robusta* (swamp mahogany)
- *Corymbia maculata* (spotted gum). It is noted that in Queensland *Corymbia citriodora* is recognised synonymously with *Corymbia maculata*.

In addition to the aforementioned species, in South East Queensland *Corymbia citriodora* (Spotted Gum) is considered a preferred foraging species. Results of the field surveys completed across the referral area recorded one (1) preferred foraging species, being *Corymbia citriodora* (Spotted Gum) specimens.

The number of preferred foraging trees within the referral area was captured on-ground whereby each tree meeting the criteria was identified and recorded. A total of 99 *Corymbia citridora* (synonym, *Corymbia maculata* – Spotted Gum) (≥300 mm DBH) were recorded across the referral area as potentially providing foraging habitat for the Regent Honeyeater.

Significant Impact Assessment

A significant impact assessment was completed and provided as part of the original referral material (refer **Part B**). The conclusion of this assessment was that it is highly unlikely that the proposed action will have a significant impact on Regent Honeyeater. While the referral area contains some potential foraging trees for the species, the overall value of the referral area is limited by regrowth dominated vegetation and cleared areas. The removal of a select few foraging specimens is unlikely to significantly reduce feeding opportunities for the one or two Regent Honeyeaters that might potentially visit the



broader locality every 3-10 years. A significant impact assessment has been updated and included as **Table A41**.

Table A51: Significant impact assessment – Regent Honeyeater (critically endangered)

Significant Impact Criteria	Assessment	Impact
An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:		
Lead to a long-term decrease in the size of a population	According to the National Recovery Plan for the Regent Honeyeater Commonwealth of Australia (2016) the referral area is within an indicative region where Regent Honeyeater may occur. However, the referral area is distant from any breeding sites. There are no records of the species within 5 km of the referral area utilising a wildnet search. A search of ALA returns multiple records within 20 km of the referral area. However, due to the sensitivity of this species, records are generalised to a grid-based system with up to 29.7 km uncertainty buffer applied. Of these records only three were independent events in the last decade, and significantly, there have been no recorded sightings within 20 km since 2019. There are no publicly accessible records for Queensland during 2025 (up to August 2025). The referral area itself lacks key foraging resources for the species as identified in the recovery plan. Notably, only 99 *Corymbia citriodora* (Synonym *Corymbia maculata*) (≥ 300mm DBH) were recorded within the referral area. The referral area is not a regular or subsidiary area used by Regent Honeyeaters for foraging and breeding as defined by the Commonwealth of Australia (2016). Hence, vegetation within the referral area is not considered known or likely foraging habitat. Otherwise, Regent Honeyeater is not expected to occur within the local area or utilise the habitats currently available in the study area to such an extent that the proposed action would lead to a long-term decrease in the size of the population.	**Significant impact not likely**
Reduce the area of occupancy of the species	The National Recovery Plan for the Regent Honeyeater outlines high value local sites where Regent Honeyeater breeds, and the most important sites in general. The key breeding areas are confined to NSW – the Capertee, Upper and Lower Hunter and Burragorang Valleys, and the Bundarra-Barraba region. Regent Honeyeater has occurred as far as 100 km north of Brisbane and within 300 km of the coast. Historically Regent Honeyeater bred in Queensland such as at Gore (inland of	**Significant impact not likely**

Significant Impact Criteria	Assessment	Impact
	Warwick) but they have not been recorded breeding there since 2007. Apart from the loss of breeding in Queensland, the frequency of independent records in Queensland has declined. One or two individual Regent Honeyeaters are known to occur in Queensland sporadically with no records in some years. Their preferred habitat is to the west of the Great Dividing Range, though even there (e.g. Gore near Warwick) records have become increasingly sporadic associated with the overall population decline. Given the extent of potential habitat within their known/expected range in south-east Queensland, the removal of limited foraging specimens from the referral area will not reduce the area of occupancy of the species.	
Fragment an existing population into two or more populations	Currently there is no resident Queensland population of Regent Honeyeater. They are occasional visitors – one or two individuals recorded in most, but not all, years. The proposed action will not fragment an existing population into two or more populations.	**Significant impact not likely**
Adversely affect habitat critical to the survival of a species	The value of the vegetation within the referral area specific to the Regent Honeyeater has been detailed in the above subsections. While potential foraging trees are present, the dominance of immature specimens and cleared areas and lack of larger trees with an abundance of flowering potential reduces the value of potential foraging habitat within the referral area. Foraging habitat representing habitat critical for the survival of the species includes preferred foraging species within known and likely foraging habitat. There are three independent sighting events from within 15km of the study area in the last decade and no recorded sightings within 20 km since 2019, and the species is not known to forage within the referral area. The lack of selectivity in sites where Regent Honeyeater is recorded in southeast Queensland (e.g. urban parks) and the absence of recorded repeat visits to sites in multiple years means that there is little chance of the proposed action adversely affecting habitat critical to the survival of the species, notwithstanding the sporadic occurrences of the few individual birds that reach southeast Queensland. Hence, low-value vegetation within the referral area is not considered known or likely foraging habitat, such that the proposed action will not adversely affect habitat critical to the survival of the species.	**Significant impact not likely**
Disrupt the breeding cycle of a population	Not known to breed in Queensland, key sites in NSW are at least 500 km distant from study area	**Significant impact not likely**

Significant Impact Criteria	Assessment	Impact
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Given the lack of suitable habitat within the referral area and the extent of potential habitat within their known/expected range in south-east Queensland (and the low number of individuals that sporadically reach Queensland), the proposed action will not modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.	**Significant impact not likely**
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	There are no invasive species that are recognised as a threat to the long-term survival or recovery of this species on mainland Australia.	**Significant impact not likely**
Introduce disease that may cause the species to decline	There are no diseases that are recognised as a threat to the long-term survival or recovery of this species.	**Significant impact not likely**
Interfere with the recovery of the species.	Distribution mapping in the National Recovery Plan (Commonwealth of Australia 2016) indicates the referral area is within a location where the species "may" occur (but is not "likely" to occur). There are very few independent records within 15 km radius over the past 10-15 years, such that the referral area would not be considered habitat critical for the survival of the species. Furthermore, the value of the referral area to provide potential foraging habitat for the species is limited by a dominance of immature trees and cleared areas and presence of only *Corymbia citriodora* as a potential foraging species. Any occurrence of the species in the referral area is expected to be very rare to the extent where the proposed action would not interfere with the recovery of the species.	**Significant impact not likely**

5.5. Greater Glider

5.5.1 Assessment

As discussed in **Section 3.2**, Greater Glider was identified in the desktop assessment as a threatened species with potential to be impacted by the development. **Section 3.4.5** details how the species is unlikely to occur based on the outcomes of field surveys showing a completed lack of suitable habitat and minimal recorded sightings of the species.

Greater Glider have small home ranges of 1-4 ha (Pope et al. 2004) and require an abundance of large hollows associated with mature trees (Smith et al., 2007). The presence of live, hollow-bearing trees is thought to be a limiting factor within otherwise suitable habitat. Large, continuous tracts of mature woodland and forest with a minimum of 2-4 suitable hollows per 2 ha is considered essential for sustaining a population (Eyre, 2002). The species is considered to be particularly sensitive to forest clearance and intensive logging practices (Kavanagh and Wheeler, 2004). Subsequently, Greater Gliders have relatively low persistence in small forest fragments and disperse poorly across vegetation that is not native forest. Modelling suggest that they require native forest patches of at least 160 km^2 to maintain viable populations (Eyre, 2002).

The referral area is entirely mapped as Category X (non-remnant) vegetation as a result of historical clearing. On-ground surveys identified largely regrowth vegetation and a lack of large mature hollow bearing trees. A detailed tree plot across the site recorded only four (4) trees containing hollows and only 2 hollows considered of a suitable size for the species (≥100 mm diameter) (refer **Plan A8**). This represents a hollow density of approximately 0.09 hollows per ha, far below the 2-4 hollows per ha required by the species as stated in the Conservation Advice for *Petauroides volans* (greater glider (southern and central)) (2022).

The referral area is also situated adjacent to established and emerging residential developments and high levels of disturbance. Nocturnal surveys (spotlighting) were conducted across the referral area, with no sighting of the species recorded. The Greater Glider's distinctive bright eye shine and inactive nature means that the likelihood of detecting the species during spotlighting is high. Furthermore, no sightings of Greater Glider have been recorded by ALA within 5 km of the referral area. The evidence suggests that the referral area is not currently utilised by Greater Glider and is considered poor habitat for the species. The nearest records of greater Glider are within White Rock Conservation Area to the south-east (refer **Plan A14**). This contains a large contiguous area of remnant vegetation recognised as suitable vegetation communities. Furthermore, a detail assessment of mature aged vegetation indicates this area as 'old growth.' Notable mature aged vegetation is not present on, or immediately adjacent, the referral area (refer **Plan A15**).

Significant Impact Assessment

A significant impact assessment was completed and provided as part of the original referral material (refer **Part B**) which has been updated and provided as **Table A52.** The referral area does not contain suitable habitat for the species due to significantly limited hollow-bearing trees and dominance of cleared areas and regrowth. The referral area is poorly connected as a result of existing developments and roads and there are limited local records of the species. The significant impact assessment found that the species is highly unlikely to be significantly impacted by the proposed action.

Table A52: Significant Impact Assessment – Greater Glider (endangered)

Significant Impact Criteria	Assessment	Impact
An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:		
Lead to a long-term decrease in the size of a population	The referral area of 22 ha is mapped as entirely Category X (non-remnant) vegetation. Historical clearing and ongoing land management has resulted in predominantly regrowth vegetation and cleared areas. Native canopy trees are present including *Corymbia citriodora* (Spotted Gum)), *Corymbia tessellaris* (Moreton Bay Ash), *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus melanophloia* (Silver-leaf Ironbark) The species was not observed within the referral area despite targeted nocturnal surveys. The species is known to have a preference for large, mature trees for foraging and hollows for denning with species occurrence directly correlated to abundance and availability of hollows. The referral area is not considered to provide suitable habitat for the species given the lack of large mature trees and hollows. All large, mature trees and hollow-bearing trees were plotted within the referral area. Only four (4) trees containing hollows and only 2 hollows considered of a suitable size for the species (≥100 mm diameter) were recorded. This represents a hollow density of approximately 0.09 hollows per ha, far below the 2-4 hollows per ha required by the species as stated in the *Conservation Advice for Petauroides volans (greater glider (southern and central)) (2022)*. Furthermore, large mature trees were also limited with only 41 trees recorded (≥ 500mm DBH) across the referral area. Notably, the majority of these specimens were located in the northern extent of the referral area adjacent to existing developments. It is considered highly unlikely that the referral area supports a population of the species. Vegetation within the referral area provides limited connectivity potential as a result of historical rural land-uses and the recent shift to urban developments. The species is known to be particularly sensitive to area of high disturbance and are unlikely to	**Significant impact is not likely**

Significant Impact Criteria	Assessment	Impact
	utilise vegetation close to these areas. The referral area is located adjacent to a major residential development and highly modified areas. Furthermore, Bayliss Road runs along the northern boundary which will be further utilised by feeding future approved developments. According to publicly available databases, sightings of the species have been recorded recently (2023) approximately 8.2 km south-east of the referral area. This record exists within White Rock Conservation Park, which along with adjacent bushland, encompasses an area >2000 ha. This area represents mature, suitable vegetation for the species that has seen minimal historical disturbance. The referral area and immediate surrounds are not consistent with this vegetation as broad scale clearing and management has taken place as reflected in the non-remnant mapping across most of the area. Furthermore, the location of this record is within vegetation adjacent to environmental protection zoned under the RVPDA development scheme. It is considered unlikely that Greater Glider would utilise the referral area and immediate surrounds given a lack of suitable vegetation and presence of existing disturbances. It is considered highly unlikely that the removal of vegetation within the referral area would affect the viability or size of any Greater Glider populations in the area given no evidence of the species on-site, low abundance of large and hollow-bearing trees, and level of disturbance likely to deter the species from dispersing through the site.	
Reduce the area of occupancy of the species	Targeted surveys did not detect any evidence of Greater Glider within the referral area, suggesting the vegetation is not utilised by Greater Glider. The vegetation within the referral area is reflective of regrowth values as a result of historical clearing and on-going rural pursuits. Large mature trees, and subsequently hollow bearing trees, were extremely limited across the referral area which is located within a highly modified environment	**A significant impact is not likely**

Significant Impact Criteria	Assessment	Impact
	There are no contemporary (<20 years old) records of the species within 5 km of the site. The species is known to be present within White Rock Conservation Park and adjacent bushland approximately 8.2 km south-east. Connectivity to the referral area is limited by poor quality vegetation associated with rural uses and urban developments within the RVPDA A study by Griffith (Norman, P. and Mackey, B. 2023) mapped vegetation based on maturity at a more detailed scale than Queensland remnant mapping. This data shows that mature vegetation is present south-east of the site within intact areas that the species has been recorded. This mature vegetation mapping does not include the site or areas immediately adjacent to the site, further indicating a lack of suitable habitat for the species (refer **Plan A15**). No Greater Glider individuals were recorded within the referral area despite targeted surveys including spotlighting. Therefore, it is anticipated that the removal of two potentially suitable hollows will not reduce the area of occupancy for Greater Glider.	
Fragment an existing population into two or more populations	There is no evidence that an existing population is present within the referral area based on detailed contemporary field surveys and historical records. The referral area does not contain suitable habitat for the species given limited mature trees and hollows and high disturbance areas. While there are records of the species within the broader locality, these are associated with large areas of intact mature, remnant vegetation associated with White Rock Conservation Park. It is therefore highly unlikely the removal of vegetation will fragment an existing population, particularly as large areas of intact, mature vegetation are present further south and east in nature reserves and conservation areas where records of the species exist.	**A significant impact is not likely**
Adversely affect habitat critical to the survival of a species	Detailed targeted surveys did not detect any evidence of Greater Glider within the referral area, suggesting the vegetation on-site is not utilised by Greater Glider.	**A significant impact is not likely**

Significant Impact Criteria	Assessment	Impact
	Recorded sightings of the species occur approximately 8.2 km south-east of the referral area within nature reserves, conservation areas and connected vegetation Field surveys identified the referral area as containing a very low abundance of large and hollow bearing trees (2 suitable sized hollows recorded) which are necessary for the species. The vegetation within the referral is not considered to facilitate dispersal for the species given current developments to the north and north-west and future developments to the west and south which are expected to be completely cleared. The *Petauroides volans* (greater glider (southern and central) Conservation Advice (DCCEEW, 2022) defines habitat critical to the survival of the Greater Glider as: • *large contiguous areas of eucalypt forest, which contain mature hollow-bearing trees and a diverse range of the species' preferred food species in a particular region; and* • *smaller or fragmented habitat patches connected to larger patches of habitat, that can facilitate dispersal of the species and/or that enable recolonization; and* • *cool microclimate forest/woodland areas (e.g. protected gullies, sheltered high elevation areas, coastal lowland areas, southern slopes); and* • *areas identified as refuges under future climate changes scenarios; and* • *short-term or long-term post-fire refuges (i.e. unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonize burnt areas.* The overall referral area contains significantly limited suitable habitat for the species and is located within a highly modified landscape. No evidence of the species and no records are present in close proximity. Records of the species are present large areas of mature, intact vegetation to the south-east which will not be affected by the proposed development. The retention of environmental protection areas in line with	

Significant Impact Criteria	Assessment	Impact
	the RVPDA development scheme will ensure the continued protection and functionality of suitable habitat in the region. Therefore, it is anticipated that the proposed development will not have any adverse effect on habitat critical to the survival of the species.	
Disrupt the breeding cycle of a population	Detailed targeted surveys did not detect any evidence of Greater Glider within the referral area, suggesting the vegetation on-site is not utilised by Greater Glider. Queensland Wildnet returned no sightings of Greater Glider within a 5 km radius of the referral area, however clusters of records occur to the north and east of the site, largely within nature reserves and conservation areas. Vegetation within he referral area is considered significantly low value for the species given the dominance of regrowth and cleared areas and lack of large mature hollow bearing trees necessary for the species. The proposed development will not significantly impact the functionality and suitability of existing habitat where the species is known to exist. As a result, it is not considered that the proposed action would disrupt the breeding cycle of a population of Greater Glider.	**A significant impact is not likely**
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The referral area has been historically cleared and consistently utilised for rural land uses resulting in entirely non-remnant vegetation that is dominated by regrowth and cleared areas. Furthermore, the site is surrounded by roads and existing residential development which are only to become more abundant following the expected delivery of several active application and road upgrades as reflected in the RVPDA development scheme zoning. Records of the species are present approximately 8.2 km south-east of the referral area within intact mature vegetation that forms part of several nature reserves including White Rock Conservation Park. Further west of this area toward RVPDA center and the referral area, the levels of disturbance increase and areas of regrowth and cleared vegetation become more prominent. Therefore, despite the referral area	**A significant impact is not likely**

Significant Impact Criteria	Assessment	Impact
	retaining some connectivity to the east, it is considered unlikely that the species would utilise the referral area, particularly given the lack of suitable habitat and no evidence of occurrence. As such, it is not considered that the proposed action will impact the availability of habitat to the extent that the species is likely to decline.	
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	The proposed action is not anticipated to significantly increase threats compared to baseline conditions as the referral area is located in a landscape that has been subject to extensive historical and contemporary modification. A number of major threats to the Greater Glider are present within the local region, including roads and residential housing likely to have domestic dogs. Notably, analysis of motion camera data revealed Red Fox within the referral area, which are a known threat to Greater Glider populations. The proposed action is not anticipated to result in the introduction or increase of invasive species that are harmful to the Greater Glider or Greater Glider habitat as these species are already present within the referral area.	**A significant impact is not likely**
Introduce disease that may cause the species to decline, or	The project is unlikely to introduce disease into the area, and therefore no significant impact is considered to result from the proposed action.	**A significant impact is not likely**
Interfere substantially with the recovery of the species.	Detailed targeted surveys did not detect any evidence of Greater Glider within the referral area, suggesting the vegetation is not utilised by Greater Glider. Queensland Wildnet returned no sightings of Greater Glider within a 5 km radius of the referral area, however clusters of records occur to the south-east within intact vegetation that adjoins nature reserves and conservation areas. The recovery actions of the Greater Glider are generally around preventing impacts from fires to the species and the removal and fragmentation of habitat. The proposed action is not considered to interfere with the recovery of the species because the habitat on-site is not considered suitable for the species. The anticipated	**A significant impact is not likely**

Significant Impact Criteria	Assessment	Impact
	development of several applications in the RVPDA in line with 'urban living' zoning on-site will not interfere with the recovery of the species. Furthermore, retained areas in the broader landscape are associated with environmental protection zoned areas which include and adjoin areas of mature vegetation where the species is known to exist allowing for continued availability of habitat. Hence, no significant impact is considered to result from the proposed action.	

5.6. Impact Analysis

Item 4.3 of the PD Request states, ***'To inform point 4.1 to 4.2, please provide an assessment of the direct, indirect, facilitated and cumulative impacts that may occur as a result of the proposed action at a local and regional scale.***

The assessment should include consideration of:

- ***a) The nature, likelihood, significance, and extent of impacts and whether any relevant impacts are likely or be unknown or irreversible***
- ***b) Timing and whether the impact is temporary or permanent***
- ***c) species specific habitat requirements such as hollow bearing trees, nest trees, refuge habitat, foraging and breeding habitat, sheltering or other microhabitat features relevant to the species within and surrounding the development footprint (if applicable)***
- ***d) whether connectivity and movement opportunities in the surrounding area may be retained, removed or functionally lost or compromised***
- ***e) adjacent areas of habitat that may or will be subject to intensification of ongoing impacts (for example, through increased human and vehicle presence)***
- ***f) indirect or facilitated impacts that may result from the proposed action,***
    - ***i. edge effects – including the potential for the introduction of weed species and pathogens in the referral area and adjacent environment.***
    - ***ii. Vehicle movement – potential increase of vehicles to strike fauna in the preconstruction, construction, and operation phase of the project.***
    - ***iii. Increased presence of dogs – pre-construction, construction and operation phases have the potential to increase dog presence in the referral area and adjacent environment.***
    - ***iv. Earthworks – potential to generate dust emissions from the removal of vegetation and movement of soil in the pre-construction and construction phase of the project.***
    - ***v. Disturbance from increased noise, artificial light, sediment generation and other relevant stressors during construction and operation of the residential development.***
- ***g) cumulative impacts, where potential project impacts on MNES are in addition to existing impacts of other activities (including current or future developments by the proponent and other proponents in the region and vicinity)***

Table A53: Direct impact analysis

Direct impact	Koala	Grey-headed Flying-fox
- *Removal of 21.7 ha of habitat critical to the survival of the Koala and 15.9 ha of potential foraging habitat for the Grey-headed Flying-fox*	The proposed action will involve the removal of vegetation that has been assessed as providing habitat critical to the survival of the Koala. Impacts are proposed over the entire referral with no vegetation retention proposed. While the impact area does contain suitable Koala habitat, the value of the vegetation for the species is reduced by a dominance of regrowth vegetation and cleared areas. Furthermore, the referral area is situated within 'urban living' zoning of RVPDA and surrounded on three sides by existing and future developments.	The proposed action will involve the removal of vegetation that has been assessed as potentially providing foraging habitat for the Grey-headed Flying-fox. Impacts are proposed over the entire referral with no vegetation retention proposed. Vegetation considered foraging habitat for the Grey-headed Flying-fox excluded portions of the referral area that are cleared.

Table A54: Indirect impact analysis

Indirect impact	Koala	Grey-headed Flying-fox
- *Edge effects – including the potential for the introduction of weed species and pathogens in the referral area and adjacent environment.*	Edge Effects and Disturbance The ecological survey across the referral area ground-truthed the site as being highly degraded due to historical land uses and clearing. Aerial imagery indicates that the site was broadly cleared prior to 1968 with maintenance and slashing concentrated across the referral area. More recently historical stockpiles had been used resulting in large, cleared areas remaining. The referral area contains exclusively regrowth vegetation with some scattered larger trees present. The subcanopy is lacking and the ground layer is dominated by exotic grasses No significant or unique ecological values are present within the referral area. As such, the proposed development is not considered to create or exacerbate edge effects or disturbance to the already highly modified and degraded nature of the vegetation. Disease and Pathogens The proposed development is not considered likely to introduce pathogens that would negatively impact any Koalas that should be utilising the area.	Edge Effects and Disturbance The ecological survey across the referral area ground-truthed the site as being highly degraded due to historical land uses and clearing. Aerial imagery indicates that the site was broadly cleared prior to 1968 with maintenance and slashing concentrated across the referral area. More recently historical stockpiles had been used resulting in large, cleared areas remaining. The referral area contains exclusively regrowth vegetation with some scattered larger trees present. The subcanopy is lacking and the ground layer is dominated by exotic grasses No significant or unique ecological values are present within the referral area. As such, the proposed development is not considered to create or exacerbate edge effects or disturbance to the already highly modified and degraded nature of the vegetation. Disease and Pathogens The proposed development is not considered likely to introduce pathogens that would negatively impact any GHFF that should be utilising the area.
- *Increased vehicle strike from increased frequency of vehicle movements throughout construction and operation of the residential development and associated infrastructure.*	Upon completion of the development, vehicle traffic within the referral area will increase compared to baseline conditions, increasing the likelihood of vehicle strike of Koalas. To reduce the risk of vehicular strike for the potential that a Koala occurs on site, speed limits will be generally limited to 50 km/hr with signage where appropriate. The risk of Koalas entering the residential area is reduced by discouraging movement though planting of non-koala habitat trees and not retaining any movement corridors through the site.	GHFF are not considered to be at increased risk of vehicular strike as they are not a ground dwelling species.

Indirect impact	Koala	Grey-headed Flying-fox
	Vehicle traffic associated with the construction and earthworks phase of the development will also increase. Measures will be implemented to reduce vehicle speeds across the referral area which will be limited to 20 km/hr across the site.	
- *Increased presence of dogs – pre-construction, construction and operation phases have the potential to increase dog presence in the referral area and adjacent environment.*	Dogs will not be allowed with the referral area during the pre-construction and construction phase of the project. Therefore, there will be no increase in the presence of dogs as part of the construction phase of the project. Upon completion of the development, domestic dog presence will increase compared to baseline conditions, potentially increasing the likelihood of mortality or injury of Koalas that happen to utilise the residential area. To reduce the risk of adverse interactions between Koalas and domestic dogs, Koala friendly design measures will be incorporated throughout the development such as designated dog off-lease areas and information packages distributed to residents. The risk of Koalas entering the residential area is reduced by discouraging movement though planting of non-koala habitat trees and not retaining any movement corridors through the site.	GHFF are not considered to be at increased risk of domestic dog attack as they are not a ground dwelling species.
- *Earthworks – potential to generate dust emissions from the removal of vegetation and movement of soil in the pre-construction and construction phase of the project.* - *Disturbance from increased noise, artificial light, sediment generation and other relevant stressors during construction and operation of the residential development*	<u>Noise</u> Noise levels greater than existing ambient noise levels are expected during construction within the referral area which will be present for the duration of the project (~4 years). Sources of noise are likely to consist of noise in short, intense pulses from mobile plant equipment, and more prolonged noise, with consistent vibration, pitch and volume from generators, excavators and pumps, in addition to noise from vehicles.	<u>Noise</u> Noise levels greater than existing ambient noise levels are expected during construction within the referral area which will be present for the duration of the project (~4 years). Sources of noise are likely to consist of noise in short, intense pulses from mobile plant equipment, and more prolonged noise, with consistent vibration, pitch and volume from generators, excavators and pumps, in addition to noise from vehicles.

Indirect impact	Koala	Grey-headed Flying-fox
	Both steady continuous and single noise events have the potential to lead to ecological impacts. Construction noise is expected to elicit some avoidance response from fauna including the Koala, that are using the surrounding vegetation. However, with consideration of the extent of habitat and presence of exiting developments, this is likely to be a temporary and negligible to minor impact. Standard mitigation measure will be implemented during the construction phase which will include but not limited to time restrictions of construction (6am – 6pm), equipment management and maintenance, worker induction and site management and speed controls Additionally, noise levels are likely to increase once the development is complete as there will be increased vehicular and pedestrian traffic. Road noise will be the primary source of noise impact. The establishment and use of garden paths through landscaped areas will also provide a source of noise due to pedestrian traffic. Notably, the surrounding area is transition to urban uses with developments completed and under construction present to the north. The impact from noise to any Koalas in the surrounding area is considered to be minor. <u>Artificial Light</u> Artificial light can affect both nocturnal and diurnal animals by disrupting behavioural patterns, with quality of light (e.g. wavelength, colour), intensity and duration potentially evoking different faunal responses. Impacts from increased light levels include disorientation from, or attraction toward, artificial sources of light; mortality from collisions with structures; and effects on light-sensitive cycles of species (e.g. breeding and migration for fauna and flowering in	Both steady continuous and single noise events have the potential to lead to ecological impacts. Construction noise is expected to elicit some avoidance response from fauna including the Koala, that are using the surrounding vegetation. However, with consideration of the extent of habitat and presence of exiting developments, this is likely to be a temporary and negligible to minor impact. Standard mitigation measure will be implemented during the construction phase which will include but not limited to time restrictions of construction (6am – 6pm), equipment management and maintenance, worker induction and site management and speed controls Additionally, noise levels are likely to increase once the development is complete as there will be increased vehicular and pedestrian traffic. Road noise will be the primary source of noise impact. The establishment and use of garden paths through landscaped areas will also provide a source of noise due to pedestrian traffic. Notably, the surrounding area is transition to urban uses with developments completed and under construction present to the north. Given the high mobility of GHFF and the lack of roosts on or in close proximity to the referral area, impacts to the species is considered to be minor. <u>Artificial Light</u> Artificial light can affect both nocturnal and diurnal animals by disrupting behavioural patterns, with quality of light (e.g. wavelength, colour), intensity and duration potentially evoking different faunal responses. Impacts from increased light levels include disorientation from, or attraction toward, artificial sources of light; mortality from collisions with structures; and effects on light-sensitive cycles of species (e.g. breeding and migration for fauna and flowering in

Indirect impact	Koala	Grey-headed Flying-fox
	plants). An artificial increase in lighting can also affect abundance of predators. Presence and intensity of artificial light in the project area will temporarily increase during the construction phase; however, night works will not be permitted. Lighting will be directed to construction areas within the project area. Some light spillage will be inevitable and is likely to be contained. Potential impacts associated with light emissions will be temporary and unlikely to be significant. With implementation of standard mitigation measures, the project is likely to result in a negligible impact to any Koalas in the surrounding area due to the use of light pollution during construction. Standard mitigation measures are required during urban development projects and are considered industry standard. These mitigation measures include but are not limited to directional lighting, time restrictions during construction, the use of low intensity lighting and avoid lighting in sensitive habitats (riparian zones and bushland). <u>Dust and Sediment Generation</u> Construction activities have the potential to generate dust emissions. Dust emissions during construction will be temporary. The main sources of dust will be generated via: • wheel-generated dust from the haul roads created for the construction phase; • dust lift-off from exposed surfaces (e.g., construction roads and pads); • earthworks, including construction of the embankments, and moving, dumping and shaping material; and	plants). An artificial increase in lighting can also affect abundance of predators. Presence and intensity of artificial light in the project area will temporarily increase during the construction phase; however, night works will not be permitted. Lighting will be directed to construction areas within the project area. Some light spillage will be inevitable and is likely to be contained. Potential impacts associated with light emissions will be temporary and unlikely to be significant. With implementation of standard mitigation measures, the project is likely to result in a negligible impact to any GHFF in the surrounding area due to the use of light pollution during construction. Standard mitigation measures are required during urban development projects and are considered industry standard. These mitigation measures include but are not limited to directional lighting, time restrictions during construction, the use of low intensity lighting and avoid lighting in sensitive habitats (riparian zones and bushland). <u>Dust and Sediment Generation</u> Construction activities have the potential to generate dust emissions. Dust emissions during construction will be temporary. The main sources of dust will be generated via: • wheel-generated dust from the haul roads created for the construction phase; • dust lift-off from exposed surfaces (e.g., construction roads and pads); • earthworks, including construction of the embankments, and moving, dumping and shaping material; and

Indirect impact	Koala	Grey-headed Flying-fox
	• vegetation and soil clearing of the land. Excessive deposition of dust on leaves of plants can suppress the growth and photosynthesis, resulting in reduced habitat quality for fauna. High levels of airborne dust can irritate the respiratory systems of fauna and potentially result in ingestion of dust-coated seeds and other foods. Excessive deposition of dust on open water bodies may also degrade water quality and overall habitat quality for fauna. With implementation of standard mitigation measures, the project is likely to result in a temporary and minor impact to any Koalas utilising the local area due to the generation of dust. Standard mitigation measures include but are not limited to water spraying of exposed ground, stabilisation of surfaces, vehicle speed limits, erosion control measures and monitoring. The project will require the formation and implementation of erosion and sediment control plan as part of the construction phase which will need to be approved by Council. During operation, various methods will be implemented to reduce dust such as paved surfaces, landscaping and ground covers and street cleaning. <u>Waste, Hazardous and Dangerous Goods</u> Spills and leaks from transfers (e.g. fuel and/or chemicals) and inadequate storage of dangerous goods and hazardous wastes could result in point-source contamination of surrounding land. Direct adverse impacts could include toxic impacts on vegetation (resulting in degradation or loss of vegetation and habitats), direct toxic impacts on fauna (from contact, inhalation or ingestion) or indirect impacts on threatened and migratory species from habitat loss. Direct adverse impacts on surface and groundwater quality are also possible.	• vegetation and soil clearing of the land. Excessive deposition of dust on leaves of plants can suppress the growth and photosynthesis, resulting in reduced habitat quality for fauna. High levels of airborne dust can irritate the respiratory systems of fauna and potentially result in ingestion of dust-coated seeds and other foods. Excessive deposition of dust on open water bodies may also degrade water quality and overall habitat quality for fauna. With implementation of standard mitigation measures, the project is likely to result in a temporary and minor impact to any GHFF utilising the local area due to the generation of dust. Standard mitigation measures include but are not limited to water spraying of exposed ground, stabilisation of surfaces, vehicle speed limits, erosion control measures and monitoring. The project will require the formation and implementation of erosion and sediment control plan as part of the construction phase which will need to be approved by Council. During operation, various methods will be implemented to reduce dust such as paved surfaces, landscaping and ground covers and street cleaning. <u>Waste, Hazardous and Dangerous Goods</u> Spills and leaks from transfers (e.g. fuel and/or chemicals) and inadequate storage of dangerous goods and hazardous wastes could result in point-source contamination of surrounding land. Direct adverse impacts could include toxic impacts on vegetation (resulting in degradation or loss of vegetation and habitats), direct toxic impacts on fauna (from contact, inhalation or ingestion) or indirect impacts on threatened and migratory species from habitat loss. Direct adverse impacts on surface and groundwater quality are also possible.

Indirect impact	Koala	Grey-headed Flying-fox
	With the application of standard mitigation and management measures, impacts from liquid and solid waste disposal will be avoided or localised and small in scale. Standard mitigation measures include but are not limited to, implementation of risk assessments, suitable storage of hazardous chemicals, spill controls and kits, site specific training and inductions, and documentation and compliance record keeping. Further to this, the likelihood of significant spillages is considered extremely low. Therefore, the project is likely to result in a negligible impact to ecological values due to potential spills and leaks.	With the application of standard mitigation and management measures, impacts from liquid and solid waste disposal will be avoided or localised and small in scale. Standard mitigation measures include but are not limited to, implementation of risk assessments, suitable storage of hazardous chemicals, spill controls and kits, site specific training and inductions, and documentation and compliance record keeping. Further to this, the likelihood of significant spillages is considered extremely low. Therefore, the project is likely to result in a negligible impact to ecological values due to potential spills and leaks.
- ***Cumulative Impacts***	The project poses potential indirect impacts in the form of cumulative impacts. This project is considered to have a minimal impact to Koala as a result of cumulative impacts given the existing development of the region including completed and near completed developments and road upgrades. Cumulative impacts are managed through landscape-scale planning. The referral area is located within 'urban living' zoning of the RVPDA with large contiguous areas of 'environmental protection' located further east away from roads and developments. Surrounding approved developments, such as EPBC 2018/8347 to the east which is under construction. This development retains environmental protection zoning in the south which connects to large areas of retained vegetation.	The project poses potential indirect impacts in the form of cumulative impacts. This project is considered to have a minimal impact to GHFF as a result of cumulative impacts given the existing development of the region including completed and near completed developments and road upgrades. Cumulative impacts are managed through landscape-scale planning. The referral area is located within 'urban living' zoning of the RVPDA with large contiguous areas of 'environmental protection' located further east away from roads and developments. Surrounding approved developments, such as EPBC 2018/8347 to the east which is under construction. This development retains environmental protection zoning in the south which connects to large areas of retained vegetation.

6. Avoidance and Mitigation

This section responds to Item 6 of the PD request which requests further details on proposed mitigation and rehabilitation measures, including the following subsections.

6.1. Description of impact avoidance

Item 6.1 of the PD Request asks for ***"Demonstrate that you have applied the mitigation hierarchy and exhausted all options to avoid and mitigate harm to protected matters, before resorting to environmental offsets."***

The project has been assessed extensively against the avoidance and mitigation hierarchy. The following sections provide details on why avoidance is not appropriate for this project and the various mitigation measures that are proposed to minimise the risk of impact on MNES.

6.1.1 Avoidance/mitigation

Contextual relevance

From a strategic planning perspective, the referral area is centrally located within RVPDA, a significant growth area in the rapidly developing western extent of South-east Queensland. The referral area is zoned 100% as 'urban living' under the RVPDA development scheme immediately south of 'Providence Central' a mostly completed large scale residential development identified as an 'urban centre' of RVPDA. All properties adjacent to the referral area are also zoned also zoned as 'urban living' with the exception of the property to the east which is zoned as 'environmental protection.'

The purpose of the RPVDA zoning was to concentrate areas proposed for urban developments while providing landscape level connectivity and functionality of high ecological value areas (remnant vegetation, waterways, and corridors) zoned as 'environmental protection.' The referral area is not located within environmental protection zoning, undoubtedly indicating the overarching intended use of the referral area as urban development and not as an area to provide connectivity or fauna refuge. The planning of the RVPDA provides a balance between residential and environmental land uses and attempts to concentrate development to areas of intended urbanisation whilst retaining a network of fauna movement and refuge.

A review of the EPBC public portal and ICC development applications identifies that all properties adjacent to the referral area that are zoned as 'urban living' have been referred under the EPBC act and are under assessment. The proposed layout of these projects shows development up to the boundary of the referral area on all sides. Furthermore, Bayliss Road to the north of the referral area is to be upgraded to facilitate access to 'Providence East' an EPBC approved project further east.

To the east of the referral area land is zoned as 'environmental protection' which links to existing retained areas of development sites further east. The development of the referral area will not impact the functionality of vegetation to the east which terminates at Providence Central to the north. There is minimal connectivity potential west of the referral area with Ripley Road and cleared properties present. Additionally, the land to the west proposes full development over the land parcel.

Therefore, the retention of any vegetation along the northern, southern and western boundary would be unsuitable given the current and expected delivery of housing in these areas. To the east of the referral area, vegetation is likely to be retained as per the RVPDA zoning and approved developments. The 'environmental protection' zoning terminates at 'Providence Central' directly north. Proposing the retention of vegetation along the eastern boundary of the referral area is not considered likely to improve the functionality of the retained area in the broader locality given the presence of developments to the north. Any additional avoidance achieved at the referral area would have no meaningful role for threatened species in the future developed scenario of this and adjoining sites. Thus, any additional avoidance would be at the expense of housing supply forced to be located elsewhere without any benefit to MNES habitat for species.

The proponent (HB QLD Pty Ltd) acquired this site due to its lack of environmental overlays and strategic position centrally in a major growth area. The site directly reflects the type of land holding which should be targeted for development based on both on-ground values and context.

6.1.2 Vegetation values

The referral area is completely mapped as non-remnant vegetation as a result of historical clearing and continued rural land management practices. On-ground surveys identifying a dominance of regrowth vegetation and cleared areas across the referral area. The dominance of immature vegetation results in a lack of large mature trees and hollow-bearing trees. These habitat features are necessary to support a number of threatened species, as discussed in **Section 3.**

No diversity in habitat types or vegetation types, i.e. riparian vegetation, rocky areas, waterways, rainforests, etc are present within the referral area thus further limiting the ability of the referral area to provide habitat for specialist or threatened species. Further, the referral area is a relatively small patch of vegetation in close proximity to existing and/or future urban development, ultimately reducing the suitability of the referral area to species that are highly sensitive to disturbance and human presence. Thin linear strips of vegetation do not provide functional corridors, particularly for species such as Koala where a minimum 100 m corridor is advised to continue to support this species (DES, 2022). Research shows that large, wide, and intact areas of vegetation are far more likely to provide suitable habitat and movement opportunities for a range of species (Catterall et al. 1993).

6.2. Description of mitigation measures

Item 6.2 of the PD Request asks for ***"Provide details (including a summary list or table) of avoidance and mitigation measures proposed to be undertaken to prevent or minimise impacts on protected matters (or their habitat) from the proposed action area, including:"***

- ***a) a description of avoidance measures that have been considered and applied. For example, proposed project site selection to avoid valuable habitat, micro-siting of infrastructure to avoid impacts on habitat on site, or avoidance of any activity that may indirectly impact on essential lifecycle processes for species.***
- ***b) a description of proposed safeguards and mitigation measures to minimise and manage relevant impacts of the action, with reference to relevant statutory or policy documents at the Commonwealth and State level (e.g., Guideline: State Development Assessment Provisions (State Code 25)).***
- ***c) pre-clearance and clearance procedures to ensure that species are detected and managed to minimise mortality, stress, injury, or introduction of disease.***
- ***d) measures to address the risk of species, such as the Koala, entering the residential area and becoming trapped/isolated without resources for shelter whilst in the residential area and safe movement opportunities to get out of the residential area, along with sufficient information on the location and design of these measures.***
- ***e) ongoing management of direct and indirect impacts due to increased likelihood of human presence, attacks by domestic dogs, and injury caused by negotiating various fence types.***
- ***f) details of how speed reduction is to be achieved (e.g., traffic calming devices) and plans showing the locations of each of these features and the manner in which they will be implemented).***
- ***g) information on safe road design and placement, including installation of crossing warning signs, wildlife threshold marking on road (include maps and imagery).***
- ***h) the locations and size of any proposed fauna movement solutions, fire breaks, no-go or buffer zones (including buffers between the construction footprint or remaining habitat in the referral area and adjacent to the site), and potential fencing, including:***
    - ***i. the location of any movement solutions, fire breaks, buffer zones, or fencing.***
    - ***ii. the characteristics of the fauna movement solutions, fire breaks, buffer zones and fencing, (i.e., height, length, wildlife proof measures etc)***
    - ***iii. whether the proposed measures, such as fencing will provide a wildlife barrier to/from/within the proposed project site.***
- ***i) description of the environmental outcomes the measures are expected to achieve including details of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes.***
- ***j) information on the timing, frequency, and duration of the measures to be implemented.***
- ***k) an actual or estimated cost of the mitigation measures."***

As stated previously, avoidance measures are not proposed for the project, however several mitigation measures are proposed to ensure impacts are minimised or prevented through the construction and operational phases.

6.2.1 Site Based Management Plan (Environment)

To avoid and mitigate the direct and indirect impact from the proposed action on the Koala and Grey-headed Flying-fox, a project specific Site Based Management Plan (Environment) (SBMP) will be prepared and signed off by the Environmental Coordinator prior to the commencement of operational works. The SBMP will act as the Environmental Management Plan for the project.

Key outcomes within the SBMP for Koala and Grey-headed Flying-fox include:

- Potential risks to the species (e.g. vehicle strike, entanglement, fragmentation of habitat / becoming stranded, noise/light pollution etc.) are identified and appropriately managed.
- All persons involved in construction and operation of the development are aware of the site values, their potential to impact on the above species and their habitats, and their responsibilities in regard to procedures and strategies with the SBMP.

The SBMP will outline construction measures to manage and mitigate impacts on native flora, and fauna, specifically the Koala and Grey-headed Flying-fox and will include details on:

- Project Description
- Environmental Management, including:
    - SBMP objectives;
    - Identification of key personnel;
    - Roles and Responsibilities;
    - Environmental awareness and compliance training for all contractors and sub-contractors;
    - Adaptive management; and
    - Statutory requirements.
- Pre-Clearance Requirements – Fauna Management, including:
    - Vegetation management (clearing and protection), including:
        - Objectives;
        - Management Strategy;
        - Performance Indicators;
        - Environmental Outcomes; and
        - Monitoring and Adaptive Management.
    - Protection of MNES Fauna (Koala) and Native Wildlife, including:
        - Objectives;
        - Management Strategy;
        - Performance Indicators;

  - Environmental Outcomes;
  - Monitoring and Adaptive Management;
  - Requirements of the DETSI approved Fauna Spotter/Catcher and adoption of the *Code of Practice for the Welfare of Animals Affected by Land Clearing and Other Habitat Impacts* in pre-clearance surveys, reporting and monitoring
  - Sequential clearing plan and clearing restrictions; and
  - Specifications and requirements for temporary fauna exclusion fencing.
- Maintenance of Safe Wildlife Movement Opportunities (during Construction) including:
  - Objectives;
  - Management Strategy;
  - Performance Indicators;
  - Environmental Outcomes;
  - Details of Temporary fencing;
  - Hours of Operation,
  - Details of Fauna awareness signage; and
  - Details of Vehicle movement controls.

6.2.2 Description of pre-clearance and clearance procedures

Item 6.2 (c) of the PD Request specifically asks for, *pre-clearance and clearance procedures to ensure that species are detected and managed to minimise mortality, stress, injury, or introduction of disease.*

Environmental Pre-clearance Package

Prior to vegetation clearing within the referral area, an Environmental Pre-clearance Checklist and Environmental Pre-clearance Package will be created and issued to the project team, including all relevant contractors and sub-contractors, to ensure all approval requirements are met. Environmental Pre-clearance Checklists are designed to easily show compliance for approval requirements, including EPBC approval requirements, in a format where they can be reviewed and 'ticked off' prior to vegetation clearing. The purpose of the checklist is to ensure the following can occur:

- All required approvals are in place prior to clearing and all relevant documentation, including approvals, approved plans and management documents are compiled and distributed to all relevant personnel.
- Threatened flora and fauna pre-clearance checks are undertaken of the clearing extent and appropriately documented so that:
  - any threatened flora in the cleared area is identified and appropriate measures are in place; and
  - any threatened fauna and / or fauna habitat is identified and appropriately managed.
- Appropriate induction procedures are in place and environmental requirements are understood and complied with by all contractors and sub-contractors.

The Environmental Pre-clearance Checklist is to be read in conjunction with the SBMP. Together the Environmental Pre-clearance Checklist and subsequent attachments, and the SBMP will form the Environmental Pre-clearance Package for that scope of works. Environmental Pre-clearance Packages require all approval documentation, including EPBC Act approval requirements, relevant to that clearing stage to be prepared, compiled and distributed to all relevant parties prior to the commencement of clearing. The Environmental Coordinator for the project will be responsible for the preparation of and the distribution of the Environmental Pre-clearance Package.

All relevant parties (e.g. civil contractor, clearing contractor, fauna spotter / catcher, environmental coordinator, superintendent and Client) must sign the checklist prior to clearing, acknowledging that they have reviewed all, and will undertake the works in accordance with approved procedures and reporting. As way of acknowledgement, the Environmental Pre-clearance Checklist will be run through at a project pre-start meeting with all personnel and relevant parties required to sign the checklist. No clearing can commence for a specific phase of works until the checklist has been completed and signed off by the Environmental Coordinator.

Fauna Spotter Catcher Roles and Reporting

As required by the SBMP, a Department of Environment, Tourism, Science, and Innovation (DETSI) registered Fauna Spotter Catcher must be appointed to ensure fauna, specifically Koala, management occurs prior to, during and post clearing. This role is mandated for any clearing of native vegetation in Queensland. The role of the Fauna Spotter Catcher is to complete an assessment of the works area no more than 2 weeks prior to clearing and present a short report to the proponent on the findings and how the proposed clearing is to be managed. The Fauna Spotter Catcher is required at the pre-start meeting and to be on site during all times of clearing works.

Under the *Nature Conservation Act 1992*, registered Fauna Spotter Catchers must complete a return of operations report to the Queensland State Government stating all fauna encountered and the specific management measures used to ensure the safety of native animals.

It is the role of the Fauna Spotter Catcher to take all reasonable steps to protect wildlife that may be impacted by vegetation clearing. These steps include the following:

- Undertaking wildlife load reduction measures through the pre-clearing trapping and relocation of wildlife within 1 to 2 weeks prior to the approved clearing being conducted. Sequential clearing cannot be used as a primary fauna management measure.
- Clearly distinguish vegetation found to contain fauna or fauna habitat (e.g. tree hollows, arboreal termite mounds, stick nests or possum drays) with flagging tape, and visually and verbally communicate this information to the tree feller to ensure flagged trees are not felled until authorised by the fauna manager.
- Manage any Koalas identified on site in accordance with the *Nature Conservation (Koala) Conservation Plan 2017* and *Management Program 2006-2016*.
- Manage fauna habitat identified during the site inspection using the protocols discussed in the SBMP.
- Work in conjunction with a professional tree feller in the removal of any vegetation.

- Schedule vegetation clearing to ensure that the impacts on wildlife are minimised and the likelihood of detection and capture of wildlife is maximised and wildlife load reduction measures are productive.
- Ensuring vegetation and rubbish piles are not left to serve as refuge for displaced or roaming wildlife through the implementation of the following measures:
    - Immediately (within 12 hours) remove or destroy such material.
    - Erect wildlife proof barriers, such as fencing surrounding stockpiles to prevent wildlife use.
    - Ensure old (>12 hours) piles of felled vegetation are treated as potential wildlife habitat and inspected by a wildlife spotter/catcher prior to removal or destruction.
- Limiting the felling of habitat and hollow bearing trees to the following methods:
    - Segmental removal of tree, with hollow bearing limbs being checked by the Fauna Spotter Catcher and cleared of fauna using a cherry picker or suitable means determined by the Fauna Spotter Catcher.
    - Segmental removal of the tree, with hollow bearing limbs plugged and lowered to the ground for inspection by wildlife spotter.
    - Use of an excavator with vertical grab to lower the main trunk (only after the removal of lateral limbs).
    - A combination of the above methods.

Adoption of the RSPCA / ESU of WW Draft Code for Fauna Spotting

The project will adopt the *DRAFT Code of Practice for the welfare of animals affected by land-clearing and other habitat impacts* (Draft Code) prepared by the *Australia Zoo Wildlife Warriors* and *Voiceless* organisations as detailed in the SBMP. The Draft Code is not mandatory, however, is advocated by various environmental organisations as the leading practice method for minimising impacts of native wildlife during construction processes.

The Draft Code will be adopted to ensure that fair, reasonable and appropriate measures are undertaken to minimise the adverse impacts on wildlife as a result of vegetation clearing. The Draft Code provides standards and guidelines for the humane treatment of wild animals affected by land clearing by detailing the general responsibilities of people involved in land clearing and the specific roles of wildlife spotter/catchers. As emphasised within the Draft Code, it will be the responsibility of all relevant parties to:

- take all reasonable steps necessary to prevent cruelty or suffering to animals;
- minimise the loss of wildlife caused directly or indirectly by development or land clearing; and
- conserve, to the greatest extent possible, the ecological values of the development site and their surrounding natural environment (Draft Code, p.5).

The following components of the Draft Code are to be adopted as the following actions for any clearing works:

Action 1 – Developer to Engage Fauna Spotter Catcher



This action requires that the developer engage a Fauna Spotter Catcher with full registrations and licences provided in accordance with DESI.

Action 2 – Fauna Spotter to Prepare a Wildlife Protection and Management Plan (WPMP)
The WPMP should include the following information:

- description of the project with reference to impacts on wildlife or wildlife habitat;
- pre-development plan of the site showing habitat areas, features, corridors, riparian habitats and adjacent areas;
- results of any fauna surveys including pre-clearance surveys; and
- a wildlife and habitat impact assessment based on the proposed development works.

Action 3 – Prepare a Wildlife and Habitat Impact Mitigation Plan (WHIMP)
Following completion and of the WPMP the Fauna Spotter Catcher should prepare a more specific WHIMP, which will include details on:

- measures required to be completed to minimise wildlife and habitat impacts during operational works;
- wildlife capture and removal plan;
- contingency plan for wildlife requiring euthanasia, other veterinary procedures or captive care;
- wildlife storage and housing plan;
- wildlife release and disposal plan; and
- post works measures to minimise impacts on wildlife.

Action 4 – Fauna Spotter Catcher Role at Pre-Start Meeting
Prior to the commencement of any construction works, a pre-start meeting is to be held between the project manager, site foreperson, plant operators and Local Government representatives. At the pre-start meeting, the Fauna Spotter Catcher is to outline the clearing process and the requirements listed in the SBMP.

Action 5 – During Construction
The Fauna Spotter Catcher is to be on site during all phases of construction which involve potential impacts on wildlife or habitat. This will enable to the Fauna Spotter Catcher to make any necessary adjustments to cater for any specific issues encountered during the clearing works.

Action 6 – Post Works Reporting (Wildlife Management Report)
During the course of all site works, including the pre-clearance surveys, the Fauna Spotter Catcher is to keep an accurate record of all animals encountered, captured, incidents and disposals for each stage of the project. The records should form part of the Wildlife Management Report to be issued under licence requirements to the State Government. The Wildlife Management Report should consist of the following 3 sections:

1. *Wildlife Habitat Management Plan* – Aspects of the planning, design, construction and ongoing operation of the project in which risks to wildlife have been identified. This plan should also include recommendations and outline the type, frequency and timeframes for monitoring.

2. *Wildlife Capture and Disposal Plan* – Should contain the following details for each captured animal:
    a. Species.
    b. Identification name or number.
    c. Sex (M, F or unknown).
    d. Approximate Age or Age Class (neonate, juvenile, sub-adult, adult).
    e. Time and date of capture.
    f. Method of capture.
    g. Exact point of capture (GPS coordinates).
    h. State of health.
    i. Incidents associated with capture likely to affect health.
    j. Veterinary intervention or treatments.
    k. Time held in captivity.
    l. Disposal method (euthanasia, translocation, re-release).
    m. Date and time of disposal.
    n. Detailed of disposal (GPS points of release).
    o. For released animals, location relative to point of capture.
3. Animal Injury and Euthanasia Report – similar details for the Wildlife Capture and Disposal Plan should be included in this report.

Vegetation Clearing and Fauna Management Plan

A Vegetation Clearing and Fauna Management Plan (VCFMP) may be required which will manage and mitigate potential impacts of the construction phase.

The VCFMP will include details on:

- trees marked for removal;
- all civil works likely to impact existing vegetation;
- temporary and permanent exclusion and protection fencing;
- roles and responsibilities for site contractors, the developer and the consultant group;
- stockpiling and site access locations;
- links to weed management and revegetation proposals;
- species surveyed as using the site, focusing on those most likely impacted by development works;
- a list of relevant State and Commonwealth legislation constraints and controls for fauna potentially affected by development works;
- a plan showing existing habitat opportunities and locations;
- details of the threats to existing fauna species;

- a clearing sequence plan showing the commencement of clearing and direction of removal to allow for the appropriate flushing of fauna towards safe havens and/or the application of an appropriate relocation program;
- management and mitigation measures – i.e. temporary use of fauna exclusion fencing;
- description of fauna spotter role, contacts and certification; and specific fauna management procedures for potential or known habitat trees.

6.2.3 Road signage

The proposed development is not intending to retain any areas on site as ecological corridors due to the urban planning intent of the region. The project will adopt the Draft Technical Note Wildlife Signage Guidelines development by the Department of Transport and Main Roads. The posted vehicle speed limit will be subject to ICC approval; however, it will not exceed 50 km/h on internal roads. Additionally, multiple Koala awareness signage types will be installed to promote fauna-sensitive driving behaviour and reduce the potential for vehicle strike.

6.2.4 Fencing

Temporary fauna friendly fencing (pre/during clearing)

Temporary fauna friendly fencing will be installed prior to vegetation clearing and will remain until cleaning is complete. This fencing is to be comprised of either orange hazard mesh or flagging to allow for safe dispersal of fauna from within the referral area (refer **Plan A4** for location and **Insert 2** for examples). This fence will serve two main purposes, the first is that it will clearly define clearing limits as defined by an VCFMP and will also allow for fauna to disperse during clearing prevent Koala being trapped or injured/killed.





Insert 2: Example of fauna friendly tree protection fencing and signage to be installed around clearing area.

Temporary fauna exclusion fencing (during construction)

Following the completion of the vegetation clearing, temporary fauna exclusion fencing is proposed along the boundaries of the referral area to prevent fauna re-entering the civil works area (refer **Plan A4** and **Insert 3**). Exclusion fencing should be between 1.2 m and 1.8 m in height and have some form of anti-climb device. Examples include 600 mm wide strip of smooth, opaque sheeting (e.g. green or black high-density polyethylene or sheet metal) at the top of the fence to prevent koalas from gaining grip and climbing over or floppy top fencing. Gaps under fences and gates, and between gates must be <10 cm

(size of juvenile koala head). Refer *'Fauna Sensitive Transport Infrastructure Delivery Manual'* (DTMR) (2024).

Figure 5.3.3(c) – Plant-hire fencing with panel at top to inhibit climbing by koala



Insert 3: Example of temporary Koala exclusion fencing to be installed prior to construction (DTMR, 2024)

No permanent Koala exclusion fencing is proposed for the development during the operational phase. The project will not retain any vegetation within the referral area and no open space/corridor areas are proposed. A district will form part of the project design and being located centrally and therefore will not promote Koala movement into the area. Fencing types for residential lots will be consistent with the requirements of the RVPDA development scheme Schedule 3 for 'urban living' zoning. All surrounding land parcels mapped as 'urban living' do not propose retained vegetated areas abutting the development. Therefore, the likelihood of Koala entering the development area is low.

6.2.5 Landscaping

The *National guidance for Koala-sensitive urban design* (2025) was reviewed with relevance to this mitigation measure. This document references a case study from New South Wales were a Koala Independent Expert Panel supported excluding Koala food tree species in streetscapes and yards on the basis that this could attract Koala to leave their domains and enter high risk areas. In other examples the promotion of Koala food trees within the streetscape was utilised to provide linear habitat connection in highly fragmented landscapes where large habitat areas were lacking. There is no standard approach to this mitigation measure with local context required to assess suitability.

As has been discussed previously within this assessment, the referral area is centrally located within RVPDA and is zoned as 'urban living.' Properties on three sides of the site are either developed, approved for development or under assessment. To the east of the referral exists a large continuous area of retained vegetation that is zoned as 'environmental protection.' These areas are designed to provide contiguous habitat and landscape scale connectivity. The presence of large areas of suitable habitat capable of supporting local populations of Koala to the east indicates that it is not suitable to promote koala movement into or across the referral area. Promoting this movement encourages Koala away from areas of low threats (vehicle strike and dog attack) to areas of high threats.

The project is not proposing to retain vegetation area as open space with only a central local park proposed. Landscaping of the proposed development will utilise a mix of non-eucalypt trees and shrubs

and ensure street and park trees, while being planted out with non-invasive native trees, don't specifically include any primary or secondary Koala food trees.

6.2.6 Education and awareness

An educational campaign to raise awareness of endemic fauna and domestic animals will be implemented by the proponent. The campaigns may include signage across public areas, social media communications, distribution of lifestyle guidelines on the purchase of a land parcel and letterbox drop pamphlets.

The distribution of "Lifestyle Guidelines" has the purpose of instilling stewardship amongst residents, encouraging them to actively protect native wildlife and providing awareness of the types of fauna that could disperse onto roads as well as how to appropriately manage domestic pets. Topics included within these education documents include:

- Appropriate plant selection on allotments.
- Inappropriate planting species (known local or declared weed species).
- Management of household scale run off.
- Protection of native animals and the types of native animals residents may expect to see.
- Understanding stormwater devices.
- Education on responsible domestic animal ownership within the referral area, including management of domestic animals, and providing key local and state phone numbers to contact if distressed fauna is located.
- Key local and state phone numbers to contact if distressed or orphaned fauna is located.

A copy of the lifestyle guidelines will be issued to new residents upon the purchase of an allotment within the development. Dog controls, off-leash areas and mitigation signage will likewise be enforced and maintained by Council under local regulations. The control of domestic animals across the referral area during the early operational phase will require assuming a reasonable level of personal responsibility from residents and the community, assisted by the provision of educational resources and signage provided by the proponent.

Community educational programs have demonstrated clear effectiveness in protecting Koalas and other fauna through increased awareness, proactive conservation behaviours, and policy integration. For example, a two-year community engagement campaign carried out on the Redland Coast in Queensland —which included social marketing and citizen science— led to measurable conservation gains, such as increased reporting of Koala sightings and increased participation in behaviour-change initiatives targeting threats like dog attacks (Fechner & Rundle-Thiele 2023). Another example is the Ballarat Koala Conservation and Education Program (2000–2009) which used the koala as a flagship species to engage local stakeholders, resulting in the incorporation of a Koala Plan of Management and habitat protections into regional planning schemes.

6.2.7 EPBC Annual Compliance Reporting

The proponent is required to complete an Annual Compliance Report for the period specified in the approval. The Annual Compliance Report ensures the proposed action is undertaken in accordance with the EPBC approval and is published on the project website.



6.2.8 Independent audits

Independent audits of the proposed action are usually undertaken at regular intervals (depending on approval conditions) or at the request of the Minister (or delegate). Independent audits help to ensure that projects with the potential to impact on MNES are implemented as planned. It is expected that the approval conditions will ensure regular independent audits of the proposed action are undertaken at the expense of the proponent.



6.3. Assessment of avoidance and mitigation measures

Item 6.4 of the PD Request asks, ***"For each measure proposed, indicate the:***

- ***a) impacts that are being avoided and/or the significance of impacts being reduced through mitigation.***
- ***b) Scientific basis for conclusions being drawn***
- ***c) an evidence-based likelihood of success/risk assessment***
- ***d) responsible party***
- ***e) milestones / performance / completion criteria***
- ***f) proposed monitoring and evaluation program."***

Discussion of the avoidance and mitigation measures, their individual performance and completion criteria, monitoring and reporting arrangements, residual risk and effectiveness are discussed in **Table A55** and **Table A46.**

Table A55: Construction impacts

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
Loss of 21.7 hectares of critical habitat for the Koala 15.9 ha of potential foraging habitat for the GHFF.	No more than 21.7 hectares of vegetation and cleared areas identified as habitat critical to the survival of the Koala and 15.9 ha potential foraging habitat for the GHFF, will be impacted to facilitate the development and is considered unavoidable.	Ecological surveys and habitat assessment conducted across the referral area led to the precise spatial analysis of vegetation and habitat qualities. The project will result in the unavoidable loss of no more than 21.7 hectares of vegetation identified as habitat critical to the survival of the Koala and 15.9 ha of potential foraging habitat for the GHFF will be impacted to facilitate the development and is considered unavoidable.	Selection of site located centrally within an urban area with limited connectivity potential Clearing within referral area boundary	EDQ (QLD Government)- defined the 'urban living' zone and RVPDA establishment. Proponent – selected site based on zoning and context Environmental Consultant – Map values and complete ecological assessments Site contractor – flag clearing limits Environmental coordinator – check fencing alignment	Several detailed field surveys assessed the quality of habitat within the referral area and usage. The low value vegetation, limited habitat connectivity and minimal evidence of usage within the referral area limits usage to sporadic transient individuals. The referral area offers low value foraging habitat for the GHFF The development is located over the entire referral area.	The referral area is cleared and developed. Works complete	Prior to commencement of vegetation clearing a VCFMP will be prepared that delineates the extent of clearing Environmental pre-start to check clearing limits and fencing EPBC ACR which includes site audit confirming clearing extent is limited to referral area	Report any inconsistencies between the extent of works and referral area boundary to proponent and civil engineer. Correct clearing limits Report non-compliance	**Loss of 21.7 critical habitat for the Koala and 15.9 potential foraging habitat for GHFF. Habitat will be offset resulting in no residual impact**
Risk of injury or mortality to Koalas and GHFF from vegetation clearing and construction • Provisions for the proponent to engage a qualified Fauna Spotter Catcher to participate in all stages of vegetation clearing. The Fauna Spotter Catcher will be required to adopt elements of the Draft Code of Practice endorsed by the Australia Zoo Wildlife Warriors and Voiceless (The Draft Code). The role of the Fauna Spotter Catcher is to ensure that no injury or deaths occur to Koalas or other fauna species. • Vegetation will be cleared sequentially. Clearing will be conducted so that fauna are flushed into safe, vegetated areas and it will avoid pushing fauna into fragmented areas. • Temporary fauna friendly fencing will allow fauna to safely disperse into vegetated areas away from construction, • Temporary fauna exclusion fencing will then be erected to prevent fauna dispersing into construction areas.	All clearing will be undertaken in accordance with the stage specific SBMP. This will include:	The use of a Fauna Spotter Catcher throughout clearing is an effective tool to: 1. Identify they types of species on site prior to clearing; and 2. Identify and flag habitat features that require thorough examination before clearing. Fauna Spotter Catchers have a primary role to ensure no fauna are in vegetation before it is cleared. Given the size of Koalas and their utilisation of tree branches, they can quite easily be observed from the ground. As such, it is extremely unlikely that a Koala will be killed or injured during vegetation clearing, particularly given the onerous and thorough procedures set out The Draft Code. The sequential clearing of vegetation will allow for the gradual loss of vegetation, giving fauna time to naturally disperse away from the disturbance. The use of fauna exclusion fencing around construction areas will ensure fauna do not disperse into unsafe, hostile areas, again minimising the risk of injury of death.	Fauna Spotter	Proponent – engage fauna spotter Fauna spotter – pre-clear inspection, WHIMP, WPMP, supervision of vegetation clearing and post clearing reporting Environmental Coordinator – review pre and post clearing reports	Fauna Spotter present during clearing reduces risk of Koala injury or mortality	No injury or death to Koalas during clearing. Mitigation measures applied at all times during clearing.	Pre-clear inspection. Environmental Coordinator to review pre-clear reports prior to pre-start meeting. On-site pre-start meeting with responsible parties. Supervision of all vegetation clearing works. Post clearing report – also reviewed by Environmental Coordinator.	In the event that a Koala is located within the clearing area a 50 m buffer and vegetated corridor is provided for dispersal to safe habitat	The use of a Fauna Spotter is mandated **No residual impact**
			Sequential Clearing	Site Contractor – undertake clearing in accordance with VCFMP Fauna spotter – guides clearing direction to promote dispersal into existing vegetation off-site	Sequential clearing allows Koalas to safely leave the area	Clearing completed as per sequential clearing	As above	As above	Sequential clearing is mandated and guided by VCFMP and pre-clearance checklists and pre-starts **No residual impact**

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
	• Restricted construction hours (i.e. daylight 6am -6pm) • Prohibition of companion /security animals (e.g. dogs). • Restricted vehicle speeds (e.g. max 40km) within construction areas. In addition to this, all construction personnel shall attend environmental training as part of the site induction process prior to entering the work site. As part of this training all personnel will be instructed on their obligations in regard to vehicle movement and construction speed limits.	Each of these measures will ensure that the risk of injury or death to Koalas as a result of construction are avoided and mitigated. The aim of these procedures is to support **zero injuries or death to Koalas** as a result of construction.	Temporary fauna friendly fencing	Site contractor – flag extent of clearing with fauna friendly fencing Environmental coordinator – check fence for compliance	Temporary fencing allows Koalas to disperse out of the construction area	Temporary fauna friendly fencing utilised at all times during clearing	Pre-start meeting to check fence alignment and suitability for fauna dispersal EPBC ACR which includes audit confirming the proposed action is condition compliant	Fencing is rectified if deemed to be unsuitable prior to clearing	Temporary fauna fencing is mandated and guided by VCFMP and pre-clearance checklists and pre-starts. **No residual impact**
			Temporary fauna exclusion fencing	Proponent – engage fencing contractor Environmental Coordinator – confirm fencing type is compliant	Temporary fencing does not allow Koalas to re-enter the construction area	Temporary fencing utilised at all times during the clearing/construction process	As above	Fencing to be corrected if deemed not compliance by environmental coordinator	Temporary fauna fencing is mandated and guided by the SBMP. **No residual impact**
			Restricted construction hours	Site contractor – limits construction to 6am – 6pm	Work hours restricted so as to minimise impact to surrounding area	Works are completed within mandated hours at all times during clearing/construction	Site induction and daily sign in register.	Regular reporting by site contractor provided to Site Superintendent and proponent.	Works guided by SBMP. **No residual impact**
			Dog prohibitions	Site contractor – does not allows dogs	No companion and security dogs on site	Construction completed without dogs on site. At all times during clearing/construction	Site induction and daily sign in register.	Regular reporting by site contractor provided to Site Superintendent and proponent	Dog controls are mandated and guided by the SBMP. **No residual impact**
			Low vehicle speeds	Site contractor – applies speed limits during construction	Speed limits to recduce risk of Koala strike	Construction completed without vehicle strike	Site induction and daily sign in register.	Regular reporting by site contractor provided to Site Superintendent and proponent	Speed limits are mandated and guided by the SBMP. **No residual impact**
			Site inductions	Site contractor – all staff are inducted and daily toolbox talks	Induction/toolbox talks to raise awareness of potential Koala	Construction completed without inductions being breached	Site induction and daily sign in register.	Regular reporting by site contractor provided to Site Superintendent and proponent	Inductions are mandated and guided by the SBMP. **No residual impact**
Fragmentation of habitat for Koalas and GHFF, during construction	Vegetation within the referral area is low value as a result of historical and contemporary rural uses. Furthermore, limited evidence of use was recorded by Koala however it is acknowledged that vegetation clearing during the	Habitat isolation and fragmentation is a primary concern due to its impacts on fauna. The direction of clearing of vegetation in accordance with the	Sequential clearing	Site Contractor – undertake clearing in accordance with VCFMP	Sequential clearing reduces risk of fragmentated habitat	Clearing completed as per sequential clearing Clearing completed without fauna being fragmented	Pre-clear inspection. Environmental Coordinator to review pre-clear reports prior to pre-start meeting.	In the event that a Koala is located within the clearing area a 50 m buffer and vegetated corridor is provided	Sequential clearing is mandated and guided by VCFMP and pre-clearance checklists and pre-starts

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
	construction phase has the risk of fragmenting habitat areas within the site. To avoid this impact, vegetation will be undertaken sequentially to allow fauna to disperse from construction areas east. Clearing procedures that avoid the fragmentation of vegetation will be adopted within the SBMPs and informed by the Fauna Spotter Cather WHIMPs.	SBMP (informed by WHIMPs) will ensure that clearing does not create fragmented habitat islands that could trap fauna. Rather, procedures will be in place to ensure clearing flushes fauna away from construction areas into surrounding habitat areas to the east that are connected to the wider landscape.		Fauna spotter – guides clearing direction to promote dispersal			On-site pre-start meeting with responsible parties. Supervision of all vegetation clearing works. Post clearing report – also reviewed by Environmental Coordinator.	for dispersal to safe habitat	**No residual impact**
	Clearing will be undertaken in a way that flushes fauna into connected areas of habitat and will avoid flushing fauna into fragmented or hostile areas. Specifically: • Fauna are not required to cross roads or move through developed or disturbed areas, such as residential areas of areas that require movement greater than 100 m over cleared ground to reach suitable habitat; • Fauna are not left occupying an 'island' of habitat between hostile environments, such as road and cleared areas; • Fauna can safely leave the site of clearing and relocate to adjacent habitat; • Demarcation fencing will be fauna friendly to ensure fauna are not trapped within the proposed cleared extent; and • Cleared vegetation is to be stockpiled as to not impede fauna movement. Additionally, proposed construction roads will be subject to design treatments to ensure safe fauna crossing opportunities are maintained to vegetated areas and impose low vehicle speeds within construction areas.		<u>Temporary fauna friendly fencing</u>	Site contractor – flag extent of clearing with fauna friendly fencing Environmental coordinator – check fence for compliance	Koala area able to disperse from the construction area	Temporary fencing utilised at all times during construction	As above	Fauna friendly fencing is rectified in considered to be unsuitable during pre-start	Temporary fauna fencing is mandated and guided by the SBMP. **No residual impact**
			<u>Stockpiling of cleared vegetation ensures safe fauna movement</u>	Site contractor – ensure stockpiling is completed in accordance with SBMP	Stockpiling does not hinder Koala dispersal	Fauna are not fragmented by stockpiles	Site inductions and toolbox talks	Regular reporting by site contractor provided to Site Superintendent and proponent	Stockpiling is mandated and guided by the SBMP and VCFMP. **No residual impact**
Disturbance to Koalas and GHFF during construction	The SBMP will include controls to avoid, minimise and mitigate risk of disturbance to Koalas during construction, specifically: <u>Light and noise disturbance</u> Construction of the project will result in increased noise and light disturbance. These impacts may disturb fauna and disrupt foraging, reproduction or movement behaviours.	Construction management and clearing controls implemented by the SBMP are considered to be able to effectively avoid, minimise and mitigate risk of disturbance to Koala activities during construction, and allow for adaptive management where required.	<u>CEMP and Restricted construction hours</u>	Site Contractor – limits construction to 6am-6pm. Proponent – ensure all procedures and protocols are followed on-site.	Minimising light and noise impacts	Light and noise disturbance is limited to daylight hours.	Site induction and daily Sign in register.	Regular reporting by site contractor provided to Site Superintendent and proponent.	Management measures implemented and guided by CEMP. **No residual impact**
			<u>CEMP</u>	Proponent – confirm acceptance of the CEMP	The risk of contamination and exacerbating weeds	Always during construction	Site Superintendent required to undertake	Undertake investigation into	**As above**

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
	Restricted construction hours (e.g. 6am-6pm) will limit disruption from light and noise impacts, as well as allow a 12 hour period for fauna to disperse and forage. Contamination, weeds and pathogens Construction activities increase the risk of weeds, pathogens and contamination into the site. To manage these impacts, a Weed and Pathogen Management Plan will be prepared to identify potential weed species, and include appropriate controls for weed and pathogen management, disposal and monitoring. Weeds will be actively managed within the construction footprint and disposed of appropriately. No companion animals (e.g. dogs) will be allowed within construction areas. Vehicle disturbance Reduced vehicle speeds will be implemented throughout the construction area to minimise vehicle disturbances. Further, proposed construction roads will be subject to design treatments to ensure safe fauna crossing opportunities are maintained to vegetated areas and impose low vehicle speeds within construction areas. Contractor management All construction personnel shall attend environmental training as part of the site induction process prior to entering the work site. As part of this training, all personnel will be instructed on their obligations in regard to vegetation clearing protocols and to protect native fauna.	Limiting hours of construction and clearing to daylight hours, allows a 12 hour period for safe dispersal. With appropriate monitoring, pre, during and post construction by the Fauna Spotter Catcher, no residual impacts area expected to occur.		and distribute to Site Superintendent and Contractors. Engineering Consultant – prepare CEMP detailing the procedures and performance criteria for each of the potential indirect impacts listed.	and pathogens is minimised	Contamination and weed and pathogen incursions do not occur	regular inspections and site audits to ensure the thresholds are not exceeded and/or performance criteria area achieved.	exceedance of thresholds and implement corrective actions as recommended in the CEMP.	
			Reduced vehicle speeds during construction	Site contractor – to enforce site speed limits during construction	Risk of Koala being impacted by high vehicle speeds during construction is reduced	Disturbance to Koala does not occur from vehicles	Site Superintendent required to undertake regular inspections and site audits to ensure the thresholds are not exceeded and/or performance criteria area achieved.	Regular reporting by site contractor provided to Site Superintendent and proponent.	Speed restrictions implemented by CEMP during construction. **No residual impact**
			Site induction and on-site daily toolbox talks	Site Contractor – prepare induction course and initiate daily toolbox talks prior to commencement of works. Construction personnel – complete site induction course, sign into site and attend daily toolbox talks. Proponent – ensure all procedures ad protocols are followed on-site.	Daily toolbox talks held with all construction personnel prior to the commencement of works for the day ensures all parties understand works extent, clearing limits and protocols, significantly reducing the likelihood of direct and indirect impacts to MNES values within and external the referral area.	Inductions and toolboxes completed at tall times during construction	Site induction and daily Sign in register.	Regular reporting by site contractor provided to Site Superintendent and proponent.	Site inductions mandatory **No residual impact**
Hydrological changes	Stormwater detention technologies will be utilised to minimise the effects of excess rainwater flowing into catchments caused by the creation of hardstand areas. All work will be undertaken in accordance with appropriate	The implementation of a project wide Stormwater Management Plan as designed by certified engineers ensures that hydrological change area appropriately accounted for and managed. These management measures will reduce impacts from higher levels of surface water flow	Hydraulic and Stormwater Management Plan	Site engineer – complete management plans	Impacts associated with hydrological changes are minimised	No worsening of hydrological impacts as a result of the development	Monitoring requirements will be detailed in the associated management plans	Regular reporting by site contractor provided to Site Superintendent and proponent.	Erosion and sediment control plans mandatory **Non residual impact**

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
	management plans to ensure the hydrological changes across the site do not impact on surrounding vegetation.	caused by hardstand areas and ensures natural drainage lines continue to function as they naturally would have. Stormwater detention basins prevent localised flooding of drainage lines and waterways caused by increased runoff over hardstand areas and also contribute to maintaining water quality levels.							

Table A56: Operational impacts

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible Party	Risk Assessment	Milestone and timeline	Monitoring actions	Corrective actions	Environmental Outcomes
Risk of injury of death to Koalas and GHFF from vehicle strike	A number of measures will be imposed to avoid and mitigate the risk of Koalas and GHFF being hit by vehicles. These measures include: • Fauna food trees will not form part of the primary landscaping of the development footprint so that fauna are not enticed to enter residential areas. • Imposition of low vehicle speeds to reduce the risk of collisions. Vehicle speed limits are restricted to 50km/h on built up residential roads. • New residents will be issued with a "Lifestyle Guideline" to raise awareness about local wildlife and to educate residents about the protection of Koalas in the area. The risk of vehicle strike to the highly mobile GHFF is considered low.	The purpose of these avoidance and mitigation measures is to minimise the risk of injury or death to Koalas from vehicle strike. It will be important to minimise the incentive for fauna to enter residential areas by restricting the availability of habitat in these areas. As such, street scaping will not be planted with suitable fauna habitat, which will in turn encourage Koalas to stay away from the development area. Importantly, low vehicle speeds will be imposed along residential roads, minimising the risk of high-speed vehicle strikes which were identified in the literature review as accounting for a large proportion of vehicle related deaths. In addition, awareness signage will ensure motorists are aware that Koalas have potential to occur in the area, making them more conscious of potentially dispersing Koalas and encouraging them to maintain a low vehicle speed. The distribution of "Lifestyle Guidelines" has the purpose of instilling stewardship of the issue amongst residents, encouraging them to actively protect native wildlife and making them aware of the types of fauna that could disperse onto roads. Overall, these tools are considered to be effective measures to reduce the risk of injury or death of Koalas from vehicle strike.	Low vehicle speeds	Proponent – include these elements in the detailed design of the estate. ICC – approve detailed design and signage locations Future Estate Residents- abide vehicle speed limits and take note of signage.	Low vehicle speeds and slow points significantly minimise the risk of vehicle strikes which were identified in the literature review as accounting for a large proportion of injuries and deaths.	No Koala deaths from vehicle strike	EPBC ACR which includes a site audit confirming the presence of mitigation measures	Reporting on non-compliances	Low vehicle speeds will be signed and enforced as for public roads **No residual impact** Koala awareness signage will be delivered dependent on ICC approval **No residual impact**
			Urban landscaping avoids Koala habitat	Proponent – engage landscape architects for street scaping and parks ICC – approve street scape plans	Planting of non-koala habitat trees in residential areas does not encourages Koalas to entre high risk areas leading to injury or death.	Urban landscaping delivered with non-Koala native species	EPBC ACR which includes a site audit confirming the presence of mitigation measures	Reporting on non-compliances	**No residual impact**
			Lifestyle guidelines	Proponent – prepare and distribute guidelines	Guidelines educate the public of potential Koala interactions	Lifestyle guidelines in purchase package	EPBC ACR which includes a site audit confirming the presence of mitigation measures	Reporting on non-compliances	**No residual impact**

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible Party	Risk Assessment	Milestone and timeline	Monitoring actions	Corrective actions	Environmental Outcomes
Risk of injury or death from dog attack	Dogs will be controlled on a lead. New residents will be issued with a "Lifestyle Guideline" to raise awareness about local wildlife and to educate residents about the protection of fauna in the area and appropriate dog management.	While dogs already occur within the local area, the project will result in an increase in dog ownership numbers. As such, the education of residents has been identified as a key management tool in reducing the risk or injury of dog attacks on Koalas. The Lifestyle Guidelines will make residents aware of the risk dogs pose to Koalas and other native fauna. The guidelines, will make it clear that dogs must be left on a lead at all other times when they are outside of residential housing lots. The Lifestyle Guidelines will allow residents to become aware of the issue and will encourage them to pro-actively manage and protect native fauna in the local area.	Dog restrictions (on-leash and off leash areas) Lifestyle guidelines	Proponent – include these elements in detailed design Proponent – prepare and distribute guidelines ICC – approve detailed design	The threat of dogs is reduced by the development.	Dog signage and fenced off-leash parks are delivered. Council controls on dog ownership imposed.	EPBC ACR which includes a site audit confirming the presence of mitigation measures	Reporting on non-compliances	**No residual impact**
Risk of injury or death from increased human presence and fences	New residents will be issued with a "Lifestyle Guideline" to raise awareness about local wildlife and to educate residents about the protection of fauna in the area. Retained vegetation within the referral area is not proposed and street trees will not encourage Koalas into the area. The presence of residential fences within the development will not cause risk or injury to Koala as they will not be encouraged to traverse the site.	Human presence will increase following completion of the development and during the operation phase. Given the development will not promote Koala movement into the area, the risk of increase human presence on Koala is low. Additionally, the use of internal fencing will not negatively impact movement opportunity for Koala as the development design is to no encourage Koala into the area. Lifestyle guides will assist in provide local residents with knowledge and awareness on local wildlife.	Lifestyle guidelines Development design	Proponent – prepare and distribute guidelines Proponent – engage landscape architects for street scaping	The development design does not encourage Koala into the area where they are at risk of increase human presence and fences	Urban landscaping delivered with non-Koala native species Lifestyle guidelines in purchase package	EPBC ACR which includes a site audit confirming the presence of mitigation measures	Reporting on non-compliances	**No residual impact**

6.4. Mitigation costs

An approximate const of mitigation measures has been estimated at $30,000

7. Proposed Offsets

Item 7 of the PD Request asks ***"Where residual significant impacts to listed threatened species or ecological communities remain after application of all reasonable avoidance and mitigation measures, a compensatory environmental offset in accordance with the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (EPBC Offsets Policy) is required. Offsets must be specific to the species or ecological community being impacted, must address the attribute of the protected matter that is demonstrably equal or better than if neither the impact nor the offset occurred. Offsets are not intended to make proposed actions with unacceptable impacts, acceptable. "***

A significant impact is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment that is to be impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

As part of the original referral material (provided as Part B) the proposed action was assessed against the relevant recovery plans for each species. It has been considered that the proposed action is likely to have a significant residual impact on Koala and Grey-headed Flying-fox. Several avoidance and mitigation measures relating to the construction and operation stages of the project are proposed which seek to reduce the potential for immediate and long-term impacts or indirect impacts on MNES and fauna generally.

7.1. Significant Residual Impact Summary

An impact of 21.7 ha of critical habitat for the Koala and 15.9 ha of potential foraging habitat for the GHFF will occur from the direct clearing associated with the proposed action (**Plan A16** and **Plan A17**).

Koala:	**Removal of 21.7 hectares of critical habitat at a MHQA score of 5.74 (rounded to 6) with a quantum impact of 13.02 ha.**
Grey-headed Flying-fox:	**Removal of 15.9 hectares of foraging habitat at a FHA score of 5.22 (rounded to 5) with a quantum impact of 7.95 ha.**

7.2. Offset Proposal

Significant residual impacts on the identified MNES, being Koala and GHFF habitat, are proposed to be wholly acquitted over one third-party offset area. The proposed Mount View Offset Area (MVOA) is located in Oaky Creek within the Scenic Rim Regional Council (SRRC) LGA, approximately 5.3 km east of Rathdowney and 59.15 km south of the impact area. The total proposed MVOA is 71 ha, comprising part of Lot 24 on RP47247. The MVOA is contained within the broader Mount View Offset Property (MVOP), owned by the environmental offset provider, Auvergne Investments. The MVOP adjoins remnant vegetation, intersects regional and state biodiversity corridors, and is intended to provide multiple Federal offsets for Koala and other species. Subsequently, the MVOA will receive and provide ecological benefit to/from the adjoining future environmental offset areas. The MVOA site aerial and context plans are provided as **Figure A3** and **Figure A4** respectively.

Key site details are provided in **Table A57** below.

Table A57: Offset area summary

Address	Oaky Scrub Road, Oaky Creek, Queensland, 4285
Lot / Plan	Part of Lot 24 on RP47247
Area	71 ha
Tenure	Freehold
Local Government Area	Scenic Rim Regional Council
Vegetation communities within offset area	**Assessment Unit 1 = 22 ha** Regrowth RE 12.8.17
	Assessment Unit 2 = 4 ha Remnant RE 12.8.17
	Assessment Unit 3 = 45 ha Cleared paddocks

7.3. Offset Area Suitability

The suitability of the nominated MVOA for the provision of habitat for Koala and GHFF is discussed in **Attachment A4** (OMP) **Section 5** with regard to the EPBC Act Offset Policy Principles. Part of the MVOA's suitability is its integration with surrounding ecological features such as the Biodiversity Planning Assessment State corridor and South East Queensland Regional Plan ('ShapingSEQ 2017') Regional Biodiversity corridor which it is located partially within (refer **Plan A20**); on-site and adjoining vegetation mapped as core Koala Habitat Area and Category B and C Regulated Vegetation; and the multiple adjoining land parcels within the MVOP intended for future federal offsets. Additionally, the mix of paddock, regrowth, and remnant vegetation within the MVOA allows for the achievement of immediate and long-term conservation outcomes that occur as soon as the MVOA is legally secured prior to the commencement of clearing at the project site.

7.4. Offset Management Plan

An OMP has been developed by SH on behalf of the Offset Provider for the proposed MVOA and is provided at **Attachment A4**. The OMP provides details on offset suitability, environmental outcomes, baseline survey methods and results, and management framework. The objective of the OMP is to summarise existing habitat quality for the Koala and GHFF within the MVOA and provide management actions designed to achieve the identified environmental outcomes.

The OMP identifies outcome-focused management actions pursuant to the EPBC Act, for the provision of Koala and GHFF habitat offset. The management objectives for the offset area, in alignment with the EOP will:

- Deliver an overall conservation outcome that improves the viability of habitat for Koala and GHFF.
- Provide a direct offset that is in proportion to the level of statutory protection that applies to habitat for the Koala and GHFF.
- Be of a size and scale proportionate to the residual impacts on habitat for the Koala and GHFF.

- Effectively account for and manage the risks of the offset not being successful within the required management timeframe.
- Provide a conservation gain additional to what is already required by a duty of care or to any environmental planning laws at any level of Government.
- Be efficient, effective, timely, transparent, scientifically robust and reasonable with appropriate transparent governance arrangements in place for measuring, monitoring, auditing and enforcing the management of the offset areas.

The achievement of environmental outcomes within the MVOA will be measured using methodologies, monitoring, and maintenance detailed in **Attachment A4**. The approval holder must apply management actions to achieve the prescribed outcomes at the offset areas.

7.5. Impact Compensation

The proposed offset area will acquit **121.79%** of the quantum impacts for Koala and **243.29%** of the quantum impacts for GHFF (refer **Table A58**).

Table A58: Offset Area Koala and GHFF MHQA offset improvement scores

MNES Species	Offset Area (ha)	Habitat Quality Score						Offset Acquittal
		Baseline Score (rounded)			Future Score (rounded)			
		AU1	AU2	AU3	AU1	AU2	AU3	
Koala	71	5	5	4	8	8	8	121.79 %
GHFF	71	5	5	4	8	8	8	243.29 %

8. Economic and Social Matters

This section responds to Item 8 of the PD request which requests further details on economic and social matters, as follows:

a. ***Provide details on the social and economic costs and / or benefits of undertaking the proposed action, including the basis for any estimations of costs and / or benefits.***
b. ***Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place.***
c. ***Provide details of any public stakeholder consultation activities, including the outcomes of those consultations.***
d. ***Provide details of any consultation with indigenous stakeholders.***

8.1. Social and Economic benefits

The proposed development results in the creation of 375 new residential allotments, which are crucial in meeting the 2029 Queensland and National housing targets set out by the National Housing Accord. Indicators from the Australian Bureau of Statistics suggests that the rate of houses being built falls well below the 2029 targets. Research from the Property Council of Australia analysing these figures indicates that Queensland is currently predicted to be 96,000 homes behind the target set out for the state, which is the second largest shortfall behind New South Wales (Property Australia, 2025). Economic Development Queensland (EDQ) has identified Ripley Valley as one of the largest urban growth areas which offers opportunities for residential growth to meet the regions affordable housing needs. As such, this development contributes towards the planning intent of the region and overall housing intent of Queensland and Australia as a whole, where more and affordable housing is desperately needed.

In addition to easing demands for housing, the construction and operation of the project will provide a number of economic benefits to the local and regional community. Firstly, the construction of the project is expected to take approximately 4 years. This will allow for the engagement of a number of trades and services from the local area to participate in the construction of the development, bolstering employment opportunities within the region. Not only will this provide employment opportunities to the community, but it will provide an economic boost to local retailers and suppliers who are engaged to supply materials and goods for the project. Subsequently, the proposed development will have a positive economic impact on the local community, which will include direct and indirect employment starting with the current planning and design phase, then civil and building construction. The increased economic activity generated by the development will therefore flow into the local and broader community. A high-level economic analysis is included in **Table A59**.

Table A59: High level economic analysis

Subdivision Construction		
Estimated Construction Cost	$40,000,000	Incl. Civil, Electrical/Telecommunications & Landscaping
Total Economic Output	$116,000,000	Based on $1m input = $2.9m output
Total Jobs Supported	360	Based on $1m input = 9 Jobs Supported
Housing Construction		
Approximate number of Lots	375	
Average House Build Cost	$ 350,000	Assumed Average Ripley Build Cost
Total Construction Cost	$131,250,000	Number of Lots x Average Build Cost
Total Economic Output	$380,625,000	Based on $1m input = $2.9m output
Total Jobs Supported	790	Based on $1m input = 6 Jobs Supported
Overall Development		
Total Economic Output	$496,625,000	Subdivision + Housing Economic Output

During the preparation of the Ripley Valley Urban Development Area Development Scheme, EDQ consulted with ICC, the State Government and the community. The development scheme was publicly notified from the 1st of April to the 10th of May 2011, in accordance with the requirements of the *Urban Land Development Authority Act 2007* (Qld). In addition, EDQ hosted a number of community information sessions to provide opportunities for the public to view details of the proposed development scheme and speak with EDQ staff. Submissions were received during the public notification period in regard to the proposed development scheme, which were taken into consideration before the scheme was submitted to the minister for approval.

The Ripley Valley Submissions Report includes a summary of key issues raised in the submissions received during the public notification of the development scheme. Feedback was provided to the 30 submissions which included ICC, developers and community/interest groups with comments incorporated into the final amendment of the development scheme.

The Ripley Valley Urban Development Area Development Scheme outlines notification requirements for EDQ development applications and provides an opportunity for people to make submissions on the same. In deciding a PDA development application, EDQ must consider any submissions made to it about the application during the submission period. The proposal is in accordance with the PDA Development Scheme which was informed by community consultation.

8.1.1 Social benefits

Social impacts have been a key consideration in the design and planning of the project and more broadly the RVPDA. Under the provisions of the RVPDA Development Scheme, guidelines are set out for proposed developments to deliver suitably designated neighbourhoods, centres, housing diversity and affordability, employment opportunities, movement networks, community greenspace networks, community facilities, natural and cultural values, community safety and development constraints, service infrastructure and other general requirements.

The project facilitates an integrated residential community that promotes a variety of housing options and will provide a range of lot sizes to meet the diverse needs of different community members. The project will balance the needs of the community by providing:



- neighbourhood parks and pocket parks
- Pedestrian paths to encourage an active lifestyle

8.1.2 Economic benefits and employment opportunities

The economic benefits discussed above are entirely in addition to what would have been expected if the action were not to take place. Without the proposed action, the land would likely continue to be leased for rural uses which would create a moderate, inconsistent benefit for a handful of people, compared to significant benefit for a community as well as an alleviation on the strain of housing demand in the area.

8.1.3 Public / stakeholder consultation

During the preparation of the Ripley Valley Urban Development Area Development Scheme, EDQ consulted with ICC, the State Government and the community. The development scheme was publicly notified from the 1st of April to the 10th of May 2011, in accordance with the requirements of the *Urban Land Development Authority Act 2007* (Qld). In addition, EDQ hosted a number of community information sessions to provide opportunities for the public to view details of the proposed development scheme and speak with EDQ staff. Submissions were received during the public notification period in regard to the proposed development scheme, which were taken into consideration before the scheme was submitted to the minister for approval.

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The Ripley Valley Urban Development Area Development Scheme outlines notification requirements for EDQ development applications and provides an opportunity for people to make submissions on the same. In deciding a PDA development application, EDQ must consider any submissions made to it about the application during the submission period. The proposal is in accordance with the PDA Development Scheme which was informed by community consultation.

At present, the only public consultation that has occurred is through the publishing of the referral and supporting documents on the EPBC public portal for public comments for 10 business days. Once this PD has been determined to be adequate it will be published for public comment.

Additionally, the referral area is subject to local development approvals with the State including Ipswich City council and EDQ. The details of this application (7251/2018/MAPDA/A) are available on the ICC *developmenti* (https://developmenti.ipswich.qld.gov.au/) online for the public.

8.1.4 Indigenous stakeholder consultation

The proponent has commenced a Cultural and Heritage Management Plan with local Indigenous group, Yuggera Ugarapul People (YUP). They have also undertaken Council planning approval, as well as consultation with owners of the adjoining land.

9. Ecological Sustainable Development

This section responds to Item 10 of the PD Request which asks the proponent to, *provide a description of how the proposed action meets the principles of ecologically sustainable development, as defined in section 3A of the EPBC Act.*

The EPBC Act has a key objective to '*promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resource,'* (EPBC Act section 3). Ecologically Sustainable Development (ESD) is defined within the Commonwealth Government's National Strategy for Ecologically Sustainable Development as *'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'*. **Table A60** assesses the capacity for this project to meet the principles of ESD, as defined in section 3A of the EPBC Act.

Table A60: Principles of ESD defined under the EPBC Act, section 3A

Principles of ecologically sustainable development defined under Section 3A of the EPBC Act
a. ***Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.***
The design of the project has taken both long-term and short-term economic, environmental, social and equitable considerations into account. Local planning has identified the area as suitable for residential development, with the surrounding area designated under Urban living with existing developments to the north and east and road upgrades planned. The project will benefit individuals and the community as a whole by providing additional housing, crucial as the supply of affordable housing is diminishing, within an area earmarked for urban development to support ongoing population growth. Residential uses are dominant in the area with major road networks present throughout including the Centenary Highway and Cunningham Highway which act as significant barriers to wildlife movement. The referral area is a small/moderately sized rural property that is strategically located in South Ripley amongst land parcels with approved and active development applications. South Ripley is seeing rapid urbanisation adding to the existing development of the Ripley Town Centre. A variety of housing types will be made available in accordance with local planning intent, ensuring that a diverse range of people will have access to appropriate housing that suits their needs and preferences. The entire referral area will be impacted to facilitate the proposed residential development, which includes drainage areas and district park. The project does not propose any open space areas given the lack of viable ecological linkages and planning intent of RVPDA.
b. ***If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.***

The implementation of precautionary measures in decision making is used where there is a threat of serious or irreversible harm and where there is scientific uncertainty as to the extent of possible environmental damage. There are a number of factors which help determine whether or not an action might cause serious or irreversible environmental damage, including:

I. **The spatial scale;**
II. **The magnitude of possible impacts;**
III. **The perceived value of the threatened environment;**
IV. **The complexity and connectivity of possible impacts;**
V. **The manageability of possible impacts;**
VI. **The level of public concern and the rationality or scientific basis for the concern; and**
VII. **Reversibility of possible impacts.**

Impacts to Koala and Grey-headed Flying-fox habitat have been identified as the primary environmental concern on a level of National Environmental Significance. The potential for the referral area to provide critical habitat for the Koala and Grey-headed Flying-fox has been discussed in detail throughout this report. The referral area has been recognised to support low level Koala activity, and an area of 22 hectares has been identified as containing habitat critical to the survival of the Koala. Additionally, the vegetation on-site also provides 15.9 ha of potential foraging habitat for Grey-headed Flying-fox.

A number of possible impacts have been identified to these species as a result of the project; however, these are all considered to be localised impacts. The magnitude of impacts is considered small and restricted to the referral site, which is a result of highly modified surrounding area, presence of existing roads and residential properties. Impacts can be summarised as those arising from the loss of habitat, injury or death from vehicle strike or dog attack and dispersal into residential areas. A number of management measures will be imposed to avoid and mitigate these impacts, which have been discussed in **Section 5** of this document. It is unsuitable to promote fauna movement onto the site given the abundance of threats in the local area and lack of movement opportunities to the north, east or south. Therefore, no open space/conservation areas are proposed.

A district park is proposed in the centre of the development. This park is not located near any retained areas and therefore does not promote Koala movement into the site and therefore the risk of dog attack is considered minimal. The impacts from the project have been identified and management measures have been subsequently developed.

The proposed action is not considered to pose a threat of serious or irreversible damage to the local Koala or GHFF population or the broader environment. Potential impacts have been considered, and management plans will be in place to ensure that any impacts are minimised and offset.

c. ***The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.***

The referral area was identified as containing limited ecological values in the form of regrowth eucalypt vegetation as a result of historical clearing and on-going rural uses. Additionally, the locality of the referral area needs to be considered in the context of habitat value. Notably, existing developments are present to the north and north-west with future developments present to the west, south-west and south. The

existing functionality of the referral area for providing ecological linkages is limited by development which is only expected to worsen following the expected delivery of surrounding developments.

d. ***The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.***

Field surveys identified the site as containing degraded ecological values through site wide historical clearing and on-going maintenance. Natural ecosystem processes are limited by the location of the site immediately adjacent existing developments. Biological diversity and ecological integrity have been considered on-site however, the proposed development aligns with the zoning intent of the RVPDA, which focuses development in 'urban living' areas and retained vegetation in 'environmental protection' zones. It is therefore not realistic to retain vegetation on-site that does not currently provide ecological linkages or in the future.

e. ***Improved valuation, pricing and incentive mechanisms should be promoted.***

This project has taken into account the *EPBC Act Offsets Policy*, which provides for the cost-effective analysis of proposed offsets.

10. Environmental record

Item 11 of the PD Request asks for, ***"The information provided must include details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:***

a) ***The person proposing to take the action;***
b) ***For an action for which a person has applied for a permit, the person making the application;***
c) ***If the person is a body corporate – the history of its executive officers in relation to environmental matters; and***
d) ***if the person is a body corporate that is a subsidiary of another body or company (the parent body)—the history in relation to environmental matters of the parent body and its executive officers."***

HB QLD Pty Ltd has a history of delivering projects with a satisfactory record of responsible environmental management. HB QLD Pty Ltd delivers land estates in both SEQ and Victoria to a high standard. HB QLD Pty Ltd has received and delivered on two EPBC approvals and offsets on sites in both Ripley Valley and Collingwood Park QLD. HBD QLD Pty Ltd does not have any present proceedings under Commonwealth, State or territory law for the protection of the environment or the conservation and sustainable use of natural resources.

11. Conclusion

The *Environmental Management Division* of Saunders Havill (SH) were commissioned to collate and provide Preliminary Documentation to support assessment of the proposed action which is for a residential development at 103 – 175 Bayliss Road, South Ripley, South-east Queensland under the EPBC Act. A Controlled Action assessment through Preliminary Documentation was determined for the development on 11 March 2025 (EPBC 2025/10110), in response to the submitted Referral on behalf of the proponent, HB QLD Pty Ltd. The decision was based on:

- Listed threatened species and ecological communities (s18 & s18A).

This Preliminary Documentation Report provides information requested by the DCCEEW to assist the assessment manager in granting an approval. As detailed in previous referral documentation and this report, SH determines that the proposal will result in the clearing and functional loss of 21.7 ha of habitat critical to the survival of the Koala and 15.9 ha of potential foraging habitat for the Grey-headed Flying-fox. The proposal has been deemed to impose a significant impact on Koala and Grey-headed Flying-fox and therefore an offset is required. The Proponent will provide an offset in accordance with the EPBC Act's Environmental Offset Policy which fully equites the impact to both Koala and Grey-headed Flying-fox.

12. References

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13. Figures and Plans

Figure A1: Site Context
Figure A2: Site Aerial
Figure A3: Offset Area Aerial
Figure A4: Offset Area Context

Plan A1: Development Layout
Plan A2: Ripley Valley PDA Zoning
Plan A3: Contextual Applications
Plan A4: Proposed Fencing
Plan A5: Historical Aerial Imagery
Plan A6: Topography
Plan A7: Field Survey Effort
Plan A8: Field Survey Results
Plan A9: Vegetation Communities
Plan A10: Koala Habitat and Records
Plan A11: Grey-headed Flying-fox Habitat and Records
Plan A12: Swift Parrot Habitat and Records
Plan A13: Regent Honeyeater Habitat and Records
Plan A14: Greater Glider Habitat and Records
Plan A15: Greater Glider Forest Maturity
Plan A16: Koala Habitat Impact
Plan A17: Grey-headed Flying-fox Habitat Impact
Plan A18: Koala Context Assessment
Plan A19: Ecological Corridors
Plan A20: Offset Area Ecological Corridors



LEGEND

Referral Area [22 ha]

Figure 1

SITE CONTEXT

CLIENT

HB QLD Pty Ltd

PROJECT

Bayliss Road, South Ripley

COORDINATE SYSTEM

GDA 2020 MGA Z56

SCALE (A4)

1:150,000

0 1 2 3 4 5 km

N

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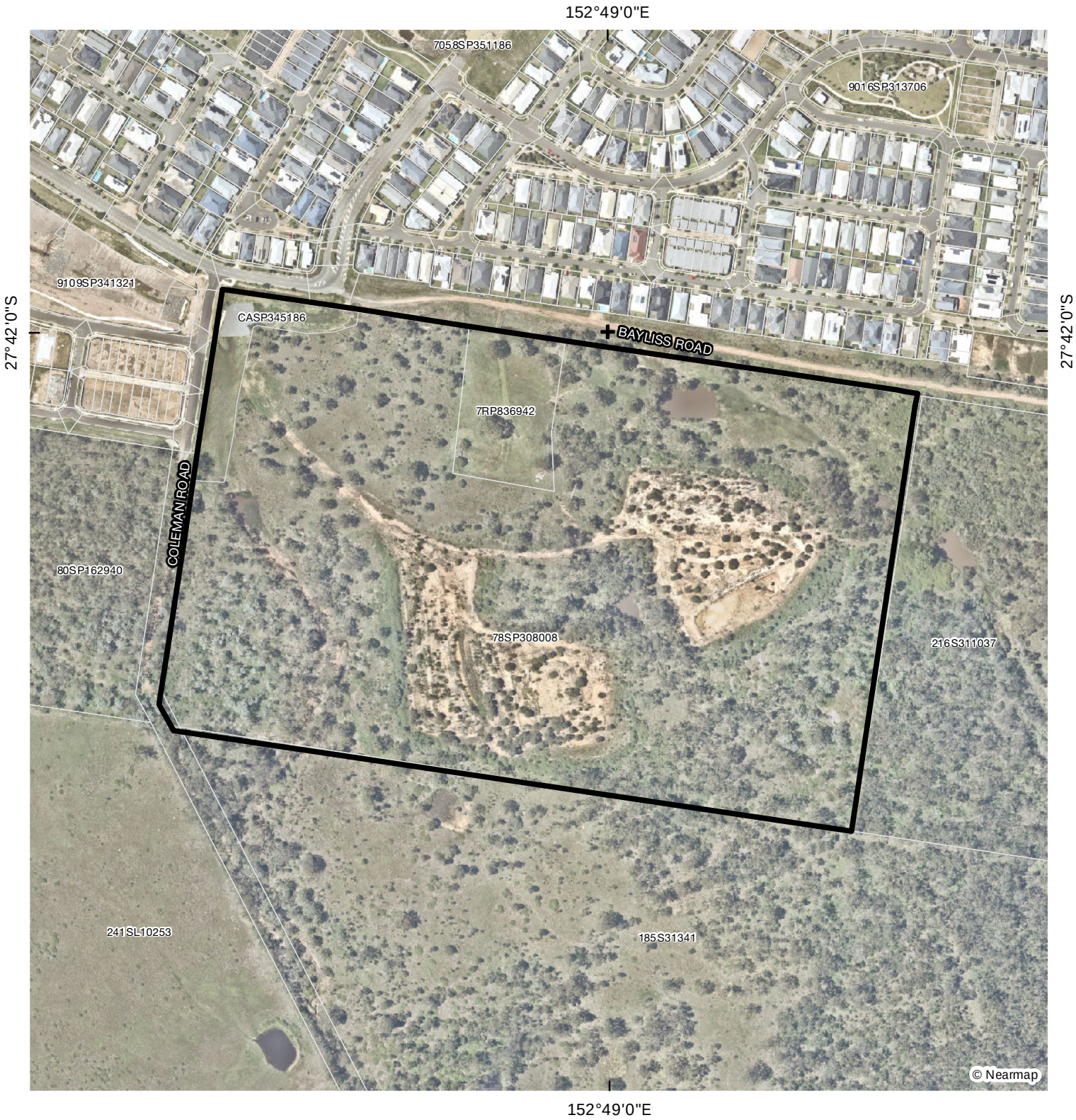
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FILE REFERENCE 12186 E PD Figure 1 Site Context A

DATE 31/07/2025



LEGEND

Qld DCDB

Referral Area [22 ha]

Figure 2

SITE AERIAL

CLIENT

HB QLD Pty Ltd

PROJECT
Bayliss Road, South Ripley

COORDINATE SYSTEM
GDA 2020 MGA Z56

SCALE (A4)
1:4,500

0 20 40 60 80 100 m

N

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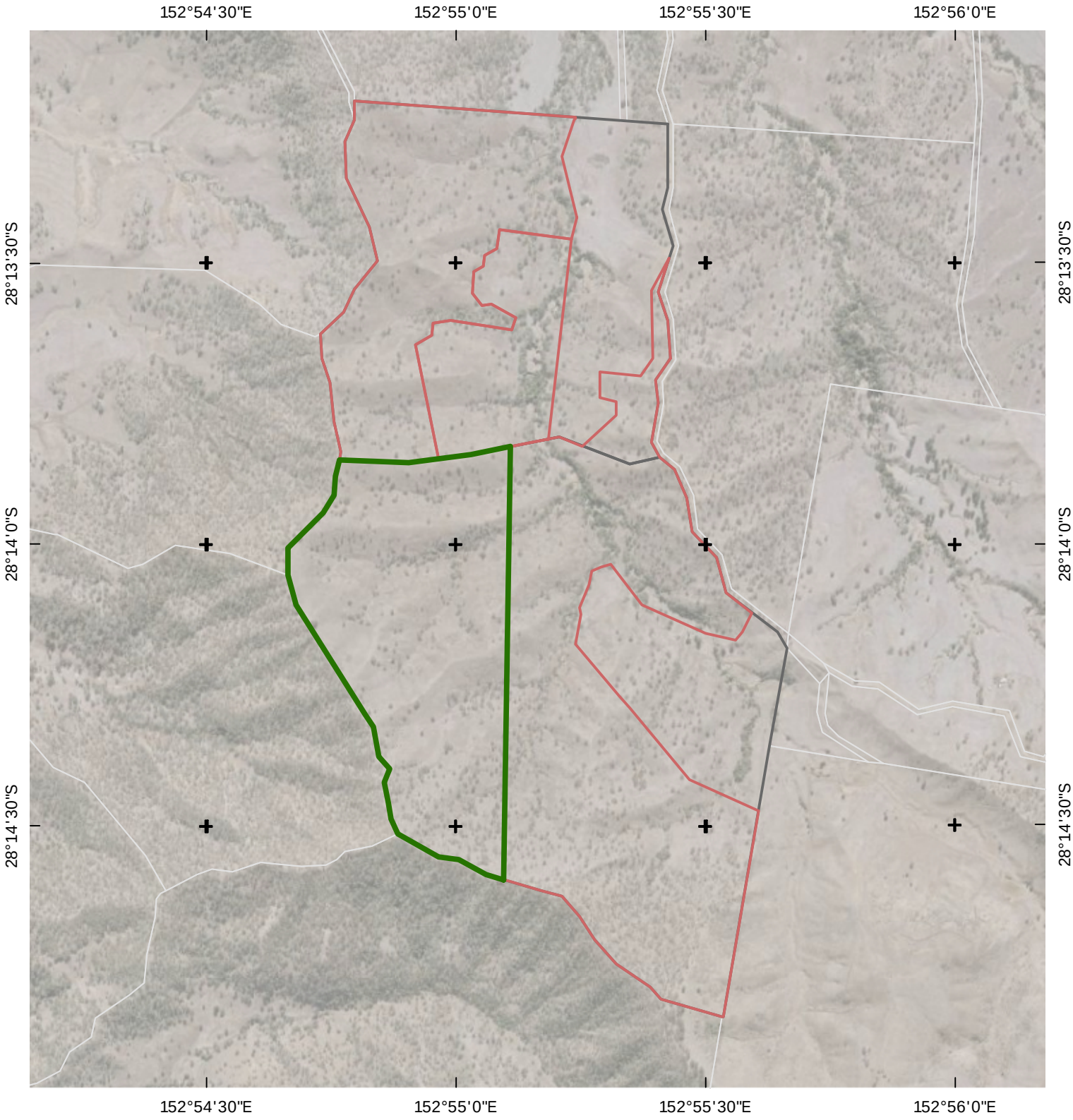
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FILE REFERENCE
12186 E PD Figure 2 Site Aerial A

DATE 31/07/2025



LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]
- Mount View Offset Property [314.7 ha]
- Future offset boundaries

Figure 3

MOUNT VIEW
OFFSET SITE AERIAL

CLIENT
HB QLD Pty Ltd

PROJECT
Bayliss Road, South Ripley

COORDINATE SYSTEM
GDA 2020 MGA Z56

SCALE (A4)
1:17,500

0 100 200 300 400 500 m

N

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FILE REFERENCE
12186 E OMP Figure 3 Offset Aerial A

DATE 23/09/2025



LEGEND

Mount View Offset Area [71 ha]

Figure 4

MOUNT VIEW
OFFSET SITE CONTEXT

CLIENT
HB QLD Pty Ltd

PROJECT
Bayliss Road, South Ripley

COORDINATE SYSTEM
GDA 2020 MGA Z56

SCALE (A4)
1:500,000

0 2 4 6 8 10 km

N

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FILE REFERENCE
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DATE 23/09/2025

A1. DEVELOPMENT LAYOUT



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LEGEND

- Qld DCDB
- Referral Area [22 ha]

Layout Detail (indicative)

- Stage Boundaries
- Proposed Lots
- Proposed Roads and Footpaths
- Development Areas [20.1 ha]
- Drainage [1.4 ha]
- District Park [0.5 ha]



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Bayliss Road, South Ripley

0 20 40 60 80 m

Transverse Mercator
GDA 2020 | Zone 56

N

1:2,500
@ A3

Address / RPD: *South Ripley, QLD*

19/09/2025

12186 E A1 Development Layout A

A2. RIPLEY VALLEY PDA ZONING

27°40'0"S

152°45'0"E

152°50'0"E

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LEGEND

- Referral Area [22 ha]
- Ripley Priority Development Area

Ripley PDA Zoning

- Urban Living
- Urban Core
- Environmental Protection



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GDA 2020 | Zone 56

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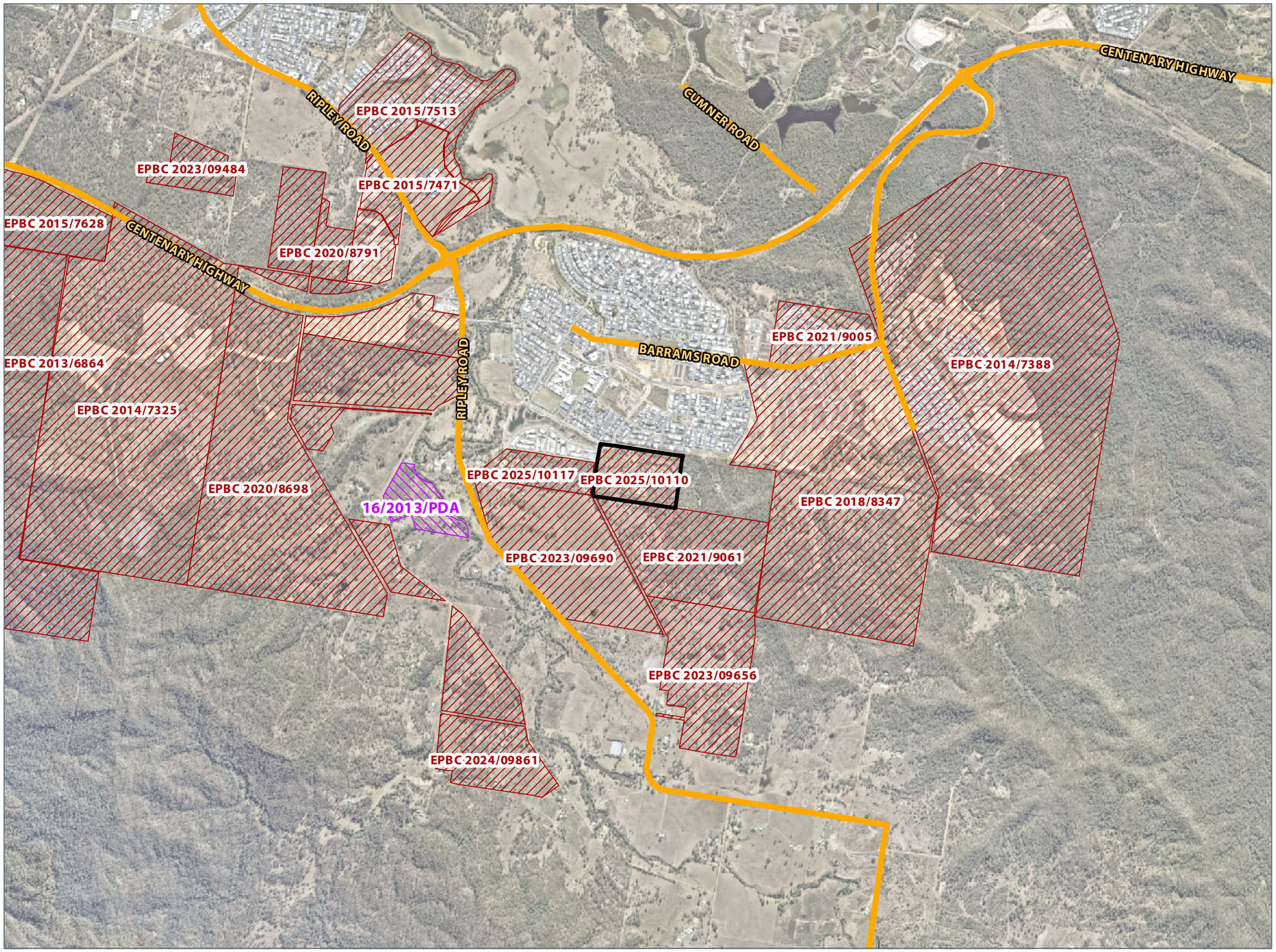
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12186 E A2 Ripley PDA Zoning A

A3. CONTEXTUAL APPLICATIONS



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LEGEND

- Referral Area [22 ha]
- EPBC Projects
- Ipswich City Council Development Applications
- Major Roads



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0 1 km

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GDA 2020 | Zone 56

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Address / RPD: *South Ripley, QLD*

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12186 E A3 Contextual Applications A

A4. PROPOSED FENCING



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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- Phase 1: Fauna friendly fencing (during clearing)
- Phase 2: Fauna exclusion fencing (during construction)

Note: Fencing locations altered to reflect staging requirements.



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GDA 2020 | Zone 56

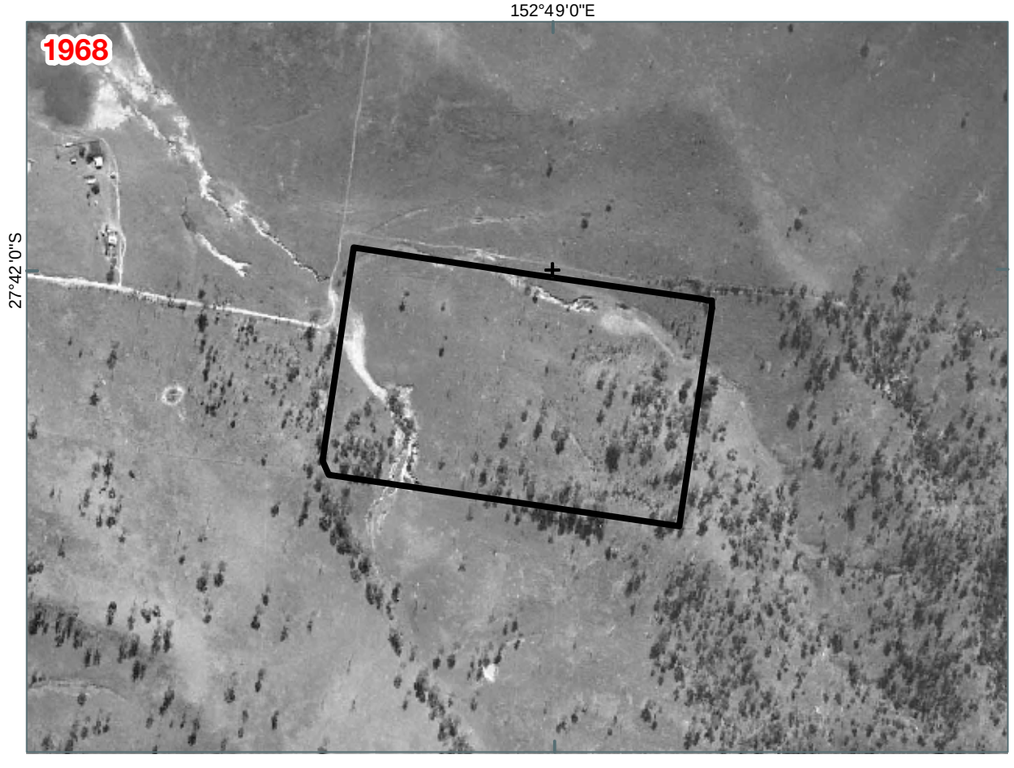
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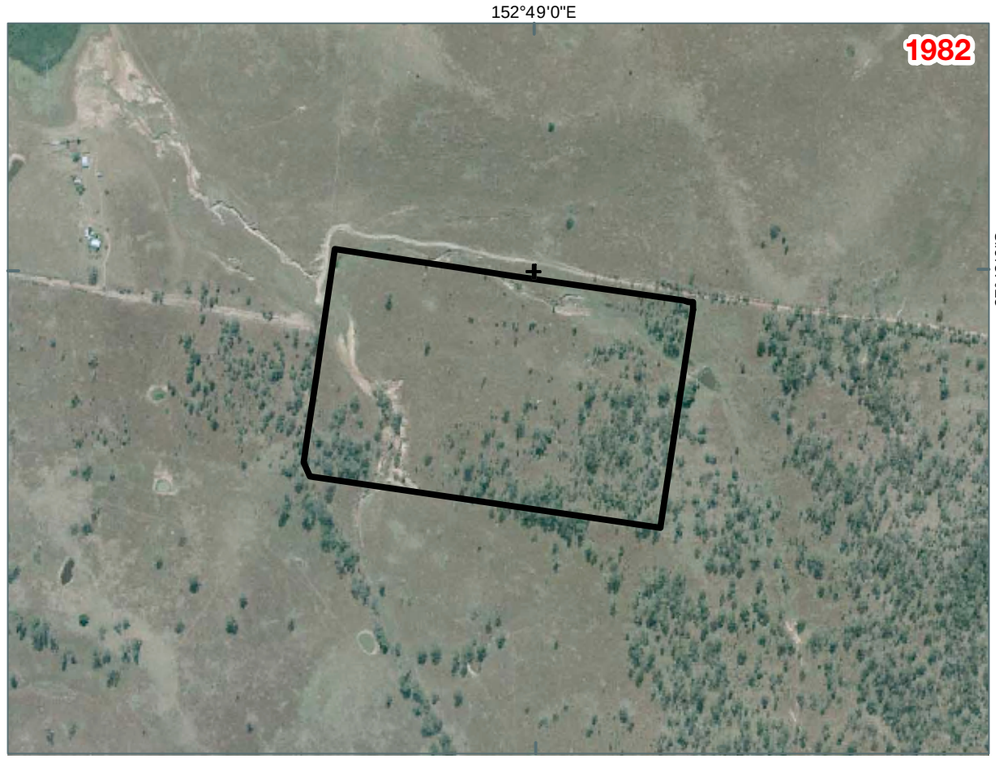
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12186 E A4 Proposed Fencing A

A5. HISTORICAL AERIAL IMAGERY









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LEGEND

Referral Area [22 ha]



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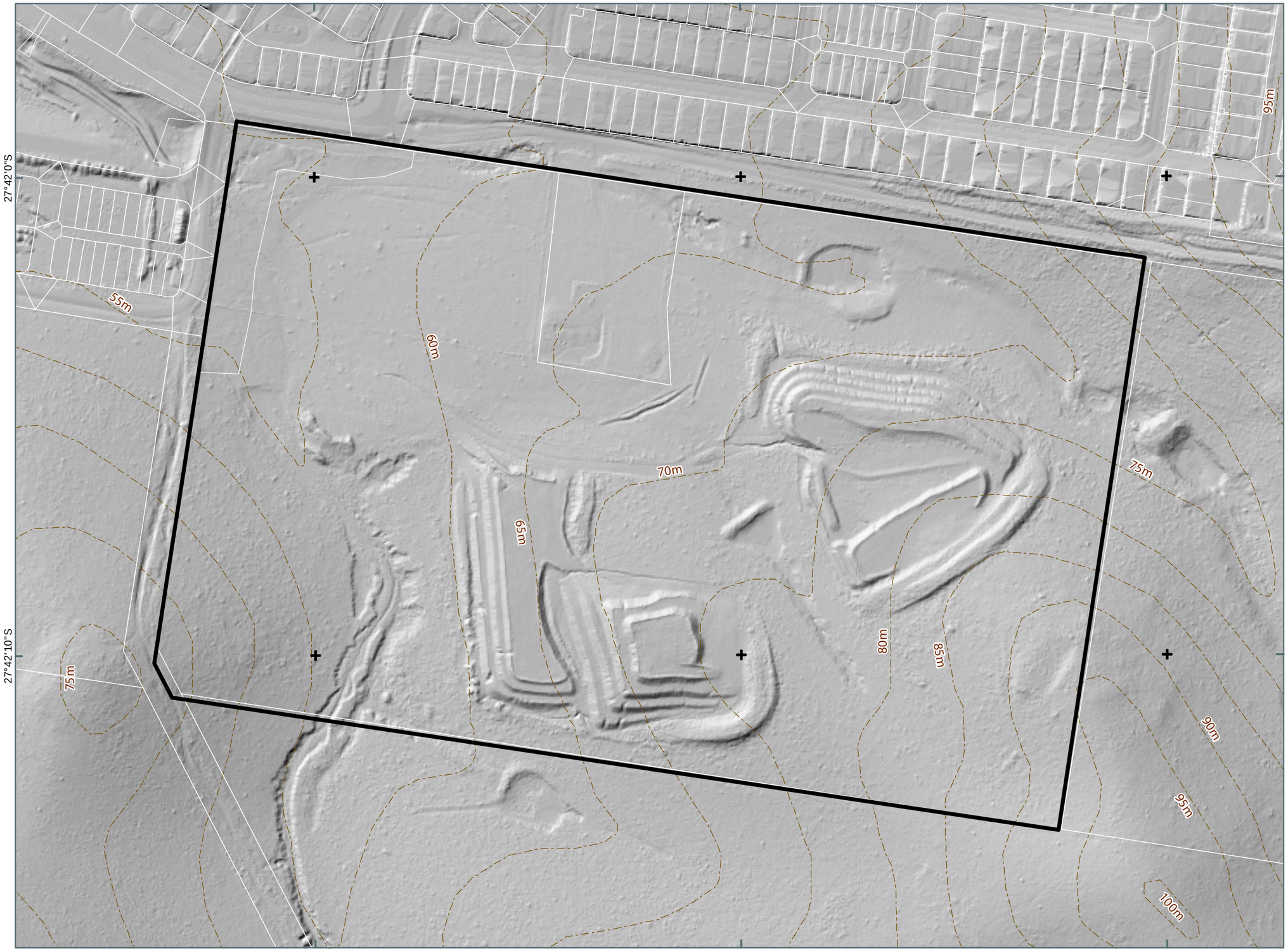
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12186 E A5 Historical Imagery A

A6. TOPOGRAPHY



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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- 5m Contours



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GDA 2020 | Zone 56

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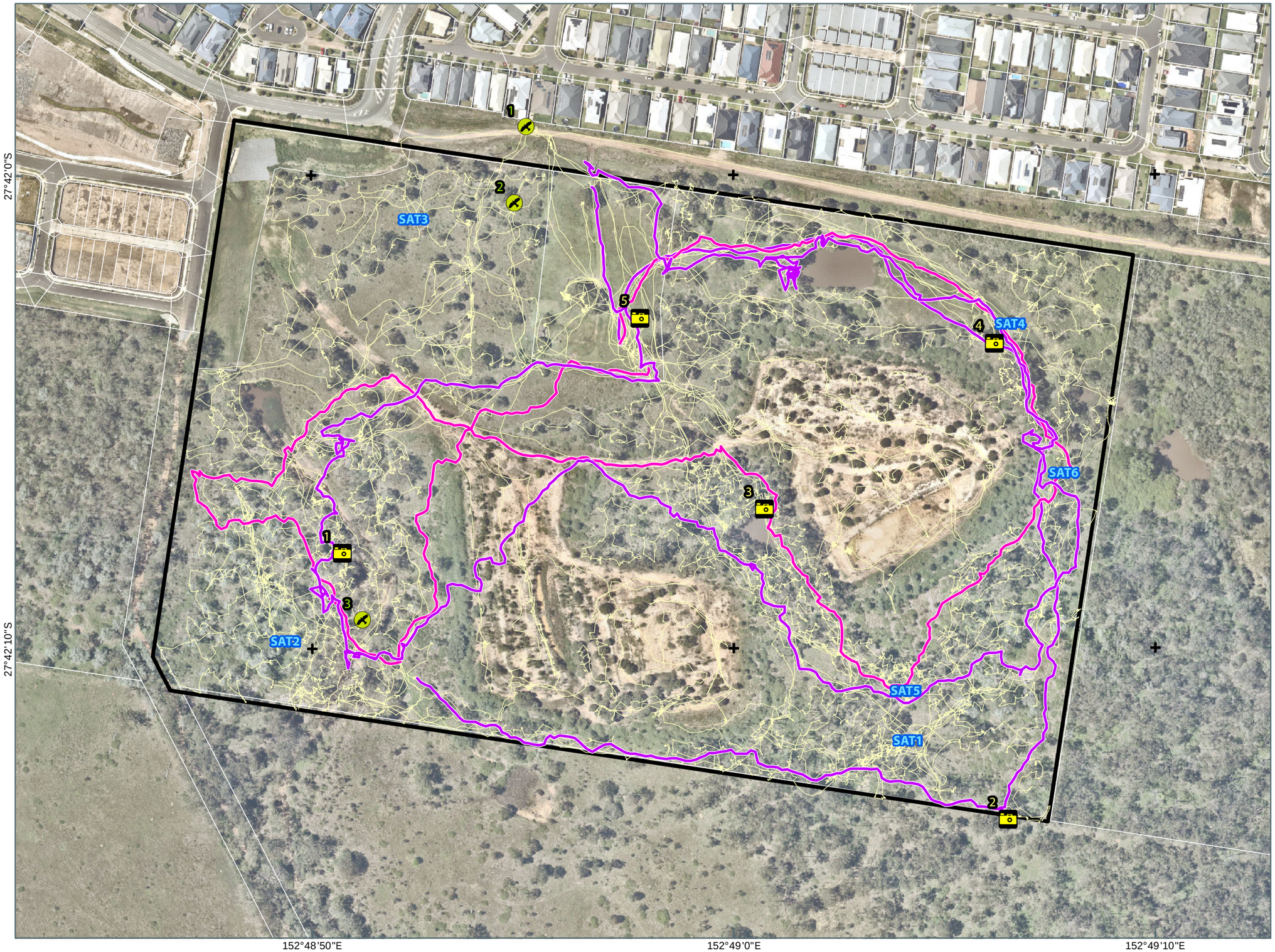
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12186 E A6 Topography A

A7. FIELD SURVEY EFFORT



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LEGEND

- Qld DCDB
- Referral Area [22 ha]

Field Survey Effort

- Incidental Surveys
- Crepuscular Bird Surveys
- Spotlighting Effort
- SAT Survey Locations
- Static Bird Survey Locations
- Camera Trap Locations



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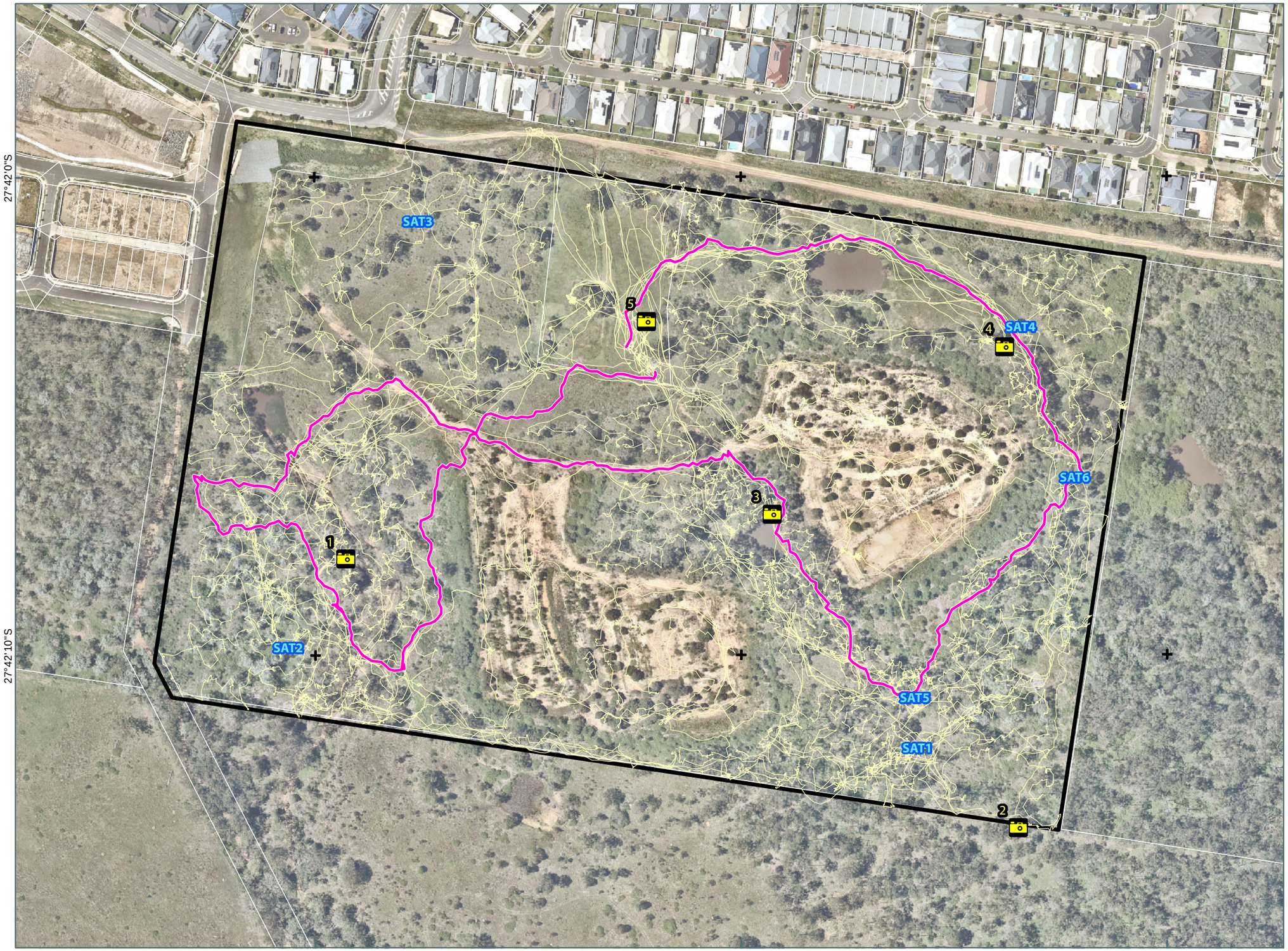
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12186 E A7 Field Survey Effort A

A7.1. FIELD SURVEY EFFORT - KOALA



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LEGEND

- Qld DCDB
- Referral Area [22 ha]

Field Survey Effort

- Incidental Diurnal Surveys
- Spotlighting Effort (18/09/2024)
- SAT Survey Locations
- Camera Trap Locations



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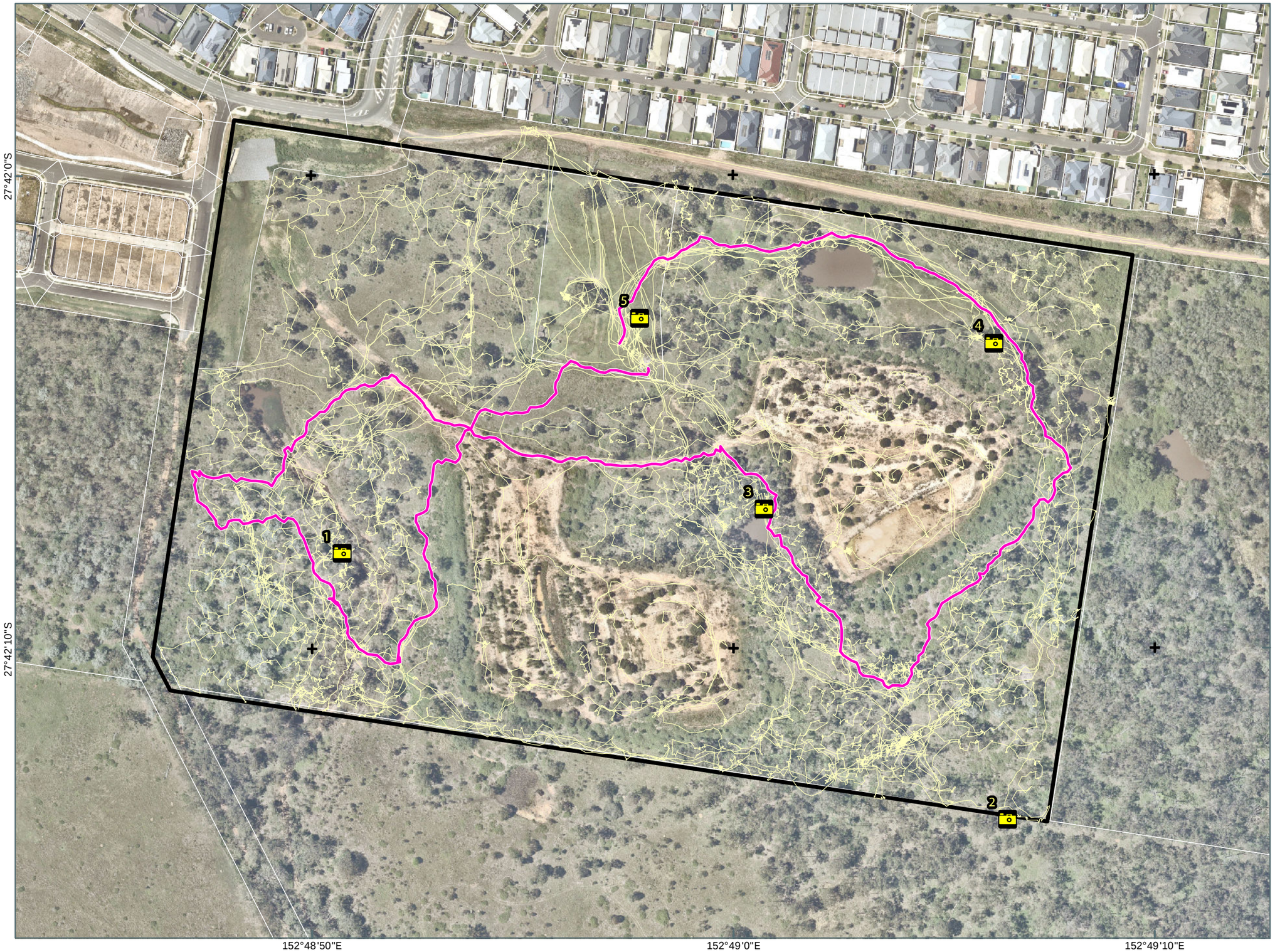
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12186 E A7.1 Koala Field Survey Effort A

A7.2. FIELD SURVEY EFFORT - GREY-HEADED FLYING-FOX



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LEGEND

- Qld DCDB
- Referral Area [22 ha]

Field Survey Effort

- Incidental Diurnal Surveys
- Spotlighting Effort (18/09/2024)
- Camera Trap Locations



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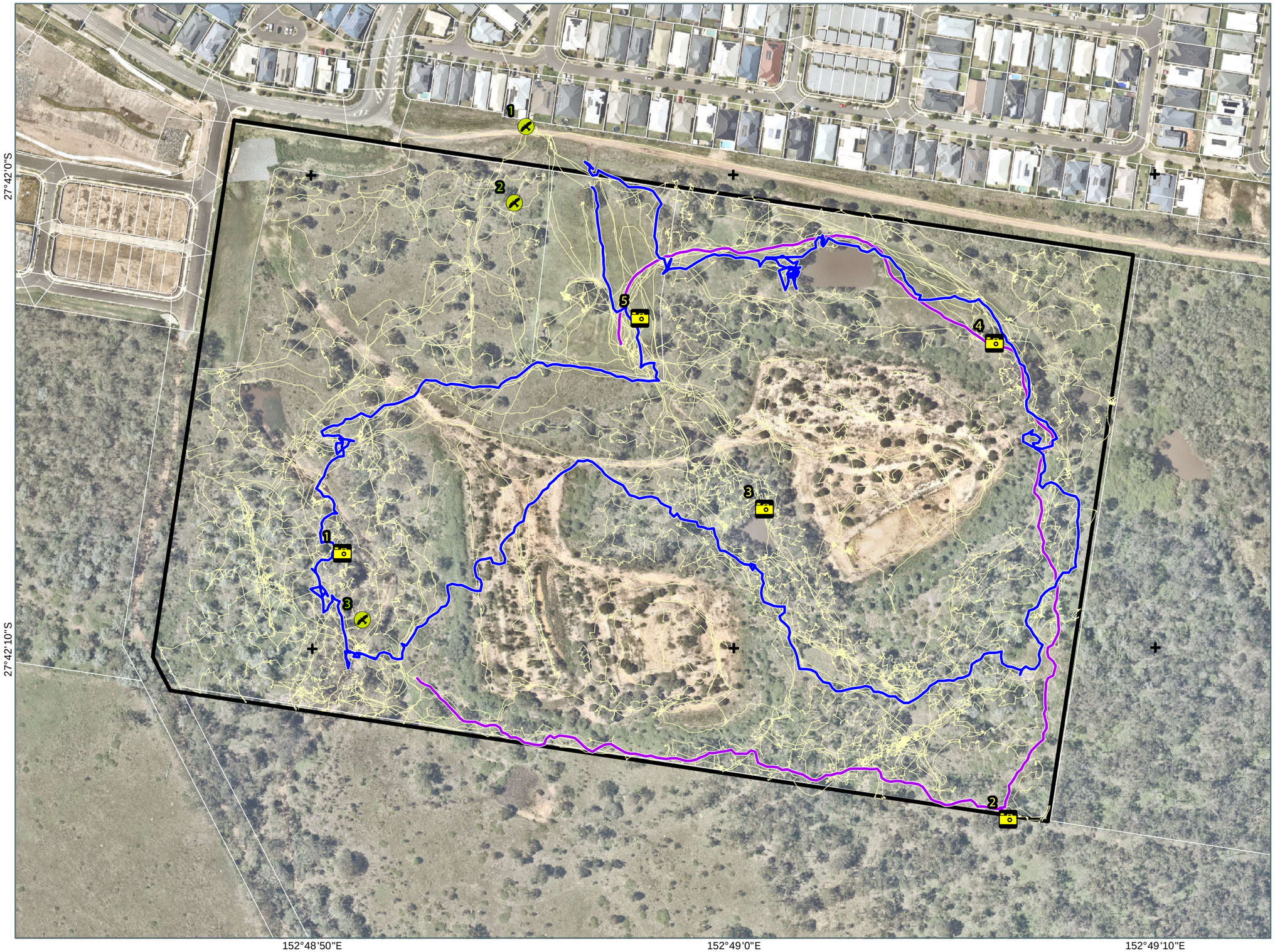
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12186 E A7.2 GHFF Field Survey Effort A

A7.3. FIELD SURVEY EFFORT - BIRDS



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LEGEND

- Qld DCDB
- Referral Area [22 ha]

Field Survey Effort

- Incidental Diurnal Surveys and Tree Plotting/Hollow Recording
- Dawn Crepuscular Bird Survey (17/09/2024)
- Dusk Crepuscular Bird Survey (18/09/2024)
- Static Bird Survey Locations
- Camera Trap Locations



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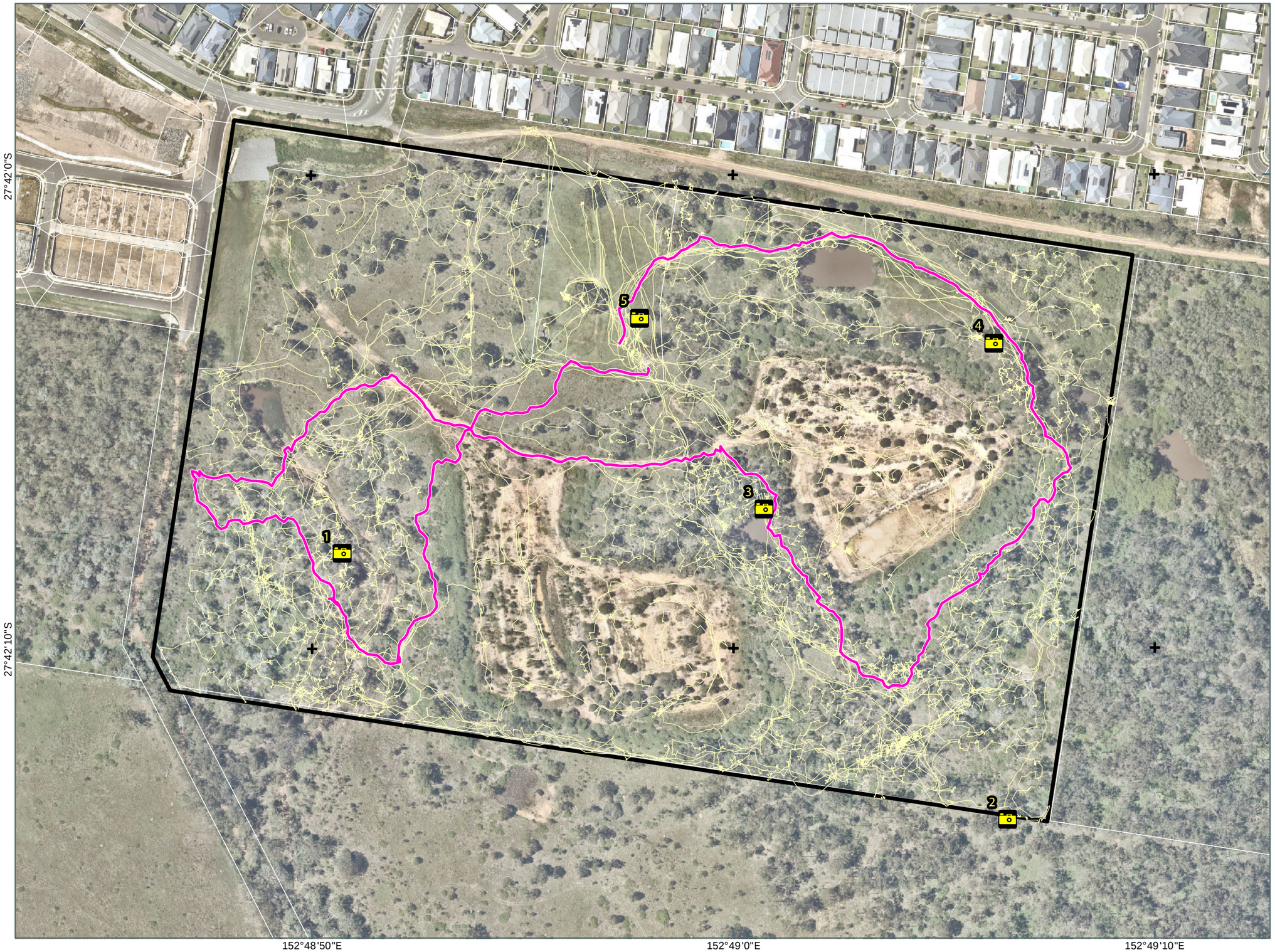
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12186 E A7.3 Birds Field Survey Effort A

A7.4. FIELD SURVEY EFFORT - GREATER GLIDER



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LEGEND

- Qld DCDB
- Referral Area [22 ha]

Field Survey Effort

- Tree Plotting/Hollow Recording
- Spotlighting Effort (18/09/2024)
- Camera Trap Locations



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12186 E A7.4 GG Field Survey Effort A

A8. FIELD SURVEY RESULTS



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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- LiDAR Delineated Waterbodies [0.3 ha]

Assessment Units

- *Assessment Unit 1:* Non-remnant vegetation (RE 12.9-10.2) [5.5 ha]
- *Assessment Unit 2:* Non-remnant vegetation (RE 12.9-10.7) [10.4 ha]
- *Vegetation Community 3:* Cleared Areas [5.8 ha]

GPS Tree Plot (Significant Trees)

- Tree with a DBH ≥ 500mm
- Tree with small hollows (<100mm) [2]
- Tree with medium hollows (>100mm) [1]
- Tree with small & medium hollows [1]



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12186 E A8 Field Survey Results A

A9. VEGETATION COMMUNITIES



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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- Transects [6]
- LiDAR Delineated Waterbodies [0.3 ha]

Assessment Units

- *Assessment Unit 1:* Non-remnant vegetation (RE 12.9-10.2) [5.5 ha]
- *Assessment Unit 2:* Non-remnant vegetation (RE 12.9-10.7) [10.4 ha]
- *Vegetation Community 3:* Cleared Areas [5.8 ha]



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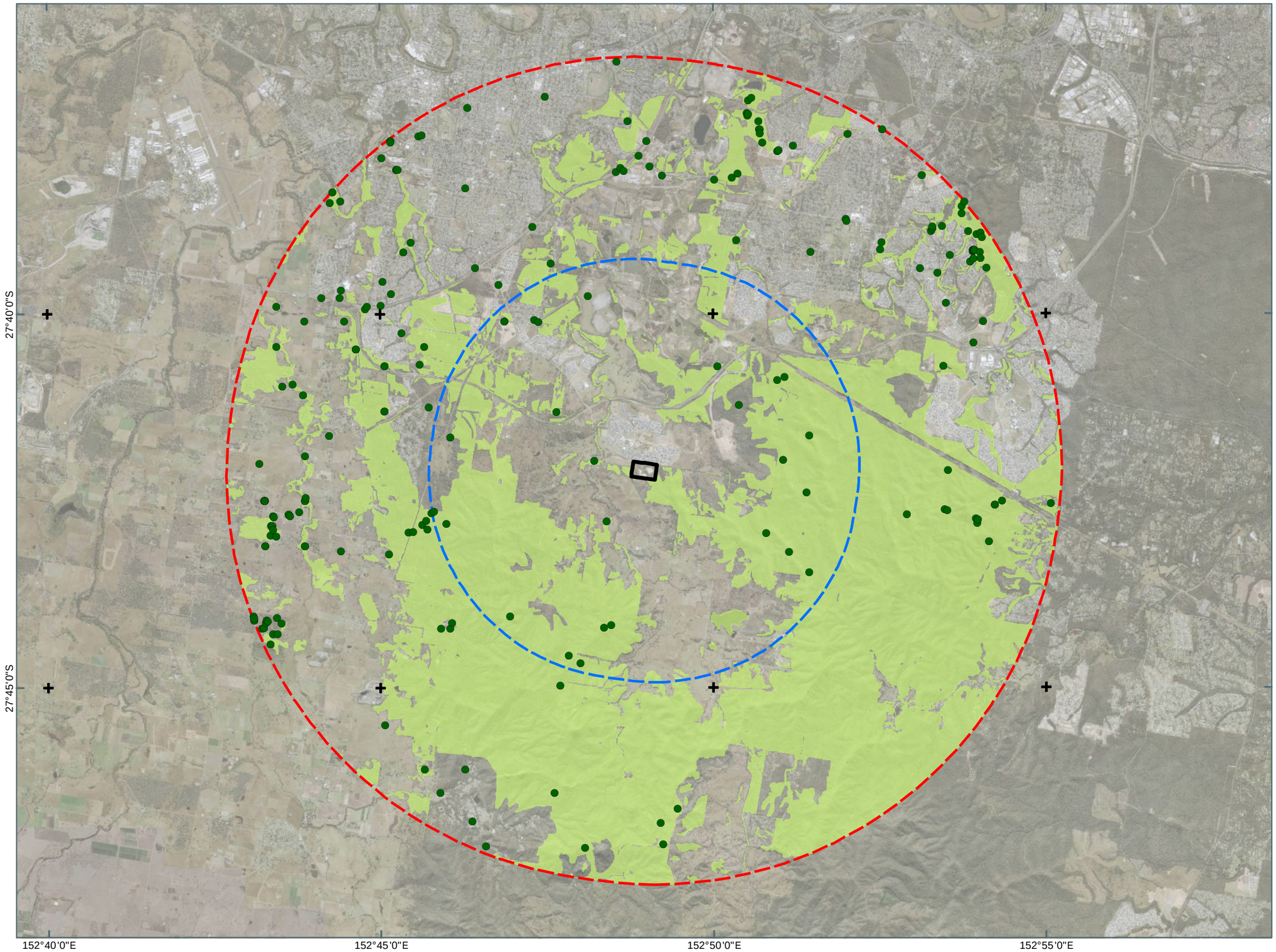
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12186 E A9 Vegetation Communities A

A10. KOALA RECORDS AND HABITAT



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LEGEND

- Referral Area [22 ha]
- 5km Referral Area Buffer
- 10km Referral Area Buffer
- Known and potential Koala habitat within 10km of referral area [45%]
- Koala records within 20km of referral area recorded within past 10 years (ALA, 2025) [218]



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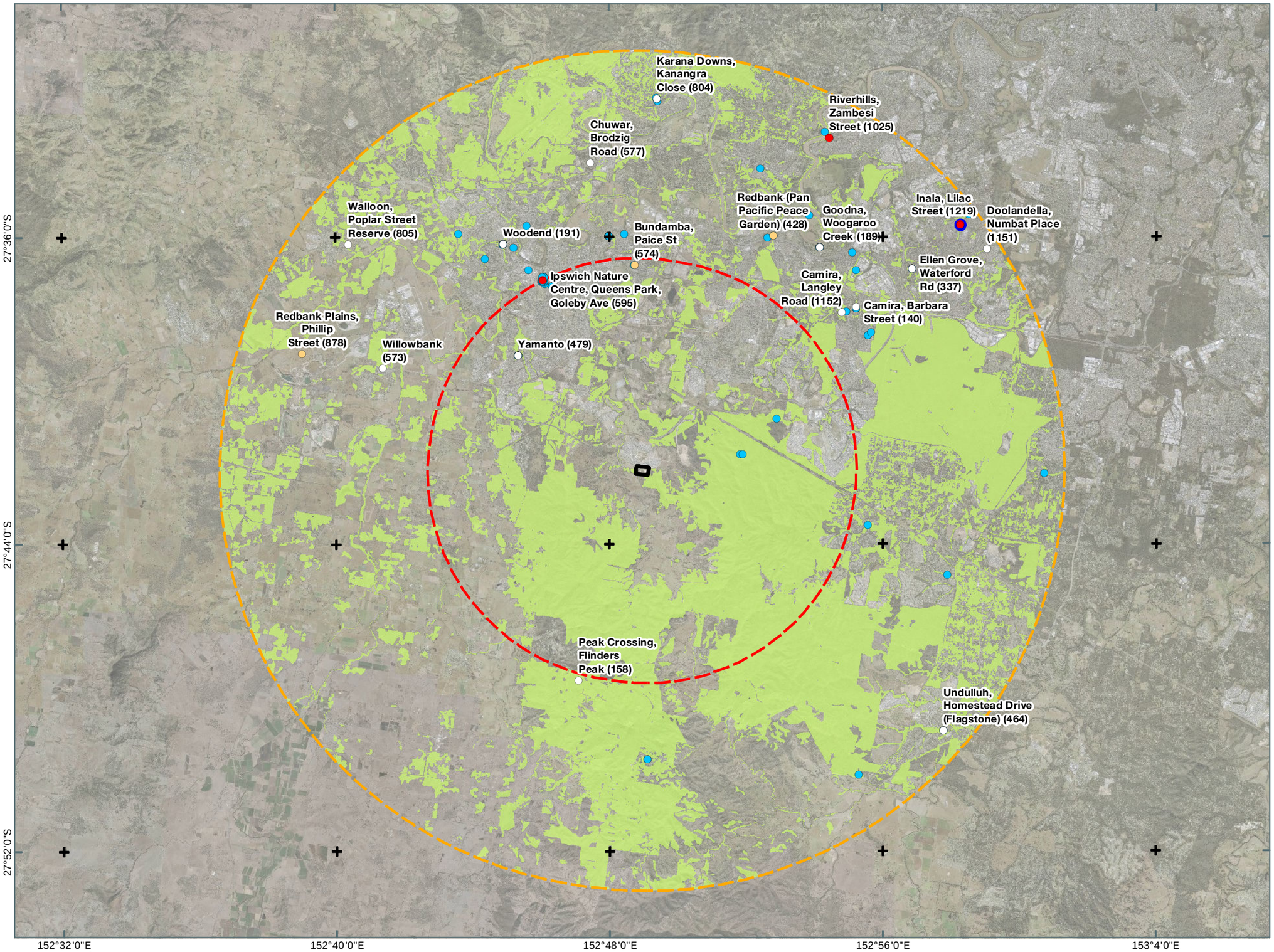
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12186 E A10 Koala Records Habitat A

A11. GREY-HEADED FLYING-FOX RECORDS AND FORAGING HABITAT



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LEGEND

- Referral Area [22 ha]
- 10km Referral Area Buffer
- 20km Referral Area Buffer
- Known and potential Grey-headed Flying-fox foraging habitat within 20km of referral area [37%]
- Grey-headed Flying-fox records within 20km of referral area recorded within past 20 years (ALA, 2025) [241]

Grey-headed Flying-fox Roosts (Fed Gov, 2025)

- Grey-headed Flying Fox roost inactive within recent surveys [13]
- Grey-headed Flying Fox roost active within recent surveys [3]
- Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [2]
- Nationally significant Grey-headed Flying Fox roost active within recent surveys [0]
- Nationally significant Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [1]



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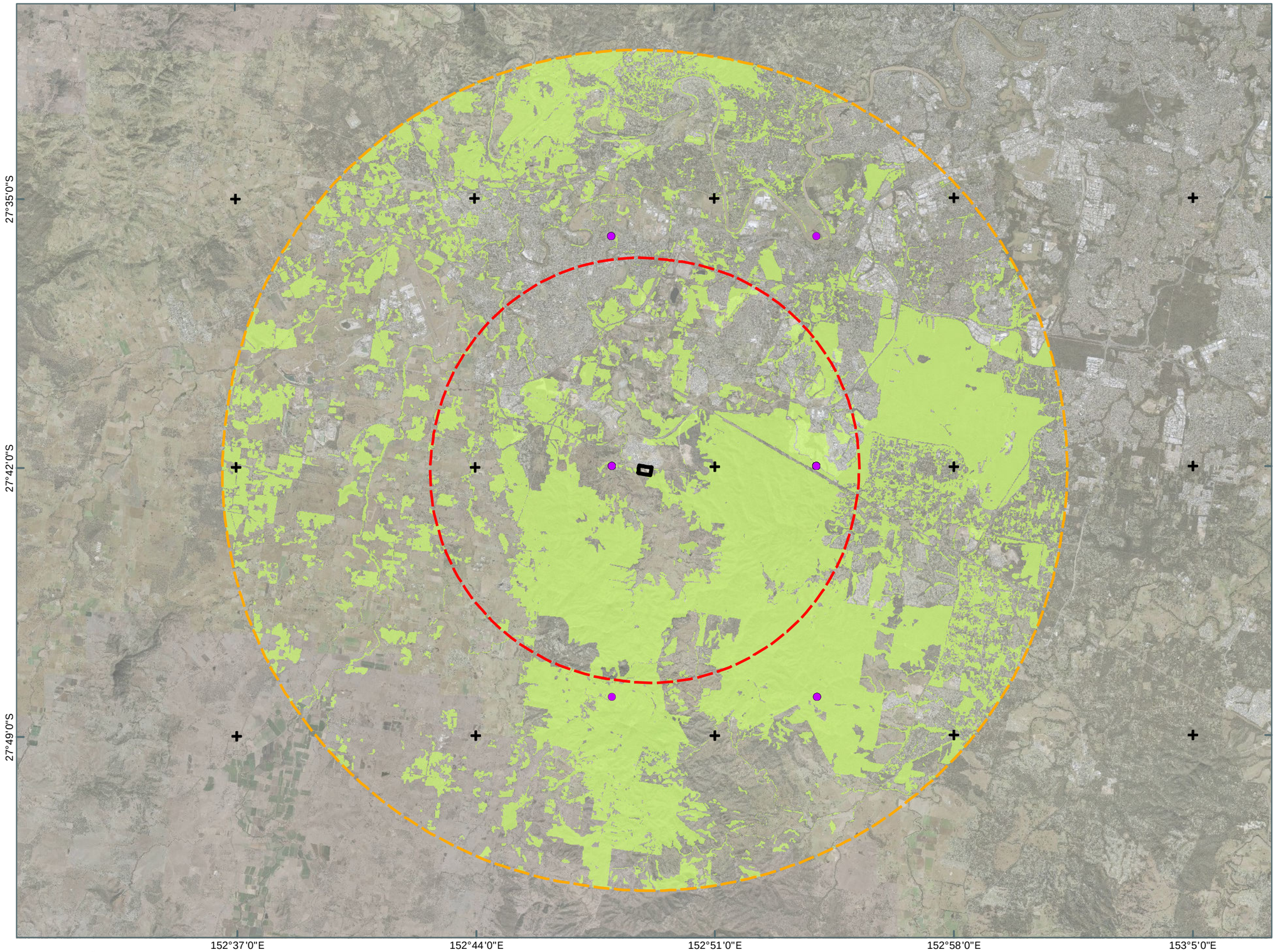
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12186 E A11 GHFF Records Habitat A

A13. REGENT HONEYEATER RECORDS AND HABITAT



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LEGEND

- Referral Area [22 ha]
- 10km Referral Area Buffer
- 20km Referral Area Buffer
- Known and potential Regent Honeyeater habitat within 20km of referral area [38%]
- Regent Honeyeater records within 20km of referral area recorded within past 20 years (ALA, 2025) *Note: Records are generalised on a grid system for protection of the species. [183]



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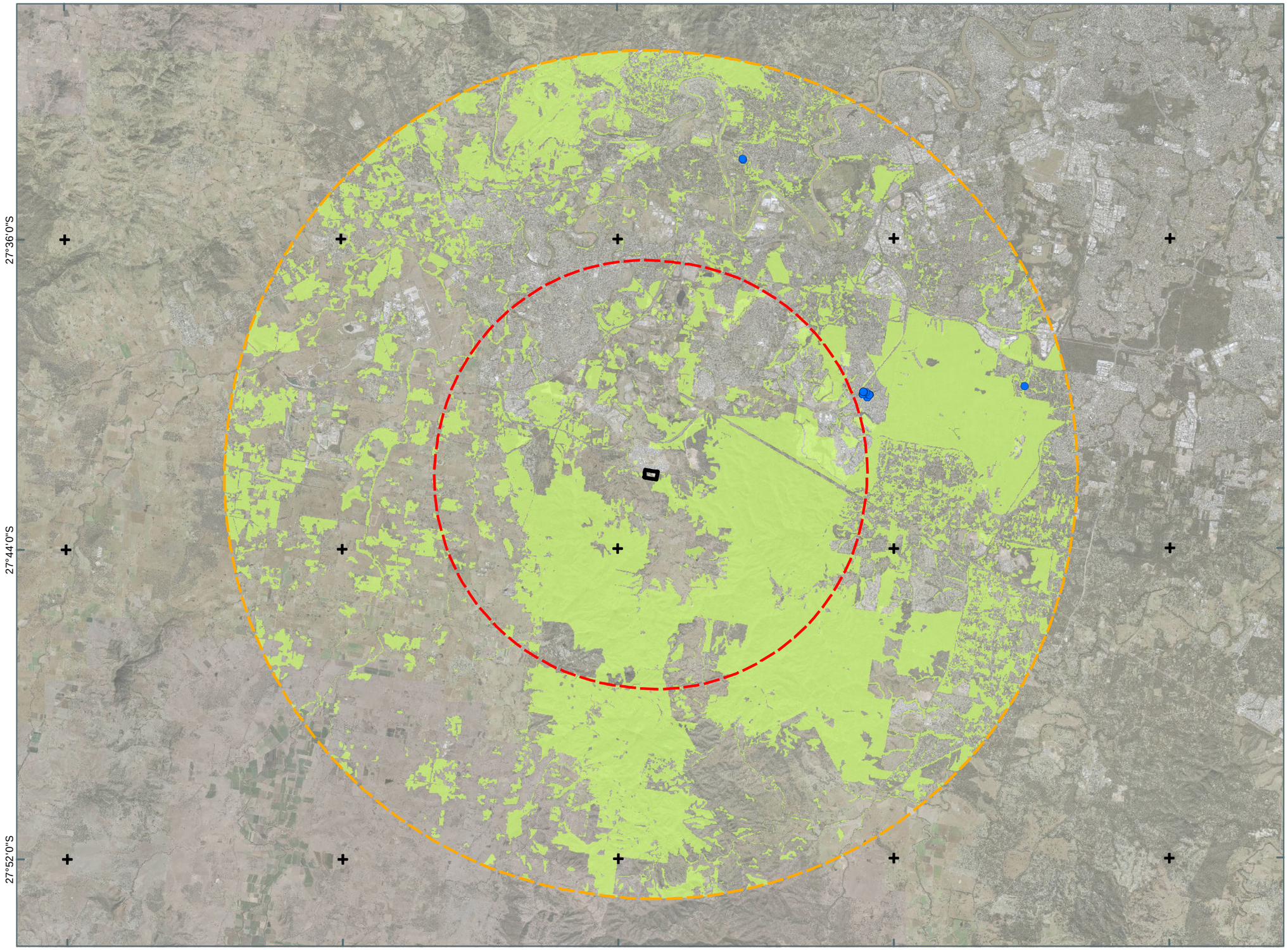
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12186 E A12 RH Records Habitat A

A12. SWIFT PARROT RECORDS AND HABITAT



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LEGEND

- Referral Area [22 ha]
- 10km Referral Area Buffer
- 20km Referral Area Buffer
- Known and potential Swift Parrot habitat within 20km of referral area [38%]
- Swift Parrot records within 20km of referral area recorded within past 20 years (ALA, 2025) *Note: Records are generalised on a grid system for protection of the species. [26]



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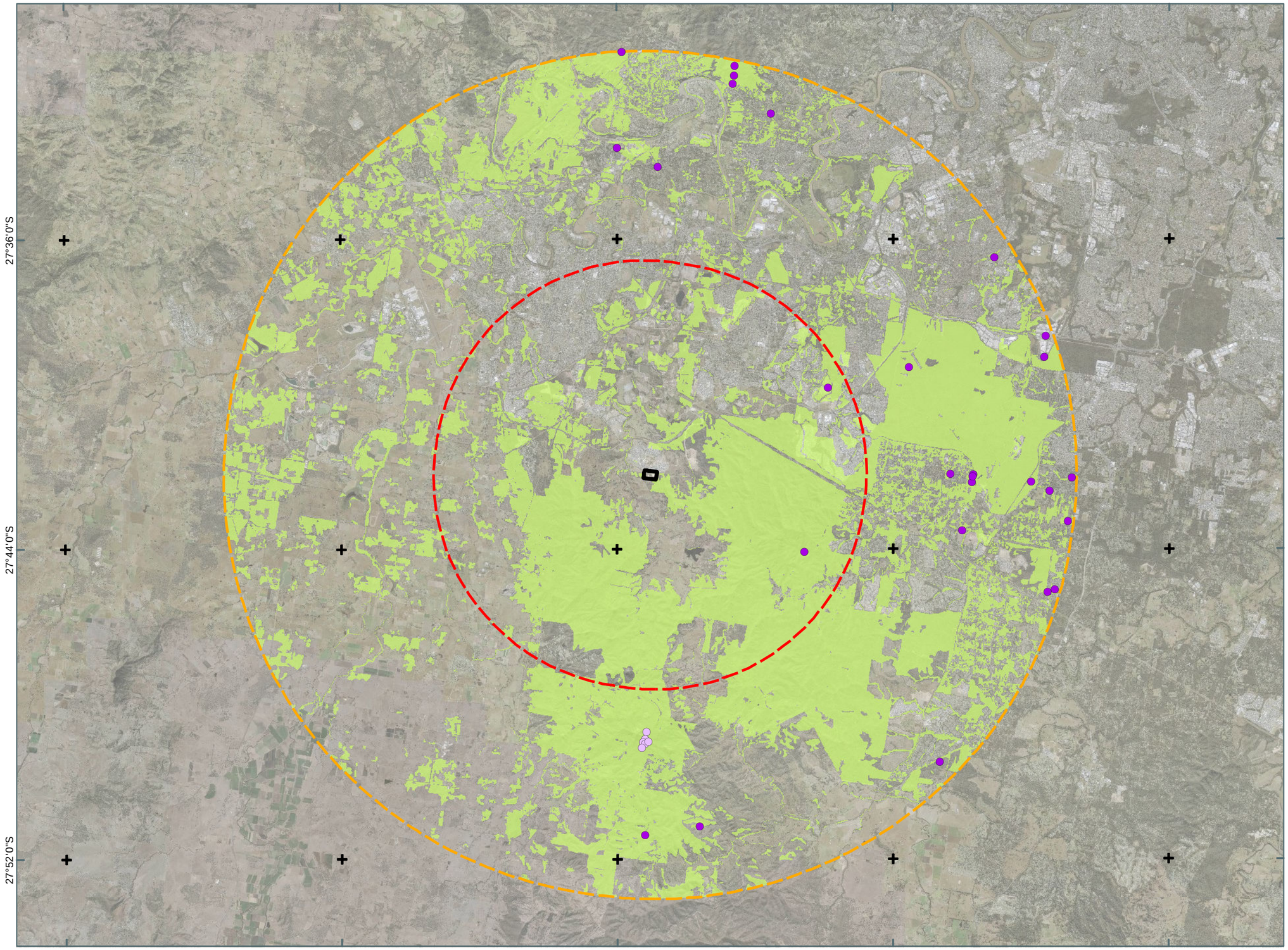
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A14. GREATER GLIDER RECORDS AND HABITAT



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LEGEND

- Referral Area [22 ha]
- 10km Referral Area Buffer
- 20km Referral Area Buffer
- Known and potential Greater Glider habitat within 20km of referral area [37%]
- Northern Greater Glider records [*Petauroides minor*] within 20km of referral area recorded within past 20 years (ALA, 2025) [6]
- Southern Greater Glider records [*Petauroides volans*] within 20km of referral area recorded within past 20 years (ALA, 2025) [27]



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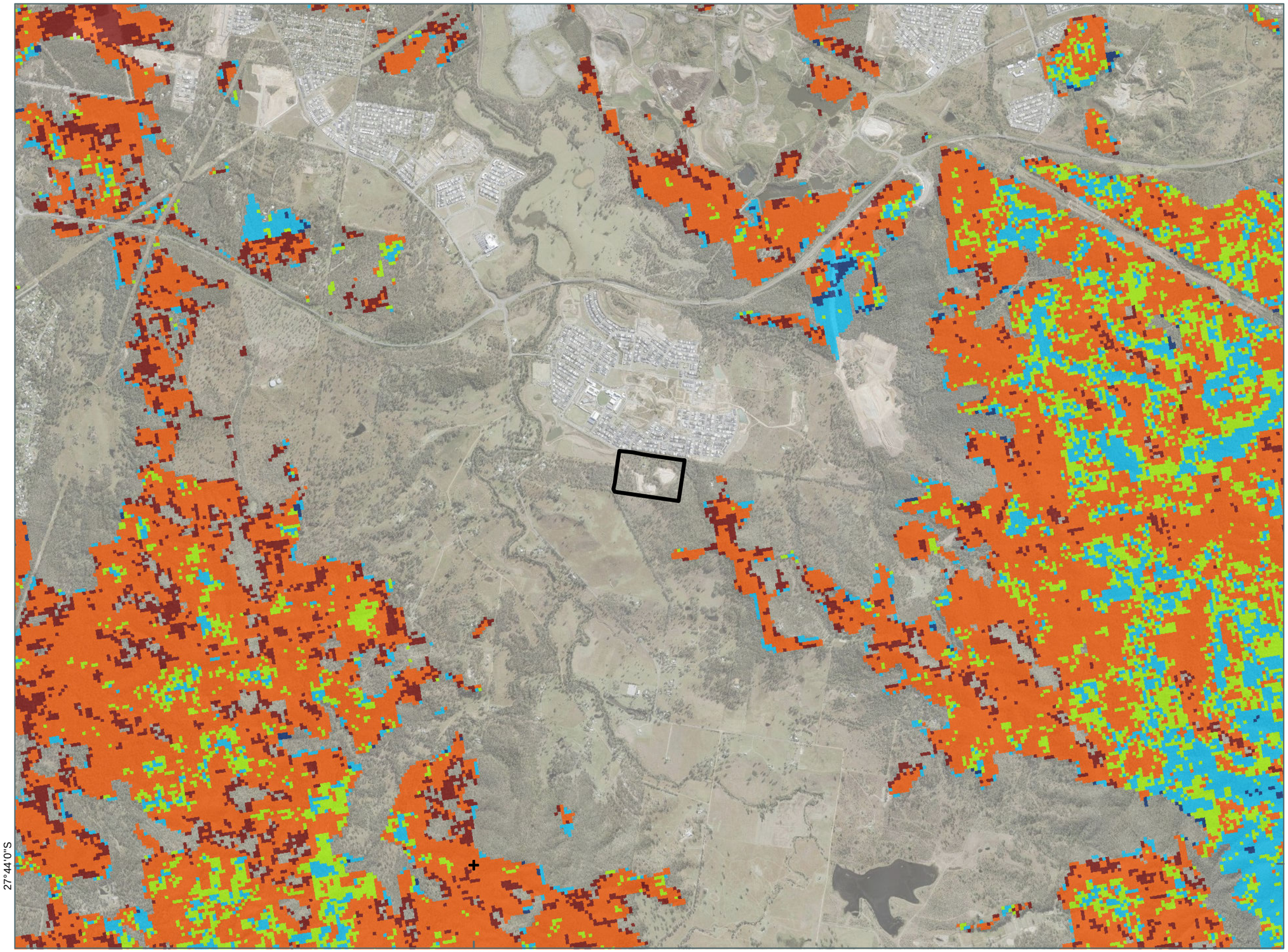
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12186 E A14 GG Records Habitat A

A15. FOREST MATURITY TYPE MAP (GRIFFITH UNIVERSITY)



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LEGEND

- Referral Area [22 ha]

Forest Maturity

- Mature Vegetation
- "" *(Intermediate to Mature Aged Vegetation)*
- Intermediate Aged Vegetation
- "" *(Young to Intermediate Aged Vegetation)*
- Young Vegetation



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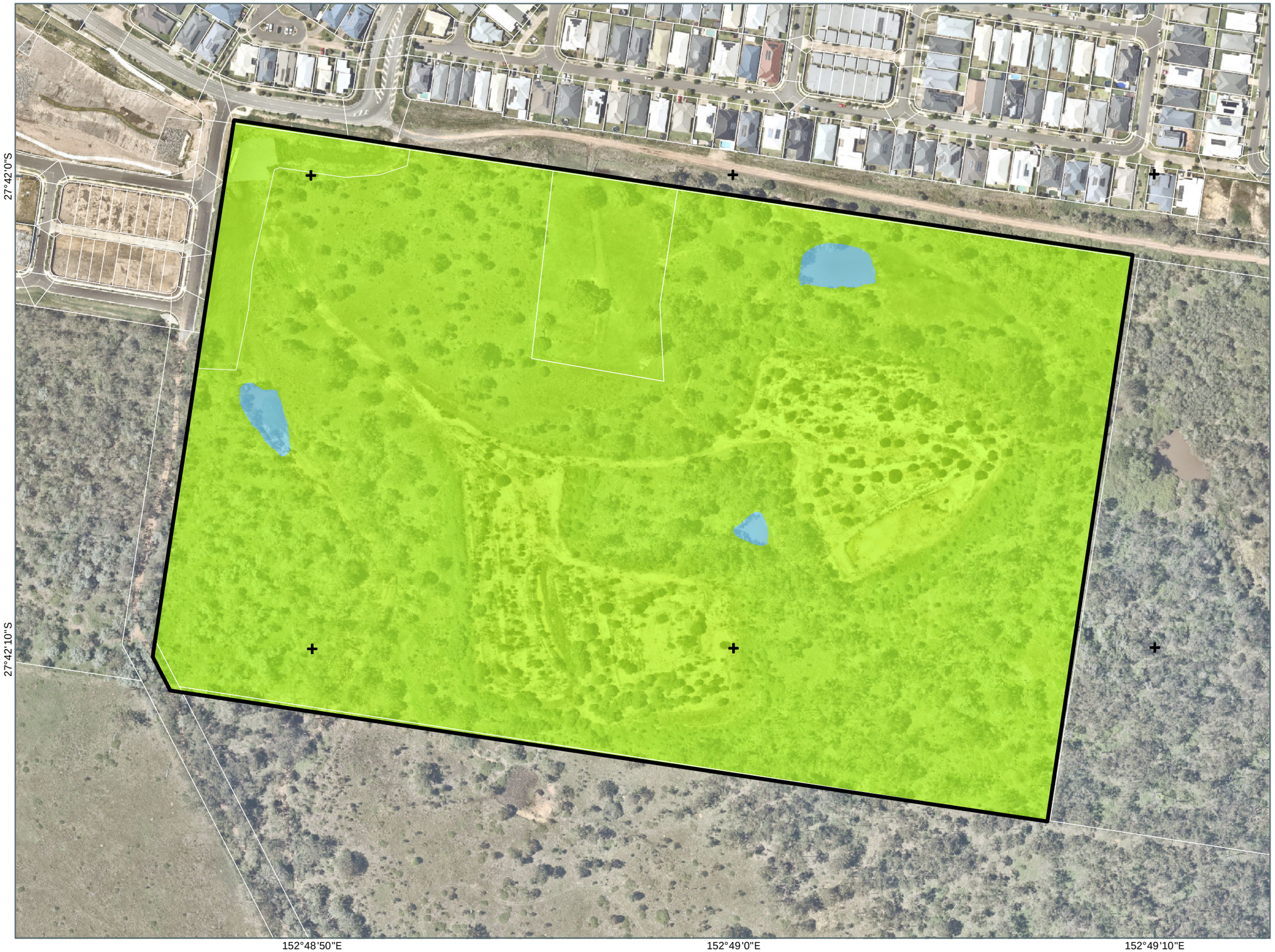
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12186 E A15 GG Forest Maturity A

A16. KOALA IMPACT



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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- LiDAR Delineated Waterbodies [0.3 ha]
- Koala Habitat Impacted [21.7 ha]



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12186 E A16 Koala Impact A

A17. GREY-HEADED FLYING-FOX IMPACT



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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- LiDAR Delineated Waterbodies [0.3 ha]
- Grey-headed Flying-fox Foraging Habitat Impacted [15.9 ha]



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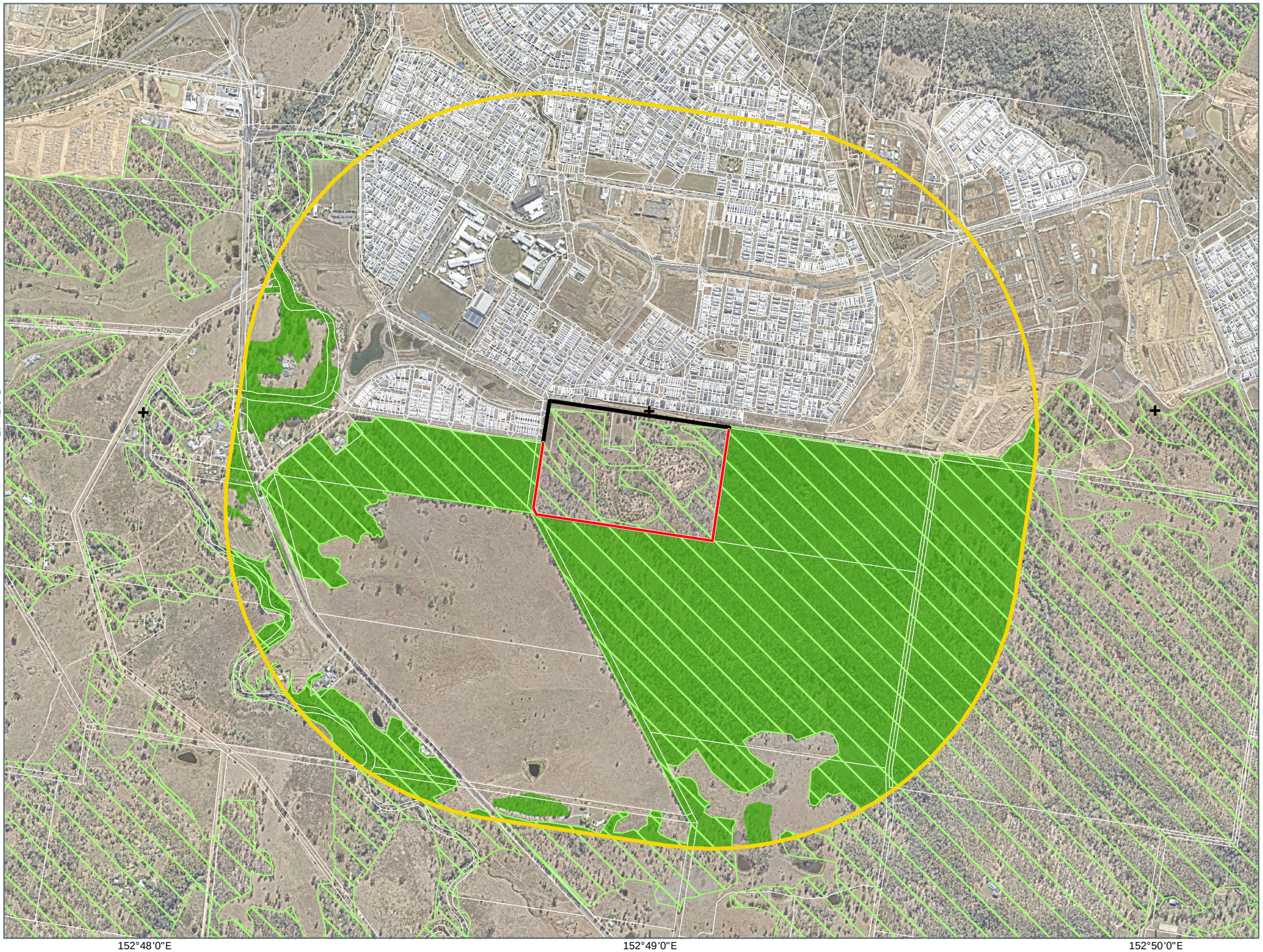
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12186 E A17 GHFF Impact A

A18. KOALA CONTEXT ASSESSMENT



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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- 1km Referral Area Buffer
- Percentage of referral area boundary length supporting a Koala critical habitat connection off and on site - 61.4%
- Percentage of Koala Critical habitat within 1km of referral area (35%)
- Size of Koala critical habitat patch adjoining impact site > 5000 ha



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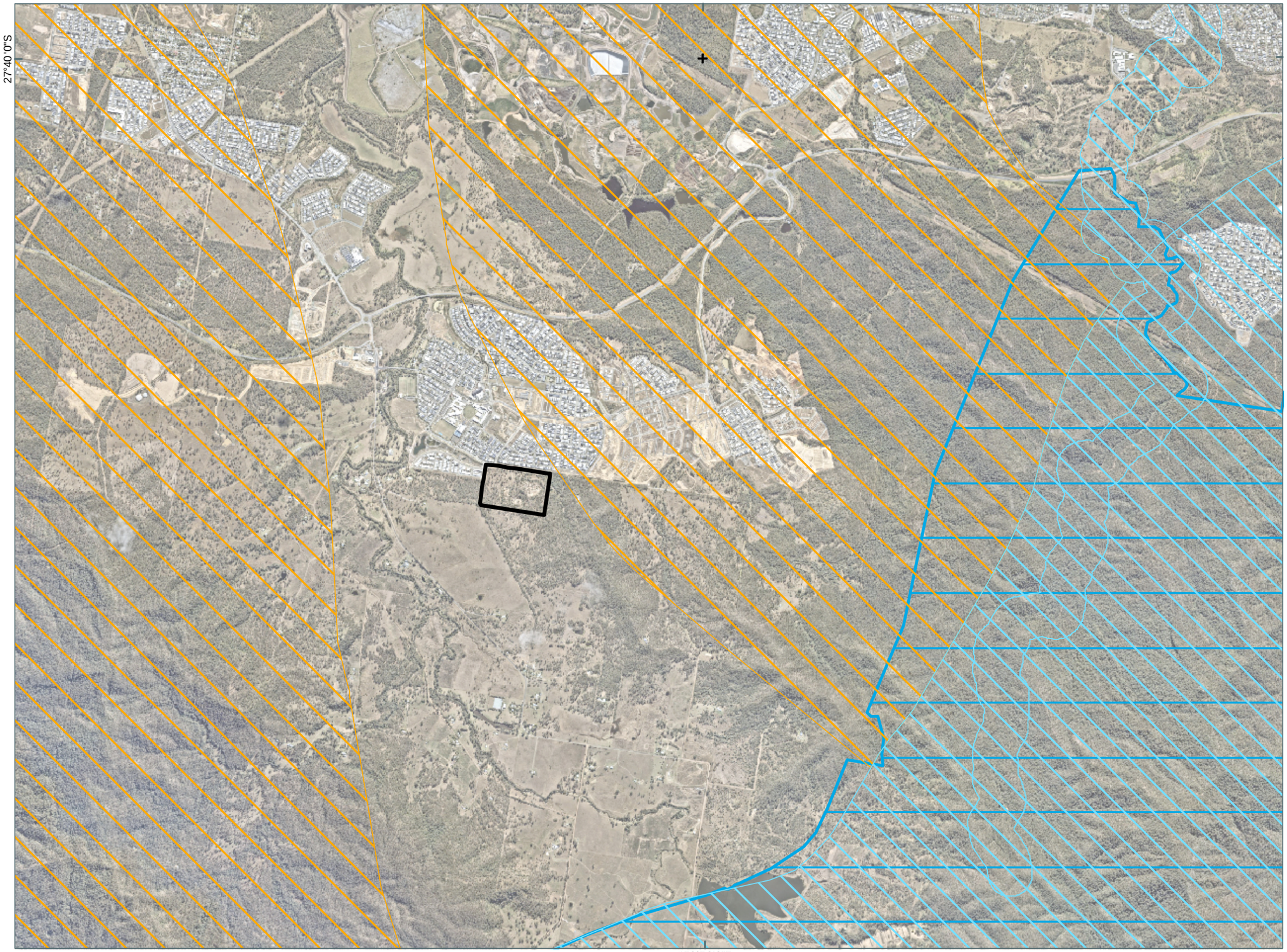
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12186 E A18 Koala Context A

A19. ECOLOGICAL CORRIDORS



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LEGEND

- Referral Area [22 ha]
- Regional biodiversity corridor (SEQ Regional Plan 2017)
- Regionally significant corridor (Biodiversity Planning Assessments)
- State significant corridor (Biodiversity Planning Assessments)



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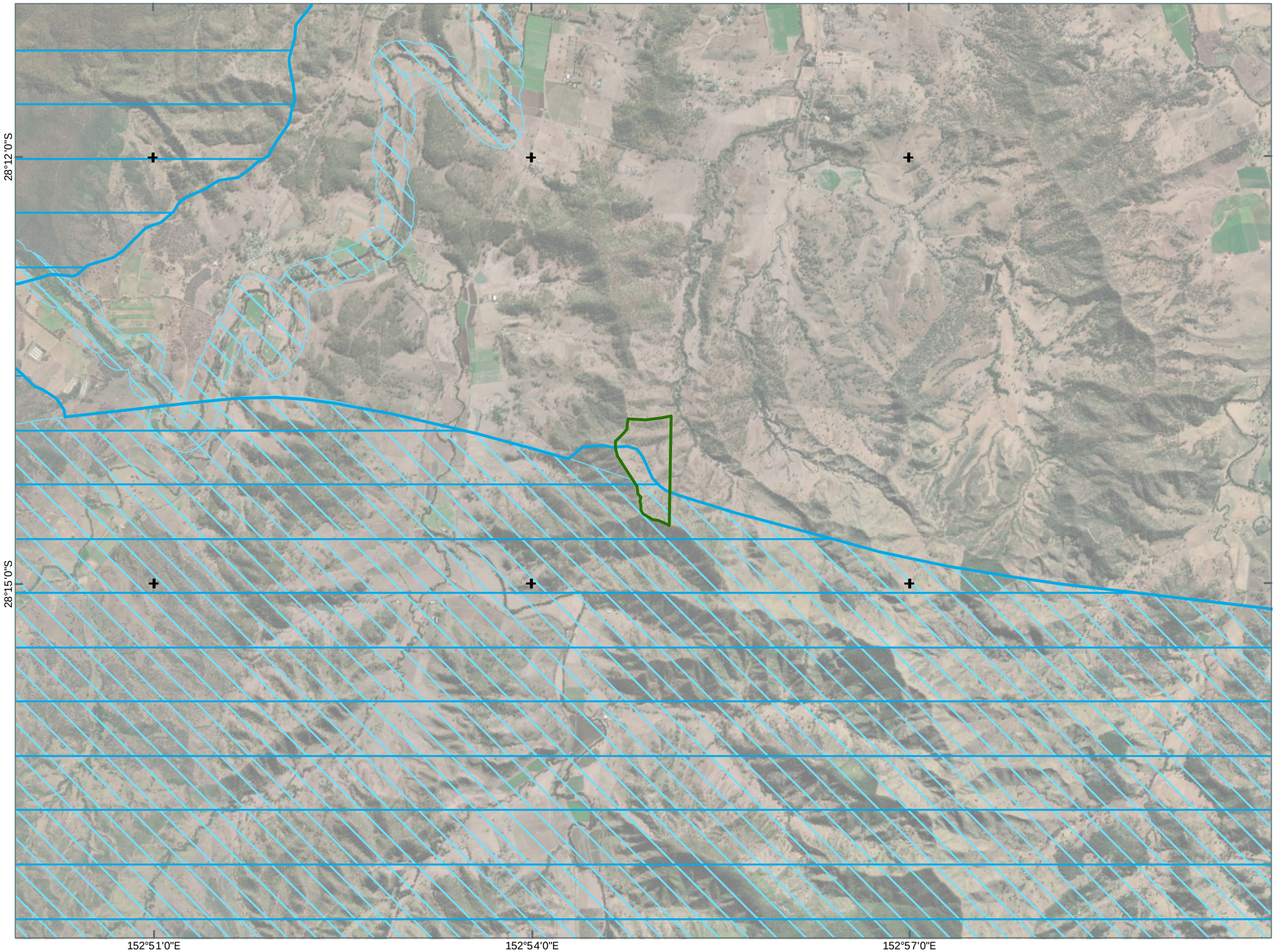
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12186 E A21 Ecological Corridors A

A20. MOUNT VIEW OFFSET AREA - ECOLOGICAL CORRIDORS



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LEGEND

- Mount View Offset Area [71 ha]
- Regional biodiversity corridor (SEQ Regional Plan 2017)
- State significant corridor (Biodiversity Planning Assessments)



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Oaky Creek

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Address / RPD: *Oaky Creek, QLD*

23/09/2025

12186 E 08 Offset Ecological Corridors A

14. Attachments

Attachment A1

EPBC Act Controlled Action Decision Notice and PD RFI

Attachment A2

Raw SAT Data

Attachment A3

Impact MHQA Data Sheets

Attachment A4

Offset Management Plan

Attachment A1

EPBC Act Controlled Action Decision Notice and PD RFI

Australian Government
Department of Climate Change, Energy, the Environment and Water

Notification of referral decision and designated proponent – controlled action– and assessment approach

Residential Development Project, Bayliss Road, South Ripley, QLD (EPBC 2025/10110)

This decision is made under section 75 and section 87 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed Action

designated proponent	HB QLD Pty Ltd ACN: 638 077 415
proposed Action	To construct a residential development in South Ripley, QLD (See EPBC Act referral 2025/10110).

Referral decision: controlled action

status of proposed Action	The proposed Action is a controlled action. The project will require assessment and approval under the EPBC Act before it can proceed.
relevant controlling provisions	• Listed threatened species and communities (sections 18 and 18A)

Assessment approach decision

assessment approach	The project will be assessed by preliminary documentation

Person authorised to make decision

name and position	Declan O'Connor-Cox Branch Head Environment Assessments Queensland
signature	
date of decision	/ / March 2025

Attachment A - Request for further information required for assessment by preliminary documentation

Residential Development Project, South Ripley, QLD (EPBC 2025/10110)

Under s95A(2) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), further information is required to inform the assessment of impacts of this action, including information about strategies for avoiding and mitigating any adverse impacts.

The preliminary documentation for the proposal must include:

a) specified information included in the original referral.

b) additional information you provide in response to this request.

c) any other information specified in this request or provided during the referral or assessment process.

Please note the department may require further information, in addition to the information required below, should new issues come to light during the assessment stage.

The preliminary documentation must address the matters set out below.

1. General content, format and style

The preliminary documentation must be written so that any conclusions reached can be independently assessed, and:

1.1) Include a reference table indicating where to find information and links within the document to relevant sections.

1.2) Where relevant information was provided in the referral, please incorporate, or cross-reference to this information as necessary in the preliminary documentation.

1.3) Contain sufficient information to allow the Minister (or delegate) to make an informed decision on whether to approve, under Part 9 of the EPBC Act, the taking of the action for the purposes of each controlling provision.

1.4) Contain sufficient information to enable interested stakeholders to understand the environmental consequences of the proposed development on matters of national environmental significance (MNES).

1.5) Ensure all work and conclusions:

a) are presented clearly, unambiguously, succinctly and objectively.

b) are evidence based, and the evidence is provided.

c) are supported by peer reviewed literature, with references provided, or expert opinion.

d) use scientifically robust methodologies appropriate to the purpose, including a justification of why the methodology/s was selected; details of the methodology described in a manner that allows an independent suitably qualified practitioners to apply the method; and, state any limitations of the chosen approach.

e) are supported by maps, plans, diagrams, baseline surveys or other descriptive detail.

f) maps must clearly identify development footprints, buffer zones, and any conservation areas where impacts will be avoided, and areas of adjacent habitat that would be subject to indirect impacts, including areas that are to be retained within and adjacent to the site.

g) use active language and state clear commitments (e.g., 'must' and 'will') where appropriate, particularly in describing avoidance, mitigation and management actions and outcomes.

h) demonstrate the use of the most up to date statutory documents* including Approved Listing Advice(s), Conservation Advice(s), Recovery Plan(s), Threat Abatement Plan(s) or comparable policy guidelines, and approved survey methods.

i) demonstrate the use of up-to-date; policy guidelines, scientific methods, information, data and species-relevant survey methods.

j) appropriately reference all sources using the Harvard standard. The reference list must include the address of any internet pages used as data sources.

**relevant documents include, but are not limited to, the resources found in the Species Profile and Threats Database (SPRAT database) and EPBC Act publications and resources.*

1.6) Are able to read as a stand-alone document and must include summaries of all relevant information referenced or provided in appendices. Complex or detailed technical information, studies or investigations necessary to support the main text should be attached to the main document as appendices.

2. Description of the action

2.1) The preliminary documentation must include:

a) A description of all components of the proposed action (such as pre-construction, construction and operational), including the staging, sequencing, duration and timing.

b) A description of the anticipated start and completion dates of all actions such as the extent, staging and timing of clearing undertaken over the construction period. The description should include at a minimum:

i) All infrastructure to be constructed and construction methods.

ii) All temporary and permanent fencing used, including a description of each fencing type and location. Include a schematic diagram of fence types and a map of where fences are proposed to be located.

iii) Ancillary and supporting infrastructure including (but not limited to): laydown areas, access tracks, temporary site office etc.

iv) Mapped locations, including the size in hectares, of any proposed fire breaks/asset protection zones.

c) The location, extent, and size (in hectares) of the total project footprint, disturbance/impact footprint, and of any adjoining areas (beyond the impact area) that may be subject to indirect or facilitated impacts, including edge effects, noise or light spill, vehicle access or other associated activities.

d) A description, with supporting spatial information, detailing all site access roads and any other shared infrastructure with adjacent projects/areas to be constructed to facilitate the proposed action.

Please describe any changes to project or disturbance footprints that may have occurred since the original referral. Please note these changes may require a formal variation request.

2.2) Provide a description of the intended land uses proposed as part of the completed development, including of any proposed open space and/or conservation areas and associated ongoing activities, and details of the intended party that would be responsible for future management activities.

2.3) Details of any local or State Government planning scheme, or plan or policy under any local or State Government planning system that applies or is likely to apply to the proposed action. Details should include, but are not limited to:

a) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy

b) application/approval numbers for existing applications where relevant

c) obtained approvals or additional approvals that are required.

3. Description of the environment and Matters of National Environmental Significance

The preliminary documentation must provide a description of the environment affected by and surrounding the proposed action area, over both the short and long term, including:

3.1) A description of the environment more broadly including previous and current land use within and surrounding the proposed action area.

3.2) A description of any potential listed threatened species or ecological community (including but not limited to those listed in this request for information) that occur in the project area and adjacent areas.

Please ensure that a recent Protected Matters Search Tool report is generated and used during the assessment before finalising the draft preliminary documentation to identify any additional species (listed at the time of the controlled action area) that may be affected by the proposal.

3.3) For listed threatened species and ecological communities that have the potential, or are likely, to be present at and in the vicinity of the project site, including but not limited to those listed in this request, please provide a likelihood of occurrence assessment including the following:

a) Information on the abundance, distribution, ecology and habitat preference of the species or communities.

b) Quantification of the extent of habitat (including maps identifying known or potential habitat) on site and, where feasible, in the broader landscape.

c) Quality and importance of known or potential habitat for the species or communities.

d) Information detailing known populations or records within at least five kilometres of the development footprint and (if known) the size of these populations.

e) Conclusions on the likelihood of occurrence of listed threatened species and ecological communities within the project site, or within an area of impacts outside the project site.

Likelihood of occurrence and habitat assessments must be informed by up-to-date desktop and field surveys and informed by relevant departmental documents (e.g., approved Conservation Advice, Recovery Plans, draft referral guidelines and Listing Advice, and SPRAT Database) and/or species experts.

3.4) Up to date baseline and survey data at the impact site(s), and if relevant, the proposed offset site(s), including:

a) Information on the survey methodology or technique used (e.g., thermal detection, camera trapping, tree hollow search, SAT surveys etc)

b) When surveys were conducted (e.g., dates, time of day, season, etc.) and survey effort (e.g., two hours for every one hectare within a 5-hectare area)

c) Map/s of survey points or transects and how the survey points or transects were selected.

d) An assessment of the adequacy of any surveys undertaken with reference to any relevant scientific literature and/or statutory documents. In particular, the extent to which these surveys were appropriate for the species and undertaken in accordance with relevant survey guidelines.

e) Results of all surveys undertaken. Include raw data sheets of all surveys undertaken as attachments to the documentation, as well as complete flora and fauna species lists and imagery of assessment locations.

3.5) Based on survey data and with reference to relevant statutory documents, provide a clear description of the total extent and quality of habitat present within and surrounding the proposed action area for each species or ecological community potentially present or impacted by the action.

For all species with residual significant impacts the method used to quantitatively assess the quality of habitat must be discussed and endorsed by the department before being applied.

Survey requirements

Survey timing

Please note that some surveys can take more than a year to complete to ensure they are undertaken in the correct season. The department generally cannot accept survey data that's more than 5 years old because:

- populations of species can change due to fires, drought, flooding and land management changes.
- some species' ranges can shift due to climate change.

If your data is older than 4 years when you start planning your project, the department recommends you undertake further up to date surveys.

For information on survey methodologies approved by the Australian Government, please refer to https://www.dcceew.gov.au/environment/epbc/advice/surveys-and-data

Precautionary principle

Failing to survey appropriately for threatened species that may be present at a site could result in the department applying the precautionary principle with regard to residual significant impact determinations.

That is, if no supporting evidence (such as survey results) is presented to support the claim of species absence, then the department may assume that the species is in fact present. The department will not accept claimed species absence without effective validation such as through application of survey guidelines, other survey techniques (for example, a state guideline or an accepted industry guideline), or statements from relevant species experts. Where a claim of absence is made, proposals must provide a robust evaluation of species absence.

4. Impact Assessment

Based on the information provided in the referral, additional information provided in support of the referral, information provided in the SPRAT database, and online observation records, the department considers the proposed action is likely to have a significant impact on listed threatened species and communities (section 18 & section 18A).

Based on the information available in the referral, the proposed action is likely to have a significant impact on the following matters of national environmental significance, including but not limited to:

- Koala (*Phascolarctos cinereus* (Combined populations of Qld, NSW, and the ACT)) – endangered
  - The proposed action will result in the loss of a minimum of 15.9 ha of habitat critical to the survival of the Koala.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – vulnerable
  - The proposed action involves clearing of at least 15.9 ha of habitat critical to the survival of the Grey-headed flying-fox (GHFF).

Based on all the information available to the department (including the PMST, which suggests the presence of the following species or communities in the area of the proposal), and without further detailed assessment of potential impacts, the department considers that the proposed action may significantly impact on other listed threatened species including but not limited to the following:

- Swift Parrot (*Lathamus discolor*) - critically endangered
- Regent Honeyeater (*Anthochaera phrygia*) - critically endangered

Note that this may not be a complete list and it is your responsibility, as the proponent, to ensure that any species or ecological communities listed under the EPBC Act at the time of the controlled action decision, which may be present or potentially significantly impacted, are assessed as part of the preliminary documentation.

The preliminary documentation must include an up-to-date assessment of potential impacts that may occur as a result of the proposed action.

Consideration of impacts must not be confined to the immediate area of the proposed action but must also consider the potential of the proposed action to impact on adjacent areas that are likely to contain populations and/or habitat for MNES.

4.1) Include a clear description of the total extent and quality of the following:

a) project footprint (including the total extent of habitat present for each relevant protected matter)

b) direct and indirect impact areas (including the total extent of habitat for each relevant protected matter to be impacted)

c) total areas proposed to be retained/avoided (including the total extent of habitat present for each relevant protected matter to be avoided).

4.2) For any threatened species or ecological communities which may be present or potentially significantly impacted, including the following threatened species in section 5 of this document, please:

a) Complete a revised habitat suitability assessment of the referral area, considering specific habitat requirements of the species in accordance with relevant listing advices, conservation advices, recovery plans, Significant Impact Guidelines 1.1 and publicly available information.

b) Provide mapping or revised and expanded mapping showing the extent of suitable habitat for the species in relation to the disturbance footprint and broader proposed action area.

c) Demonstrate that previous and any additional or new surveys for the species have been completed in accordance with relevant Commonwealth, State or local council guidelines (or best available peer reviewed information).

d) Provide information regarding the total area proposed to be retained/avoided (including the total extent of habitat present to be avoided) at the referral area.

e) Confirm the area of habitat that will be directly and indirectly impacted by the proposed action, including but not limited to areas where:

   i) Connectivity to surrounding habitat will be retained, removed or functionally compromised/lost.

   ii) Adjacent habitat will be subject to intensification of ongoing impacts (for example, through increased vehicle movement and/hydrology changes).

f) Ensure that all classification and quantification of habitat, and all references to the extent of impact to protected matters, are consistent throughout the preliminary documentation and supporting mapping.

4.3) To inform point 4.1 to 4.2, please provide an assessment of the direct, indirect, facilitated and cumulative impacts that may occur as a result of the proposed action at a local and regional scale.

The assessment should include consideration of:

a) the nature, likelihood, significance, and extent of impacts and whether any relevant impacts are likely to be unknown, unpredictable or irreversible.

b) timing and whether the impact is temporary or permanent

c) species specific habitat requirements such as hollow bearing trees, nest trees, refuge habitat, foraging and breeding habitat, sheltering or other microhabitat features relevant to the species within and surrounding the development footprint (if applicable).

d) whether connectivity and movement opportunities in the surrounding area may be retained, removed or functionally lost or compromised.

e) adjacent areas of habitat that may or will be subject to intensification of ongoing impacts (for example, through increased human and vehicle presence)

f) indirect or facilitated impacts that may result from the proposed action including, but not limited to, the following:

   i) Edge effects – including the potential for the introduction of weed species and pathogens in the referral area and adjacent environment.

   ii) Vehicle movement – potential increase of vehicles to strike fauna in the pre-construction, construction, and operation phase of the project.

   iii) Increased presence of dogs – pre-construction, construction and operation phases have the potential to increase dog presence in the referral area and adjacent environment.

   iv) Earthworks – potential to generate dust emissions from the removal of vegetation and movement of soil in the pre-construction and construction phase of the project.

v) Disturbance from increased noise, artificial light, sediment generation and other relevant stressors during construction and operation of the residential development.

g) cumulative impacts, where potential project impacts on MNES are in addition to existing impacts of other activities (including current or future developments by the proponent and other proponents in the region and vicinity)

Please review the following policy statement, providing guidance on what impacts constitute a 'indirect consequences(s)', under paragraph 527E(1)(b) of the EPBC Act.

Facilitated impacts may include (but are not limited to) the risk of injury or mortality to MNES as a result of the introduction of domestic dogs in a residential area, vehicle strike as a result of increased residential car use and/or the development of swimming pools.

4.4) Include current maps and coordinates/shapefiles showing the total project footprint, total disturbance/direct and indirect impact areas, areas of habitat for MNES proposed to be retained.

4.5) Include details of any policy guidelines, relevant studies, surveys, or consultations with species experts/field specialists, which were not included in the referral or additional information provided in support of the referral.

5. Species Specific Requirements

In addition to the requirements in Sections 3 and 4, the following information is required for the assessment of impacts to the following species:

5.1) Koala (*Phascolarctos cinereus* (combined populations of Qld, NSW, and the ACT)) – Endangered

a) The department notes the referral does not consider the cleared areas as Koala dispersal habitat. The department provides that more information is required on dispersal habitat in the proposed action area in accordance with statutory documents.

b) Habitat descriptions should consider habitat use requirements (e.g., foraging, survival, growth, reproduction and movement) across the proposed action area and align with the habitat requirements for the species outlined in the statutory documents found on the department's Species Profile and Threats Database.

c) Mitigation measures must be outlined in accordance with Section 6 below and if there is a residual significant impact then offsets must be proposed in accordance with Section 7 below.

5.2) Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable

a) The department notes the referral documentation does not consider there to be a significant impact to the Grey-headed Flying-Fox due to dominance of regrowth vegetation, cleared areas and locality to known roost sites.

b) The department believes that habitat critical has not been adequately assessed in accordance with the Recovery Plan for the Grey-headed Flying-Fox. Habitat descriptions should consider habitat use requirements (e.g., foraging, survival, growth, reproduction and movement) across the proposed action area and align with the habitat requirements for the species outlined in the statutory documents found on the department's Species Profile and Threats Database.

c) Mitigation measures must be outlined in accordance with Section 6 below and if there is a residual significant impact then offsets must be proposed in accordance with Section 7 and 8 below.

5.3) Swift Parrot (*Lathamus discolor*) - critically endangered

a) Referral documentation lists the likelihood of occurrence as low with suitable foraging habitat present on site however the species was not observed onsite during surveys. The referral documentation does not discuss the likelihood of significant impact for the species. The department believes that habitat critical to the survival of the species has not been adequately assessed in order to determine the likelihood of a significant impact. The department notes that failure to locate the species during surveys does not conclude that the species is not present or that habitat critical to the survival of the species is absent.

b) Survey methods of habitat on site needs to be documented and habitat adequately characterised and discussed in accordance with the "Conservation Advice *Lathamus discolor* swift parrot" and the "National Recovery Plan for the Swift Parrot (*Lathamus discolor*)". These documents and other relevant information can be found on the department's Species Profile and Threats Database.

c) Mitigation measures must be outlined in accordance with Section 6 below and if there is a residual significant impact then offsets must be proposed in accordance with Section 7 and 8 below.

5.4) Regent Honeyeater (*Anthochaera phrygia*) - critically endangered

a) Referral documentation lists the likelihood of occurrence as moderate through desktop assessment with suitable foraging habitat present on site however the species was not observed onsite during surveys. The referral documentation concludes the likelihood of occurrence is low and no significant impact assessment is required. The department believes that habitat for the species has not been adequately assessed in order to determine the likelihood of a significant impact. The department notes that failure to locate the species during surveys does not conclude that the species is not present or that habitat critical to the survival of the species is absent.

b) Survey methods of habitat on site needs to be documented and habitat adequately characterised and discussed in accordance with the "Conservation Advice *Anthochaera phrygia* regent honeyeater" and the "National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*)". These documents and other relevant information can be found on the Species Profile and Threats Database.

c) Mitigation measures must be outlined in accordance with Section 6 below and if there is a residual significant impact then offsets must be proposed in accordance with Section 7 and 8 below.

5.5) Other species

a) For any other species identified in the assessment that is likely to be significantly impacted by the proposed action, then the requirements outlined in Sections 3, 4, 6, 7 and 8 are required to be addressed.

6. Avoidance, mitigation and management measures

The information available in the referral indicates that there is substantial area within the project footprint with protected matters present or likely to be present.

The mitigation hierarchy is a process that is used to limit the amount of damage an action, such as a development, will have on the environment. There are three steps, and each step must be followed in order and to the greatest extent possible before moving on to the next. These steps are:

1. **avoid** harm to the environment within and surrounding the project area.
2. **reduce** or mitigate environmental damage within and surrounding the project area.
3. identify **offsets** within the region that compensate for the significant residual impacts to listed species or ecological communities.

The preliminary documentation must provide information on proposed avoidance, safeguards and mitigation measures to deal with the relevant impacts of the proposed action on MNES.

6.1) Demonstrate that you have applied the mitigation hierarchy and exhausted all options to avoid and mitigate harm to protected matters, before resorting to environmental offsets.

In doing this, you must demonstrate that any avoidance or mitigation measures will provide ecological benefits to the species in the long-term. For example, on-site avoidance/conservation areas must be connected or provide connectivity opportunities for species in the broader landscape and must include enduring mitigation of impacts from adjacent development.

6.2) Provide details (including a summary list or table) of avoidance and mitigation measures proposed to be undertaken to prevent or minimise impacts on protected matters (or their habitat) from the proposed action area, including:

a) a description of avoidance measures that have been considered and applied. For example, project site selection to avoid valuable habitat, micro-siting of infrastructure to avoid impacts on habitat on site, or avoidance of any activity that may indirectly impact on essential lifecycle processes for species.

b) a description of proposed safeguards and mitigation measures to minimise and manage relevant impacts of the action, with reference to relevant statutory or policy documents

at the Commonwealth and State level (e.g., Guideline: State Development Assessment Provisions (State Code 25)).

c) pre-clearance and clearance procedures to ensure that species are detected and managed to minimise mortality, stress, injury, or introduction of disease.

d) measures to address the risk of species, such as the koala, entering the residential area and becoming trapped/isolated without resources for shelter whilst in the residential area and safe movement opportunities to get out of the residential area, along with sufficient information on the location and design of these measures.

e) ongoing management of direct and indirect impacts due to increased likelihood of human presence, attacks by domestic dogs, and injury caused by negotiating various fence types.

f) details of how speed reduction is to be achieved (e.g., traffic calming devices) and plans showing the locations of each of these features and the manner in which they will be implemented).

g) information on safe road design and placement, including installation of crossing warning signs, wildlife threshold marking on road (include maps and imagery).

h) the locations and size of any proposed fauna movement solutions, fire breaks, no-go or buffer zones (including buffers between the construction footprint or remaining habitat in the referral area and adjacent to the site), and potential fencing, including:

   i) the location of any movement solutions, fire breaks, buffer zones, or fencing.

   ii) the characteristics of the fauna movement solutions, fire breaks, buffer zones and fencing, (i.e., height, length, wildlife proof measures etc)

   iii) whether the proposed measures, such as fencing will provide a wildlife barrier to/from/within the proposed action area.

i) a description of the environmental outcomes the measures are expected to achieve including provision of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes.

j) information on the timing, frequency, and duration of the measures to be implemented.

k) an actual or estimated cost of the mitigation measures.

6.3) Provide an assessment of the predicted effectiveness of each proposed avoidance or mitigation measure, noting that the effectiveness of a particular measure is a reflection of confidence in the anticipated outcome. The assessment of effectiveness should be evidence based and include examples of demonstrated success of a particular measure to achieve the desired avoidance/mitigation outcome.

6.4) For each measure proposed, indicate the:

a) impacts that are being avoided and/or the significance of impacts being reduced through mitigation.

b) Scientific basis for conclusions being drawn

c) an evidence-based likelihood of success/risk assessment

d) responsible party

e) milestones / performance / completion criteria

f) proposed monitoring and evaluation program.

6.5) Proposed management plans need to be consistent with the Environmental Management Plan Guidelines - DCCEEW, and must include:

a) a table of commitments made in the plan to achieve the environmental outcomes, and a reference to exactly where these commitments are detailed in the plan,

b) commitments capable of ensuring that the environmental outcomes are achieved,

c) reporting and review mechanisms to demonstrate compliance with the commitments made in the plan,

d) an assessment of risks relating to achieving the environmental outcomes and risk management strategies and/or mitigation measures that will be applied to address identified risks,

e) impact avoidance, mitigation and/or repair measures, and the timing of those measures,

f) a monitoring program of the effects of management measures which must include:

i) performance indicators,

ii) trigger values for corrective actions,

iii) the timing and frequency of monitoring, ensuring monitoring is capable of detecting trigger values and changes in the performance indicators,

iv) proposed corrective actions if trigger values are reached, and

v) links to other relevant plans or conditions of approval (including state or territory approval conditions).

6.6) Describe any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advice, recovery plan or threat abatement plan, and a discussion on how the proposed measures are not inconsistent with relevant plans.

For example, the National Recovery Plan for the Grey-Headed Flying Fox states an objective:

'*To improve the Grey-headed Flying-foxes national population trend by reducing the impact of*

the threats outlined in this plan on Grey-headed Flying-foxes through habitat identification, protection, restoration and monitoring'.

Please provide a discussion on how the proposed action is not inconsistent with relevant species' objectives or alternatively, how the proposed avoidance, mitigation/management and offsetting actions will compensate for any residual significant impacts, thereby ensuring consistency with the objective for relevant EPBC Act species.

6.7) All proposed measures must consider the 'S.M.A.R.T' principle:

S – Specific (protected matter-specific objectives, methods, outcomes, and repeatability)

M – Measurable (baseline information, quantifiable, auditable)

A – Achievable (timeframes, financial and human resources)

R – Relevant (conservation advice, recovery plans, threat abatement plans)

T – Time-bound (set implementation, performance and completion timeframes).

7. Proposed offsets

Where residual significant impacts to listed threatened species or ecological communities remain after application of all reasonable avoidance and mitigation measures, a compensatory environmental offset in accordance with the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (EPBC Offsets Policy) is required.

Offsets must be specific to the species or ecological community being impacted, must address the attribute of the protected matter that is impacted, and must deliver an outcome for the protected matter that is demonstrably equal or better than if neither the impact nor the offset occurred. Offsets are not intended to make proposed actions with unacceptable impacts, acceptable.

If an offset is required, prior to publication, the preliminary documentation must include an:

1. **Offset Proposal** – The Offset Proposal must provide detail about the proposed offset site or sites including baseline survey information (including threats such as weed cover and pest species surveys), habitat or vegetation quality scores, how the offset will be managed, and evidence that the protected matter is present or uses the offset site. The Offset Proposal must demonstrate how the proposed offset is suitable and meets the principles of the EPBC Offsets Policy and must include sufficient information for the department to assess it using the EPBC Offsets Assessment Guide.

2. **Offset Management Plan (OMP)** – The OMP supports the Offset Proposal and must detail all the management activities to be undertaken at the offset site including setting environmental objectives, milestones, monitoring and reporting measures. Management plans and activities must be targeted towards the specific plant, animal or ecological community (protected matter) that is being offset. If there is more than one offset site, then a separate OMP must be prepared for each site.

For further details regarding offset requirements and the requirements of an Offset Proposal and

OMP, see Attachment B.

8. Habitat quality assessment

A methodology that is suitable for each listed threatened species or threatened ecological community (i.e., endorsed by the department or supported by literature) where there is a residual significant impact must be used to assess habitat quality, noting the same scoring mechanism must be used at both impact and offset sites.

The department encourages proponents to consult and seek endorsement from the department on a proposed method prior to undertaking any habitat quality assessment at both impact and offset site(s).

The department currently prefers habitat quality scoring methods for each prescribed matters to be consistent with the Modified Habitat Quality Assessment (MHQA) method. The MHQA tool derives habitat quality scores using an adaptation of the Queensland Government's Guide to determining terrestrial habitat quality version 1.2 (DEHP Guide).

The MHQA aligns, as far as possible the DEHP Guide with the requirements of the EPBC Act Environmental Offsets Policy for determining habitat quality scores. In aligning with this policy, all habitat quality scoring methods are required to generate future scores for 'with' and without' offset scenarios. Forecast gains or loss in habitat quality score must be substantiated by scientific information and via the endorsed MHQA (or alternative) method.

To support the habitat quality assessment, a link to the DEHP Guide, a MHQA scoring guide, and a MHQA scoring spreadsheet template (.xlsx) are provided herein. When calculating offsets, please refer to the department's published guidance: How to use the Offsets Assessment Guide.

A precautionary approach to forecasting scores should be applied, with all limitations and uncertainties considered, documented and integrated within the 'Confidence in Result % (Quality)' value applied in the Offset Assessment Guide (offset calculator). Please also note the following:

- If you propose a habitat quality gain of more than 2 points, or an achieved future habitat quality score 'with offset' of 9 or 10, it becomes less certain that the conservation outcome can be achieved. The justification of effectiveness of your proposed management measures and associated habitat quality score improvements and (reflected in the confidence in result) must be supported by substantial evidence.

- Higher habitat quality gains will generally be associated with lower 'confidence in result' scores in the Offset Assessments Guide to reflect the difficulty associated with achieving the conservation outcomes. In these cases, it is likely that outcomes-based commitments will be required in the associated management plan for the site, including specifying binding metrics to be met to demonstrate quality improvement. For further information, please contact the department to discuss the metrics that will be used to demonstrate achievement of quality standards.

If you intend to propose an alternative methodology for assessing and scoring habitat quality for any/all of the prescribed matters likely to experience significant residual impacts as a result of the proposed action, the alternative methodology must:

- directly relate to habitat requirements of the species and factors associated with the viability of the prescribed matter, and align with information contained in the SPRAT database and relevant statutory/departmental documents, and
- be substantiated with appropriate field surveys in accordance with the relevant survey guidelines or using a scientifically robust and repeatable methodology.

Where there are any inconsistencies between the habitat assessment approach and information contained in the SPRAT database, the inconsistencies must be discussed with the department prior to the submission of the assessment documentation and must be supported by scientific evidence including published research, independent expert advice and information derived from field surveys.

9. Economic and social matters

If not previously provided in the referral documentation, the preliminary documentation must:

9.1) Provide details on the social and economic costs and/or benefits of undertaking the proposed action, including the basis for any estimations of costs and/or benefits. Where possible, please include the total economic capital investment and economic ongoing value of the project.

9.2) Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place.

9.3) Provide details of any public stakeholder consultation activities, including the outcomes of those consultations.

Indigenous engagement

9.4) Identify existing or potential native title rights and interests, including any areas and objects that are of particular significance to Indigenous peoples and communities, possibly impacted by the proposed action and the potential for managing those impacts.

Describe any Indigenous consultation that has been undertaken, or will be undertaken, in relation to the proposed action and their outcomes. This should include:

a) details regarding the specific Indigenous groups and Traditional Owners consulted and an indication of the areas, both tangible and intangible, of cultural significance across the project site; and

b) a discussion about how impacts to areas and/or objects of Indigenous cultural significance (tangible and intangible) are avoided, mitigated or minimised.

The department considers that best practice consultation, in accordance with the *Interim Engaging with First Nations People and Communities on Assessment and Approvals under the EPBC Act 1999 (2023)* includes:

a) identifying and acknowledging all relevant affected Indigenous peoples and communities.

b) committing to early engagement.

c) building trust through early and ongoing communication for the duration of the project, including approvals, implementation and future management.

d) setting appropriate timeframes for consultation and submission formats; and

e) demonstrating cultural awareness and ensuring cultural safety.

Describe any state requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action with regards to Indigenous peoples and communities.

10. Ecologically sustainable development

If not previously provided in the referral, the preliminary documentation must:

Provide a description of how the proposed action meets the principles of ecologically sustainable development, as defined in section 3A of the EPBC Act, which are as follows:

a) decision making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.

b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

c) the principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making.

11. Environmental record of the person proposing to take the action

Include details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

a) the person proposing to take the action

b) for an action for which a person has applied for a permit, the person making the application

c) if the person is a body corporate—the history of its executive officers in relation to environmental matters

d) if the person is a body corporate that is a subsidiary of another body or company (the parent body)—the history in relation to environmental matters of the parent body and its executive officers.

12. Ecological data provision

The preliminary documentation must include an appendix of occurrence records (both sightings and evidence of presence) for all listed threatened and migratory species identified during field surveys for the proposed action. This data may be used by the department to update the relevant species distribution models that underpin the publicly available Protected Matters Search Tool (PMST).

The species occurrence records must be provided in accordance with the department's *Guidelines for biological survey and mapped data* (2018) using the *species observation data template*. Ecological data will be managed in accordance with the department's *Policy on Accessing and Sharing Biodiversity Data*.

Attachment B – Information requirements for EPBC Act Offset Proposals and Offset Management Plans

An EPBC Act offset proposal must demonstrate that the relevant species or ecological communities significantly impacted by the proposed action is not worse-off when compared to a situation where neither the impact nor the offset occurred.

1. Offset Proposal requirements

Further to Section 6 of the PD request, the offset proposal must include, but not be limited to, the following:

1.1) A detailed project description, including a site description and how and to what extent your action will impact on protected matters.

1.2) Details of the protected matters being impacted by the proposed action, including the total number of individuals and/or extent of habitat being impacted.

1.3) Details about the offset proposal/offset site, including:

a) A description of the proposed offset site(s) including location, size, and relevant ecological/species habitat features, landscape context and cadastre boundaries of the offset site(s) (supported by mapping).

b) Information about how the proposed offset/s area will provide connectivity with other relevant habitats and biodiversity corridors.

c) Information how the proposed offset site/s contribute to relevant State and/or regional plan/s or initiatives for the conservation of the protected matter.

d) Evidence of the presence of, or usage by, relevant MNES on, or adjacent to the proposed offset site(s)

e) Evidence that the location of the offset site is suitable and provides a conservation benefit to the impacted protected matter. Note: The EPBC Offsets Policy states that in most cases, the offset site should be as close to the impact as possible.

f) Up to date surveys and baseline data confirming the current condition/quality of vegetation on site (including number of hollow bearing trees if relevant), the extent and presence of weeds, and the extent of threats.

g) Information about the ecosystems present, current usage of the site, its general condition and location in the landscape/region

h) An assessment of how the offset and impacts sites are like-for-like, i.e., the environmental values for the MNES at the offset are of the same type or equivalent to that affected by the proposed action.

i) The methodology, with justification and supporting evidence, used to inform the inputs of the Offsets Assessment Guide in relation to the offset site for each relevant MNES, including:

i) total area of habitat (in hectares)

ii) habitat quality (as discussed in section 8)

iii) time over which loss is averted (max. 20 years)

iv) time until ecological benefit

v) risk of loss (%) without offset

vi) risk of loss (%) with offset

vii) confidence in result (%).

1.4) The Offset Proposal must demonstrate how the offset meets the principles of the EPBC Offsets Policy and EPBC Offsets Assessment Guide to inform the Minister's decision on whether or not the project should be approved under the EPBC Act.

1.5) Details of the actual or estimated cost of the offset proposal including costs associated with proposed mitigation and management measures onsite.

1.6) Details of the execution timing of the protective mechanism to legally secure the environmental offset/s (minimum covenant or otherwise accepted method) proposed to be applied at any offset site/s to provide enduring protection (for at least the duration of the impact) , including a draft of the protective mechanism and its terms. Note that protective mechanisms for permanent impacts should continue in perpetuity.

2. Offset Management Plan (OMP) requirements

An offset management plan is a practical document that outlines what must be done to manage an offset site. A plan must detail all the management activities at the offset site and how progress will be monitored and reported. An OMP provides confidence that the outcomes described in an offset proposal can and will be achieved. The OMP must include, but may not be limited to:

2.1) A description of the proposed offset site(s) including location, size, condition, existing and future tenure, and relevant ecological/species values present and surrounding land uses.

2.2) Maps and shapefiles to clearly define the location and boundaries of the offset area/s, accompanied by the offset attributes (e.g., physical address of the offset area/s, coordinates of the boundary points in decimal degrees, the relevant MNES that the environmental offset/s compensates for, and the size of the environmental offset/s in hectares).

2.3) Baseline survey information showing MNES presence and the extent and quality of the respective habitat(s) at the proposed offset site(s) in accordance with the relevant survey guidelines or using a scientifically robust and repeatable methodology.

2.4) Summarised details of the nature of the conservation gain to be achieved for relevant MNES, including the creation, restoration and revegetation of habitat in the proposed offset area/s.

2.5) Information about how the proposed offset area/s will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for the relevant MNES. This should include information about how the proposed offset/s area contributes to any state and/or regional plan/s for the conservation of the protected matter.

2.6) Completion criteria and, if necessary, performance targets that evidence protection or improvement of EPBC Act listed communities, species and their habitat. For the purpose of the plan:

a) completion criteria are longer term time-bound values, specified for measurable parameters, that if attained and maintained ensure the plan's environmental objectives are achieved.

For example: 'By Year 20, the approval holder must reduce non-native plant cover to within 5% of the benchmark value associated with each Regional Ecosystem.'

b) performance targets are time-bound short and medium term targets, for management interventions and environmental condition, that are used to monitor, evaluate, review and improve the effectiveness of the plan to offset impacts.

For example: 'By Year 10, the approval holder must reduce non-native plant cover to within 10% of the benchmark value associated with each Regional Ecosystem.'

c) interim performance targets for each attribute must be identified to demonstrate offset site quality improvement and must be measurable and related to the completion targets identified; and

d) corrective actions must be identified should anticipated habitat quality improvements are not achieved prior to the subsequent interim performance target event.

2.7) The plan includes management measures that will protect or improve EPBC Act listed threatened ecological communities and/or species and their habitat. Each management measure:

a) is specifically linked to the attribute of the protected matter for which the management measure applies

b) has timeframes for implementation

c) is described sufficiently to avoid ambiguity and to inform plan implementation;

d) is related to attaining/maintaining completion criteria and/or performance targets

e) is derived from recognised principles, practice, or guidelines, and is justified - technically, scientifically and legally (e.g. by recommendation in a national recovery plan) – as an effective and appropriate measure to attain and/or maintain the plan's completion criteria and/or performance targets

2.8) The plan identifies and manages uncertainty. To this end the plan specifies:

a) key data/information used to formulate the plan

b) the limitations and/or uncertainty associated with the use of that data/information

c) the risks that limitation and/or uncertainty represents for plan failure

d) How limitations and/or uncertainty, and associated risks, are mitigated during plan implementation. For example, where a margin of safety is applied to management measures until uncertainty is reduced to an acceptable level or performance targets/completion criteria are attained/maintained.

2.10) The plan manages the risk of failure to achieve performance targets and/or completion criteria by:

a) specifying management measures that will be implemented to attain/maintain the completion criteria and/or performance targets

b) enhancing monitoring and management measures for high risk events or circumstances, thereby providing a 'margin of safety' to detect, avoid or mitigate the likelihood and/or impacts of the event or circumstance

c) specifying measurable events or circumstances (management triggers) that detect actual or potential issues in a timely manner to avoid, minimise or mitigate adverse impacts

d) ensuring the monitoring program includes activities to detect management triggers, and explains how monitoring activities may inform the selection and implementation of corrective actions

e) specifying methods to be used to determine whether the management trigger is project attributable

f) specifying effective and appropriate corrective actions that may be implemented if a management trigger is realised

g) monitoring the effectiveness of corrective actions and implementing appropriate responses in the event corrective actions are not effective.

2.11) The plan assesses the risk of failure to achieve the plan's performance targets and/or completion criteria. To this end the plan:

a) states the plan's performance targets and/or completion criteria

b) identifies events or circumstances that prejudice attainment/maintenance of performance targets and/or completion criteria. The events or circumstances must address scientific/ecological uncertainty, stochastic events and legal/land use planning factors that may represent risks

c) includes a qualitative assessment of the likelihood and consequence of those events or circumstances, and the residual risk of failure to achieve those criteria due to identified

events or circumstances (assuming management measures will be implemented)

d) characterises risk as low, medium, high or severe, and derived from likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical); and

e) outlines how consequence, likelihood and risk level for each risk have been determined.

2.12) The plan describes the monitoring methods that will be implemented, and:

a) demonstrates the relevance of the monitoring methods to the protection of the relevant aspect of the protected matter(s) for which the offset is implemented

b) includes quantitative (e.g. on-ground survey results) and qualitative baseline data (e.g. photo-point monitoring sites) that establish the start quality/condition of the environment, and which can be used to measure performance against

c) describes the sampling strategy (including monitoring area, site selection and sampling intensity over space and time) and statistical analyses to be employed

d) justifies the sampling strategy/monitoring methods, including through:

viii) an assessment of effectiveness and constraints to use

ix) capacity to detect change in environmental condition due to management interventions

x) capacity to demonstrate attainment of performance targets and/or completion criteria

xi) the statistical power of the strategy/method.

e) commits to engage appropriately qualified experts to design and conduct monitoring and survey activities, and analyse monitoring results

f) accounts for seasonal/climatic variability

g) details the location, nature and number of monitoring sites, including benchmark/reference sites to evaluate management performance.

2.13) The plan includes commitments to report on plan implementation and success as well as opportunities for improvement. This is achieved by:

a) if the project is approved, identifying relevant reporting obligations under the EPBC approval, or otherwise proposing appropriate regular reporting intervals, objectives and methods

b) specifying how plan/strategy implementation will be reported in accordance with those obligations

c) including a reporting template specifying key risk management, management measures, monitoring and adaptive implementation outcomes for the reporting period

d) including a schedule and triggers for reporting types (e.g. annual compliance, incident, non-compliance, contingency).

Attachment A2

Raw SAT Data

■ Report type

Spot Assessment Technique (SAT)				
Date:	25.05.2024	**Site: 12186**	**SAT ID: 1**	
Tree No.	**Scientific Name**	**Common Name**	**DBH**	**Scats**
1	*Corymbia tesselaris*	Moreton Bay Ash	220	N
2	*Eucalyptus tereticornis*	Forest Red Gum	230	N
3	*Eucalyptus crebra*	Narrow-leaved Ironbark	400	N
4	*Corymbia citriodora*	Spotted Gum	560	N
5	*Corymbia citriodora*	Spotted Gum	160	N
6	*Eucayltus crebra*	Narrow-leaved Ironbark	100	N
7	*Corymbia citriodora*	Spotted Gum	180	N
8	*Corymbia citriodora*	Spotted Gum	220	N
9	*Corymbia citriodora*	Spotted Gum	260	N
10	*Corymbia citriodora*	Spotted Gum	240	N
11	*Corymbia citriodora*	Spotted Gum	220	N
12	*Corymbia citriodora*	Spotted Gum	140	N
13	*Corymbia citriodora*	Spotted Gum	210	N
14	*Corymbia citriodora*	Spotted Gum	170	N
15	*Corymbia citriodora*	Spotted Gum	220	N
16	*Corymbia citriodora*	Spotted Gum	220	N
17	*Corymbia citriodora*	Spotted Gum	190	N
18	*Corymbia citriodora*	Spotted Gum	290	Y
19	*Corymbia citriodora*	Spotted Gum	280	N
20	*Corymbia citriodora*	Spotted Gum	300	N
21	*Corymbia tesselaris*	Moreton Bay Ash	290	N
22	*Corymbia tesselaris*	Moreton Bay Ash	200	N
23	*Corymbia tesselaris*	Moreton Bay Ash	280	N
24	*Corymbia tesselaris*	Moreton Bay Ash	160	N
25	*Corymbia citriodra*	Spotted Gum	340	Y
26	*Corymbia tesselaris*	Moreton Bay Ash	180	N
27	*Corymbia citriodora*	Spotted Gum	160	N
28	*Corymbia citriodora*	Spotted Gum	160	N
29	*Corymbia citriodora*	Spotted Gum	180	N
30	*Corymbia citriodora*	Spotted Gum	440	N
		Total Scats	2	
		Percentage	6.67	
		East Coast (med-high) Activity Category	Low	

■ Report type

Spot Assessment Technique (SAT)				
Date:	05.09.2024	**Site: 12186**	**SAT ID: 2**	
Tree No.	**Scientific Name**	**Common Name**	**DBH**	**Scats**
1	*Eucayltus crebra*	Narrow-leaved Ironbark	155	N
2	*Corymbia intermedia*	Pink Bloodwood	230	N
3	*Corymbia intermedia*	Pink Bloodwood	220	N
4	*Eucalyptus melanophloia*	Silver-leaf Ironbark	130	N
5	*Eucalyptus melanophloia*	Silver-leaf Ironbark	180	N
6	*Eucalyptus tereticornis*	Forest Red Gum	250	N
7	*Eucalyptus tereticornis*	Forest Red Gum	250	N
8	*Eucalyptus tereticornis*	Forest Red Gum	260	N
9	*Eucalyptus melanophloia*	Silver-leaf Ironbark	170	N
10	*Eucalyptus tereticornis*	Forest Red Gum	300	N
11	*Eucalyptus tereticornis*	Forest Red Gum	210	N
12	*Eucalyptus melanophloia*	Silver-leaf Ironbark	165	N
13	*Eucalyptus tereticornis*	Forest Red Gum	160	N
14	*Eucalyptus melanophloia*	Silver-leaf Ironbark	120	N
15	*Eucalyptus melanophloia*	Silver-leaf Ironbark	170	N
16	*Eucalyptus melanophloia*	Silver-leaf Ironbark	190	N
17	*Eucalyptus melanophloia*	Silver-leaf Ironbark	185	N
18	*Eucalyptus melanophloia*	Silver-leaf Ironbark	180	N
19	*Eucalyptus melanophloia*	Silver-leaf Ironbark	140	N
20	*Eucalyptus melanophloia*	Silver-leaf Ironbark	150	N
21	*Eucalyptus melanophloia*	Silver-leaf Ironbark	170	N
22	*Eucalyptus melanophloia*	Silver-leaf Ironbark	210	N
23	*Eucalyptus melanophloia*	Silver-leaf Ironbark	210	N
24	*Eucalyptus melanophloia*	Silver-leaf Ironbark	180	N
25	*Eucalyptus melanophloia*	Silver-leaf Ironbark	190	N
26	*Eucalyptus melanophloia*	Silver-leaf Ironbark	160	N
27	*Eucalyptus melanophloia*	Silver-leaf Ironbark	180	N
28	*Eucalyptus melanophloia*	Silver-leaf Ironbark	175	N
29	*Acacia concurrens*	Black Wattle	200	N
30	*Eucalyptus melanophloia*	Silver-leaf Ironbark	130	N
		Total Scats	0	
		Percentage	0.00	
		East Coast (med-high) Activity Category	Low	

■ Report type

Spot Assessment Technique (SAT)				
Date:	05.09.2024	**Site: 12186**	**SAT ID: 3**	
Tree No.	**Scientific Name**	**Common Name**	**DBH**	**Scats**
1	*Corymbia tessellaris*	Moreton Bay Ash	150	N
2	*Corymbia tessellaris*	Moreton Bay Ash	150	N
3	*Eucalyptus tereticornis*	Forest Red Gum	160	N
4	*Corymbia tessellaris*	Moreton Bay Ash	570	N
5	*Eucalyptus tereticornis*	Forest Red Gum	300	N
6	*Corymbia tessellaris*	Moreton Bay Ash	340	N
7	*Eucalyptus tereticornis*	Forest Red Gum	195	N
8	*Eucalyptus tereticornis*	Forest Red Gum	220	N
9	*Eucayltus crebra*	Narrow-leaved Ironbark	280	N
10	*Eucalyptus tereticornis*	Forest Red Gum	300	N
11	*Corymbia tessellaris*	Moreton Bay Ash	150	N
12	*Eucayltus crebra*	Narrow-leaved Ironbark	230	N
13	*Corymbia tessellaris*	Moreton Bay Ash	110	N
14	*Corymbia tessellaris*	Moreton Bay Ash	175	N
15	*Corymbia tessellaris*	Moreton Bay Ash	155	N
16	*Eucalyptus tereticornis*	Forest Red Gum	220	N
17	*Eucalyptus tereticornis*	Forest Red Gum	320	N
18	*Corymbia tessellaris*	Moreton Bay Ash	160	N
19	*Corymbia tessellaris*	Moreton Bay Ash	210	N
20	*Eucalyptus tereticornis*	Forest Red Gum	160	N
21	*Corymbia tessellaris*	Moreton Bay Ash	200	N
22	*Corymbia tessellaris*	Moreton Bay Ash	130	N
23	*Eucalyptus tereticornis*	Forest Red Gum	160	N
24	*Eucalyptus tereticornis*	Forest Red Gum	205	N
25	*Corymbia tessellaris*	Moreton Bay Ash	160	N
26	*Eucalyptus tereticornis*	Forest Red Gum	160	N
27	*Eucalyptus tereticornis*	Forest Red Gum	290	N
28	*Eucalyptus tereticornis*	Forest Red Gum	380	N
29	*Eucalyptus tereticornis*	Forest Red Gum	370	N
30	*Eucalyptus tereticornis*	Forest Red Gum	170	N
		Total Scats	0	
		Percentage	0.00	
		East Coast (med-high) Activity Category	Low	

■ Report type

Spot Assessment Technique (SAT)				
Date:	28.05.2024	**Site: 12186**	**SAT ID: 4**	
Tree No.	**Scientific Name**	**Common Name**	**DBH**	**Scats**
1	*Eucalyptus tereticornis*	Forest Red Gum	240	N
2	*Corymbia tesselaris*	Moreton Bay Ash	180	N
3	*Corymbia citriodora*	Spotted Gum	410	N
4	*Eucalyptus tereticornis*	Forest Red Gum	170	N
5	*Corymbia citriodra*	Spotted Gum	300	N
6	*Ecualyptus tereticornis*	Forest Red Gum	10	N
7	*Ecualyptus tereticornis*	Forest Red Gum	310	N
8	*Ecualyptus tereticornis*	Forest Red Gum	320	N
9	*Corymbia tesselaris*	Moreton Bay Ash	190	N
10	*Corymbia tesselaris*	Moreton Bay Ash	220	N
11	*Corymbia tesselaris*	Moreton Bay Ash	220	N
12	*Corymbia tesselaris*	Moreton Bay Ash	180	N
13	*Eucalyptus tereticornis*	Forest Red Gum	420	N
14	*Corymbia tesselaris*	Moreton Bay Ash	180	N
15	*Eucalyptus tereticornis*	Forest Red Gum	180	N
16	*Eucalyptus tereticornis*	Forest Red Gum	280	N
17	*Cormbia tesselaris*	Moreton Bay Ash	160	N
18	*Cormbia tesselaris*	Moreton Bay Ash	160	N
19	*Cormbia tesselaris*	Moreton Bay Ash	180	N
20	*Cormbia tesselaris*	Moreton Bay Ash	170	N
21	*Cormbia tesselaris*	Moreton Bay Ash	160	N
22	*Cormbia tesselaris*	Moreton Bay Ash	180	N
23	*Cormbia tesselaris*	Moreton Bay Ash	160	N
24	*Cormbia tesselaris*	Moreton Bay Ash	150	N
25	*Eucalyptus tereticornis*	Forest Red Gum	620	N
26	*Corymbia tesselaris*	Moreton Bay Ash	180	N
27	*Corymbia tesselaris*	Moreton Bay Ash	160	N
28	*Acacia disparama*	Brush Ironbark Wattle	180	N
29	*Corymbia tesselaris*	Moreton Bay Ash	180	N
30	*Corymbia tesselaris*	Moreton Bay Ash	300	N
		Total Scats	0	
		Percentage	0.00	
		East Coast (med-high) Activity Category	Low	

■ Report type

Spot Assessment Technique (SAT)				
Date:	18.09.2024	**Site: 12186**	**SAT ID: 5**	
Tree No.	**Scientific Name**	**Common Name**	**DBH**	**Scats**
1	*Corymbia citridora*	Spotted Gum	350	N
2	*Corymbia citridora*	Spotted Gum	170	N
3	*Corymbia citridora*	Spotted Gum	240	N
4	*Corymbia citridora*	Spotted Gum	180	N
5	*Corymbia citridora*	Spotted Gum	190	N
6	*Corymbia citridora*	Spotted Gum	210	N
7	*Corymbia citridora*	Spotted Gum	260	N
8	*Corymbia citridora*	Spotted Gum	200	N
9	*Corymbia citridora*	Spotted Gum	230	N
10	*Corymbia citridora*	Spotted Gum	160	N
11	*Corymbia citridora*	Spotted Gum	150	N
12	*Corymbia citridora*	Spotted Gum	160	N
13	*Corymbia citridora*	Spotted Gum	140	N
14	*Corymbia citridora*	Spotted Gum	170	N
15	*Corymbia citridora*	Spotted Gum	190	N
16	*Corymbia citridora*	Spotted Gum	120	N
17	*Corymbia citridora*	Spotted Gum	160	N
18	*Corymbia citridora*	Spotted Gum	240	N
19	*Eucalyptus melinophloia*	Silver Leaved Ironbark	170	N
20	*Corymbia citridora*	Spotted Gum	210	N
21	*Corymbia citridora*	Spotted Gum	170	N
22	*Corymbia citridora*	Spotted Gum	120	N
23	*Corymbia citridora*	Spotted Gum	150	N
24	*Corymbia citridora*	Spotted Gum	200	N
25	*Corymbia citridora*	Spotted Gum	200	N
26	*Corymbia citridora*	Spotted Gum	190	N
27	*Corymbia citridora*	Spotted Gum	130	N
28	*Corymbia citridora*	Spotted Gum	180	N
29	*Corymbia citridora*	Spotted Gum	200	N
30	*Corymbia citridora*	Spotted Gum	330	N
		Total Scats	0	
		Percentage	0.00	
		East Coast (med-high) Activity Category	Low	

■ Report type

Spot Assessment Technique (SAT)				
Date:	18.09.2024	**Site: 12186**	**SAT ID: 6**	
Tree No.	**Scientific Name**	**Common Name**	**DBH**	**Scats**
1	*Corymbia citriodora*	Spotted Gum	180	N
2	*Corymbia citriodora*	Spotted Gum	240	N
3	*Corymbia citriodora*	Spotted Gum	260	N
4	*Corymbia citriodora*	Spotted Gum	220	N
5	*Corymbia citriodora*	Spotted Gum	120	N
6	*Corymbia citriodora*	Spotted Gum	220	N
7	*Corymbia citriodora*	Spotted Gum	250	N
8	*Eucalyptus crebra*	Narrow Leaf Ironbark	310	N
9	*Corymbia citriodora*	Spotted Gum	180	N
10	*Corymbia citriodora*	Spotted Gum	280	N
11	*Eucalyptus crebra*	Narrow Leaf Ironbark	100	N
12	*Eucalyptus crebra*	Narrow Leaf Ironbark	120	N
13	*Corymbia citriodora*	Spotted Gum	160	N
14	*Corymbia citriodora*	Spotted Gum	200	N
15	*Corymbia citriodora*	Spotted Gum	230	N
16	*Corymbia citriodora*	Spotted Gum	250	N
17	*Eucalyptus crebra*	Narrow Leaf Ironbark	300	N
18	*Eucalyptus crebra*	Narrow Leaf Ironbark	230	N
19	*Acacia disparrima*	Hickory Wattle	100	N
20	*Corymbia citriodora*	Spotted Gum	220	N
21	*Corymbia citriodora*	Spotted Gum	230	N
22	*Corymbia citriodora*	Spotted Gum	150	N
23	*Corymbia citriodora*	Spotted Gum	440	N
24	*Corymbia citriodora*	Spotted Gum	220	N
25	*Corymbia citriodora*	Spotted Gum	160	N
26	*Corymbia citriodora*	Spotted Gum	180	N
27	*Corymbia citriodora*	Spotted Gum	170	N
28	*Corymbia citriodora*	Spotted Gum	260	N
29	*Corymbia citriodora*	Spotted Gum	230	N
30	*Eucalyptus melanophloia*	Silver Leaf Ironbark	180	N
		Total Scats	0	
		Percentage	0.00	
		East Coast (med-high) Activity Category	Low	

Attachment A3

Impact MHQA Data Sheets

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T1	Job Number / Property	12186 - Bayliss Road

Part B - Site Data

Recorders	David Havill (Principal Ecologist) & Harrison Cormack (Graduate Environmental Scientist)	Date	28/05/2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		Non-remnant	12

Site description and Location (including details of discrete polygons within the assessment unit)
A Property Map of Assessable Vegetation (PMAV) was registered in 2018 (**Reference number 2018/001633**) which has locked in the vegetaion on site as Category X (non-remnnat) vegetation. Preclear Regional Ecosystem mapping has this portion of the site at Transect 1 as once containing Of Concern Regional Ecosystem 12.9-10.7 described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora spp. and Euclayptus melanophloia woodland on sedimentary rocks* . Species recorded within the transect area are consistent with the preclear regional ecosystem community. Introduced species dominated the ground and shrub layer including dense patches of *Lantana camara* (Lantana).

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	5			EDL / Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forrest Red Gum	EDL /Dom / R
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	EDL /R
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood	EDL
Scientific Name	*Acacia leiocaylx*	Common Name	Early Flowering Black wattle	R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark	EDL
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	4		
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash
Scientific Name	*Acacia leiocaylx*	Common Name	Early Flowering Black wattle
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forrest Red Gum
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	6		
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wiregrass
Scientific Name	*Cynodon dactylon*	Common Name	Green Couch
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Eragrostis brownii*	Common Name	Brown's love grass
Scientific Name	*Aristida calycina*	Common Name	Dark Wire Grass
Scientific Name	*Themeda triandra*	Common Name	Kangaroo grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	2		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	80.00%		
Scientific Name	*Senecio madagascariensis*	**Common Name**	Fireweed
Scientific Name	*Melinis repens*	**Common Name**	Red Natal Grass
Scientific Name	*Emilia sonchifolia var. javanica*	**Common Name**	Emilia
Scientific Name	*Lantana camara*	**Common Name**	Lantana
Scientific Name	*Bidens pilosa*	**Common Name**	Cobbler's pegs
Scientific Name	*Sporobolus pyramidalis*	**Common Name**	Giant Rats Tail Grass
Scientific Name	*Chloris gayana*	**Common Name**	Rhodes Grass
Scientific Name	*Baccharis halimifolia*	**Common Name**	Groundsel Bush
Scientific Name	*Paspalum dilatatum*	**Common Name**	Paspalum
Scientific Name		**Common Name**	
Scientific Name		**Common Name**	

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	**27.00**		
1	2.00	**26**	
2	0.70	**27**	
3		**28**	
4		**29**	
5		**30**	
6		**31**	
7		**32**	
8		**33**	
9		**34**	
10		**35**	
11		**36**	
12		**37**	
13		**38**	
14		**39**	
15		**40**	
16		**41**	
17		**42**	
18		**43**	
19		**44**	
20		**45**	
21		**46**	
22		**47**	
23		**48**	
24		**49**	
25		**50**	

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	**Quadrat 1**	**Quadrat 2**	**Quadrat 3**	**Quadrat 4**	**Quadrat 5**	**Average**
Native perennial grass cover	15%	5%	10%	18%	50%	20%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	0%	13%	3%
Native shrubs	0%	0%	0%	2%	2%	1%
Non-native grass	80%	60%	40%	68%	35%	57%
Non native forbs and shrubs	5%	20%	0%	0%	0%	5%
Litter	0%	15%	5%	4%	0%	5%
Rock	0%	0%	0%	0%	0%	
Bare Ground	0%	0%	45%	8%	0%	11%
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	390	**Number of large eucalypt trees:**	2
Non- Eucalypt Large tree DBH benchmark used:	200	**Number of large non eucalypt trees:**	0
Total number of large trees recorded:	2		
Total Number Large Trees per ha:	4		

Median Tree Canopy Height Measurements	**Canopy:**	24	**Sub-canopy:**	8	**Emergent:**	NA

Percentage of ecologically dominant layer species regenerating:	**100**

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	**Canopy:**	17.8%	**Sub-canopy:**	14.60%	**Emergent:**	
Shrub canopy cover %	10.60%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	81.3	99.1	17.8	**T2**	0.0	4.6	4.6
T1			0.0	**T2**	24.0	30.6	6.6
T1			0.0	**T2**	56.9	60.3	3.4
T1			0.0	**T2**			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	1.3	2.5	1.2	**Shrub**	67.4	68.2	0.8
Shrub	11.3	12.7	1.4	**Shrub**	70.7	71.2	0.5
Shrub	22.2	26.2	4.0	**Shrub**	76.3	77.0	0.7
Shrub	52.0	52.8	0.8	**Shrub**	92.4	93.2	0.8
Shrub	66.0	66.4	0.4	**Shrub**			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present. If trees are in the same layer and continuous along the transect you can group them.

Part I: GHFF Stem Count

Species Name	Stem Count
Eucalyptus tereticornis	14
Corymbia tesselaris	11
Total	25
Total stems per hectare	125

Attach Landscape Photos Here

North



South





East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T2	Job Number / Property	12186 - Bayliss Road

Part B - Site Data

Recorders	David Havill (Principal Ecologist) & Harrison Cormack (Graduate Environmental Scientist)	Date	28/05/2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		Non-remnant	12

Site description and Location (including details of discrete polygons within the assessment unit)
A Property Map of Assessable Vegetation (PMAV) was registered in 2018 (Reference number 2018/001633) which has locked in the vegetaion on site as Category X (non-remnnat) vegetation. Preclear Regional Ecosystem mapping has this portion of the site at Transect 2 as once containing Of Concern Regional Ecosystem 12.9-10.7 described as Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora spp. and Euclayptus melanophloia woodland on sedimentary rocks. Species recorded within teh transect area are consistent with teh preclear regional ecosystem community. This transect is located on the western side of a mapped waterway and has undegrone some weed management however limited follow up maintenance. Although the mapped waterway is not mapped as containing alluvial systems (landzone 3) some evidence of this is noted between the low banks directly east of the plot alignmnet.

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	7			EDL / Dom / R
Scientific Name	*Eucalyptus melanophloia*	Common Name	Silver-leaved Ironbark	EDL / Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forrest Red Gum	EDL / R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Red Ironbark	EDL
Scientific Name	*Alphitonia excelsa*	Common Name	Soap tree	R
Scientific Name	*Acacia disparama*	Common Name	Hickory Wattle	R
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood	EDL
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	5		
Scientific Name	*Eucalyptus melanophloia*	Common Name	Silver-leaved Ironbark
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forrest Red Gum
Scientific Name	*Acacia disparrima*	Common Name	Hickory Wattle
Scientific Name	*Corymbia tesselaris*	Common Name	Moreton Bay Ash
Scientific Name	*Alphitonia excelsa*	Common Name	Soap tree
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	4		
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Eragrostis brownii*	Common Name	Brown's love grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wiregrass
Scientific Name	*Aristida calycina*	Common Name	Dark Wire Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	4		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Wahlenbergia stricta*	Common Name	-
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name	*Lomandra longifolia*	Common Name	Spiny-headed Matrush
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	80.00%		
Scientific Name	*Glandularia aristigera*	Common Name	Maynes Pest
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana

Scientific Name	*Chloris gayana*	Common Name	Rodes Grass
Scientific Name	*Sida cordifolia*	Common Name	Madeira vine
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion Vine
Scientific Name	*Bidens pilosa*	Common Name	Cobblers Peg
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	256.00		
1	0.70	26	
2	1.80	27	
3	1.40	28	
4	2.00	29	
5	1.20	30	
6	8.00	31	
7	4.00	32	
8	3.00	33	
9	1.50	34	
10	1.30	35	
11	0.70	36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	2%	0%	10%	15%	0%	5%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	0%	0%	
Native shrubs	0%	0%	0%	0%	3%	1%
Non-native grass	35%	10%	75%	30%	90%	48%
Non native forbs and shrubs	35%	80%	5%	40%	7%	33%
Litter	28%	10%	10%	10%	0%	12%
Rock	0%	0%	0%	0%	0%	
Bare Ground	0%	0%	0%	5%	0%	1%
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	420	Number of large eucalypt trees:	1
Non- Eucalypt Large tree DBH benchmark used:	200	Number of large non eucalypt trees:	1
Total number of large trees recorded:	2		
Total Number Large Trees per ha:	4		

Median Tree Canopy Height Measurements	Canopy:	19	Sub-canopy:	10	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	6.4%	Sub-canopy:	45.50%	Emergent:	
Shrub canopy cover %	5.90%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	6.4	6.4	T2	3.1	11.5	8.4
T1			0.0	T2	11.5	15.4	3.9
T1			0.0	T2	16.5	23.8	7.3
T1			0.0	T2	23.8	25.2	1.4
T1			0.0	T2	33.4	35.1	1.7
T1			0.0	T2	43.6	51.8	8.2
T1			0.0	T2	62.6	66.6	4.0
T1			0.0	T2	66.7	71.2	4.5
T1			0.0	T2	71.2	74.6	3.4
T1			0.0	T2	84.3	87.0	2.7
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	9.4	10.1	0.7	Shrub	53.3	54.0	0.7
Shrub	12.3	14.0	1.7	Shrub	56.1	56.7	0.6
Shrub	15.8	17.1	1.3	Shrub	61.7	62.6	0.9
Shrub	34.1	35.0	0.0	Shrub			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
Corymbia intermedia	2
Eucalyptus mealanophloia	27
Eucalyptus tereticornis	6
Accacia leiocalyx	2
Alphitonia excelsa	2
Corymbia tessalaris	1
Eucalyptus crebra	3
Total	40
Total stems per hectare	200

Attach Landscape Photos Here

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T3	Job Number / Property	12186 - Bayliss Road

Part B - Site Data

Recorders	Nicole Tomlinson (Senior Ecologist) and Harrison Cormack (Graduate Environmental Scientist)	Date	18/09/2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		Non-remnant	12

Site description and Location (including details of discrete polygons within the assessment unit)

A Property Map of Assessable Vegetation (PMAV) was registered in 2018 (Reference number 2018/001633) which has locked in the vegetaion on site as Category X (non-remnnat) vegetation. Preclear Regional Ecosystem mapping has this portion of the site at Transect 3 as once containing Of Concern Regional Ecosystem 12.9-10.7 described as *Eucalyptus crebra +/- Eucalyptus tereticornis, Corymbia tessellaris, Angophora spp. and Euclayptus melanophloia woodland on sedimentary rocks*. Species recorded within the transect area are more consistent with the Least Concern Regional Ecosystem 12.9-10.2 which is described as *Corymbia citriodora subsp. variegata +/- Eucalyptus crebra open forest on sedimentary rocks* . This Least Concern Regional Ecosystem is mapped directly east of the transect area. Transect 3 is located towrads the south east corner of the site with *Corymbia citriodora* (Spotted Gum) recorded as the dominant species with some scattered *Eucalyptus crebra* (Narrow Leaf Ironbark) and *Eucalyptus tereticornis* (Forest Red Gum) specimens. Teh transect occurs adjacent to a VMA mapped waterway however no waterway or riparian features were observed. The average DBH of the remaining vegetaion is less 250mm.

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	4			EDL / Dom / R
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum	EDL / Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	EDL
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow Leaf Ironbark	EDL
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	2		
Scientific Name	*Acacia leiocalyx*	Common Name	Early Flowering Black Wattle
Scientific Name	*Acacia disparrima*	Common Name	Hickory Wattle
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	5		
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Cynondon dactylon*	Common Name	Green Couch
Scientific Name	*Panicum decompositum*	Common Name	Native Millet
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass
Scientific Name	*Cymbopogon refractus*	Common Name	Barbed Wire Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	2		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax Lily
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	45.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Sida rhombifolia*	Common Name	Arrowleaf Sida
Scientific Name	*Emilia sonchifolia*	Common Name	Emilia
Scientific Name	*Cyperus rotundus*	Common Name	Nutgrass
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Urochloa decumbens*	Common Name	Signal Grass
Scientific Name	*Hypochaeris radicata*	Common Name	Flatweed
Scientific Name		Common Name	
Scientific Name		Common Name	

Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	148.00		
1	3.90	26	
2	7.30	27	
3	3.60	28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	40%	70%	98%	65%	97%	74%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	18%	2%	4%
Native shrubs	15%	10%	0%	0%	0%	5%
Non-native grass	10%	0%	0%	0%	0%	2%
Non native forbs and shrubs	2%	2%	0%	2%	1%	1%
Litter	33%	18%	2%	15%	0%	14%
Rock	0%	0%	0%	0%	0%	
Bare Ground	0%	0%	0%	0%	0%	
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	0
Non- Eucalypt Large tree DBH benchmark used:	200	Number of large non eucalypt trees:	0
Total number of large trees recorded:	0		
Total Number Large Trees per ha:	0		

Median Tree Canopy Height Measurements	Canopy:	18	Sub-canopy:	13	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	33.3%

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	26.3%	Sub-canopy:	36.60%	Emergent:	
Shrub canopy cover %	6.50%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	13.7	33.9	20.2	T2	0.0	1.6	1.6
T1	63.1	69.2	6.1	T2	7.7	10.4	2.7
T1			0.0	T2	12.1	22.2	10.1
T1			0.0	T2	54.3	61.8	7.5
T1			0.0	T2	66.2	71.1	4.9
T1			0.0	T2	76.1	80.9	4.8
T1			0.0	T2	82.4	86.3	3.9
T1			0.0	T2	98.9	100.0	1.1
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	17.5	18.3	0.8	Shrub			0.0
Shrub	23.6	24.6	1.0	Shrub			0.0
Shrub	61.3	62.5	1.2	Shrub			0.0
Shrub	71.5	73.4	1.9	Shrub			0.0
Shrub	75.9	76.7	0.8	Shrub			0.0
Shrub	78.9	79.7	0.8	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0

Shrub			0.0	**Shrub**			0.0
Shrub			0.0	**Shrub**			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
Corymbia citriodora	52
Eucalyptus tereticornis	1
Corymbia tessellaris	16
Total	69
Total stems per hectare	345

Attach Landscape Photos Here

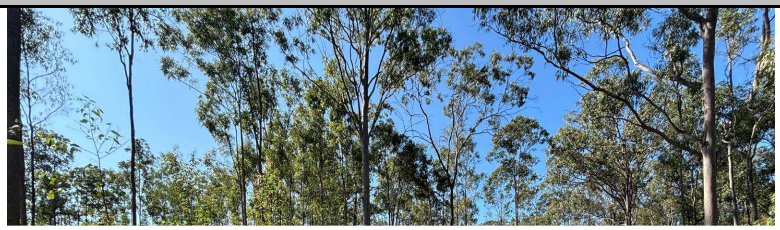
North



South



East





West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T4	Job Number / Property	12186 - Bayliss Road

Part B - Site Data

Recorders	Nicole Tomlinson (Senior Ecologist) and Harrison Cormack (Graduate Environmental Scientist)	Date	16/09/2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		Non-remnant	12

Site description and Location (including details of discrete polygons within the assessment unit)

SIte is mapped as category X vegetation however Transect 4 is located towards sites eastern property boundray in an area once mapped as containing a composite regional ecosystem community containing 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and 15% Least Concern RE12.9-10.19. Vegetation assessed throughout the transect area is most typical of the Least Concern RE12.9-10.2 which has *Corymbia citriodora* (Spotted Gum) as the dominant species. *Lantana camara* (Lantana) dominated the shrub layer with disturbances appearing a result of an old hous elocation with the concrete slab and some building material observed.

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	5			EDL / Dom / R
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum	EDL / Dom / R
Scientific Name	*Eucalyptus melanophloia*	Common Name	Silver Leaved Ironbark	EDL / R
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow Leaf Ironbark	R
Scientific Name	*Acacia disparrima*	Common Name	Hickory Wattle	R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	5		
Scientific Name	*Eucalyptus melanophloia*	Common Name	Silver Leaved Ironbark
Scientific Name	*Corymbia citriodora*	Common Name	Spotted Gum
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash
Scientific Name	*Acacia disparrima*	Common Name	Hickory Wattle
Scientific Name	*Acacia concurrens*	Common Name	Black Wattle
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	3		
Scientific Name	*Heteropogon contortus*	Common Name	Black Spear Grass
Scientific Name	*Cynondon dactylon*	Common Name	Green Couch
Scientific Name	*Aristida calycina*	Common Name	Dark Wiregrass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	0		
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	35.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Lantana montevidensis*	Common Name	Creeping Lantana
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion Vine
Scientific Name	*Bidens pilosa*	Common Name	Cobbler's Pegs
Scientific Name	*Sida acuta*	Common Name	Wire Weed
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Asclepias curassavica*	Common Name	Red Head Cotton Bush
Scientific Name	*Sida rhombifolia*	Common Name	Arrowwleaf Sida
Scientific Name	*Chamaesyce hirta*	Common Name	Asthma Plant
Scientific Name		Common Name	

Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	202.00		
1	2.60	26	
2	1.20	27	
3	2.30	28	
4	1.40	29	
5	1.90	30	
6	0.80	31	
7	2.70	32	
8	1.60	33	
9	5.70	34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	85%	50%	0%	85%	90%	62%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	0%	0%	
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	0%	5%	0%	0%	0%	1%
Non native forbs and shrubs	5%	25%	50%	5%	5%	18%
Litter	5%	20%	50%	10%	5%	18%
Rock	0%	0%	0%	0%	0%	
Bare Ground	5%	0%	0%	0%	0%	1%
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	Corymbia citriodora (Spotted Gum) - 440mm; Eucalyptus crebra (Narrow Leaf Ironbark) - 420mm = 2
Non- Eucalypt Large tree DBH benchmark used:	200	Number of large non eucalypt trees:	0
Total number of large trees recorded:	2		
Total Number Large Trees per ha:	4		

Median Tree Canopy Height Measurements	Canopy:	18	Sub-canopy:	12	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	33.3%

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	33.9%	Sub-canopy:	16.00%	Emergent:	
Shrub canopy cover %	9.70%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	10.6	13.8	3.2	T2	0.0	6.0	6.0
T1	34.7	36.6	1.9	T2	45.7	49.9	4.2
T1	43.8	45.5	1.7	T2	54.7	58.9	4.2
T1	50.5	69.0	18.5	T2	98.4	100.0	1.6
T1	76.8	85.4	8.6	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	38.9	39.8	0.9	Shrub			0.0
Shrub	41.3	45.8	4.5	Shrub			0.0
Shrub	52.2	53.2	1.0	Shrub			0.0
Shrub	55.3	55.9	0.6	Shrub			0.0
Shrub	69.9	71.6	1.7	Shrub			0.0
Shrub	83.4	84.4	1.0	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0

Shrub			0.0	**Shrub**			0.0
Shrub			0.0	**Shrub**			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
Corymbia citriodora	29
Eucalyptus crebra	9
Eucalyptus melanophloia	8
Corymbia tessellaris	1
Total	47
Total stems per hectare	235

Attach Landscape Photos Here

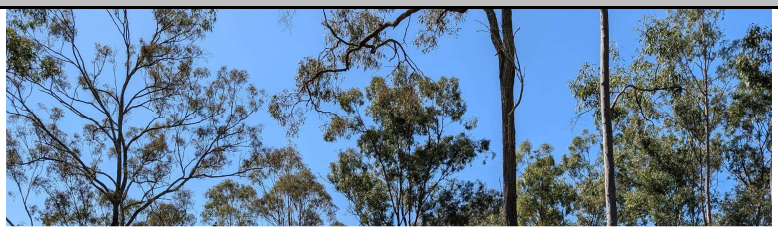
North



South



East





West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T5	Job Number / Property	12186 - Bayliss Road

Part B - Site Data

Recorders	Nicole Tomlinson (Senior Ecologist) and Harrison Cormack (Graduate Environmental Scientist)	Date	18/09/2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		Non-remnant	12

Site description and Location (including details of discrete polygons within the assessment unit)

Transect 5 is located within mapped Category X vegetation towards the centre of the property which has historically been a stock pile for soil from early 2020. A lack of maintenance has allowed for some regrowth vegetation dominated by scattered Acacia species including *Acacia leiocalyx* (Early Flowering Black Wattle), *Acacia disparrima* (Hickory Wattle) and *Acacia fimbriata* (Fringedd Wattle), all with multi-stems and therefore recorded within the shrub layer. . The majority of the gound layer is exposed bare earth, with some small patches of native or exotic grasses. Note that no trees within the transect plot had a trunk DBH greater than 100mm and therefore no GHFF trees have been recorded or koala SAT survey completed. Aditionally, no indicator species could be used to determine a suitable vegetation community due to the disturbances.

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	0			EDL / Dom / R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	4		
Scientific Name	*Acacia leiocalyx*	Common Name	Early Flowering Black Wattle
Scientific Name	*Acacia disparrima*	Common Name	Hickory Wattle
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Acacia concurrens*	Common Name	Black Wattle
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	2		
Scientific Name		Common Name	
Scientific Name	*Aristida calycina*	Common Name	Dark Wiregrass
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	3		
Scientific Name	*Dianella caerulea*	Common Name	Blue Flaxlily
Scientific Name	*Juncus usitatus*	Common Name	Common Rush
Scientific Name	*Pomax umbellata*	Common Name	Pomax
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	35.00%		
Scientific Name	*Sida rhombifolia*	Common Name	Arrowleaf Sida
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Chloris gayana*	Common Name	Rhodes Grass
Scientific Name	*Emilia sonchifolia*	Common Name	Emilia
Scientific Name	*Urochloa decumbens*	Common Name	Signal Grass
Scientific Name	*Tipuana tipu*	Common Name	Racehorse Tree
Scientific Name	*Leucaena leucocephala*	Common Name	Leucaena
Scientific Name	*Baccharis halimifolia*	Common Name	Groundsel Bush
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Asclepias curassavica*	Common Name	Red Head Cotton Bush
Scientific Name	*Phytolacca octandra*	Common Name	Inkweed

Scientific Name	*Lotus corniculatus*	Common Name	Birdsfoot
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	NIL		
1		26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10%	40%	25%	60%	10%	29%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	0%	0%	
Native shrubs	15%	0%	0%	0%	0%	3%
Non-native grass	0%	0%	5%	0%	0%	1%
Non native forbs and shrubs	8%	0%	2%	0%	0%	2%
Litter	47%	30%	55%	40%	70%	48%
Rock	0%	0%	0%	0%	0%	
Bare Ground	20%	30%	13%	0%	20%	17%
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	300	Number of large eucalypt trees:	0
Non- Eucalypt Large tree DBH benchmark used:	200	Number of large non eucalypt trees:	0
Total number of large trees recorded:	0		
Total Number Large Trees per ha:	0		

Median Tree Canopy Height Measurements	Canopy:	Absent	Sub-canopy:	4	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	0

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	0.0%	Sub-canopy:	0.00%	Emergent:	
Shrub canopy cover %	14.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	24.2	24.9	0.7	Shrub			0.0
Shrub	26.8	28.2	1.4	Shrub			0.0
Shrub	28.9	32.1	3.2	Shrub			0.0
Shrub	46.1	47.5	1.4	Shrub			0.0
Shrub	67.8	70.6	2.8	Shrub			0.0
Shrub	78.8	80.1	1.3	Shrub			0.0
Shrub	90.2	93.4	3.2	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0

Shrub			0.0	**Shrub**			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
	No trees with a trunk diameter greater than 100mm DBH
Total	0
Total stems per hectare	0

Attach Landscape Photos Here

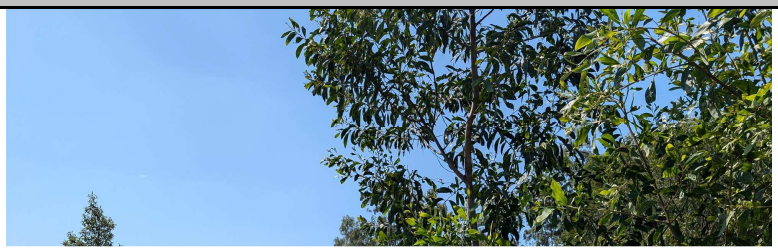
North



South



East





West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T6	Job Number / Property	12186 - Bayliss Road

Part B - Site Data

Recorders	David Havill (Principal Ecologist) & Jonny Pickvance (Ecologist)	Date	18/09/2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		Non-remnant	12

Site description and Location (including details of discrete polygons within the assessment unit)

Transect 6 is located within mapped Category X vegetation towards the centre of the property which has historically been a stock pile for soil from early 2020. A lack of maintenance has allowed for some regrowth vegetation dominated by scattered Acacia species including *Acacia leiocalyx* (Early Flowering Black Wattle), *Acacia disparrima* (Hickory Wattle) and *Acacia fimbriata* (Fringedd Wattle). Some scattered regowth *Eucalyptus tereticornis* (Forest Red Gum) was also noted thorughout the broader Assessment unit area. The majoriity of the gound layer is exposed bare earth, with some small patches of native or exotic grasses. The plot alignment is approximaetly 121° Southeast. Note that no trees within the transect plot had a trunk DBH greater than 100mm and therefore no GHFF trees have been recorded or koala SAT survey completed. Aditionally, no indicator species could be used to determine a suiitable vegetation community due to the disturbances.

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	2			EDL / Dom / R
Scientific Name	*Acacia leiocalyx*	Common Name	Early Flowering Black Wattle	Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	2		
Scientific Name	*Acacia fimbriata*	Common Name	Fringed Wattle
Scientific Name	*Acacia leioclayx*	Common Name	Early Flowering Black Wattle
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	3		
Scientific Name	*Themeda triandra*	Common Name	Kangaroo Grass
Scientific Name	*Aristida calycina*	Common Name	Dark Wiregrass
Scientific Name	*Eragrostis brownii*	Common Name	Browns Love Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	0		
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	5.00%		
Scientific Name	*Chloris gayana*	Common Name	Rhodes Grass
Scientific Name	*Urochloa decumbens*	Common Name	Signal Grass
Scientific Name	*Emilia sonchifolia*	Common Name	Emilia
Scientific Name	*Cortaderia selloana*	Common Name	Pampas Grass
Scientific Name	*Baccharis halimifolia*	Common Name	Groundsel Bsuh
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	NIL		
1		26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	30%	2%	10%	1%	40%	17%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	0%	0%	
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	0%	0%	0%	0%	0%	
Non native forbs and shrubs	10%	0%	0%	0%	0%	2%
Litter	50%	0%	0%	0%	0%	10%
Rock	0%	0%	0%	0%	0%	
Bare Ground	10%	98%	90%	99%	60%	71%
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	300	Number of large eucalypt trees:	0
Non- Eucalypt Large tree DBH benchmark used:	200	Number of large non eucalypt trees:	0
Total number of large trees recorded:	0		
Total Number Large Trees per ha:	0		

Median Tree Canopy Height Measurements	Canopy:	Absent	Sub-canopy:	4	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	0.0%	Sub-canopy:	0.00%	Emergent:	
Shrub canopy cover %	17.60%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	0.0	3.9	3.9	Shrub			0.0
Shrub	20.4	24.6	4.2	Shrub			0.0
Shrub	31.8	34.7	2.9	Shrub			0.0
Shrub	45.5	52.1	6.6	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0

Shrub			0.0	**Shrub**			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
	No trees with a trunk diameter greater than 100mm DBH
Total	0
Total stems per hectare	0

Attach Landscape Photos Here

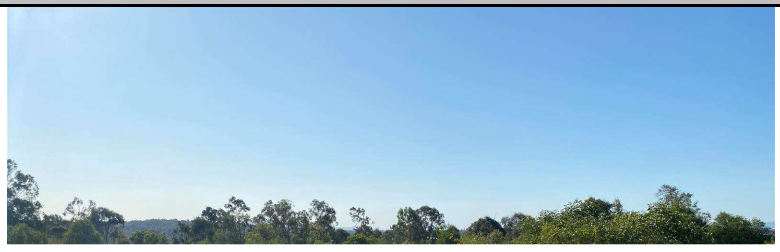
North



South



East





West



Attachment A4

Offset Management Plan



Offset Management Plan EPBC (2025/10110)

Residential Development Project

103 – 175 Bayliss Road, South Ripley, QLD, 4306

Mount View Offset Area

12 May 2026



Saunders Havill

PATHWAYS TO SUCCESS

Document Control

Document: 12186 Bayliss Road, South Ripley, Queensland, 4306 Offset Management Plan (EPBC 2025/10110), prepared by Saunders Havill for HB QLD Pty Ltd, dated 12 May 2026.

Document Issue

Issue	Date	Prepared by	Checked by
Issue A	19.09.2025	TM	LB
Issue B	27.04.2026	LB	SM
Issue C	12.05.2026	LB	LB

Prepared by
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Acronyms & Definitions

ACR	Annual Compliance Report
ASL	Above Sea Level
AU	Assessment Unit
BMP	Bushfire Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EDL	Ecologically Dominant Layer
EOP	Environmental Offsets Policy
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
FHA	Foraging Habitat Assessment
GBO	General Biodiversity Obligation
GHFF	Grey-headed Flying-fox
Ha	hectares
Km	kilometres
M	metres
MHQA	Modified Habitat Quality Assessment
MNES	Matters of National Environmental Significance
MVOA	Mount View Offset Area
MVOP	Mount View Offset Property
OAAR	Offset Area Annual Report
OAG	Offset Assessment Guide
OMP	Offset Management Plan
OMU	Operational Management Unit
RAI	Relative Abundance Index
RE	Regional Ecosystem
RVPDA	Ripley Valley Priority Development Area
SAT	Spot Assessment Technique
SEQ	South-east Queensland
SEQERF	South-east Queensland Ecological Restoration Framework
SPRAT	Species Profile and Threats Database
SRRC	Scenic Rim Regional Council
SH	Saunders Havill
SSR	Species Stocking Rate
QLD	Queensland
VCFMP	Vegetation Clearing and Fauna Management Plan
VDEC	Voluntary Declaration
VMA	Vegetation Management Act 1999
WONS	Weeds of National Significance

Impact area – The area where clearing will occur. This is located at Lot 7 on RP836942 and Lot 78 on SP308008.

Milestone Report – A report prepared by a suitably qualified person before the end of Years 5, 10, 15 and 20 of the offset assessing against the interim milestone achievements and completion criteria.

Offset property – Means 'Mount View Offset Property', 510 Oaky Scrub Road, Oaky Creek, QLD, 4285. Formally described as Lots 23 and 24 on RP47247, an area of 314.7 ha.

Mount View Offset Area (MVOA) – The 71 ha area within the offset property where the specific offset will be implemented and consists of three assessment units.

Year 1 of the offset – the 12-month period following legal securement of the Mount View Offset Area.

Years 2 to 20 of the offset – The 12-month period following each anniversary of the legal securement of the Mount View Offset Area.

Life of the offset – 20-year period following legal securement of the Mount View Offset Area.

Declaration of Accuracy

In making this declaration, I am aware that section 491 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed

Full Name

Position

Organisation

Date

Offset Provider Consent

The Offset Provider agrees to the offset being undertaken over the land identified in Section 4 of this Offset Management Plan, and in the manner outlined in Section 8.

Signed

Full Name

Position

Organisation

Date

1. Introduction

Saunders Havill (SH) have prepared an Offset Management Plan (OMP) on behalf of the proponent (HB QLD Pty Ltd) to be implemented by the offset provider (Auvergne Investments) in accordance with the Preliminary Documentation Request provided for EPBC Application 2025/10110. The proposed action is for impacts to *Phascolarctos cinereus* (Koala) and *Pteropus poliocephalus* (Grey-headed Flying-fox) habitat to facilitate a residential development on Bayliss Road, South Ripley, QLD. The action was referred under the EPBC Act and declared a "Controlled Action" on 11 March 2025 by the Department of Climate Change, Energy, the Environment and Water (DCCEEW), requiring assessment by "Preliminary Documentation" pursuant to section 18 and 18A (EPBC 2025/10110).

The impact area is a total of 22 hectares (ha) inclusive of 21.7 ha of Matters of National Environmental Significance (MNES) habitat for the Koala and 15.9 ha for the Grey-headed Flying-fox (GHFF). The OMP includes the dedication and rehabilitation of 71 ha of single site offset solution (the 'Mount View Offset Area'). The Mount View Offset Area (MVOA), located as part of Lot 24 on RP47247 at Oaky Scrub Road, Oaky Creek, Queensland, 4285, will deliver overall 'conservation gain' for Koala and GHFF. The MVOA forms part of the Mount View Offset Property (MVOP) which adjoins remnant vegetation, intersects regional and state biodiversity corridors, and is intended to provide multiple Federal offsets for Koala and other species. The MVOA as proposed will acquit the required impacts and provide additional benefit for the species. Details of the MVOA are provided in **Section 4**.

1.1. Purpose of the Management Plan

The purpose of this OMP is to provide the objectives of the plan, key commitments including milestones and measurables (performance targets) and completion criteria to compensate for significant residual impacts on Koala and GHFF. The plan must include (but is not limited to):

i. the ecological outcomes of the MVOA (including baseline survey results);
ii. management measures proposed to achieve the ecological outcomes;
iii. for each management action and monitoring outcome, detail how and when performance will be quantified, measured and monitored;
iv. detail contingency measures to be implemented if some or all of the specified are not achieved.

2. Roles and Responsibilities

Excluding the regulatory role completed by the Commonwealth Government for the assessment and approval of the offset and the Queensland Government for registering and declaring the Voluntary Declaration and Scenic Rim Regional Council declaring the covenant, the following people and entities retain key responsibilities for the implementation of this OMP.

A list of key contacts for the project is contained in **Table 1**.

Table 1: Key personnel

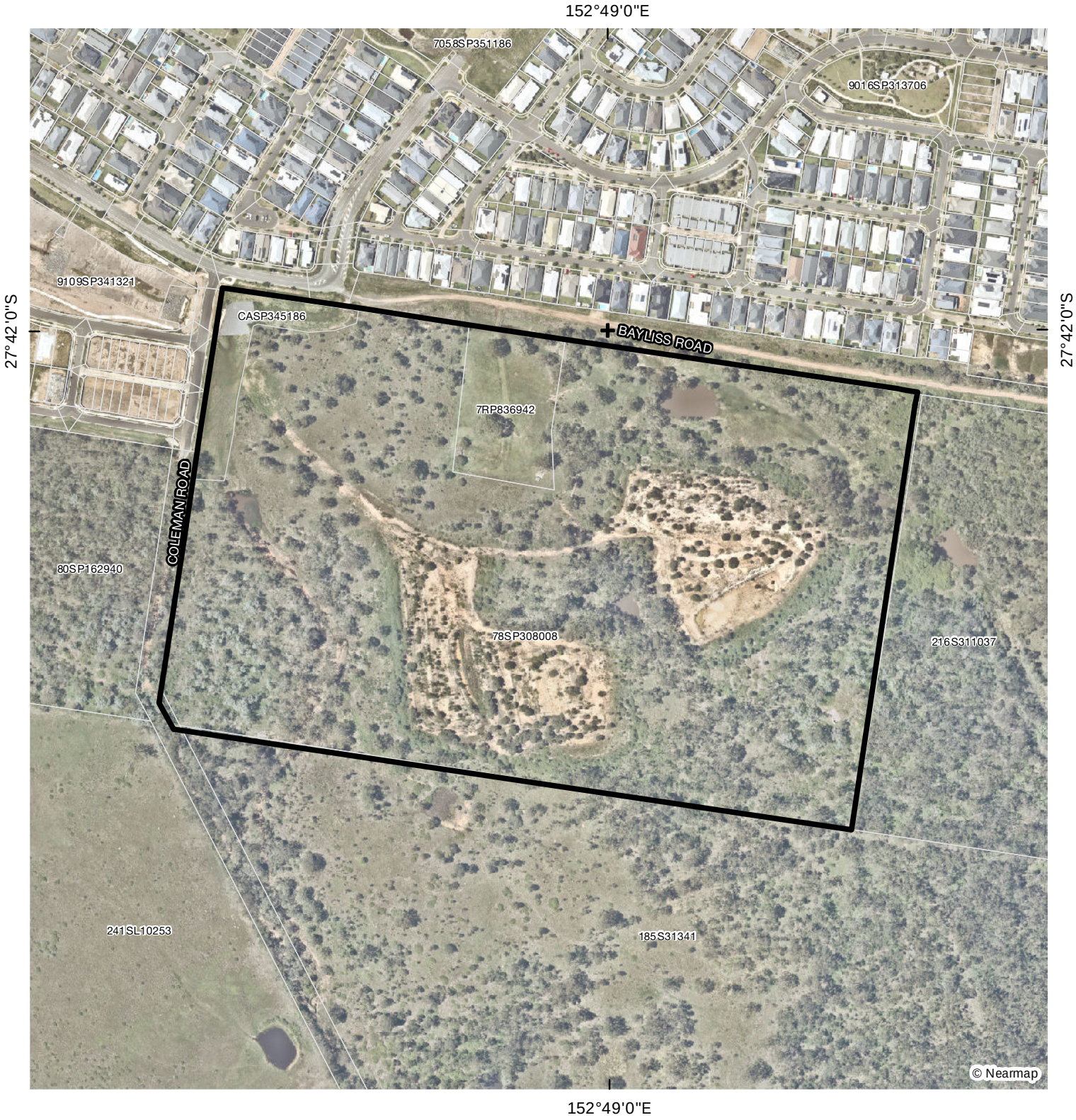
Role	Nominated person	Company/Entity	Contact details
Proponent/Approval Holder	Peter Johnson	HB QLD Pty Ltd	pj@hbland.com.au
Offset Provider	Tim McKinnon	Auvergne Investments	admin@tampastoralcompany.com.au
Administering Authority	NA	DCCEEW Compliance Monitoring Branch	EPBCMonitoring@dcceew.gov.au
Suitably qualified person/contractor	Appointed as required by either the Proponent or the Offset Provider.	Appointed as required by either the Proponent or the Offset Provider.	Appointed as required by either the Proponent or the Offset Provider.

3. Overview of Impact Area

3.1. Project and Site

The proposed action is for residential development on 22 ha of land located at 103 – 175 Bayliss Road, South Ripley (Lot 7 on RP836942 and Lot 78 on SP308008). This land has been historically cleared and continually maintained for rural uses. The referral area is entirely mapped as Category X (non-remnant) under the VMA, with the area dominated by cleared open areas and regrowth vegetation (**Figure 1**). A total of 21.7 ha of habitat critical to the survival of Koala was identified within the referral area as well as 15.9 ha of potential GHFF habitat (**Plan 1**).

The referral area adjoins existing developments to the north and north-west and future developments to the west, south-west and south. The referral area is located approximately 14.5 kilometres (km) south-east of Ipswich and 34 km south-west of Brisbane and is central within the Queensland Government's Ripley Valley Priority Development Area (RVPDA) (**Figure 2**). The RVPDA is supported by significant Queensland Government investment in roads, sewer and water purposefully designed to enable projects to commence and alleviate housing pressure in the South-East Queensland region. Under the RVPDA the site is zoned as 'Urban Living', which the proposed action aligns with. The project proposes impacts across the entire 22 ha referral area resulting in an impact of 21.7 ha of Koala habitat and 15.9 ha of GHFF foraging habitat (**refer Plan 1** and **Plan 2**).



LEGEND

Qld DCDB

Referral Area [22 ha]

Figure 1

IMPACT SITE AERIAL

CLIENT

HB QLD Pty Ltd

PROJECT
Bayliss Road, South Ripley

COORDINATE SYSTEM
GDA 2020 MGA Z56

SCALE (A4)
1:4,500

0 20 40 60 80 100 m

N

Saunders Havill

BOWEN HILLS I SPRINGFIELD
1300 123 744
mail@saundershavill.com

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FILE REFERENCE
12186 E OMP Figure 1 Site Aerial A

DATE 6/08/2025



LEGEND

Referral Area [22 ha]

Figure 2

IMPACT SITE CONTEXT

CLIENT

HB QLD Pty Ltd

PROJECT
Bayliss Road, South Ripley

COORDINATE SYSTEM
GDA 2020 MGA Z56

SCALE (A4)
1:150,000

0 1 2 3 4 5 km

N

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FILE REFERENCE
12186 E OMP Figure 2 Site Context A

DATE 6/08/2025

01. REFERRAL AREA



Notes:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havil therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of Saunders Havil.Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- LiDAR Delineated Waterbodies [0.3 ha]

Assessment Units

- *Assessment Unit 1:* Non-remnant vegetation (RE 12.9-10.2) [5.5 ha]
- *Assessment Unit 2:* Non-remnant vegetation (RE 12.9-10.7) [10.4 ha]
- *Assessment Unit 3:* Cleared Areas [5.8 ha]

Total impact to Koala - 21.7 ha

Total impact to Grey-headed Flying-fox - 15.9 ha



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HB QLD Pty Ltd

Bayliss Road, South Ripley

0 20 40 60 80 m
Transverse Mercator
GDA 2020 | Zone 56
N
1:2,500 @ A3

Address / RPD: *South Ripley, QLD*

15/09/2025

12186 E 01 Referral Area A

02. REFERRAL AREA IMPACT



Notes:
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Layer Sources
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
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http://qldspatial.information.qld.gov.au/catalogue/
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LEGEND

- Qld DCDB
- Referral Area [22 ha]
- Impact Area [22 ha]



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HB QLD Pty Ltd

Bayliss Road, South Ripley

0 20 40 60 80 m
Transverse Mercator
GDA 2020 | Zone 56
N
1:2,500
@ A3

Address / RPD: *South Ripley, QLD*

6/08/2025

12186 E 02 Referral Impact Area A

3.2. Summary of Matters Requiring Offset

The impact area involves directly impacting critical Koala and GHFF habitat. The OMP proposes land-based offsets for the following MNES species that will be subject to significant residual impacts due to the project:

- Koala – due to unavoidable impacts to 21.7 ha of habitat critical to the survival of the species
- GHFF – due to unavoidable impacts to 15.9 ha of habitat critical to the survival of the species

Habitat for MNES proposed to be impacted for the project is summarised below.

Vegetation communities impacted
The impact area contains three (3) discrete Assessment Units (AU) as identified during field surveys and detailed in **Section 3.3** of the Preliminary Documentation.

Table 2: Impact area - summary of Koala assessment units and MHQA transects

Assessment unit	Pre-clear vegetation community	Impact area (ha)	MNES habitat
AU1	RE 12.9-10.2	5.5	Koala/GHFF
AU2	RE 12.9-10.7	10.4	Koala/GHFF
AU3	RE 12.9-10.7	5.8	Koala

3.3. Habitat Quality Scoring Methods

3.3.1 Koala – Modified Habitat Quality Assessment

The quantum and quality of habitat for the Koala within the impact area was assessed using a modified version of the Queensland State Government's *Guide to determining terrestrial habitat quality: A toolkit for assessing land-based offsets under the Queensland Environmental Offsets Policy* Version 1.2 April 2017 (herein referred to as the 'Habitat Quality Guideline'). This assessment approach utilises the Site Condition assessment method framework established under the *BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland* Version 2.2 February 2015 combined with site context and species stocking rate assessments to determine the habitat quality of the impact area. The guideline is a step-by-step methodology explaining how to measure habitat quality for land-based offsets. This methodology has been adopted and tailored/modified to assess the impacts and offsets relating to MNES.

The traditional terrestrial habitat quality assessment assesses three (3) core indicators:

1. Site Condition – a general condition assessment of vegetation compared to a benchmark;
2. site context – an analysis of the site in relation to the surrounding environment; and
3. species habitat index – the ability of the site to support a species.

The MHQA for Koala combines the three (3) core indicators into two (2) (Site Condition and Site Context), with each attributed an equal weighting of 30% of the final score. The balance of the weighting (40%) has been attributed to the third indicator, Species Stocking Rate (SSR), which is independent of the traditional habitat quality assessment. The SSR has been added to the MHQA to better incorporate MNES, and for the purpose of this project, the endangered-listed Koala MNES. The following subsections detail the methodology utilised to assess the Site Condition, site context, and species stocking rate under the MHQA.

Site Condition (30%)

Assessing site condition is an integral step in determining specific quantification of impacts, while also determining whether an offset site is suitable to establish a desired capacity to support the prescribed environmental matters being offset. The on-site condition is a key element of habitat quality and has a direct influence on the biodiversity it supports. Site condition is assessed using a suite of attributes to describe the structure and function of the vegetation community and is benchmarked against the expected range for a relatively undisturbed community.

The site condition assessment under the MHQA is assessed using 15 condition characteristics. Each condition characteristic and the relevant scoring and benchmark percentage is provided in **Table 3**.

Table 3: Koala site condition scoring attributes (BioCondition Version 1.2)

Site condition attribute	*Scoring and benchmark percentage*				
*(1) Recruitment of woody perennial species in ecologically dominant layer in EDL**	Score	0	3		5
	Benchmark	<20%	≥20-75%		≥75%
(2) Native plant species richness – trees	Score	0	2.5		5
	Benchmark	<25%	≥25-90%		≥90%
(3) Native plant species richness – shrubs	Score	0	2.5		5
	Benchmark	<25%	≥25-90%		≥90%
(4) Native plant species richness – grasses	Score	0	2.5		5
	Benchmark	<25%	≥25-90%		≥90%
(5) Native plant species richness – forbs	Score	0	2.5		5
	Benchmark	<25%	≥25-90%		≥90%
(6) Tree canopy height	Score	0	3		5
	Benchmark	<25%	≥25-70%		≥70%
(7) Tree canopy cover	Score	0	2	3	5
	Benchmark	<10%	≥10%-<50%	≥200%	≥50-200%
(8) Shrub canopy cover	Score	0	3		5
	Benchmark	<10%	≥10%-<50% or ≥200%		≥50-<200%
(9) Native perennial grass cover	Score	0	1	3	5
	Benchmark	<10%	≥10-50%	≥50-90%	≥90%
(10) Organic litter	Score	0	3		5
	Benchmark	<10%	≥10%-50% or ≥200%		≥50-<200%
(11) Large trees	Score	0	5	10	15

Site condition attribute	*Scoring and benchmark percentage*				
	Benchmark	0%	0-50%	≥50-100%	≥100%
(12) Coarse woody debris	Score	0	2		5
	Benchmark	<10%	<50% or ≥200%		≥50% or <200%
(13) Non-native plant cover	Score	0	3	5	10
	Benchmark	>50%	≥25-50%	≥5-25%	<5%

Assessment methodology of the above condition characteristics mostly do not differ from the traditional terrestrial habitat quality assessment. In developing the MHQA to better incorporate MNES, two (2) species habitat index characteristics, being (1) 'quality and availability of food and foraging habitat', and (2) 'quality and availability of shelter', have been added to the site condition indicator.

Quality and Availability of Food and Foraging Habitat

Food-tree availability is consistently identified as one of the most important determinants of koala population dynamics, owing to their highly specialised folivorous diet and dependence on a narrow subset of Eucalyptus species (Kavanagh et al., 2007).

To reflect the importance of food trees to koala habitat, the quality and availability of foraging habitat has been assessed using two parameters:

- Abundance of koala food trees
- Tree canopy cover

These two parameters provide an indication of the number of trees available for koalas to forage in and the amount of resource available from those trees. Weighting of the parameters in the assessment is 80% for food tree abundance and 20% for canopy cover as koalas are known to graze on trees of any size and established smaller trees will grow to provide a larger canopy area over time.

All koala food trees (eucalypt, corymbia and angophora species) with a DBH >100mm were counted within a 100m x 20m plot at each habitat transect to estimate abundance. The count is multiplied by 5 to produce a stem density per hectare which is averaged across the assessment unit. The count is then compared to the average stem density per hectare identified in the regional ecosystem technical descriptions (Ryan 2019 - additional description for RE 12.9-10.2 provided by the Queensland Herbarium). Where the technical description provides stem densities for multiple tree stratums, T1 and T2 are combined to provide benchmark stem density as this will encompass all non-juvenile koala food tress (>100mm DBH).

A score out of 8 is calculated as follows:

- <1% – 0/8
- 1%-24.99% of benchmark – 2/8
- 25% - 49.99% of benchmark – 4/8
- 50% - 74.99% of benchmark – 6/8
- 75% - 100%+ of benchmark – 8/8

Canopy in Southeast Queensland Eucalypt woodland is dominated by koala food tree species, therefore, the tree canopy cover collected a part of the site condition assessment provides an accurate estimate of food source availability, and if anything would overestimate food availability giving a conservative baseline score. Canopy cover has been averaged and compared to the benchmark for the regional ecosystem.

A score out of 2 has been calculated as follows:

- <1% – 0/2
- 1%-24.99% of benchmark – 0.5/2
- 25% - 49.99% of benchmark – 1/2
- 50% - 74.99% of benchmark – 1.5/2
- 75% - 100%+ of benchmark – 2/2

The scores for food tree abundance and canopy cover are then added together to provide an overall score out of 10 for quality and availability of food sources. For the purposes of the MHQA condition assessment, scores will be categorised as follows:

- 0-2.99/10 will be given a 1 in the MHQA
- 3-6.99/10 will be given a 5 in the MHQA
- 7-10/10 will be given a 10 in the MHQA

Quality and Availability of Shelter Habitat

Koalas choose shelter in trees that provide thermal protection, safety from predators, and access to preferred food trees (Briscoe et al 2014; Ellis et al 2012; Law et al 2022). Studies have found shelter trees are not necessarily food species such as eucalypts with a range of ancillary species used as long as they are near a food source. Trees selected are often larger with a DBH 0f 30cm – 60cm.
Two parameters have been used to assess shelter habitat values at the impact and offset sites:

- Abundance of koala food trees and ancillary trees (hereby referred to as shelter trees)
- Abundance of large shelter trees (food and ancillary species)

These two parameters provide an indication of the number of koala shelter trees available on the impact and offset sites as well as existing larger trees that can be preferred while resting through the day. Weighting of the parameters in the assessment is 60% for shelter tree abundance and 40% for large trees.

All shelter trees with a DBH >100mm were counted within a 100m x 20m plot at each MHQA transect completed at the impact and offset sites to estimate abundance. The count is multiplied by 5 to produce a stem density per hectare which is averaged across the assessment unit. The count is then compared to the average stem density per hectare identified in the regional ecosystem technical descriptions (Ryan 2019 - additional description for RE 12.9-10.2 provided by the Queensland Herbarium). Where the technical description provides stem densities for multiple tree stratums, T1 and T2 are combined to provide benchmark stem density as this will encompass all non-juvenile koala food tress (>100mm DBH).

A score out of 6 calculated as follows:

- <1% – 0/6
- 1%-24.99% of benchmark – 1.5/6
- 25% - 49.99% of benchmark – 3/6
- 50% - 74.99% of benchmark – 4.5/6
- 75% - 100%+ of benchmark – 6/6

Large shelter trees are counted over a 100m x 50m plot at each MHQA transect completed at the impact and offset sites to estimate abundance of large trees. The count is multiplied by 2 to produce a density per hectare which is averaged across the assessment unit and compared to the benchmark for the regional ecosystem.

A score out of 4 is calculated as follows:

- <1% – 0/4
- 1%-24.99% of benchmark – 1/4
- 25% - 49.99% of benchmark – 2/4
- 50% - 74.99% of benchmark – 3/4
- 75% - 100%+ of benchmark – 4/4

The scores for shelter tree abundance and large trees are then added together to provide an overall score out of 10 for quality and availability of shelter. For the purposes of the MHQA condition assessment, scores will be categorised as follows:

- 0-2.99/10 will be given a 1 in the MHQA
- 3-6.99/10 will be given a 5 in the MHQA
- 7-10/10 will be given a 10 in the MHQA

Site Context (30%)

The site context assessment considers the landscape characteristics adjoining the site. Site context is measured using a suite of attributes to describe the location of the habitat within the surrounding landscape and the influence of its associated threats. This assessment also considers the influence of adjacent vegetated areas and ecological corridors. Under the MHQA, site context is measured using seven characteristics. In developing the MHQA, three species habitat index characteristics were nominated to form part of the site context characteristics: role of site location to overall species population in the state, threats to the species, and species mobility capacity. The seven characteristics are listed below with details of how each are measured in accordance with the Habitat Quality Guideline.

- Size of patch – Measured as the area of vegetation in which the assessment unit(s) is contained, and add on all other directly connecting areas of koala habitat. The calculation of the area of the patch size uses the method outlined in the BioCondition assessment manual v2.2 that considers the patch to be areas connected by corridors greater than 200 m wide within a 1 km radius of the site. This methodology includes use of a “segmentation” process that removes areas connected to the assessment area by narrow corridors)

- Connectedness and Context – Connectedness relates to the capacity that the species have to disperse through the landscape. This attribute is calculated using GIS by measuring the length koala habitat along the boundary of the site, calculated as a percentage. The context score is calculated by GIS to quantify the amount of vegetation immediately surrounding the assessment site. It is measured as the percentage of koala habitat within a 1 km radius of the site.

  Unlike the traditional habitat quality assessment methodology where site connectedness are assessed against the surrounding remnant vegetation only, the MHQA site connectedness is assessed against the surrounding MNES habitat, in this instance, Koala habitat. While remnant eucalypt forest vegetation is critical habitat for Koala, equally Koalas can utilise areas of non-remnant vegetation or high value regrowth vegetation that does not yet achieve remnant status. Therefore, site context under the MHQA accounts for surrounding Koala habitat rather than remnant vegetation.

  Habitat critical to the survival of the Koala was determined using the combination of the Unsupervised Classification tool within ESRI's ArcGIS software and the most recently available aerial photograph from Nearmap.com. The Unsupervised Classification tool is able to determine vegetation areas through the near infrared (NIR) composite band of the Landsat 8 imagery available online. The tool is able to create a dataset of vegetation areas without the analyst's intervention providing a rapid method for mapping habitat critical to the survival of the Koala over large regions such as South East Queensland. Nearmap.com aerial image is used for calibration purposes, particularly when dealing with smaller scale EPBC assessment areas. The dataset created by the Unsupervised Classification tool is revised using the latest aerial imagery available from Nearmap.com at scale of 1:40,000 and provides a more accurate depiction of habitat critical to the survival of the Koala at the assessment scale for EPBC projects.

- Ecological corridors – This attribute is as per the methods of the Guide to determining terrestrial habitat quality V1.2 and is used to determine if a site is located within or shares a boundary with an ecological corridor that facilitates long term ecosystem function by connecting large patches of remnant vegetation with sufficient tract size (corridor width in relation to the fragmentation of the landscape) (EHP 2014). These corridors support the habitat of MNES by providing opportunity for long term dispersal of habitat species following landscape level changes in climate. Although the ecological corridors allow for the dispersal of MNES themselves, for example, Koala, this is not their primary function when assessing the attribute. An 'ecological corridor' is represented as any 'Riparian' or 'Terrestrial' feature within the 'CORR_TYPE' attribute table of the 'Queensland biodiversity and vegetation offsets special features' map. The mapping can also be viewed on Queensland Globe in the 'Statewide Biodiversity Corridors' layer
- Role of site location to species overall population in the state – This attribute is based on the observed role of the site in relation to the overall population of the species. The scoring table considers the species' use of the site – such as whether it is used for feeding and/or nesting and the effect that damage to or removal of the site would have to the likelihood of the species' overall population survival.
- Threats to the species – This attribute identifies the presence and severity of threatening processes observed at or adjacent to the site which may include clearing associated with development, creation of a barrier to movement, introduction or spread of disease or pathogens, risk of high-intensity fires, degradation of habitat from hydrological change and introducing or increasing mortality attributed to vehicle strike or dog attacks as references in the *Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital*

Territory. The highest threat level is given to a site if it isolated from other Koala habitat, or if major roads without exclusion measures, or residential encroachment is within 1500 m of the site boundary. A risk matrix relative to the conservation advice for the Koala was applied to determine threats to species:

- Habitat loss is considered 'Very High Risk' under the Koala conservation advice. Clearing and degradation of habitat is scored Low, Moderate and High and weighted according to risk factor relative to the expected threat score for each (summed vertically as 15 for Low, 7 for Moderate or 1 for High).
- High intensity bushfire is considered 'Very High Risk' under the Koala conservation advice. Inappropriate fire regimes is scored Low, Moderate and High relative to the implementation of an endorsed bushfire management plan and fuel load weighted according to risk factor relative to the expected threat score for each (15, 7 or 1).
- Vehicle strike is considered 'Moderate Risk' under the Koala conservation advice. Vehicle strike is scored Low, Moderate and High relative to the presence and severity of road use within 1 km of the site and weighted according to risk factor relative to the expected threat score for each (15, 7 or 1).
- Dog attack is considered 'Moderate Risk' under the Koala conservation advice. Dog attack is scored Low, Moderate and High relative to the presence of dogs and level of cover available and weighted according to risk factor relative to the expected threat score for each (15, 7 or 1).

- Species mobility capacity – Species mobility is scored based on the presence and severity of factors that would contribute to a reduction in the mobility of the species. This can include barrier that would result in a long-term reduction in genetic fitness or access to important resources.

The Guide to Determining Terrestrial Habitat Quality version 1.2 scores this attribute based on the presence and severity of factors that would contribute to a reduction in the mobility of the species. The scoring is based on a percentage reduction of mobility ranging from minor restriction (0-25% reduction) to severely restricted (76-100%). A score of 1, 4, 7 or 10 may be attributed depending on the level of restriction. Score categories are summarised below (**Table 4**):

Table 4: Species mobility scoring metric (BioCondition Manual)

Restriction	Score
Severely restricted (76–100% reduction)	1
Highly restricted (51–75% reduction)	4
Moderately restricted (26–50% reduction)	7
Minor restriction (0–25% reduction)	10

The Guideline references the presence of barriers that would result in a long-term reduction in genetic fitness or access to important resources as an example of how mobility can be reduced. However, it is noted that the presence or absence of barriers alone do not exclusively determine the percentage reduction in mobility.

Factors that may limit or impede mobility for the koala used to inform this assessment include:

- The presence of large stretches of cleared land where uses are incompatible with koala movement. This may include intensive agriculture (e.g. cropping) or commercial uses (e.g. hardstand or carparks).
- The presence of thick lantana infestations in woodland or gullies.
- Waterways larger than 40m wide.
- Roads such as 4-lane arterial roads or smaller connectors that are highly trafficked and safe koala movement features such as underpasses are not present.
- The presence of a non-climbable fences and other small-scale infrastructure.
- The presence of a rail corridor or other linear infrastructure with regular anthropogenic uses.

While the guideline identifies features that restrict mobility, they are not attributed a category of restriction. A literature review has been completed to identify which features would be considered to have the potential to be a severe, high or moderate restrictions to dispersal. The outcomes are summarised below.

Potential severity assumes a 'worst case' scenario and site-specific conditions need to be considered for the assessment. For example, a rural property surrounded by barbed wire fencing with small infrastructure littered throughout the property may only provide a moderate impediment to koala movement whereas residential areas with a mosaic of timber and colour bond fencing site would be considered a high or severe impediment (**Table 5**).

Table 5: Attributes contributing to reduced species mobility capacity for the Koala

Potential Severity	Impediment	Primary Effect on Mobility	References
Severe	Habitat Loss & Fragmentation	Isolates habitat patches; reduces canopy connectivity; forces ground travel. The site must be isolated from any other vegetation cleared land with uses incompatible to koala movement.	Rhodes et al. 2006 McAlpine et al. 2006 Youngentob 2021
Severe	Roads & Vehicle Traffic	Roads act as hard physical barriers; vehicle strikes kill dispersing koalas. Dual lane or high trafficked roads with no or limited koala movement features such as underpasses are considered a high barrier to dispersal.	Rhodes et al. 2006 Lunney et al. 2002
Highly	Fencing & Small-Scale Infrastructure	Fences can prevent koalas from reaching adjacent habitat patches, particularly when too high or lacking climbable surfaces.	NSW Department of Planning and Environment (2022) McAlpine et al. 2006
Highly	Human Disturbance	Koalas and other small mammals tend to avoid habitats close to construction sites, recreational areas such as bike paths and parks and other human activities. If major anthropogenic disturbance is located adjacent the site, it is considered a high barrier to dispersal.	McAlpine et al. 2006 Blickley and Patricelli 2010

Potential Severity	Impediment	Primary Effect on Mobility	References
Moderate	Dense weed infestation	Weed invasion alters vegetation structure, reduces habitat quality, and can significantly influence how koalas move through the landscape. A dense weed infestation is defined as at least 50% cover.	NSW Department of Planning and Environment (2022)
Moderate	Waterways	Waterways can impede koala movement primarily by creating physical gaps in canopy connectivity, forcing koalas to travel on the ground where they are more vulnerable to predation and vehicle strikes. Large waterways (>40 m wide) are considered a significant barrier because they isolate habitat patches and reduce safe dispersal routes.	Rhodes et al. 2006 McAlpine et al. 2006

Species mobility capacity is calculated using the following method:

- The site is split into four quadrants (north, east, south and west).
- Each quadrant will be reviewed using a combination of desktop and field assessment to identify if any restriction to mobility.
- Restriction in each quadrant will be allotted a percentage score based on severity as follows:
    - No or any minor restriction not listed in **Table 5** – 0%
    - Any moderate restriction as listed in **Table 5** – 40%
    - Any high restriction as listed in **Table 5** – 65%
    - Any severe restriction as listed in **Table 5** – 90%

The restriction percentages for each quadrant are added together and divided by 4 to obtain an overall reduction in mobility for the site. A score is then allotted according to the mobility restriction severity scoring from the Guide to Determining Terrestrial Habitat Quality version 1.2.

Scoring attributes extracted from the Habitat Quality Guideline are provided in **Table 6**.

Table 6: Koala site context scoring attributes

Site context attribute	*Scoring and benchmark percentage*				
Size of patch	0	2	5	7	10
	<5 ha	5-25 ha	26-100 ha	101-200 ha	>200 ha
Connectedness	0	2	4		5
	0-10%	>10-<50%	50-75%		>75% or >500 ha
Context	0	2	4		5
	<10% habitat	>10-30% habitat	>30-75% habitat		>75% habitat
Ecological corridors	0	4	6		

Site context attribute	*Scoring and benchmark percentage*			
	Not within	Sharing a common boundary	Within (whole or part)	
Role of the site location to species overall population in the state	1	4	5	
	Not or unlikely to be critical to survival of the koala	Likely to be critical to survival of the koala	Critical to the survival of the koala	
Threats to the species	1	7	15	
	High threat level	Moderate threat level	Low threat level	
Species mobility capacity	1	4	7	10
	Severely restricted (76-100% reduction)	High restricted (51-75% reduction)	Moderately restricted (26-50% reduction)	Minor restriction (0-25% reduction)

Species Stocking Rate (40%)

The MHQA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment methodology. Species stocking rates are estimates of the koala carrying capacity of the site at the time of undertaking the survey. Given the discreet nature of the Koala and limited to no published literature on habitat carrying capacity of the species, the species stocking rate scoring methodology has been derived through the collation of site-specific surveys and surrounding contextual habitat analysis. Species stocking rate is calculated using the following parameters:

- Species presence on or adjacent to the site – whether or not evidence of koala has been recorded within or adjoining the site. Evidence may be direct in the form of observation of koalas, or indirect via the presence of scats.
- Species usage of the site (habitat type and evidenced usage) – the type of habitat includes vegetation structure such as whether it contains remnant, regrowth or non-remnant vegetation values, and evidenced usage is the confirmed presence or use of the species within the habitat. Both factors are used to inform the species usage of the site. Depending on the level of variability in vegetation and usage patterns across the site, this characteristic may be scored differently for assessment units.
- Approximate density of the species on the site – measured through the use of Spot Assessment Technique (SAT) (Phillips et al. 2011) and targeted searches with a high probability of detection. The combination of methods produces a higher reliability of data when extrapolating koala density. The SAT method is an industry recognised technique for identifying presence/absence of koala and measuring activity. SAT survey results are interpreted using the broad population categories provided in the Australian Koala Foundation Koala activity level classification table to infer an activity level or approximate density. Depending on the population category applied, koala activity is described as 0%, 'low', 'moderate', or 'high'.

- Role/importance of species population on site – the extent to which the site is considered a key source population for breeding, dispersal, is necessary for maintaining genetic diversity or near the limit of the species' range.

For subjective criteria where it is unclear whether a particular attribute score is achieved, the precautionary approach is applied to favour the higher score. **Table 7** outlines the attributes utilised to assess species stocking rate.

Baseline Koala presence surveys (SATs)

Koala presence and activity levels were determined through utilising SATs (Phillips and Callaghan 2011). The SAT method is an industry recognised technique for identifying presence/absence, density and habitat usage of Koala at a site and is specified as an appropriate survey method in the former *EPBC Act Referral Guidelines for the Vulnerable Koala*. SATs are also addressed in the Australian National University's *A review of koala habitat assessment criteria and methods*.

Table 7: Koala Species Stocking Rate Scoring

Attribute	*Scoring and criteria*				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score (/10)	0	5	10	
		No	Yes – adjacent to site	Yes – on-site	
Species usage of the site (habitat type and evidenced usage)	Score (/15)	0	5	10	15
		Not habitat	Dispersal habitat	Foraging habitat	Breeding habitat
Approximate density (per ha)	Score (/30)	0	10	20	30
		0%	Low	Medium	High
*Role/importance of species population on site**	Score (/15)	0	5	10	15
		0	5-15	20-35	40-45
Total SSR	/70				
SSR Score	/4				

**Species Stocking Rate supplementary table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15*			
Key source population for breeding	Score (/10)	0	10
		No	Yes/Possibly
Key source population for dispersal	Score (/5)	0	5
		No	Yes/Possibly
Necessary for maintaining genetic diversity	Score (/15)	0	15
		No	Yes/Possibly
Near the limit of the species range	Score (/15)	0	15
		No	Yes

Results from SAT surveys are compared against current available published scientific literature to identify an estimated Koala carrying capacity (SSR). SAT survey results are interpreted using the broad population categories provided in the Australian Koala Foundation Koala activity level classification table. These categories being 'East Coast (low)', 'East Coast (med-high)' and 'Western (med-high)' are shown in **Table 8** and are used to estimate Koala activity within a given area. Depending on the population category applied, Koala activity is described as 'low', 'moderate', or 'high'. Population categories are assigned as follows:

- Sites considered to be suitable or have high suitability for Koalas are assigned the 'East Coast (med-high)' category;
- Sites considered to have low suitability are assigned the 'East Coast (low)' category; and
- The 'Western (med-high)' category does not apply to South East Queensland local government areas.

Table 8: Koala activity level classification (Phillips and Callaghan 2011)

Activity	East Coast (low)	East Coast (med-high)	Western (med-high)
Low	<3.33%	<22.5%	<35.8
Moderate	3.33-12.6%	22.5-32.8%	35.8-46.7
High	>12.6%	>32.8	>46.7

A total of six (6) SAT surveys were completed on 5 and 16 September 2024 across the MNES impact area. The impact site was assessed under the 'East Coast (med-high)' category as is expected in areas of higher Koala density east of the Great Dividing Range (Phillips and Callaghan 2011).

As described by Phillips and Callaghan (2011) if the results of a SAT site return an activity level within the low use range, the level of use by *Koala* is likely to be transitory. Conversely, where a given SAT site returns an activity level within the prescribed range for medium (normal) to high use - the level of use is indicative of more sedentary ranging patterns and is thus within an area of major activity.

Scoring Weight Justification

For this project, site condition was given a weighted score out of 3, site context was given a weighted score out of 3, while species stocking rate was given a weighted score out of 4. The species stocking rate is an important component when assessing the overall habitat quality of a site as it indicates species usage and the capacity of a given area to support the koala therefore was weighted more heavily.

Site condition was weighted with a score out of 3. The koala is known to occupy a variety of habitats, ranging from non-remnant regrowth eucalypt forest / woodland through to old growth remnant forest / woodland. However, the site condition of the habitat is considered to directly influence the long-term koala carrying capacity.

Site context was weighted with a score out of 3. Site context is considered an important component when assessing the koala as it directly relates to the long-term survival rate of the species. The proximity of the site to other areas of suitable habitat, the movement pattern through the landscape of the koala (and / or barriers inhibiting movement), and threats to the species are important attributes to assess when considering the overall functionality of the site.

It is considered that the provision of this weighted scoring most accurately quantifies the ecological requirements of the koala, which will then assist in determining whether an offset site is suitable to establish a desired capacity to support the prescribed environmental matters being offset.

3.3.2 Discussion

The habitat quality scores for each AU were determined using a combination of Site Condition, Site Context, and Species Stocking Rate technical data and scoring. The impact area was given an overall weighted habitat quality score of **5.74 out of a total 10**, rounded to 6, and is considered a low to moderate habitat quality score. This score is calculated based on the combined weighted habitat quality scores for each assessment unit. Refer to **Table 16** for a summary of results. Detailed MHQA results are presented in **Appendix A.**

Site Condition (30%)

AU1 and AU2 showed similar site condition scores of 1.86 and 1.49 out of 3 respectively. AU3 showed a significantly lower score reflecting cleared areas (0.84 out of 3).

AU2 makes up a proportionally larger size of the referral area (10.4 ha out of a total of 21.7 ha) therefore contributing to a size weighting of 0.479 in the final MHQA. AU1 and AU3 are similarly sized (5.50 ha and 5.80 ha out of 21.70 ha respectively) and therefore contribute to 0.253 and 0.267).

The scores for the two habitat index characteristics being quality and availability of food and foraging habitat and quality and availability of shelter are discussed below (refer **Table 9** and **Table 14**). As detailed in **Section 3.3.1**, these scores are derived from the relevant site condition attributes.

Table 9: Koala Food Tree Abundance – Impact site

Assessment Unit	RE	Benchmark (trees/ha)	Site Count (trees/ha)	Benchmark Percentile	Score
Impact AU1	12.9-10.2	240	290	120.83%	8/8
Impact AU2	12.9-10.7	480	163	33.95%	4/8
Impact AU3	12.9-10.7	480	0	0%	0/8

Table 10: Canopy Cover – Impact Site

Assessment Unit	RE	Benchmark (% cover)	Site (% cover)	Benchmark Percentile	Score
Impact AU1	12.9-10.2	64	30.1	47.03%	1/2
Impact AU2	12.9-10.7	40	12.1	30.25%	1/2
Impact AU3	12.9-10.7	40	0	0%	0/2

Table 11: Quality and availability of food and foraging habitat score – Impact Site

Assessment Unit	Total Score	MHQA score
Impact AU1	9/10	10/10

Assessment Unit	Total Score	MHQA score
Impact AU2	5/10	5/10
Impact AU3	0/10	1/10

Table 12: Koala Shelter Tree Abundance – Impact Site

Assessment Unit	RE	Benchmark (trees/ha)	Site Count (trees/ha)	Benchmark Percentile	Score
Impact AU1	12.9-10.2	240	290	120.83%	6/6
Impact AU2	12.9-10.7	480	163	33.95%	3/6
Impact AU3	12.9-10.7	480	0	0%	0/6

Table 13: Large Trees abundance – Impact Site

Assessment Unit	RE	Benchmark (trees/ha)	Site (trees/ha)	Benchmark Percentile	Score
Impact AU1	12.9-10.2	38	2	5.26%	1/4
Impact AU2	12.9-10.7	18	4	22.22%	1/4
Impact AU3	12.9-10.7	18	0	0%	0/4

Table 14: Quality and availability of shelter score – Impact Site

Assessment Unit	Total Score	MHQA score
Impact AU1	7/10	10/10
Impact AU2	4/10	5/10
Impact AU3	0/10	1/10

Site Context (30%)

Size of patch

This attribute is a measure of the size of the patch of vegetation in which the assessment unit is located. The scoring reflects the importance of large patches in the landscape and is based on the size of the patch of critical Koala habitat connected to the site in this instance. This attribute is scored such that is reflects the fact that larger patches are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller patches. The size of patch attribute was calculated using GIS and determined the impact area to be part of a patch size of larger than 5000 ha due to the presence of surrounding vegetation. This achieved a score of **10 out of 10** (>200 ha Koala Habitat as per the *Queensland BioCondition Assessment* methodology) (refer **Plan 3**).

Connectedness

As a landscape level attribute, connectedness aims to assess the degree to which the assessment unit is connected to adjacent native vegetation. Connectedness relates to the capacity of the species to disperse through the landscape between sustainable patches of habitat and therefore has important implications for species persistence. Connectedness was calculated using GIS, with the percentage of impact area boundary length supporting a Koala critical habitat connection off and on-site calculated at 61.4 %, and consequently scored a **4 out of 5** as per the Queensland BioCondition Assessment methodology (refer **Plan 3**).

Context

The context attribute refers to the amount of critical Koala habitat retained within a 1 km buffer of the proposed site and is calculated using GIS. Existing critical Koala habitat within a 1 km buffer of the site was calculated at 35 %, and therefore the context attribute achieved a score of **4 out of 5** as per the Queensland BioCondition Assessment methodology (refer **Plan 3**).

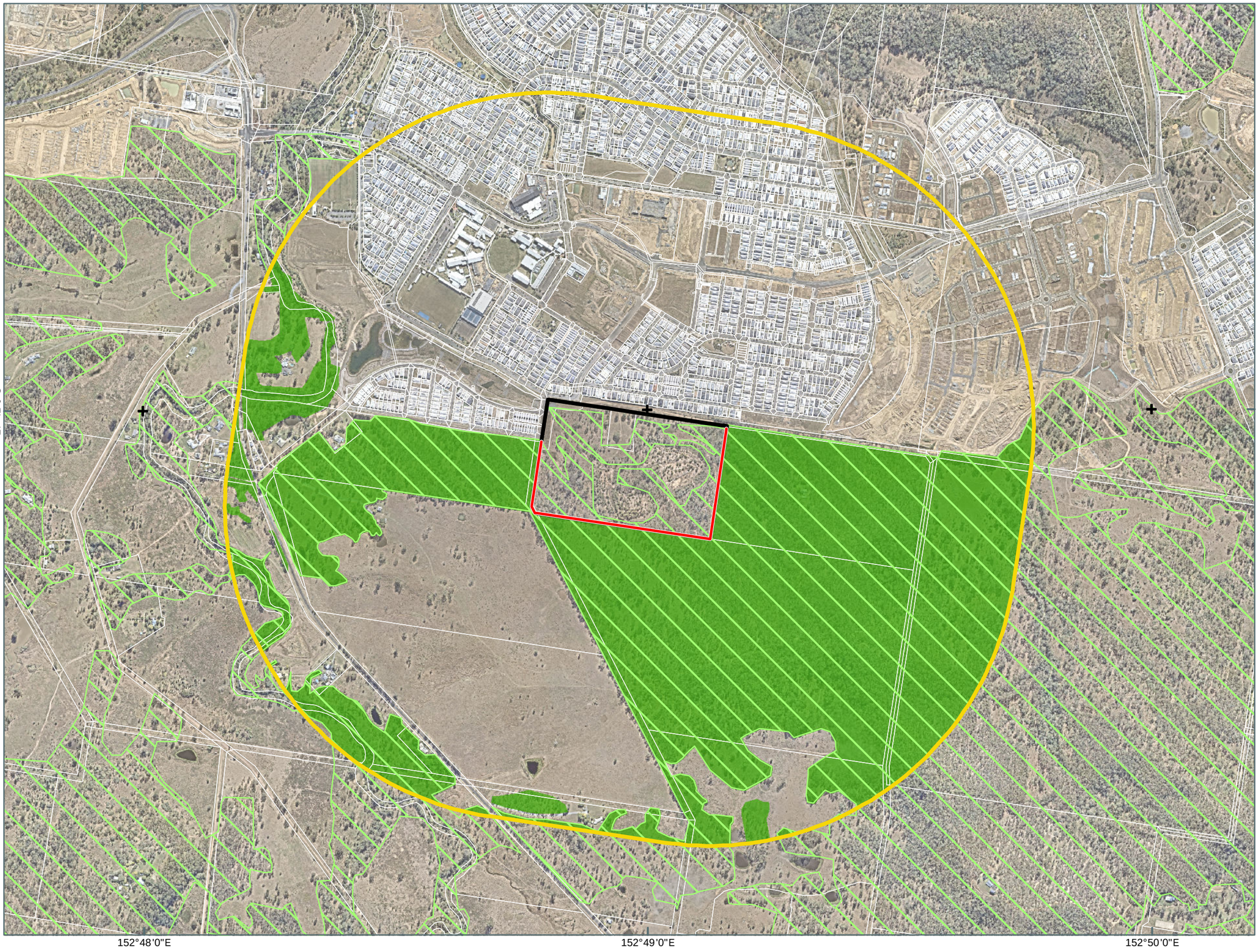
Ecological Corridors

GIS was utilised to identify the role of the site in any ecological corridors on or adjacent to the site. A score of **4 out of 6** was given to the Ecological Corridors component of Site Context as the site is located adjacent to a regionally significant ecological corridor (refer **Plan 5**).

Role of site location to species overall population in the State

This attribute aims to quantify the geographical importance of the impact area for state Koala populations through a combined approach that considers the activity and usage across the site and the importance of the habitat for fulfilling the Koala's life cycle (i.e., foraging and breeding) and thus the effect that removal of this habitat would have on a local population and the species as a whole. This attribute was assigned a score of **5 out of 5** due to the presence of key values to support the Koala such as food trees and connection to large, vegetated areas.

03. REFERRAL AREA - KOALA CONTEXT ASSESSMENT



Notes:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of Saunders Havill.Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
© State of Queensland (Department of Resources) 2025.
Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/
* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

LEGEND

- Qld DCDB
- Referral Area [22 ha]
- 1km Referral Area Buffer
- Percentage of referral area boundary length supporting a Koala critical habitat connection off and on site - 61.4%
- Percentage of Koala Critical habitat within 1km of referral area (35%)
- Size of Koala critical habitat patch adjoining impact site > 5000 ha



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Transverse Mercator
GDA 2020 | Zone 56

1:12,500
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6/08/2025

12186 E 03 Referral Koala Context A

Threats to the species

The 'threats to the species' attribute aims to quantify potential risks to the survival of Koala existing within and adjacent to the referral area. Key known threats to the survival of the Koala include proximity to main roads increasing the risk of motor vehicle strike, as well as predation by wild or domestic dogs as reference in the conservation advice for the species.

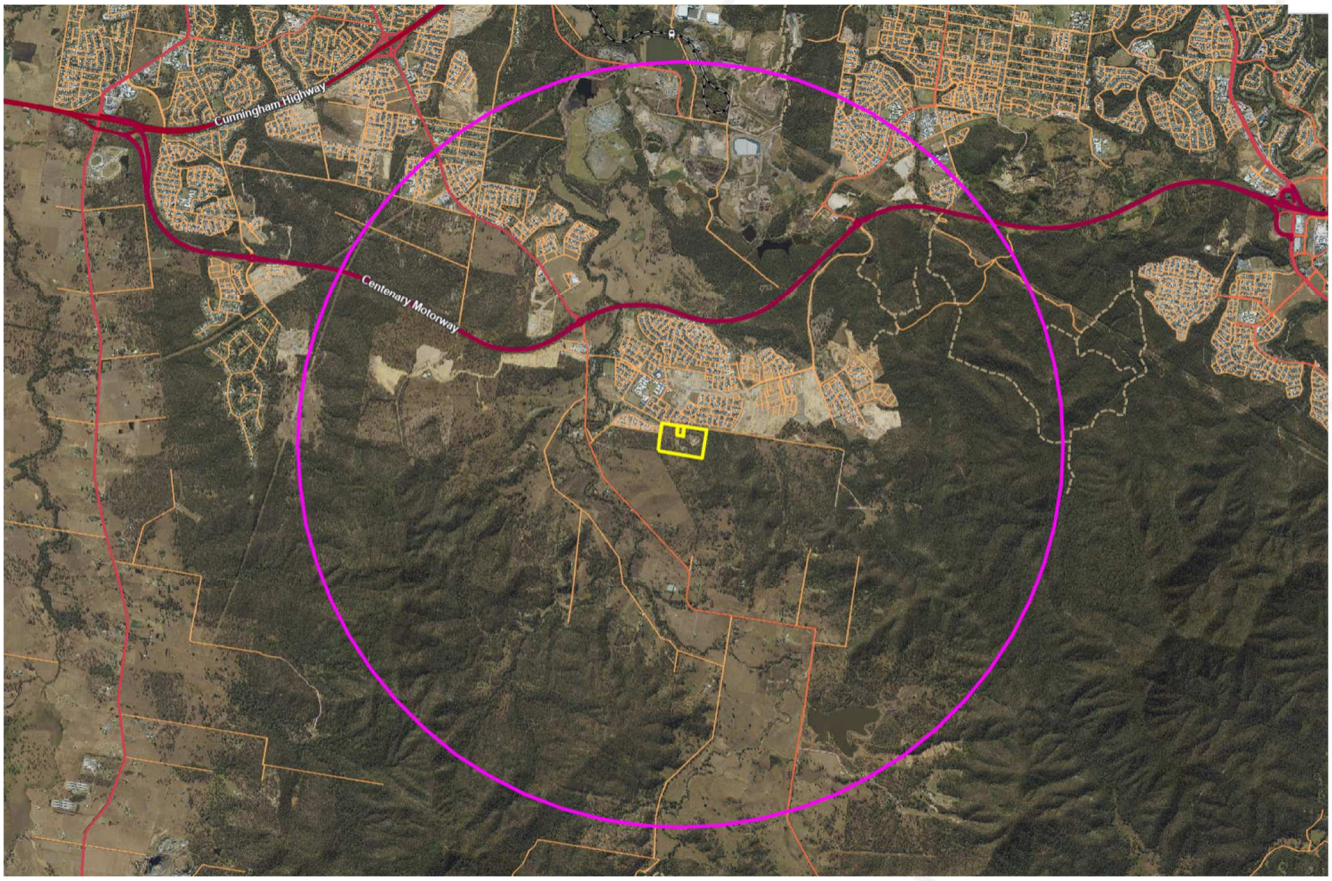
Table 15 provides a risk matrix relative to the conservation advice for the Koala to determine threats to species. Essentially, each of the threats identified within the conservation advice is weighted relative to the identified level of risk, with the weighted scores summed to provide the threat score, noting the MHQA allows for only scores of 1 (high), 7 (moderate) or 15 (low) for threats. An analysis of the scoring attributes for the site is provided below which supports an assessment of a score of **7 out of 15 or 'moderate risk'** as appropriate for the site.

- Clearing and degradation of habitat – the referral area is zone completely as 'urban living' within the Ripley Valley Priority Development Area. The RVPDA is major growth area within the western corridor of SEQ. The zoning intent of 'urban living' is to focus development within strategic areas of high disturbance and modification with high value vegetation retained as large contiguous corridors. This site is highly likely to be developed as part of this zoning. A high-level review of surrounding land indicates at least 50% degraded land within 5 km primarily a result of development to the north and existing cleared rural land to the south. Degraded land includes vegetation that has been cleared or modified for rural or urban uses. Therefore, a weighted score of 0.4 or 'high risk' is appropriate.
- Inappropriate fire regimes – The RVPDA development scheme identifies the referral area as 'transitional bushfire risk area.' This mapping recognises an exiting threat from bushfire which may reduce following the expected completion of surrounding development. A non-Koala specific Bushfire Management Plan is not in place for the referral area which Is considered to have moderate fuel loads as the subcanopy has been thinned out for rural uses and cattle grazing. Therefore, a weighted score of **2.8** or 'moderate risk' is appropriate.
- Vehicle strike – Existing residential developments are present to the north and north-west which include new roads. Bayliss Road is present along the entire northern boundary of the referral area which at present existing as an unsealed road. This road is proposed to be upgraded to facilitate existing developments further east. Main roads such as Ripley Road are present approximately 860 m to the west which has a posted speed limit of 80 km/h and no Koala mitigation measures. This road is the primary linkage to the South Ripley area and is proposed to be upgraded following expected development in the region. At present, there is considered to be a moderate risk of vehicle strike, therefore, a weighted score of **0.7** is appropriate.
- Dog attack – While the threat of dogs is known to be present through Wild Dogs and domestic dogs as have been recorded across the area, no dogs were recorded within the site during site surveys. Therefore, a weighted score of **1.5** or 'low risk' is considered appropriate.

Table 15: Koala Threat Scoring Matrix (green shading indicates applicable scores for the site)

Metric	Low	Moderate	High
Threat Thresholds			

Metric	Low	Moderate	High
Clearing and Degradation of Habitat	Apply one of the following options in order of priority: 1. Apply a current legal protective mechanism. 2. The site is zoned for conservation purposes or clearing is not permitted. 3. If ≤30% of the area within a 5 km buffer of the site is cleared or disturbed land.	In the absence of justification for scoring as high or low and if: >30% and <70% of the area within a 5km buffer of the site is cleared or disturbed land.	Apply one of the following options in order of priority: 1. The site is zoned for development. 2. If ≥ 70% of the area within a 5 km buffer of the site is cleared or disturbed land.
Score Weighting	**6**	**2.8**	**0.4**
Inappropriate Fire Regimes **Very High Risk**	Current Government endorsed Bushfire Management Plan (BMP) to protect the Koala is in effect.	Non-Koala specific BMP in effect. or; Low fuel load and low fire risk.	Site has a high fuel load and/or high fire risk.
Score Weighting	**6**	**2.8**	**0.4**
Vehicle Strike **Moderate Risk**	Low volume of cars, unsealed, no Koala accessibility, fencing, and mitigation measures in place, negligible Koala mortality.	Site-specific and evidence-based qualitative assessment of these considerations	High volume of cars, sealed, accessibility for Koala, no fencing, and no mitigation measures in place, high Koala mortality
Score Weighting	**1.5**	**0.7**	**0.1**
Dog Attack **Moderate Risk**	No dogs recorded on site.	Dogs recorded on site and adequate refuge for Koalas (>70% canopy cover).	Dogs recorded on site and limited refuge for Koalas (<70% canopy cover)
Score Weighting	**1.5**	**0.7**	**0.1**
Threats to Species			
Threshold Analysis	>10	>5 and ≤10	≤5
Score	**15**	**7**	**1**



Insert 1: High level assessment of degraded land within 5 km of the referral area (~50%)

Species mobility capacity

Species mobility capacity is used to quantify the ability of the species to move from the site and through the surrounding landscape to meet survival needs. Species mobility capacity is considered particularly important in response to rapid changes to the surrounding environment, such as the commencement of land clearing. The Koala is considered a relatively immobile species due to it being a ground-dwelling species, moving relatively slowly and hence its vulnerability to threats on ground as outlined above.

The referral area retains some connectivity potential to the south, east and west, however the north and north west directions are completely restricted by existing residential developments. The referral area has a connectedness score of 61.4% meaning that 38.6% offers no connection for Koala as a significant barrier (residential developments). Comparing this score to the specific attribute would be considered as 'moderately restricted' (26-50% reduction). The mobility capacity within the site is also considered where a relatively intact canopy (coverage) provides greater mobility capacity for the species. While Koalas are capable of traversing on-ground between habitat trees, their movement on-ground is limited (Barth et al 2019).

AU1 and AU2 have a recorded canopy coverage (T1 layer) of <50% of the benchmark value (47.03% for AU1 and 30.25% for AU2) while AU3 retains no canopy. The lack of canopy cover and dominance of open areas reduces the species mobility capacity for the Koala. The referral area is considered to have at least a moderate reduction in species mobility capacity as a result of neighbouring developed areas and internal cleared areas lacking canopy coverage. Species mobility capacity is generally scored for the site as a whole, however where significant changes in vegetation value is present it is appropriate to differential the score in order to reflect the obvious variations in mobility capacity.

For the purposes of this assessment, AU1. AU2 and AU3 all scored a **7 out of 10** (moderately restricted) for species mobility capacity.

Species Stocking Rate (40%)

The final component of the MHQA technique is SSR, which is an estimate of the Koala carrying capacity of the site at the time of undertaking the survey. This attribute was calculated for each AU due to the differing quality and availability of habitat for Koala. Detailed calculations for Koala SSR are provided in **Appendix A**).

The final component of the MHQA technique is species stocking rate. The species stocking rate provides an estimation of the landscape's capacity to support Koala and their range of life cycle requirements including dispersal, foraging and breeding as well as population-level dynamics. A species stocking rate score of 40 out of 70 was attributed to AU1 and AU2 reflecting foraging and breeding activities and 30 out of 70 for AU3 to reflect cleared portions of the site that only provide dispersal opportunity

Further details on the justification for the scoring of each attribute is provided below:

- Presence – No direct sighting of Koala was recorded within the referral area despite several days of surveys. Indirect evidence (scats) was recorded at one of the 6 SAT locations. Therefore, therefore 'presence detected on site' was assigned a score of **10 out of 10**
- Species usage of the site (habitat type and evidenced usage) – This attribute was scored a **15 out of 15** for AU1 and AU2 indicating foraging/breeding habitat due to the presence of Koala evidence and Koala habitat trees. AU3 is highly modified cleared land with no canopy coverage or Koala habitat trees. This AU is only capable of providing a dispersal capacity for the species as no foraging or breeding resources are present. AU3 scored a **5 out 15**
- Approximate density – This attribute was scored as **10 out of 30** for the whole site indicating low usage within the site as supported by on-site data from SAT surveys
- Role/importance of species population on site – the extent to which the site is considered a key source population for breeding, dispersal, is necessary for maintaining genetic diversity or near the limit of the species' range. The site is not considered to be a key source population for breeding or genetic diversity based on low usage recorded and is not near the limit of the species range. There is potential that the site is a key source population for dispersal and therefore scores a **5**.

3.3.2.1 Total Quantum Impact

The proposed action will impact on low to moderate quality Koala habitat and not the species or an important population, having a total weighted impact of **5.88 (rounded to 6) out of 10**. It will result in an impact area of 21.7 ha of vegetation identified as critical habitat for the Koala. With a weighted habitat quality score rounded to 6.00, there is an overall Quantum Impact of **13.02 ha**.

Table 16: MHQA final weighted score summary

MHQA Final Weighting	AU1	AU2	AU3
Site Condition /3	1.86	1.49	0.84
Site context /3	2.20	2.20	2.20
Species stocking rate /4	2.29	2.29	1.71
AU area (ha)	5.50	10.40	5.80

MHQA Final Weighting	AU1	AU2	AU3
AU weighted score	1.61	2.86	1.27
Total weighted score		**5.74**	

3.3.3 Grey-headed Flying-fox – Foraging Habitat Assessment Tool

The impact area has been assessed using a GHFF Foraging Habitat Assessment (GHFF FHA) tool developed by Saunders Havill in 2019 in consultation with DCCEEW and utilised on several approved EPBC projects. This method adopts characteristics of the Habitat Quality Guideline while integrating published scientific literature on GHFF foraging habitat.

The traditional terrestrial habitat quality assessment assesses three (3) core indicators—Site Condition, site context and species habitat index.

The GHFF FHA tool combines these three (3) core indicators and published scientific literature into two (2) attributes, Site Condition and site context. Site Condition is weighted at 40% and site context weighted at 30% of the final score. The balance of the weighting (30%) is attributed to the third indicator, species stocking rate, which is independent of the traditional habitat quality assessment. The SRR assessment incorporated in the GHFF FHA tool focuses on 'foraging habitat' for GHFF rather than GHFF stocking rates (presence/absence of the species). This assessment of 'foraging habitat' for SSR has been incorporated in the GHFF FHA tool as GHFF roosting camp and/or species presence was not observed on-site but suitable foraging habitat was evident. Therefore, the density of foraging habitat available on-site is considered an appropriate assessment benchmark for SSR.

The following section details the methodology utilised to assess the Site Condition, site context and species stocking rate under the GHFF FHA.

Site Condition under the GHFF FHA was assessed at the MHQA transect locations within the impact AUs summarised in **Table 2**. Given the lack of trees through AU3, only AU1 and AU2 have been considered as habitat for GHFF.

3.3.3.1 Site Condition (40%)

Assessing Site Condition is an integral step in determining specific quantification of impacts, while also determining whether an offset property is suitable to establish a desired capacity to support the prescribed environmental matters being offset. On-Site Condition is a key element of habitat quality and has a direct influence on the biodiversity it supports. It is assessed using a suite of attributes to describe the structure and function of the vegetation community and is benchmarked against the expected range for a relatively undisturbed community.

The Site Condition assessment under the GHFF FHA is assessed using six (6) condition characteristics being:

- Vegetation condition;
- Species richness (canopy trees);
- Flower scores (average);
- Timing of biological shortages;
- Quality of foraging habitat (trees >0.65 wt p*r); and
- Non-native plant cover.

Assessment methodology of the above condition characteristics is outlined below:

Vegetation condition

This condition characteristic is assessed using the Queensland *Vegetation Management Act 1999* vegetation community status definition, being Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant). This characteristic is scored from a desktop mapping perspective and verified on-ground during assessment. Refer to **Table 17**.

Species richness (canopy trees)

This condition characteristic is assessed using a 100 m X 20 m plot following the contour of the land when possible. Within the plot, all canopy tree and subcanopy tree specimens are recorded. Non-GHFF foraging species are also documented however only GHFF foraging trees are considered in this score. Eby and Law (2008) list GHFF 'diet trees' including blossom trees and fruit trees. It is unlikely that all suitable foraging trees are covered in this document, however any trees from the *Eucalyptus, Corymbia, Angophora, Melaleuca and Syncarpia* genus should be considered a foraging tree for the purpose of this scoring. These genera are dominant within regional ecosystems mapped at the impact and offset sites. Refer to **Table 18**.

Flower scores (average)

This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within Ranking the feeding habitat of Grey-headed flying foxes for conservation management (Eby and Law 2008) and the *National Recovery Plan for the Grey-headed Flying-fox* (DAWE, 2021). Each GHFF foraging trees recorded within each transect is assigned a flower score. Productivity is based on abundance and spatial synchrony, and reliability is based on the consistency with which a species flowers from year to year.

Flower scores of foraging species are derived from Table 4.1 of Eby and Law (2008) which calculates the flower score as:

$$Wt\ p^* r = (productivity)0.7 * (reliability)0.3$$

An average flower score is then calculated for each transect which is averaged across the assessment unit (multiple transects) producing a Average flower score. Should a tree species be present that does not have a referenced flower score in Eby and Law (2008) a flower score will be determined based on the species relative importance to the species. For example *Eucalyptus crebra* (Narrow-leaved Ironbark) is not referenced in Eby and Law (2008) however has been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the *National Recovery Plan for the Grey-headed Flying-fox* (DAWE, 2021). Refer to **Table 19**.

Timing of biological shortages

This condition characteristic is assessed by analysing and cross referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *National Recovery Plan for the Grey-headed Flying-fox* (DAWE, 2021). The later provides details of times of year during biological shortages (food shortages, pregnancy and birthing, lactation, mating and conception, migration paths and fruit industries). Eby and Law (2008), Table 4.5 provide details of flowering periods of foraging species. A combination of this data determines the ability



of the canopy species in the vegetation community to produce foraging habitat. For example, *Corymbia citriodora* (Spotted Gum) flowers in winter/spring and therefore provides valuable foraging resources during a time of food shortages (winter/spring) for the GHFF.

It should be noted that this condition characteristic is weighted and 'food shortages' has been weighted heavier than the balance of the characteristics which are equal, as 'food shortages' is recognised as a major issue. Refer to **Table 20**.

Quality of foraging habitat

This condition characteristic is assessed by analysing and cross-referencing the species recorded in the 'species richness (canopy trees)' characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *National Recovery Plan for the Grey-headed Flying-fox* (DAWE, 2021) and determining which canopy species recorded contain a flower score greater than 0.65 wt p*r and is recognised as a significant food plant by Eby and Law (2008). It should be noted that species recorded that are not prescribed a value by Eby and Law (2008) but are recognised as GHFF foraging trees, have been given an average weighted value of related species or, in the case of Eucalyptus crebra (Narrow-leaved Ironbark) been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the *National Recovery Plan for the Grey-headed Flying-fox* (DAWE, 2021). Refer to **Table 21**.

Non-native plant cover

This condition characteristic is assessed using a 100 m X 20 m plot following the contour of the land when possible. All non-native plant cover was assessed by estimating the cover of exotic species over the 100 m X 20 m plot. Refer to **Table 22**.

It should be noted that for on-ground assessment purposes, the 100 m X 20 m plot utilised for the GHFF FHA overlaps with the on-ground condition characteristics of the Koala MHQA.

Table 17: GHFF FHA Vegetation Condition scoring

Score	Description
5	Category X / non-remnant
10	Category C / regrowth
20	Category B / remnant

Table 18: GHFF FHA Species Richness scoring

Score	Description
0	0 GHFF foraging species
5	1 – 3 GHFF foraging species
10	4 – 6 GHFF foraging species
20	> 6 GHFF foraging species

Table 19: GHFF FHA Flower Score (average) scoring

Score	Description
2	0.01 – 0.25
5	0.26 – 0.50
8	0.51 – 0.75
10	0.76 – 1.00

Table 20: GHFF FHA Timing of Biological Shortages scoring

Score	Description
2.5	Food shortages
1.5	Pregnancy and birthing
1.5	Lactation
1.5	Mating and conception
1.5	Migration paths
1.5	Fruit industries
Total (/10)	Combine total of above

Table 21: GHFF FHA Quality of Foraging Habitat (trees >0.65 wt p*r) scoring

Score	Description
0	0 significant GHFF foraging tree species
5	1 – 3 significant GHFF foraging tree species
10	4 – 6 significant GHFF foraging tree species
20	> 6 significant GHFF foraging tree species

Table 22: GHFF FHA Non-native Plant Cover scoring

Score	Description
1	> 50 % non-native plant cover



Score	Description
5	25 – 50 % non-native plant cover
10	5 – 25 % non-native plant cover
20	< 5 % non-native plant cover

3.3.3.2 Site Context (30%)

The site context assessment deals with the site and its adjacent surroundings. Site context is measured using a suite of attributes to describe the location of the habitat within the surrounding landscape and the influence of its associated threats. This assessment also considers the influence of adjacent vegetated areas and ecological corridors.

Under the GHFF FHA, site context is measured using the following six (6) characteristics:

- Size of patch (refer **Plan 4**);
- Connectedness (active GHFF roost camps in a 20 km radius) (refer **Plan 4**);
- Context (percentage of GHFF foraging habitat in a 20 km radius) (refer **Plan 4**);
- Ecological corridors (refer **Plan 5**);
- Role of site location to species overall population in the state (active GHFF national flying-fox monitoring viewer 'level 3' roost camps in a 20 km radius) (refer **Plan 4**); and
- Threats to the species.

The assessment methodology of the above context characteristics is outlined below:

Size of patch

This context characteristic is assessed using a modified version of the Habitat Quality Guideline method with the directly connected patch of GHFF foraging habitat to site measured. This context characteristic is measured using GIS. The benchmark values for this context characteristic are those used in the traditional habitat quality assessment. Refer to **Table 23**.

Connectedness

This context characteristic is assessed by analysing the number of active GHFF roost camps (over the past year of monitoring) within a 20 km radius of the site. For consistency purposes this assessment is to utilise the data provided on the national flying-fox monitoring viewer (Australian Government). Refer **Table 24**.

Context

This context characteristic is assessed using a modified version of the Habitat Quality Guideline method with the percentage of GHFF foraging habitat within a twenty (20) kilometre buffer of the site measured. This context characteristic is measured using GIS. Refer **Table 25**.

Ecological corridors

This context characteristic is assessed using the Habitat Quality Guideline method which involves determining the proximity of the site to state, bioregional, regional or sub-regional corridors. Refer **Table 26**.

Role of site location to species overall population in the state (active GHFF national flying-fox monitoring viewer 'level 3' roost camps in a 20 km radius)

This context characteristic is assessed by analysing the number of active GHFF roost camps level 3 or greater (over the past year of monitoring) within a 20 km radius of the site. For consistency purposes this assessment is to utilise the data provided by CSIRO (McKeown et al 2026). Refer **Table 27**.

Threats to species

This context characteristic is assessed by analysing the published scientific literature regarding threats to GHFF and determining the number and severity of the threatening processes observed at or adjacent to the site. Refer **Table 28**.

Table 23: GHFF FHA Size of Patch scoring

Score	Description
0	< 5 hectares
2	5 – 25 hectares
5	26 – 100 hectares
7	101 – 200 hectares
10	> 200 hectares

Table 24: GHFF FHA Connectedness scoring

Score	Description
0	< 1 active Grey-headed Flying-fox camp within a 20 km radius
3	1 – 3 active Grey-headed Flying-fox camp within a 20 km radius
6	4 – 6 active Grey-headed Flying-fox camp within a 20 km radius
10	> 6 active Grey-headed Flying-fox camp within a 20 km radius

Table 25: GHFF FHA Context scoring

Score	Description
0	< 10 % Grey-headed Flying-fox foraging habitat within a 20 km radius
3	10 – 30 % Grey-headed Flying-fox foraging habitat within a 20 km radius
6	31 – 75 % Grey-headed Flying-fox foraging habitat within a 20 km radius
10	> 75 % Grey-headed Flying-fox foraging habitat within a 20 km radius

Table 26: GHFF FHA Ecological Corridors scoring

Score	Description
0	Not within an ecological corridor
6	Sharing a common boundary with an ecological corridor
10	Within an ecological corridor

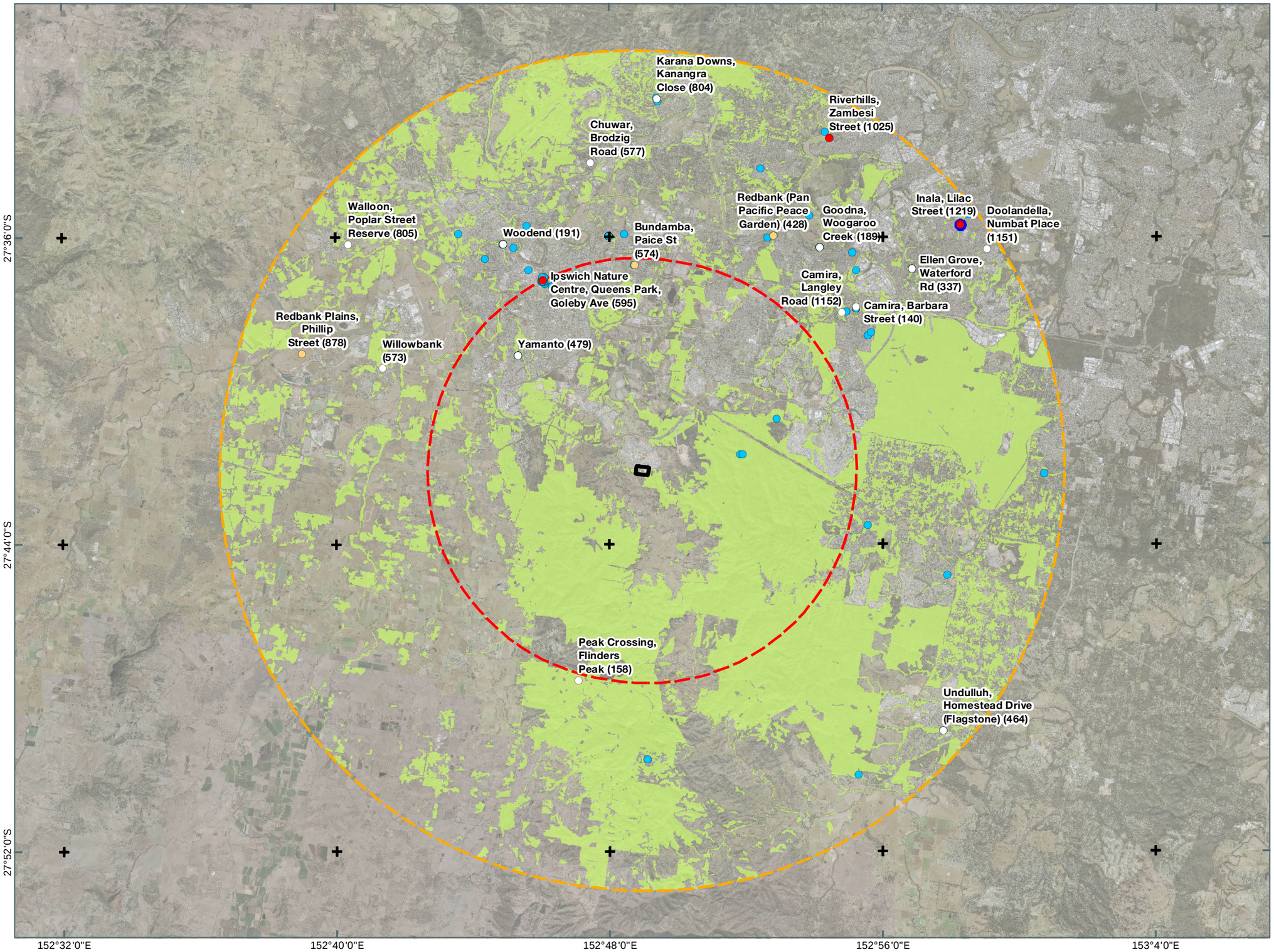
Table 27: GHFF FHA Role of Site Location to Species Overall Population in the State scoring

Score	Description
1	1 – 2 active level 3 Grey-headed Flying-fox camp within a 20 km radius
6	2 – 4 active level 3 Grey-headed Flying-fox camp within a 20 km radius
10	> 4 active level 3 Grey-headed Flying-fox camp within a 20 km radius

Table 28: GHFF FHA Threats to Species scoring

Score	Description
1	High level threat to the species
5	Moderate level threat to the species
10	Low level threat to the species

04. REFERAL AREA - GREY-HEADED FLYING-FOX CONTEXT ASSESSMENT



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LEGEND

- Referral Area [22 ha]
- 10km Referral Area Buffer
- 20km Referral Area Buffer
- Known and potential Grey-headed Flying-fox foraging habitat within 20km of referral area [37%]
- Grey-headed Flying-fox records within 20km of referral area recorded within past 20 years (ALA, 2025) [241]

Grey-headed Flying-fox Roosts (Fed Gov, 2025)

- Grey-headed Flying Fox roost inactive within recent surveys [13]
- Grey-headed Flying Fox roost active within recent surveys [3]
- Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [2]
- Nationally significant Grey-headed Flying Fox roost active within recent surveys [0]
- Nationally significant Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [1]



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0 1 2 3 4 km
N
Transverse Mercator 1:185,000
GDA 2020 | Zone 56 @ A3

Address / RPD: *South Ripley, QLD*

6/08/2025

12186 E 04 Referral GHFF Context A

05. REFERRAL AREA - ECOLOGICAL CORRIDORS

27°40'0"S

27°45'0"S

152°45'0"E

152°50'0"E

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LEGEND

- Referral Area [22 ha]
- Regional biodiversity corridor (SEQ Regional Plan 2017)
- Regionally significant corridor (Biodiversity Planning Assessments)
- State significant corridor (Biodiversity Planning Assessments)



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1:50,000
@ A3

Address / RPD: *South Ripley, QLD*

6/08/2025

12186 E 05 Referral Ecological Corridors A

3.3.3.3 Species Stocking Rate (30%)

The GHFF FHA incorporates species stocking rate which is an attribute not included in the Habitat Quality Guideline method. As discussed above, SSR for GHFF associated with this proposed action is related to the density of GHFF foraging habitat present at the time of the surveys.

Baseline GHFF foraging tree surveys were undertaken by utilising the stem count methodology provided in the *Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland* (version 5.0) (Neldner *et al.* 2019).

This methodology involves assigning the strata for canopy (T1) and subcanopy (T2) and then counting the number of individual tree specimens within the 100 m X 20 m plot. A tree that branches into two or more stems above 30 cm above the ground is counted as one individual. The stem density of canopy species recorded within the 0.2 ha plot is multiplied by five (5) to produce a stem density per ha. This number is then compared to the benchmark stem density per ha based on the sum of the T1 stem density taken from the relevant regional ecosystem technical description as per the *Technical Descriptions of Regional Ecosystems of Southeast Queensland* (Ryan 2019). Refer **Table 20** for benchmark scoring values for species stocking rate.

Table 29: GHFF Species Stocking Rate scoring

Stem density per hectare		
Score	**RE12.9-10.2**	**RE12.9-10.7**
2	0-30	0-60
4	31-130	61-260
6	131-220	261-440
8	221-235	441-470
10	236-245	471-490
8	246-260	491-520
6	261-350	521-700
4	351-450	701-900
2	>451	>901

3.3.3.4 Discussion

The habitat quality scores for each AU were determined using a combination of Site Condition, Site Context, and Species Stocking Rate technical data and scoring. The site was given an overall weighted habitat quality score of **4.81 out of 10**. This score is calculated based on the combined weighted habitat quality scores for each assessment unit (refer **Table 21**).

Table 30: Impact area – GHFF FHA assessment results summary

MHQA Final Weighting	AU1	AU2
Site Condition /4	1.72	1.56
Site context /3	2.20	2.20
Species stocking rate /3	1.80	1.20
AU area (ha)	5.5	10.40
AU weighted score	1.98	3.24
Total weighted score	**5.22**	

Site Condition

The Site Condition achieved a score of **1.72** and **1.56 out of 3** for AU1 and AU2 respectively. This is reflective of the availability of GHFF foraging species within a disturbed environment.

Site Context

Size of patch

This attribute is a measure of the size of the patch of vegetation in which the assessment unit is located. The scoring reflects the importance of large patches in the landscape and is based on the size of the patch of potential GHFF habitat connected to the site in this instance. This attribute is scored such that is reflects the fact that larger patches are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller patches. The size of patch attribute was calculated using GIS and determined the impact area to be part of a patch size of larger than 5000 ha. This achieved a score of **10 out of 10** (**Plan 4**).

Connectedness

As a landscape level attribute, connectedness aims to assess the degree to which the assessment unit is connected to other populations of GHFF. Connectedness was calculated by counting the number of active GHFF camps within a 20 km radius. There are 6 active camps within recent surveys, and so the site scored a **6 out of 10** (**Plan 4**).

Context

The context attribute refers to the amount of potential GHFF habitat retained within a 20 km buffer of the proposed site and is calculated using GIS. Existing habitat within a 20 km buffer of the site was calculated at 37 %, and therefore the context attribute achieved a score of **6 out of 10** (**Plan 4**).

Ecological Corridors

GIS was utilised to identify the role of the site in any ecological corridors on or adjacent to the site. A score of **4 out of 6** was given to the Ecological Corridors component of Site Context as the site is located adjacent to a regionally significant ecological corridor (**Plan 5)**

Role of site location to species overall population in the State

This attribute aims to quantify the importance of the site for state GHFF populations by assessing the number of notable populations within 20 km of the site and is calculated using GIS. Three (3) GHFF camps have been recorded within 20 km of the site in recent surveys with a population level of 3+, and so this attribute was assigned a score of **6 out of 10** (**Plan 4**).

Threats to the species

The 'threats to the species' attribute quantifies potential risks to the survival of GHFF existing within and adjacent to the impact area. Key known threats to the GHFF include barbed-wire fencing and powerlines. Fencing was limited across the impact site and therefore this attribute was scored a **10 out of 10** or 'low' threat.

Species Stocking Rate

The final component of the MHQA technique is SSR. Species stocking rates are estimates of the GHFF carrying capacity of the site at the time of undertaking the survey. Stem density of GHFF foraging trees was 290 and 160 per ha at AU1 and AU2 and so received SSR scores of **6** and **1 out of 10**, respectively.

3.3.3.5 Total Quantum Impact

The proposed action will result in an impact area of 15.9 ha of vegetation identified as critical habitat for the GHFF. With a weighted habitat quality score rounded to 5.22 (rounded to 5.00), there is an overall Quantum Impact of **7.95 ha**.

3.4. Impact Assessment Summary

The overall habitat quality scores for Koala and GHFF at the impact area are presented in **Table 31** and **Table 32**.

As per the EPBC Act Application (EPBC 2025/10110), the action proposes to impact 21.7 ha of Koala habitat and 15.9 ha of GHFF foraging habitat with an MHQA score of 5.74 (rounded to 6) for Koala and 5.22 (rounded to 5) for GHFF. This results in a quantum of impact of 13.02 ha for the Koala and 7.95 ha for the GHFF. Detailed impact scoring table for Koala and GHFF are provided as **Appendix A**.

Table 31: Impact area – Total MHQA results for Koala

MHQA Final Weighting	AU1	AU2	AU3
Site Condition /3	1.86	1.49	0.84
Site context /3	2.20	2.20	2.20
Species stocking rate /4	2.29	2.29	1.71
AU area (ha)	5.5	10.4	5.8
AU weighted score	1.61	2.86	1.27
Total impact area (ha)	**21.7**		
Total weighted score	**5.74**		

Table 32: Impact area – Total FHA assessment results for GHFF

MHQA Final Weighting	AU1	AU2
Site Condition /4	1.72	1.56
Site context /3	2.20	2.20
Species stocking rate /3	1.80	1.20
AU area (ha)	5.5	10.40
AU weighted score	1.98	3.24
Total area (ha)	**15.9**	
Total weighted score	**5.22**	

4. Overview of Offset Area

4.1. Offset Property Description and Tenure

The MVOA is located at Oaky Scrub Road, Oaky Creek, Queensland within the Scenic Rim Regional Council (SRRC) Local Government Area, approximately 5.3 km east of Rathdowney and 59.15 km south of the impact area. The MVOA comprises 71 ha of Lot 24 on RP47247 and is part of the larger MVOP which is intended to provide multiple other future Federal Offsets for Koala and other MNES. Offset site aerial and context figures are provided as **Figure 3** and **Figure 4**.

The MVOA is currently zoned as Rural under the SRRC Planning Scheme. Key details relating to the MVOA are provided in **Table 33**.

Table 33: Mount View Offset Area summary

Address	**Oaky Scrub Road, Oaky Creek, Queensland, 4285**
Lot/Plan	Part of Lot 24 on RP47247
Area (ha)	71
Tenure	Freehold
Local Government Area	Scenic Rim Regional Council
Zoning	Rural

The MVOA is currently used for pastoral grazing and rural land uses. The area is highly disturbed by grazing activities and is dominated by cleared paddock with patches of retained remnant and regrowth eucalypt vegetation predominantly restricted to gullies (refer **Plan 6**). Weed presence within the MVOA is patchy, with some dense *Lantana camara* (Lantana) infestation through the gullies and exotic grasses across paddocks. Notably, land management practices including prescribed burns, spraying and slashing have been used consistently, and continue to be used, to promote pasture grasses and improve grazing potential. As a result, there is very little understorey or regrowth present.

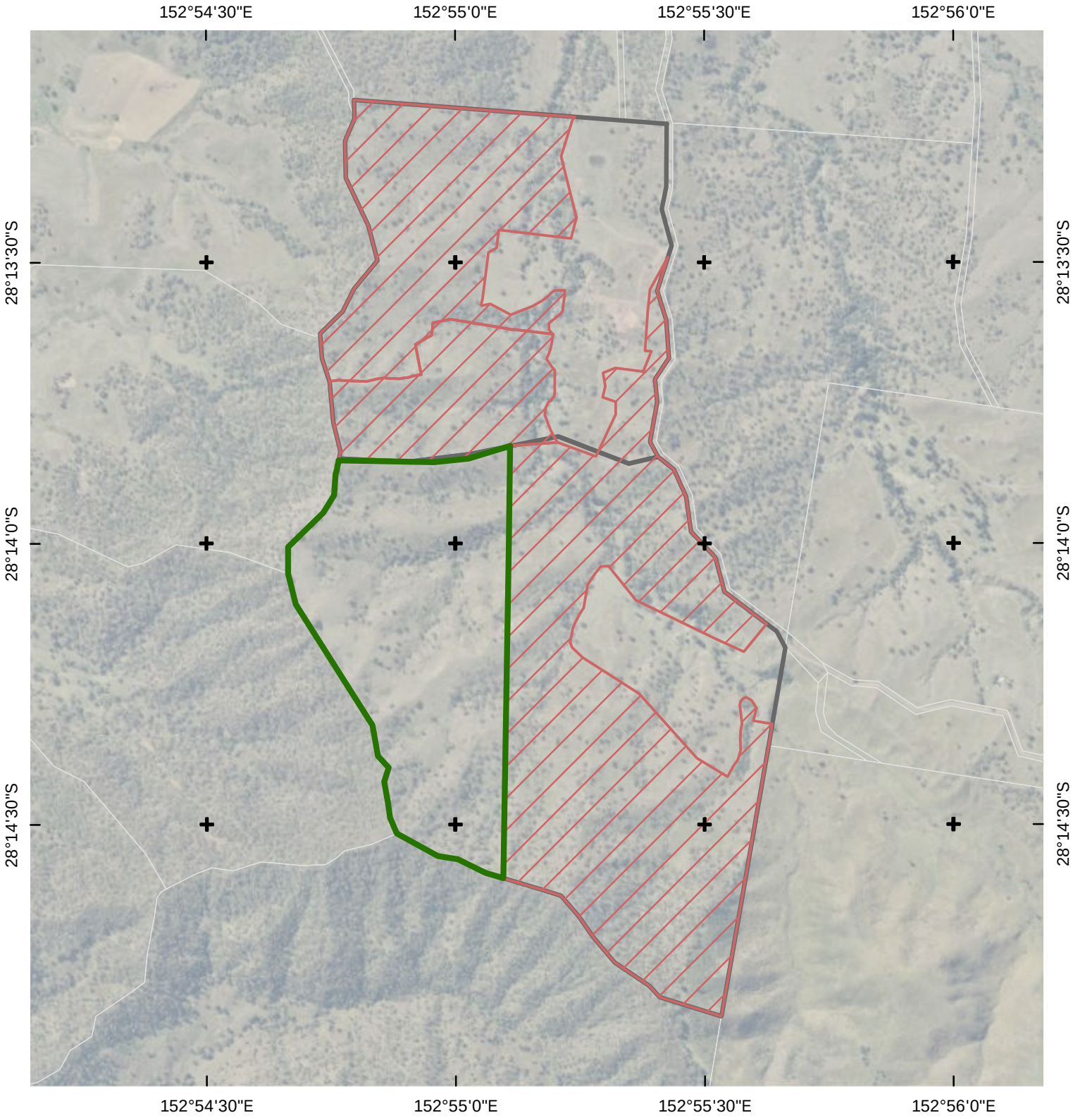
A review of historical aerial imagery was undertaken to assist with the broad delineation of vegetation communities and identification of historical land management patterns that potentially affect current local vegetation values (**Plan 7**). This review observed expected patterns of extensive clearing and maintenance of the vegetation for rural purposes since 1955. Vegetation within MVOA has generally been minimal and restricted to gullies, as it is currently, with slight fluctuations of growth and clearing over time.

The MVOA is considered to have the capacity to meet the offset requirements and deliver overall conservation gains for Koala and GHFF. The MVOA is well-connected to existing habitat for these species, being partially located within both a Regional Biodiversity and State Significant corridor that connect large

nearby national parks such as the Border Ranges, Lamington, and Mt Barney (**Plan 8**). The MVOA is undulating, with hills and gullies and a long range of hills running off-site south towards Mt Chinghee National Park and the Border Ranges, which has preserved vegetation connectivity to the south despite historical and ongoing grazing in the surrounding area. The surrounds also contain records of both MNES species, and so utilisation of the MVOA once revegetated is likely.

Improvement of the potential habitat within the MVOA to increase quality, quantity, and accessibility for these species is also achievable since the mixture of existing remnant, regrowth, and non-remnant vegetation means it can act as a receiving area for both habitat rehabilitation and creation. As such, the proposed MVOA provides well-connected potential habitat for the impacted MNES at various states of degradation through an area known to contain the target species, and its management will allow for a conservation gain for both.

Upon EPBC Act Approval, the MVOA will be protected by a Voluntary Declaration under the *Vegetation Management Act 1999* which will provide protection for the duration of the impact. A covenant will also be completed under the *Land Act 1994* or *Land Titles Act 1994* within 12 months of commencement of the action. If a covenant is not possible an alternative legally binding mechanism will be implemented in consultation with DCCEEW. An assessment of the suitability of the MVOA is provided **Section 5**.



LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]
- Mount View Offset Property [314.7 ha]
- Future offset boundaries

Figure 3

MOUNT VIEW
OFFSET SITE AERIAL

PROJECT
Bayliss Road, South Ripley

COORDINATE SYSTEM
GDA 2020 MGA Z56

SCALE (A4)
1:17,500

0 100 200 300 400 500 m

N

CLIENT
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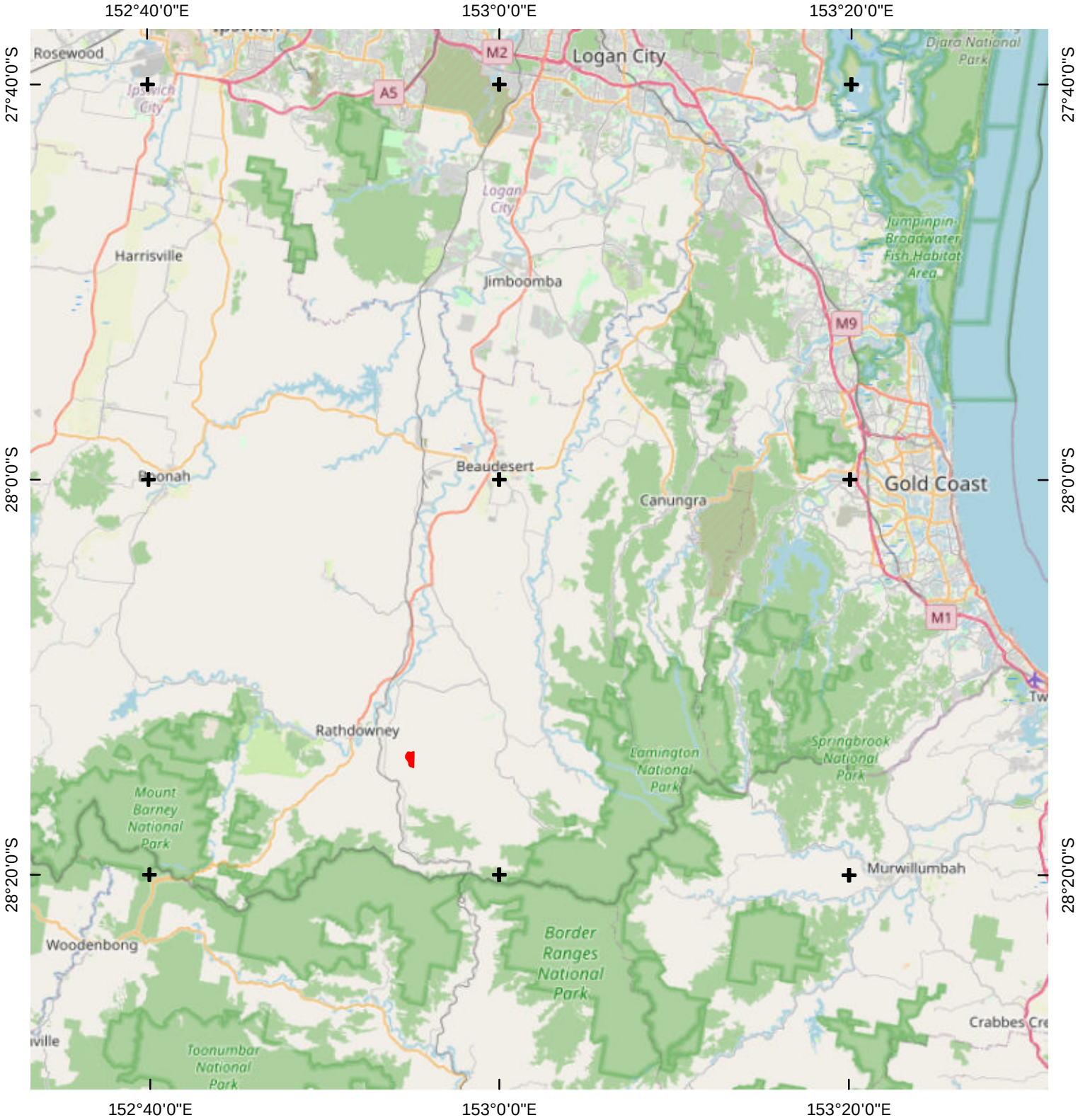
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FILE REFERENCE
12186 E OMP Figure 3 Offset Aerial B

DATE 27/04/2026



LEGEND

Mount View Offset Area [71 ha]

Figure 4

MOUNT VIEW
OFFSET SITE CONTEXT

CLIENT
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PROJECT
Bayliss Road, South Ripley

COORDINATE SYSTEM
GDA 2020 MGA Z56

SCALE (A4)
1:500,000

0 2 4 6 8 10 km

N

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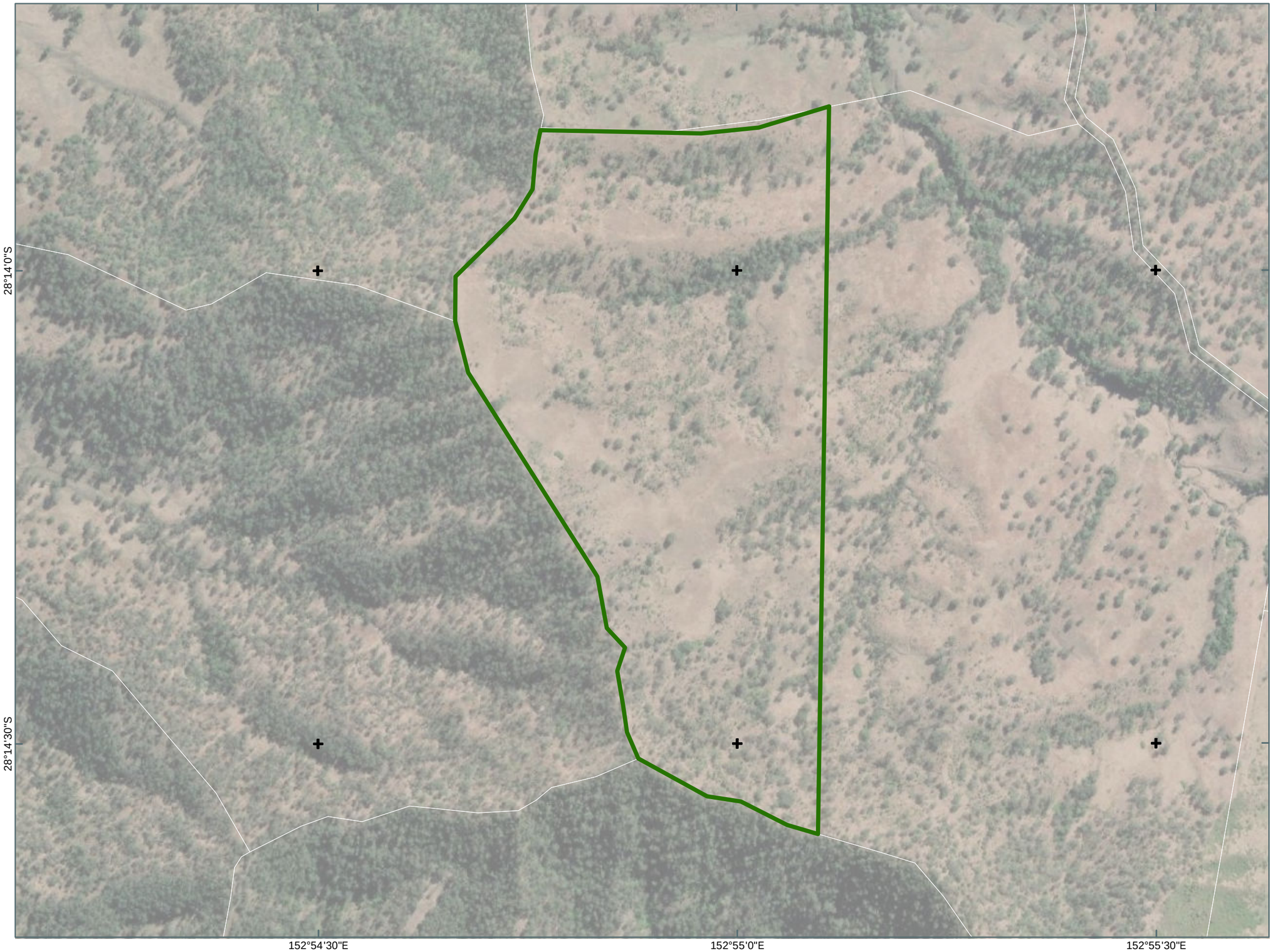
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06. MOUNT VIEW OFFSET AREA



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LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]



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HB QLD Pty Ltd

Oaky Creek

0 50 100 150 200 m

Transverse Mercator
GDA 2020 | Zone 56

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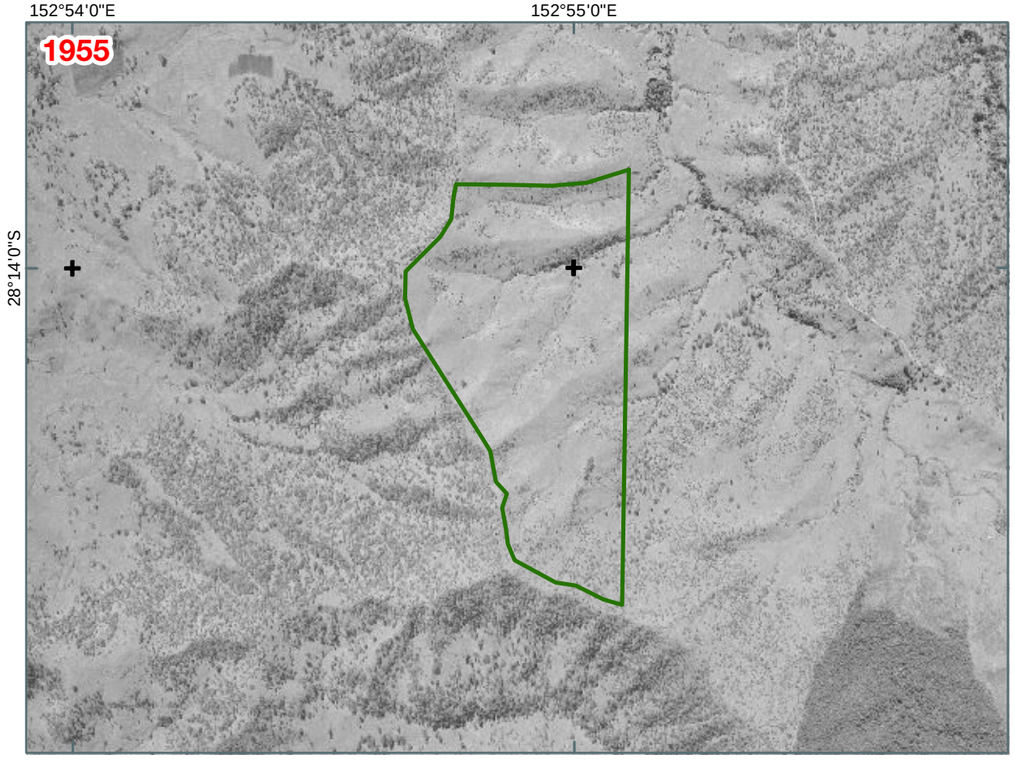
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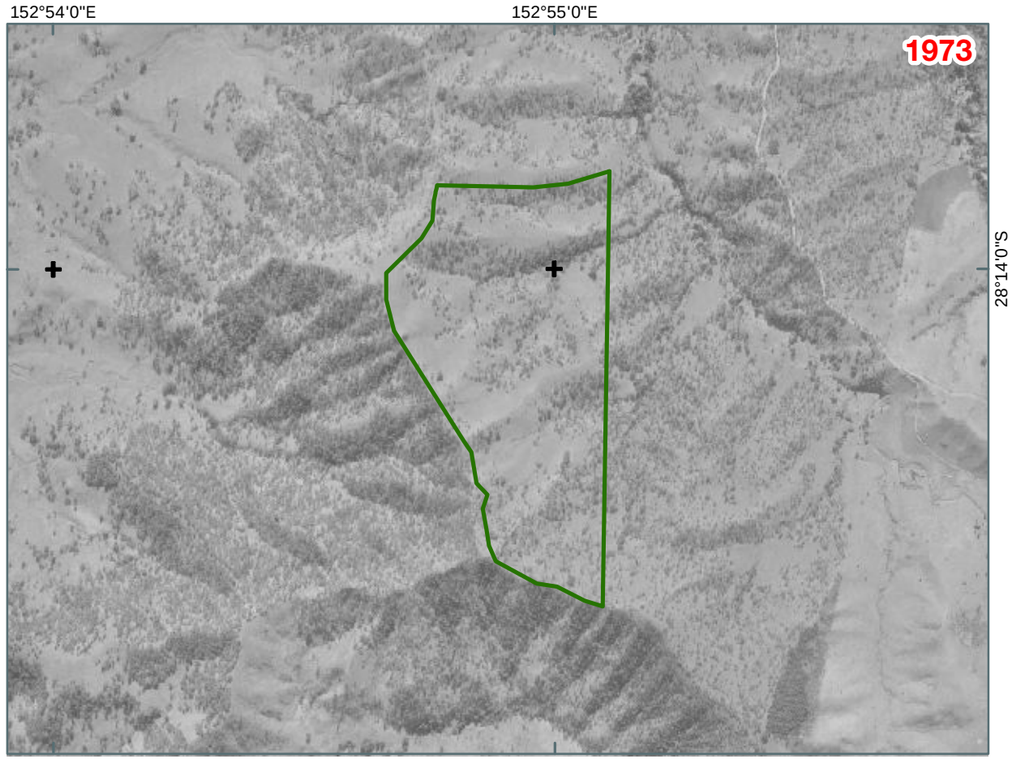
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12186 E 06 Offset Area B

07. MOUNT VIEW OFFSET AREA - HISTORICAL AERIAL IMAGERY









Notes:
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LEGEND

Mount View Offset Area [71 ha]



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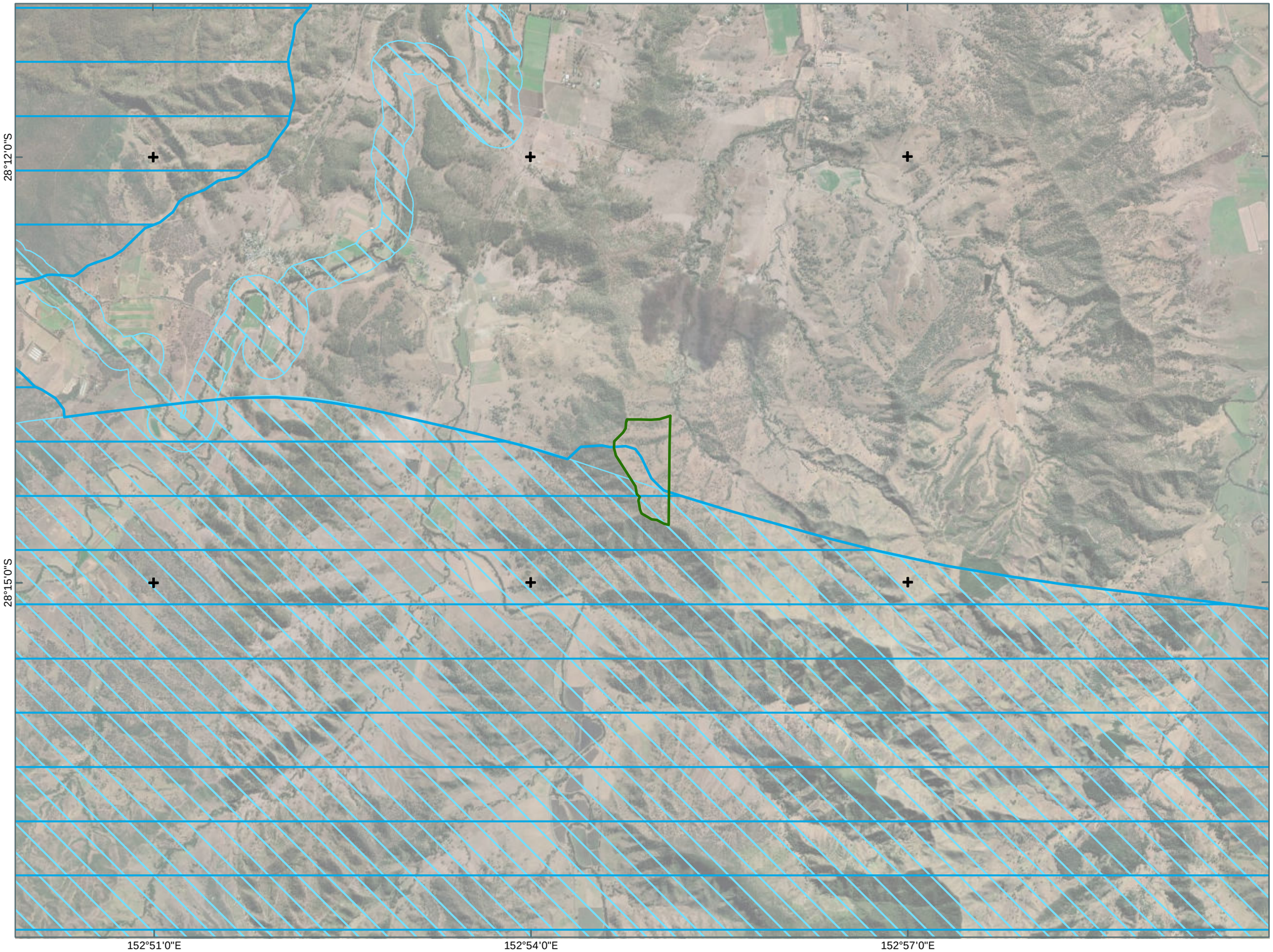
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12186 E 07 Offset Historical Imagery B

08. MOUNT VIEW OFFSET AREA - ECOLOGICAL CORRIDORS



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LEGEND

- Mount View Offset Area [71 ha]
- Regional biodiversity corridor (SEQ Regional Plan 2017)
- State significant corridor (Biodiversity Planning Assessments)



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12186 E 08 Offset Ecological Corridors B

5. Offset Area Suitability

As detailed in **Section 1**, one (1) offset area (MVOA) has been selected to be secured to wholly acquit the impacts to MNES outlined under the EPBC Preliminary Documentation (EPBC 2025/10110) and provide benefit additional to the required compensation for residual impacts.

The suitability of the MVOA is discussed within this section and considers the bioregional context of the MVOA, ecological values, water resources, topography, and existing habitat values for Koala and GHFF.

5.1. Bioregional Context

Queensland is divided into 13 biogeographical areas to identify biodiversity features at a regional scale. The MVOA is located in the South East Queensland (SEQ) Bioregion. The SEQ Bioregion extends from the Border Ranges on the New South Wales border, north to the dry coastal corridor between Gladstone and Rockhampton (DEHP 2016). It shares its western boundary with the Brigalow Belt Bioregion. The McPherson Range borders the southern boundary, and the Great Dividing Range the west of the bioregion. Ranges extend north-south through the central region creating an altitudinal gradient from the coast. Small volcanic plugs remain in the landscape offering distinctive conditions for taxa and ecosystems (DEHP 2016). Large sand islands off the coast offer unique environments and create sheltered bays and passages within which marine and coastal plants and animals thrive (DEHP 2016). The impact area and MVOA are within adjoining sub-bioregion, with the impact are in Moreton Basin and the MVOA a few kilometres from the southern Moreton Basin boundary in Scenic Rim.

5.2. Offset Area Values

5.2.1 Regional and Landscape Context

The MVOA sits partially within the Biodiversity Planning Assessment State corridor and South East Queensland Regional Plan ('ShapingSEQ 2017') Regional Biodiversity corridor which spans from the Noosa headland in the north, down to Mount Barney and Lamington National Park on the Queensland border (**Plan 8**). The corridor aims to encompass large tracts of vegetation, terrestrial connectivity, aquatic connectivity, species richness, diversity and refugia, ecosystem representation and uniqueness and climate resilience areas (Queensland Government 2017).

The regional biodiversity corridor forms part of the Great Eastern Ranges terrestrial corridor which extends from the mountains of Victoria to the Atherton Tablelands in far north Queensland (Mackay *et al.* 2010). The Great Eastern Ranges corridor provides habitat and movement for a range of species that have Federal, State and Local significance, supports significant cultural heritage values and offers scenic amenity and outdoor recreation opportunities (Mackay *et al.* 2010).

The MVOA will conserve freehold land within and adjoining the regional biodiversity corridor, linking large patches of remnant vegetation and habitat. This linkage provides a valuable contiguous habitat corridor, ensuring habitat fragmentation is minimised and improving the connectivity of Koala habitat within SEQ, contributing to the future protection and persistence of the species.

The MVOA is well positioned to provide high conservation values once rehabilitated through the management actions proposed in this OMP and contribute to the provision of protected, well-connected, and high-quality Koala and GHFF habitat in the region. By improving potential habitat on site via natural

revegetation, replanting, and removing pests, weeds, and threats, the property will provide biodiversity offsets that ensure an ecological gain on the residual impacts resulting from the impact site. This aligns with offset principle 1 of the EPBC Act Environmental Offsets Policy (EOP) which states Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter.

The broader MVOP is intended to support future EPBC offsets meaning that the MVOA will combine with additional offset areas to form a more than 250 ha patch of suitable, well-connected habitat that directly connects to Local and Regional biodiversity corridors.

5.2.2 Topography

Topography within the MVOA is varied, with multiple relatively steep gullies and hills intersecting the broader site (**Plan 9**). The western boundary aligns with the ridge of a small mountain range, so the land and gullies generally slope east towards Dip Gully, located just off-site. The MVOA ranges from almost 300 m Above Sea Level (ASL) along the western ridge line to approximately 190 m ASL closest to Dip Gully, with drops of up to 40 m ASL along individual gullies.

5.2.3 Water Resources

The MVOA contains three (3) watercourses mapped by the VMA, running west-east from the ridgeline down to Dip Gully along the most prominent gullies. All three watercourses are VMA 'level 1' watercourses and are not mapped by either Queensland *Fisheries Act 1994* or *Water Act 2000*.

5.2.4 Koala and Grey-headed Flying-fox Habitat

Field surveys determined the MVOA is dominated by cleared grazing areas, with patches of retained eucalypt vegetation within gully lines in the north and south of the site. This vegetation is comprised largely of regrowth, with two small areas considered remnant vegetation along the eastern boundary. The remnant vegetation contains both a higher abundance of mature and regrowth eucalypt trees, and a higher density of *Lantana camara* (Lantana) infestation. Generally, Lantana presence is highest through the gully lines on site.

The MVOA is mapped similarly under the VMA, with polygons of regulated vegetation present through the north and south with the majority mapped as Category X (non-remnant) vegetation.

Where Category B vegetation is present, this is mapped as containing RE 12.8.17 with Category C mapped as composite RE 12.8.17/12.8.16/12.8.14 (50/30/20%). Pre-clear RE mapping across the Category X (non-remnant) vegetation is also predominantly RE 12.8.17/12.8.16/12.8.14, with a small central area of RE 12.8.17. Descriptions for these REs are provided in **Table 34**.

The MVOA was delineated into three (3) separate Assessment Units based on the ground-truthed non-remnant, regrowth, and remnant vegetation communities under the MHQA methodology. Notably, all areas of the MVOA were observed to have evidence of historical clearing including mapped remnant and regrowth mapping.

Table 34: Mount View Offset Area – Regional Ecosystem descriptions

Regional Ecosystem	Vegetation structure	Description
12.8.17	Sparse	*Mixed woodland with combinations of Eucalyptus crebra, E. melanophloia, E. tereticornis, Corymbia tessellaris, C. intermedia, and commonly containing Angophora subvelutina and E. melliodora, with a grassy ground layer. Usually occurs on mid and lower slopes of hills on Cainozoic igneous rocks, especially basalt. Not a Wetland. (BVG1M: 11a).*
12.8.16	Sparse	*Eucalyptus crebra, generally with E. melliodora and E. tereticornis subsp. Basaltica grassy woodland. Eucalyptus albens may occur on the western edge of the bioregion. Usually occurs on dry mid and upper slopes and crests on Cainozoic igneous rocks, especially basalt. Not a Wetland. (BVG1M: 11a).*
12.8.14	Mid-dense	*Eucalyptus eugenioides, E. biturbinata, E. melliodora +/- E. tereticornis, Corymbia intermedia, E. crebra open forest. Allocasuarina torulosa is a common understorey species. Localised occurrences of Eucalyptus laevopinea, E. quadrangulata and E. banksii may occur. Occurs on Cainozoic igneous rocks, especially basalt. Not a Wetland. (BVG1M: 11a).*

The dominance of vegetation communities containing foraging habitat values for the Koala and GHFF suggests the MVOA provides value for these species and will continue to improve in quality and availability with targeted restoration and preservation in historically degraded areas.

5.2.5 Current Land Management Practices

Presently, the MVOA is utilised for cattle grazing and is managed through various farming practices. This includes the use of the following management activities:

- Intensive grazing to ensure ground cover levels are maintained, subsoil moisture is retained, and pasture growth is encouraged.
- Targeted spraying/slashing of regrowth and weeds to encourage spread of pasture grass.
- Controlled burns to remove weeds and regrowth to promote pasture grass. Fire scar mapping shows the entire site has undergone management since 2016.
- Establishing and maintaining adequate firebreaks across the property.
- Utilisation of fencing and gates for cattle control

5.2.6 Current Threats

The MVOA is and has been utilised in various ways for agriculture, which attracts a range of threats to both livestock and native wildlife. Non-native vertebrate pests have been confirmed within the local region adjacent to the MVOA. The Queensland WildNet database identifies records of two (2) Wild Dog (*Canis familiaris*), five (5) Red Fox (*Vulpes vulpes*), one (1) Feral Cat (*Felix catis*), and one (1) European Brown



Hare (*Lepus europaeus*) within 20 km of the MVOA. Wild Dogs are known to travel up to 20 km seeking prey, with home ranges of individuals likely to overlap with the MVOA.

The SRRC lists Wild Dogs (*Canis familiaris*) as declared pest animals and runs an ongoing baiting program alongside landowners to reduce numbers. Wild Dogs (*Canis familiaris dingo, Canis familiaris dingo X Canis familiaris, Canis familiaris*) are considered direct threats to the MNES target species. This conclusion is based on several federal government documents including the DAWE Conservation Advice for *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory.

Additional threats to Koala and Grey-headed Flying Fox include Feral Cat (*Felix catus*) and European Red Fox (*Vulpes vulpes*). These species are not listed as a key threatening process to either of the MNES species however both are known to be opportunistic predators with significant impacts to native species.

Feral Pig (*Sus scrofa*) and European Rabbit (*Oryctilagus cuniculus*) are also known to cause significant environmental destruction to soil and vegetation through digging, spreading weeds and will be addressed through the OMPs pest management strategy.

Other general threats to habitat quality at the MVOA include:

- clearing and harvesting of timber for pastoral uses,
- ploughing and harvesting land for fodder,
- uncontrolled wildfire,
- barbed wire, and
- significant weed infestations of Weeds of National Significant (WONS) including *Lantana camara* (Lantana) and *Senecio madagascariensis* (Fireweed).

Refer to **Table 35** and **Table 36** for a summary of threats identified at the site and **Figure 5** for an outline of how threats will be prioritised for management.

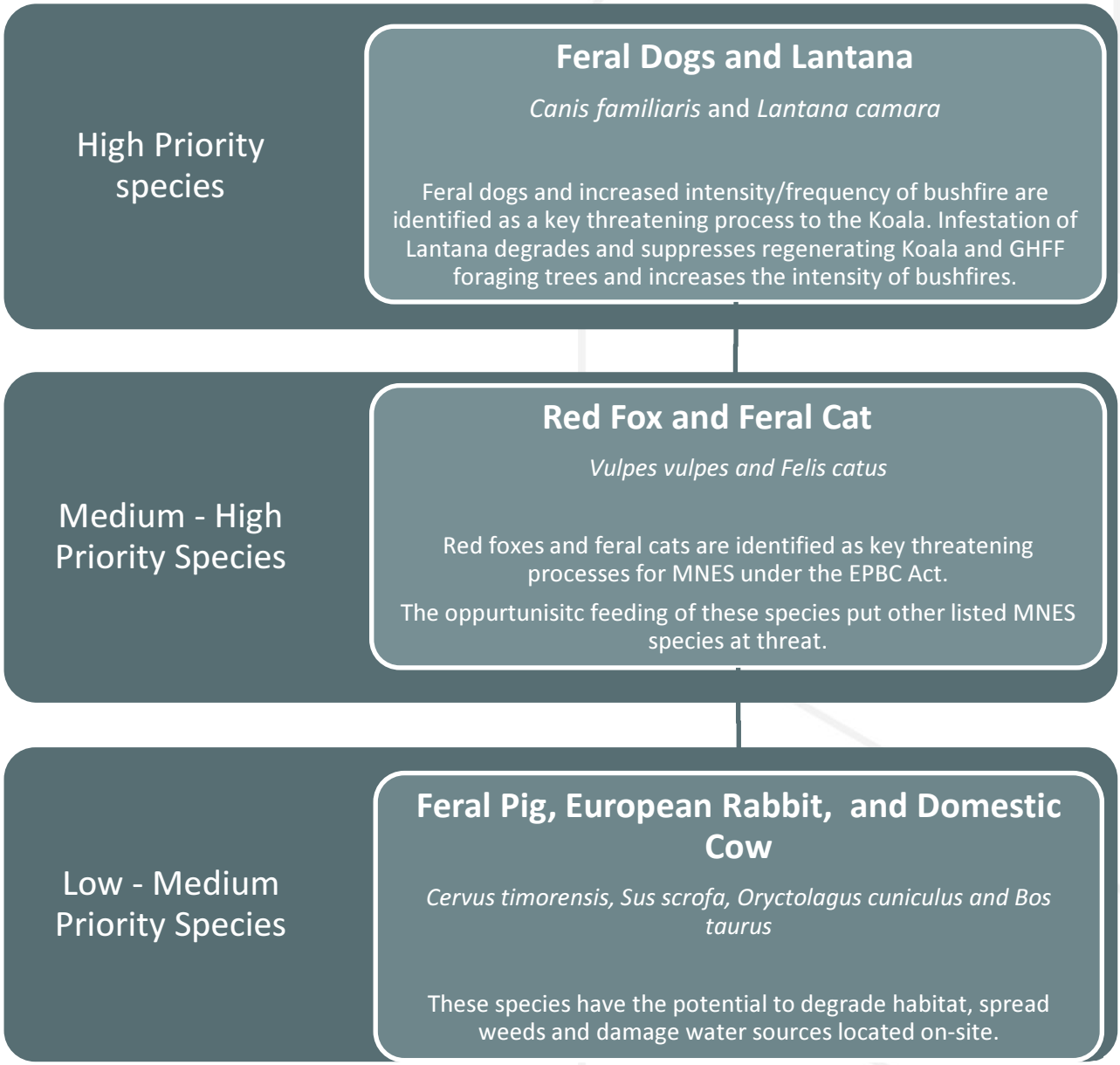
Table 35: Offset property restricted invasive matters identified as threats to MNES.

***Biosecurity Act 2014* Restricted Matter**	**Restricted Category**	**SRRC Declared Pest Animals or Weeds**
Weeds of National Significance (WONS)		
Lantana (*Lantana camara*)	3	Yes
Fireweed (*Senecio madagascariensis*)	3	Yes
Significant Invasive Fauna		
Wild Dogs (*Canis familiaris dingo, Canis familiaris dingo X Canis familiaris, Canis familiaris*)	3,4,6	Yes
Feral Cat (*Felis catus*)	3,4,5,6	Yes
Feral Pig (*Sus scrofa*)	3,4,6	Yes
European Red Fox (*Vulpes vulpes*)	3,4,5,6	Yes

Table 36: Offset property threats MNES species

MNES Offset Target Species	Major threats to MNES present within offset property
Koala (*Phascolarctos cinereus*)	- Encounter mortality from Wild Dogs (*Canis familiaris dingo*, *Canis familiaris dingo X Canis familiaris*, *Canis familiaris*) - *Lantana camara* adversely affects the ability of Koalas to move between trees
Grey-headed Flying-fox (*Pteropus poliocephalus*)	- Barbed wire fencing (entanglement)

Figure 5: Threat Management Prioritisation



5.2.7 Weeds of National Significance

Lantana camara (Lantana) was observed in several locations across the site, in particular around the waterways and gullies. Invasion, establishment and spread of Lantana is a key threatening process to many threatened flora species and has been acknowledged to adversely affect the ability of Koala to move between trees (NSW Scientific Committee, 2021). The Department of Agriculture and Fisheries (DAF) (2023) indicates more than 1400 native species are negatively affected by Lantana invasion, including many endangered and threatened species. Additionally, Lantana as a woody shrub with thin, combustible canes, has been observed to create hotter bushfires, which significantly alters native vegetation communities and pastures (DAF, 2023). It is noted that under the Conservation Advice for Koala, increased intensity/frequency of bushfire is a listed key threatening process. Although this largely refers to the impacts caused by Climate Change, the presence of Lantana within bushland can significantly increase the extremity of bushfire and thus the impact it has directly on Koala and other listed species such as GHFF that rely on Eucalypt bushland for foraging and breeding (refer **Figure 5**). For this reason, the Queensland Governments 'Southeast Queensland Koala Conservation Strategy 2022 – 2025' lists management of invasive weeds in both *Action Area 1: Habitat Protection* and *Action Area 3: Threat Management* (DES, 2020). Impact management of invasive flora, particularly Lantana, is therefore considered a key direct action to addressing threats on Koala and other listed species that share the same habitat requirements.

Lantana has potential to quickly colonise an area preventing movement opportunities for fauna and supressing native regrowth and is therefore considered a primary weed to be controlled.

Fireweed was also observed on site. It is a prominent weed throughout native and improved pastural land, open woodland and grassland that is abundant and conspicuous throughout much of southern Queensland. This species is listed as a Weed of National Significance (WONS) due to its invasiveness, capacity to rapidly spread, and environmental impacts. Although not listed as a direct threat or key threatening process to MNES, Fireweed is known to outcompete native species and reduce ground cover, ultimately resulting in erosion and stripping of topsoils. As such, Fireweed should be controlled to limit competition with natural regeneration of Koala and GHFF foraging trees and improve overall soil health.

5.2.8 Significant Invasive Fauna

5.2.8.1 Wild Dog

The Department of Primary Industries (DPI) lists feral dogs as abundant and widespread throughout the Scenic Rim region. Although not recorded within the MVOA during field surveys, motion-sensor fauna camera traps deployed in the wider MVOP recorded multiple Wild Dogs over the broader property (**Photo set 1**). Furthermore, anecdotal evidence from the site owners also indicates Wild Dogs have been observed within the site itself. In addition, research by Pest Animal Management QLD (2020) found that the Scenic Rim region contains an abundance of Wild Dogs, with evidence indicating that calf predation has increased significantly in the last decade.



Photo set 1: Wild Dogs recorded in the wider 'offset property'

5.2.8.2 European Red Fox

European Red Fox is listed as a major threat to the survival of several MNES species. DAF lists foxes as being widespread across Australia due to being highly adaptable and opportunistic feeders consuming a wide variety of animal and plant material, such as rabbits, rodents, frogs, birds, insects and even fruit, vegetables and grain. Scenic Rim Regional Council also lists this species as being abundant throughout the region, with trapping programs widely conducted (SRRC 2023).

Records of this species are present within 20 km of the site. Further, under SRRCs *Biodiversity Strategy 2015 – 2025* local council has set forth an objective to support land managers in the control of pest animals, including foxes. Indicating the acknowledgement that these pest species are currently a problem in the region.

5.2.8.3 Feral Cats

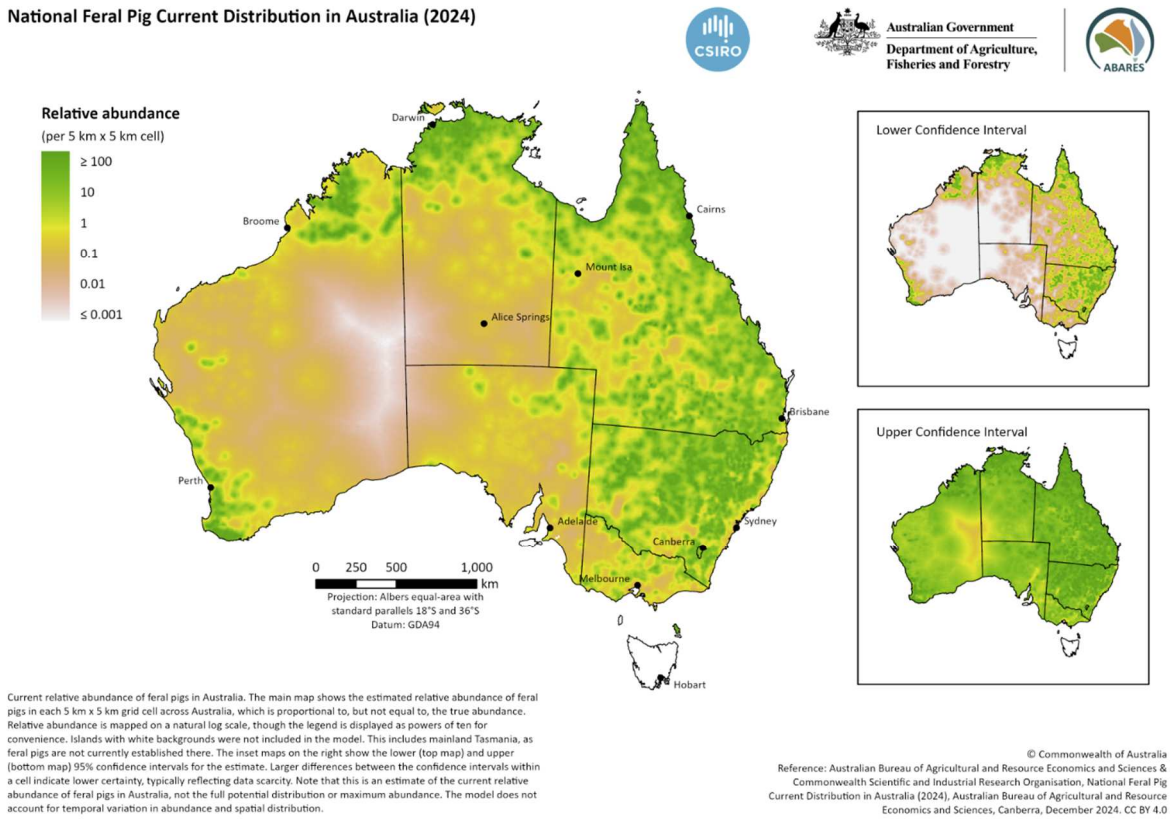
DCCEEW state that Feral Cats pose a significant threat to many nationally listed threatened species. This species is known to predate on native species, spread diseases and reduce viable habitat for species most at risk. It is recorded that they are a threat to more than 120 nationally listed threatened species and have been implicated in 28 mammal extinctions (DCCEEW, 2023). For this reason, predation by Feral Cats has been listed as a Key Threatening Process (KTP) under the *Environment Protection and Biodiversity Conservation Act 1999*. Additionally, the impacts of unabated Feral Cat predation on threatened species have resulted in this pest species being a focus point of many federal, state and local government programs, with a feral cat taskforce established by the *Threatened Species Commissioner in 2015*.

WildNet records of Feral Cats indicate they occur within 20 km of the site. Further, Scenic Rim Regional Council declare Feral Cats as a pest animal within the area with it noted that they are scattered throughout the region and trapping is an on-going activity. Additionally, research from the National Land & Water Resources Audit, Canberra indicates that Feral Cat occurrence, abundance and distribution within south-east Queensland is "common/widespread".

5.2.8.4 Feral Pigs

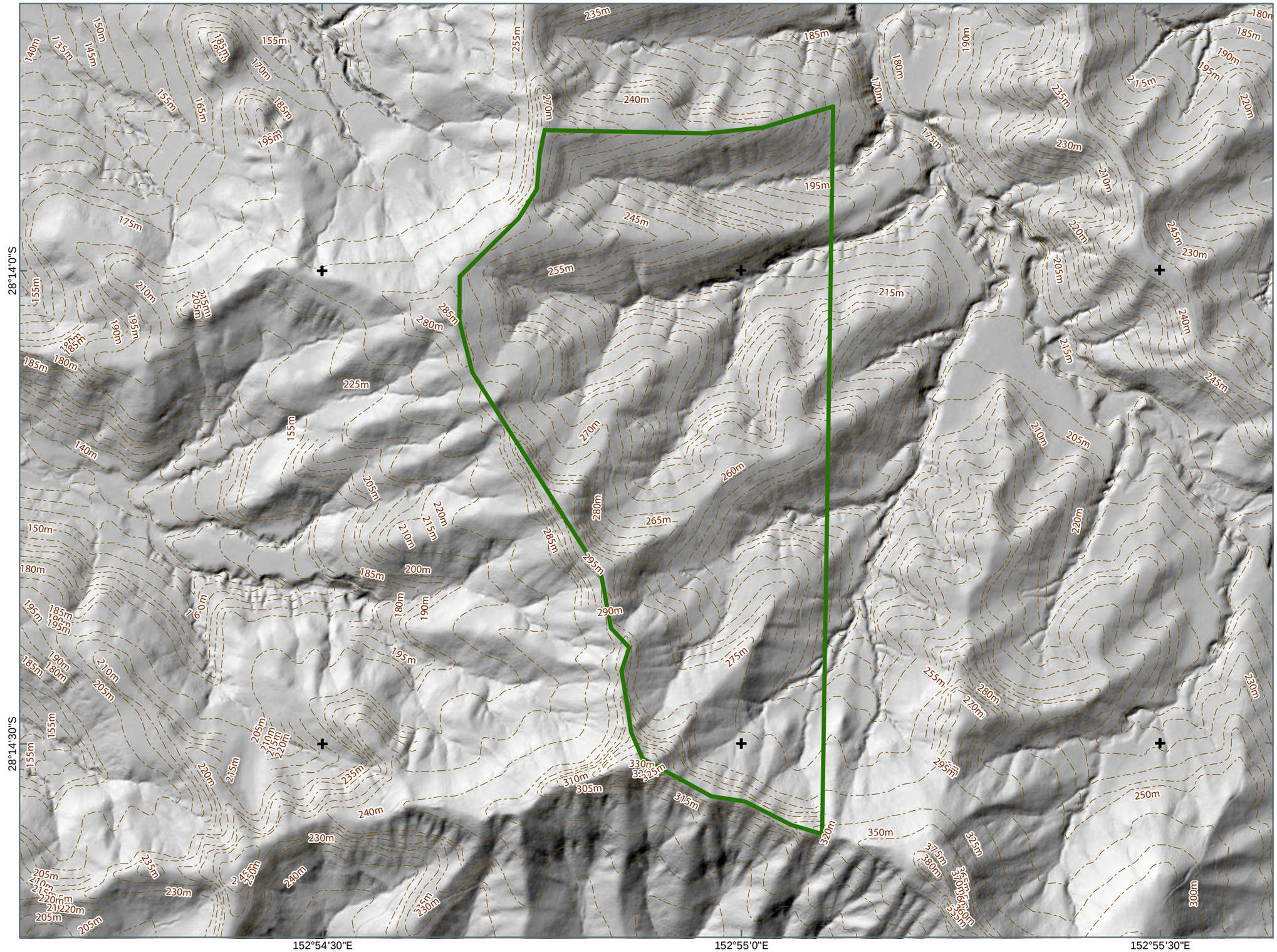
Although Feral Pig (*Sus scrofa*) aren't listed as a direct threatening process to Koala or GHFF, it is acknowledged they are opportunistic omnivores and will consume a wide range of animals including small mammals and birds. Feral Pigs are also widely known to cause significant environmental destruction to soil and vegetation via digging, spreading weeds and consumption, particularly surrounding waterbodies. Therefore, the presence of Feral Pigs can cause the destruction of current habitat value and water resources and indirectly impacting essential habitat areas for the listed MNES.

Evidence of Feral Pig was not recorded within the MVOA or wider offset property however records of this species are present within 20 km of the site. In addition, CSIROs *National Feral Pig Current Distribution in Australia (2024)* modelling indicates relative abundance of Feral Pig within the SRC region to be ≥100 per a 5km x 5km area (**Extract 1**).



Extract 1: National Feral Pig Current Distribution in Australia (2024)

09. MOUNT VIEW OFFSET AREA - TOPOGRAPHY



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LEGEND

- Mount View Offset Area [71 ha]
- 5m Contours



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12186 E 09 Offset Topography B

5.3. Suitability Analysis – Environmental Offset Policy

The objective of this OMP is to outline appropriate management actions to achieve the offset outcomes specified within the EPBC Act and provide an overall improved conservation outcome and net gain in Koala habitat, thereby ensuring the long-term viability of this species. **Table 37** lists the principles of the EPBC Act EOP and describes how the proposed offset has been developed to adhere to these principles.

Table 37: Offset suitability analysis – Environmental Offset Policy

EOP Requirements **Suitable offsets must:**	**Delivery**
Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the protected matter	The impact site is mapped centrally within the Queensland Government's RVPDA. The land area is supported by significant Queensland Government investment into roads, sewer, and water purposefully designed to enable projects to commence and alleviate housing pressure in the SEQ region. The entire 22 ha impact site is required to be cleared to facilitate residential development, inclusive of the unavoidable impact to 21.7 ha of Koala habitat and 15.9 ha of potential GHFF foraging habitat. The habitat to be impacted is in highly disturbed condition receiving habitat scores of 6/10 and 5/10 for Koala and GHFF respectively. Large, cleared areas through the centre of the site contain no trees and do not constitute habitat for GHFF. Given the planning intent of the site and surrounding area, the ability of the site to provide current and future conservation outcomes for MNES is limited. The MVOA is significantly larger than the impact area, 71 ha, and will directly contribute to the ongoing viability of the Koala and GHFF by securing an area directly connected to environmental corridors and future offset areas and maintaining the vegetation within this area to improve and increase potential habitat. Protection and management of the MVOA in accordance with this OMP will improve conservation outcomes by providing a net gain in Koala and GHFF habitat. The proposed MVOA, without being secured as an offset, is not protected or managed for conservation outcomes and exists as freehold land used for pastoral grazing and rural land uses. Given the historical and ongoing use for grazing, it is unlikely land uses would change organically without this area being pursued as an EPBC MVOA, wherein the land would continue to be disturbed, providing limited viability to support populations of Koala and/or GHFF. As a result of the long-standing agricultural use, the MVOA is highly disturbed with large, cleared paddock areas and some heavily weeded vegetation present through gully lines. This OMP and associated management provide guidance for the regeneration and restoration of habitat, to enhance habitat values for Koala and GHFF and provide connection to the existing state significant and regional biodiversity corridor it is partially located within whilst reducing known threats to the species. The proposed restoration and improvement of vegetation in the MVOA through increasing abundance of food trees and removing weeds to encourage natural regeneration will increase the overall area of Koala and GHFF habitat in SEQ and compensate for the loss of 15.9 and 21.7 ha of GHFF and Koala habitat in an urban area. The improvement and uplift of habitat contributes to conservation outcomes by



EOP Requirements Suitable offsets must:	Delivery
	providing areas of refuge and increases resilience of these species by increasing landscape connectivity through the protection of the offset properties in perpetuity.
Be built around direct offsets but may include other compensatory measures	The MVOA is >3 times larger than the impact area and will provide a direct offset for the entire impact. The MVOA will be legally secured for conservation purposes prior to the proposed impact occurring and will endure in perpetuity. Legally securing and managing the MVOA in accordance with this OMP protects the improved habitat from incompatible land uses that ultimately contribute to the viability of Koala and GHFF.
Be in proportion to the level of statutory protection that applies to the protected matter	The OAG lists the probability of annual extinction of the Koala as 0.2%. This use of this measurement in the OAG ensures that the appropriate level of statutory protection is applied. All threats to Koala outlined in the Department's Species Profile and Threats Database (SPRAT) and EPBC Act referral guidelines for the Endangered Koala (Koala referral guidelines) have been addressed within this OMP. Threats outlined in the Department's SPRAT for GHFF have been addressed within this OMP.
Be of a size and scale proportionate to the residual impacts on the protected matter	Permanent protection and management for the lifetime of the approval will deliver a conservation gain for Koala, adequately compensating for the quantum impact on the matter of national significance. The total MVOA for protection and management is 71 ha, delivering a **121.79%** offset for Koala and a **243.29%** offset for GHFF, thus satisfying the 90% minimum direct MVOA. Management actions outlined within this OMP aim to protect and enhance Koala and GHFF habitat, compensating for and exceeding habitat quality of the impact. The MVOA and management actions will provide: • Legally secured and long-term protection of 71 ha of Koala habitat and GHFF foraging habitat. • Improvement of habitat through revegetation and natural regeneration of Koala food trees and removal of weeds. • Contribution to a large contiguous protected habitat and biodiversity corridor with reduced threats. • Long-term reduction in threats, through the removal of incompatible land uses. • Reduced risk of Koala mortality or injury due to predators, through control of non-native predators. • Reduced risk of high intensity fire through management of fuel loads. • Reduced risk of the spread of diseases and/or pathogens.



EOP Requirements Suitable offsets must:	Delivery
Effectively account for and manage the risks of the offset not succeeding	Confidence in the success of the offset is high for areas of the site with some existing vegetation (AU1 and AU2) with a slight reduction in confidence (75%) for AU3 where more significant rehabilitation is taking place. These confidence results are considered appropriate given the detail and intensity of the management actions outlined within this OMP. The confidence is supported by the selection of the MVOA, design of management actions, and clear monitoring and reporting procedures. The MVOA contains an access track that will facilitate access to high priority weed treatment areas and planting areas. Non-remnant vegetation areas across the MVOA are considered to have a lower confidence level reflecting the potential risks relating to higher levels of disturbance, revegetation processes and plant stock success/failure rates, and natural events. Risks associated with the offset delivery will be mitigated and managed through the detailed management actions outlined in **Section 8**. Management actions have been drawn from offset targets which aim to protect and conserve large, connected areas of Koala and GHFF foraging habitat to support viable populations.
Be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs	Legally securing the MVOA for the duration of the impact will ensure existing and future owners are prohibited from conflicting land uses, including clearing. Management beyond minimum legislative requirements is proposed across the whole area to ensure loss of habitat values does not occur through intensification of weeds causing loss of connectivity, destruction of habitat via hot, intense fires, or increased risk of mortality or injury by dog attack.
Be efficient, effective, timely, transparent, scientifically robust, and reasonable	Efficient and Effective: • The MVOA is surrounded by a wider landscape of connected Koala habitat. Management actions will ensure efficient delivery of outcomes over the MVOA and involve proactive management, monitoring and reporting to ensure response and/or corrective actions are timely and focused. • Prior to the EPBC Act process triggering the required offsetting, the MVOA was not protected or managed for conservation outcomes. Protection and management of the MVOA in accordance with this OMP aims to deliver an overall improved conservation outcome and net gain in Koala habitat in an area that would not have otherwise contributed to conservation outcomes for the species. Timely: • The mix of paddock, regrowth, and remnant vegetation within the MVOA allows for the achievement of immediate and long-term conservation outcomes that occur as soon as the MVOA is legally secured prior to the commencement of clearing at the project site. Legally securing the MVOA for the duration of the impact will ensure existing and future owners are prohibited from conflicting land uses, such as vegetation clearing for agriculture. • Following the approval and implementation of this OMP, management actions outlined within **Section 8** will commence and continue for the duration of the approval. In addition, adaptive management processes will



EOP Requirements Suitable offsets must:	Delivery
	ensure management actions respond to technology improvements, natural events and potential risks identified in the risk assessment. Transparent: • The baseline surveys established the survey methodology to be used for the monitoring and reporting required for the lifetime of the approval. A clear monitoring and reporting framework is established within this OMP (**Section 6**). Monitoring and reporting of the MVOA will be summarised within the MVOA Annual Report provided by the Offset Provider which is then included in the Annual Compliance Reports (ACRs) for the project. Scientifically robust: • The proposed MVOA was assessed by qualified and experienced ecologists. Ongoing management and monitoring actions will be conducted in collaboration with other qualified ecologists and regeneration specialists to achieve the outcomes specified within the EPBC Act approval and this OMP. • The baseline surveys conducted for the MVOA follows standard, accepted monitoring methodology and are considered scientifically robust, reliable and repeatable. This will ensure the monitoring and compliance reporting are consistent and relate back to the overall outcomes specified within the EPBC Act approval. Reasonable: • The offset is considered reasonable as the MVOA is greater than the significant residual impact on both Koala and GHFF habitat and provide a **121.79%** offset for Koala and a **243.29%** offset for the GHFF based on the quantum impact (using the OAG). • This OMP outlines appropriate management actions to achieve the offset outcomes specified within the EPBC Act approval and an overall improved conservation outcome and net gain in Koala and GHFF habitat, ensuring the long-term viability of the protected matters.
Have transparent governance arrangements including being able to be readily measures, monitored, audited and enforced	This OMP provides a detailed monitoring and reporting framework, performance criteria, and corrective actions (Sections 7 and 8). These provide minimum requirements for success/failure of management actions and triggers for corrective actions. The approval holder will engage qualified and experienced consultants and specialists periodically throughout the offset delivery to ensure the offset outcomes are achieved. Section 491 of the EPBC Act makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection*

EOP Requirements Suitable offsets must:	Delivery
	and Biodiversity Conservation Regulations 2000 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. As such, engaged consultants and specialists are required to complete a declaration of accuracy in reports provided to the Department, acknowledging their responsibility and accountability for information provided to the Department. ACRs must be published on the approval holder's website in accordance with an EPBC Act approval and may be subject to audit by the Department by an independent auditor in accordance with section 458 of the EPBC Act, and/or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the Department's website or through the general media.

5.3.1 Compliance with Plans, Strategies and Conservation Advice

Koala Conservation Advice and National Recovery Plan

Conservation Advice for *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory.

The Conservation Advice came into effect on 12 February 2022. It lists six conservation and recovery actions that are categorised into 'supporting strategies' which provide for governance to coordinate actions, led by the Australian Government in partnership with the States and Territories, and 'on-ground (direct) strategies' which relate to improving habitat quality and restoration, implemented at the site level.

The development and offset are considered to be consistent with the on-ground strategies detailed in the Conservation Advice and Recovery Plan:

- Strategy 3: Increase habitat protection
- Strategy 5: Strategic habitat restoration
- Strategy 6: Active metapopulation management

Strategy 3: Increase habitat protection

Land-use change is the most significant threat to Koala through habitat loss, fragmentation, and degradation. Increasing the total area of protected, connected, quality Koala habitat is important to protect and recover Koala populations.

The proposed Mount View MVOA will create a net gain of Koala habitat, with improved habitat quality, connectivity, and longevity over the impact site. The eventual dedication of the offset site will protect this gain in Koala habitat in perpetuity, securing it from the threat of land-use change or increases in the intensity of current grazing practices.

Strategy 5: Strategic habitat restoration

Restoration increases the overall habitat available for Koalas and increases the connectivity between areas of habitat to contribute to ensuring the long-term survival of Koala populations. It involves restoring lost and degraded habitat to improve environmental functions.

While the development proposes to impact 21.7 ha of habitat identified as critical for the survival of the Koala, the habitat on-site is highly disturbed surrounded by urban values and infrastructure. A total of 71 ha of MVOA will be legally secured and rehabilitated, providing uplift in the Koala habitat values. The MVOA is located partially within regional and state biodiversity corridors which have been identified by the State government to provide large tracts of vegetation for terrestrial and aquatic connectivity, diversity and refugia for a range of species. Rehabilitation and protection of the offset site therefore implements the strategic intent of the biodiversity corridor set out by the Queensland government.

Strategy 6: Active metapopulation management

Metapopulation management concerns the movement of individuals and genes between populations. Consideration of metapopulation management is reflected in the design of the development, specifically the creation and rehabilitation of conservation areas to promote connectivity and Koala movement within the landscape, and through the removal of hazards to Koala.

Although the proposed action will involve the removal of disturbed habitat critical to the survival of the Koala habitat, all significant residual impacts are to be compensated through the provision of land-based offsets. Proposed offsets will be located in Koala occupied areas of connected and resilient habitat.

South East Queensland Koala Conservation Strategy

The South East Queensland Koala Conservation Strategy 2020-2025 (the Strategy) came into effect on 16 February 2020 and addresses the key threats facing Koalas and outlines strategies to stop the decline of Koala numbers and set in train the species' recovery. Issues addressed in the Strategy include:

Habitat Protection

The project requires the removal of 21.7 ha of habitat critical to the survival of Koala as defined under the EPBC Act and Koala habitat area mapped under the Strategy. The development site is highly disturbed and is not mapped as a Koala habitat area (KHA) at the State level therefore is not protected by the conservation strategy.

All vegetation clearing under the project will continue to be governed by impact and pre-clearing management protocols including preparation of a site-based management plans and pre-start checklists.

Habitat Restoration for Koalas

The project will impact 21.7 ha of Koala habitat. The impact area is located centrally within the RVPDA and is surrounded by other similar development applications and approvals. Proposed offsets will be located in areas of connected and resilient habitat, and significant uplift in habitat quality is possible given the large areas of non-remnant, weeded vegetation currently existing in as a result of extensive historical rural land uses.

Improved mapping, monitoring, research and reporting

Not applicable.

Strong Community engagement and partnerships

Awareness signage and traffic calming devices will be employed at the impact site to ensure motorists are aware that Koalas have potential to occur in the area, making them more conscious of potentially dispersing Koalas and encouraging them to maintain a low vehicle speed. The proponent will continue to be involved in perpetuity the proposed development, providing ongoing management of the action.

Partnerships and strategic coordination

Not Applicable.

The proposed action has sought to reduce impacts to the Koala through the avoid, mitigate and offset hierarchy. The proposed residential development will be entirely located within the RVPDA and will require the unavoidable removal of all Koala habitat on site. Further, the retention of the Koala dispersal habitat on site would quickly become redundant given the expected development of surrounding properties with no vegetation retention. All vegetation clearing under the proposal will be government by State requirements for fauna management and the significant residual impacts will be compensated through land-based offsets, in an area surrounded by other future offsets and a nearby regional biodiversity corridor that will ensure connectivity and longevity of the rehabilitated habitat is protected.

Grey-headed Flying-fox National Recovery Plan

The purpose of the National Recovery Plan for the Grey-headed Flying-fox is to set out the management and research actions necessary to stop the decline and support the recovery of the GHFF over the next 10 years. The overall objectives of this Grey-headed Flying-fox recovery plan are:

- to improve the Grey-headed Flying-foxes national population trend by reducing the impact of the threats outlined in this plan on Grey-headed Flying-foxes through habitat identification, protection, restoration and monitoring, and
- to assist communities and Grey-headed Flying-foxes to coexist through better education, stakeholder engagement, research, policy and continued support to fruit growers.

The approved National Recovery Plan lists the overall objectives for the GHFF to improve the national population trend by reducing in impact of threats through habitat identification, protection, restoration and monitoring as well as assisting communities and GHFF to coexist through education, stakeholder engagement, research, policy and continued support to fruit growers.

It should be noted that, while the national GHFF population was thought to be in decline, counts carried out by CSIRO since 2012 as part of the National Flying-fox Monitoring Program (NFFMP) have shown GHFF numbers have been stable over that period. A recent paper published by Vanderduys *et. al.* (2024) noted 'Despite the general perception that the species is in decline, our raw data and the modelled population trend suggest the grey-headed flying-fox population has remained stable during the NFFMP period, with the range also stable. These results indicate that the species' extreme mobility and broad diet bestow it with a high level of resilience to various disturbance events'. Counts suggest a stable or slightly increasing national GHFF population of between 622,000 and 692,000 individuals.

In addition to the positive count numbers, the study suggest surveys may have missed populations between central and northern Queensland as count data has been provided for sites near Rockhampton and Ingham but nothing in between. There is potential that populations may exist in remote or difficult to access areas, such as mangrove forests, that have not been included in the national survey.

The project is removing 15.9 ha of habitat for the GHFF, but will deliver 71 ha of MNES MVOA which will be protected and rehabilitated allow for a net conservation gain for the species.

The plan addresses the key threats facing the GHFF and recovery objectives which are provided below with responses relevant to the proposed action:

Identify, protect and increase native foraging habitat that is critical to the survival of the Grey-headed Flying-fox

Although no roosts were identified on-site, the impact area is located within 20 km of known GHFF roosts and foraging habitat. Habitat critical to the survival of the species is considered important winter and spring flowering vegetation communities, and natives that are known to be productive from August to May. Important winter and spring vegetation communities are those that contain *Eucalyptus tereticornis, E. albens, E. crebra, E. fibrosa, E. melliodora, E. paniculata, E. pilularis, E. robusta, E. seeana, E. sideroxylon, E. siderophloia, Banksia integrifolia, Castanospermum australe, Corymbia citriodora, C. eximia, C. maculata, Grevillea robusta, Melaleuca quinquenervia* or *Syncarpia glomulifera* (Eby and Law 2008; Eby 2016; Eby et al. 2019).

Of the species listed above *E. crebra, E. tereticornis,* and *C. citriodora* were recorded within the impact area. As such, the proposed action will result in the unavoidable loss of 15.9 ha of potential foraging vegetation considered critical habitat for the GHFF.

An offset for the loss of potential GHFF foraging habitat will be provided and will increase the available forging habitat for the GHFF.

Identify, protect and increase roosting habitat of Grey-headed Flying-fox camps
There are no roosts within the project area. Preferred roosting habitat for the GHFF is poorly understood, and so it is difficult to preserve potential roosting habitat for the species.

Determine trends in the Grey-headed Flying-fox population so as to monitor the species' national distribution, habitat use and conservation status
Not applicable. Mitigation measures will be implemented during construction and operation of the proposed action and at the MVOA to reduce threats.

Build community capacity to coexist with flying-foxes and minimise the impacts on urban settlements from new and existing camps while avoiding interventions to move on or relocate entire camps
Not applicable. There are no observed roosts on-site.

Increase public awareness and understanding of Grey-headed Flying-foxes and the recovery program, and involve the community in the recovery program where appropriate
Not applicable.

Improve the management of Grey-headed Flying-fox camps in areas where interaction with humans is likely
Not Applicable. There are no observed roosts on-site.

Significantly reduce levels of licenced harm to Grey-headed Flying-foxes associated with commercial horticulture
Not applicable.

Support research activities that will improve the conservation status and management of Grey-headed Flying-foxes
Not applicable.

Reduce the impact on Grey-headed Flying-foxes of electrocution on power lines, and entanglement in netting and on barbed-wire
Electrocution on powerlines and entanglement on barbed-wire are a risk, although impacts to barbed wire will be reduced and this species is considered a temporary and intermittent visitor to the site due to lack of detection during fauna surveys. These impacts will be managed through the implementation of mitigation measures and procedures outlined within future management documents for the specific impact area including the VCFMP. As such, the proposed action is not considered likely to impact the recovery of this species.

Notably, the risk of barbed wire entanglement will be managed by retrofitting fences within the MVOA.



6. Baseline Surveys

6.1. Offset Area Baseline Surveys - Methodology

Baseline field surveys to determine habitat quality for Koala and Grey-headed Flying-fox and non-native vertebrate pest presence were completed on 7, 8, 21, and 22 July 2025.

Table 38: MVOA baseline survey methods summary

Date	Temperature (°C)	Rainfall (mm)	Methods implemented
7 July 2025	11.1 min - 22.5 max	1.0	Camera trap deployment
8 July 2025	2.5 min - 22.4 max	0	MHQTs and SATs 1-4
21 July 2025	10.6 min - 21.9 max	1.0	MHQTs and SATs 5-6 WONS mapping
22 July 2025	7.4 min - 22.0 max	0	Camera trap retrieval WONS mapping

NB: Data sourced from Bureau of Meteorology (BoM): Temperature from Station 040983 Beaudesert Drumley Street, rainfall from Station 040754 Rathdowney TM.

6.1.1 Habitat Quality – Koala and Grey-headed Flying-fox

The MHQA and FHA assessment methodology for Koala and GHFF respectively utilised for the impact area (described in **Section 3.3.1**) were also applied to the MVOA. Three (3) AUs were identified in the MVOA. These are summarised in **Table 39** and shown in **Plan 10**. Site Condition was measured through the completion of MHQA transects. Assessment at multiple locations per AU is necessary where possible to measure vegetation condition at representative locations across the spatial extent of each assessment unit (refer **Section 6.2.1** for details).

Table 39: MVOA - Summary of Assessment Units and MHQA transects

AU	Vegetation community	Area (ha)	Transects
1	Regrowth RE 12.8.17	22.2	1 & 5
2	Remnant RE 12.8.17	3.9	2 & 6
3	Cleared Paddocks	45.0	3 & 4

10. MOUNT VIEW OFFSET AREA - ASSESSMENT UNITS



Notes:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of Saunders Havill.Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
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LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]
- MHQA Transects

Assessment Units

- Assessment Unit 1: Regrowth RE 12.8.17 [22 ha]
- Assessment Unit 2: Remnant RE 12.8.17 [4 ha]
- Assessment Unit 3: Cleared Paddocks [45 ha]



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GDA 2020 | Zone 56
1:7,500 @ A3

Address / RPD: *Oaky Creek, QLD*

27/04/2026

12186 E 10 Offset Area AUs B

6.1.2 Spot Assessment Technique Surveys

Baseline Koala activity levels were determined through utilising the SAT surveys (Phillips et al. 2011). The SAT method is an industry recognised technique for identifying presence/absence of Koala and is described in section 3.3.1 as part of the description of the species stocking rate assessment. A total of four (4) SAT surveys were completed across the MVOA in conjunction with MHQA transects 1, 2, 5, and 6 where sufficient trees were available to target presence of Koala (**Plan 11**).

6.1.3 Motion-triggered Camera Trapping

Surveys for non-native vertebrate pest presence, primarily targeting wild dogs which are the primary threat to Koala, were completed via the use of motion-triggered camera trapping. Camera trapping involves setting up a fixed digital camera to capture images or video of animals that pass in front of an infrared trigger. The use of camera trapping is an effective method in capturing, assessing and monitoring pest management. At present, DCCEEW does not have a published guideline for detecting feral animals. The *Survey Guidelines for Australia's Threatened Mammals (2011)* was reviewed as a published methodology for detecting mammals. However, this guideline focuses on highly cryptic threatened species with small home ranges. In contrast, feral animals are far less cryptic and significantly more mobile with larger home ranges than most native species.

As the purpose of this assessment is to survey feral animal abundance, the *Survey Guidelines for Australia's Threatened Mammals* is considered excessive and impractical for an area of this size. **Table 40** below outlines key feral animal presence within the region and their associated home ranges. Several papers outline required density of cameras to monitor abundance of specific feral mammals, typically utilising a grid-based system applied over the survey area. The grid-based system is a standard method of unbiased assessment, with the purpose being that each camera is equidistant from the other. The literature recommends grids from 500 m x 500 m, and frequently up to 1 km x 1 km to ensure suitable coverage.

The number of camera traps required for a specific survey area is dependent on the individual characteristics of the survey site (size and variety of vegetation communities) as well as the behaviours of the specific species being targeted (mobility/home range). Threatened species guidelines recommends ten (10) remote cameras per ha, though as mentioned this is a result of its focus on cryptic, less mobile threatened species. Given the large home range of the target species, wild dogs (**Table 40**), eight (8) camera traps were installed across the 71 ha MVOA for a period of 15 nights from 7 to 22 July 2025 (**Plan 11**) approximately 400 m apart. All future pest detection surveys should be conducted at a similar time each year to allow for valid comparisons in species abundance/activity trends. **Table 41** provides a description of camera deployment locations.

Camera trap set up and deployment was conducted as per the Queensland Government's *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (June 2022). The guideline advises this survey technique should be employed to identify fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts. Cameras were attached 30 – 100 cm from the ground on a tree or post and directed towards a bait station placed 1.5 – 2 m from the mounted camera. Bait stations contained chicken necks to target wild dogs and other known potential threats to MNES. The bait station utilised does not allow the target animal to consume the bait. Rainfall was minimal during the survey period, and so it was not necessary to replenish the bait.

Within the pre-determined camera location, cameras were directed towards animal tracks to increase the chances of detection and identification. Heavy, loose vegetation was avoided to reduce the chance of false triggering, and the camera was aimed to avoid sun shining directly onto the lens. Where not possible to place the cameras exactly within the grid system, cameras were placed in the most suitable location and 'site type' (e.g. track, bush, open area).

6.1.4 Relative Abundance Index

The results of the motion-triggered camera detection survey were utilised to provide relative abundance of non-native vertebrate pest species over the MVOA, reducing bias and increasing repeatability.

A Relative Abundance Index (RAI) is then calculated for feral animal abundance, using the formula RAI= D/TN x 100, where D is number of individual detections and TN is the total number of camera-trap nights (all cameras combined). This methodology ensures that the surveys are representative of the entire area and are repeatable for future monitoring requirements. A higher RAI indicates a higher pest presence.

Table 40: Camera grid size justification

Target Animal	Approx. Home Range	References	Spacing Recommendations
Dog	>250 ha	Department of Primary Industries, NSW Government (2018), Guidelines for camera trapping wild dogs, foxes and feral cats	1 km
		Northern Territory Government (2015), A guide for the use of remote cameras for wildlife survey in northern territory	500 m
		Contardo, J. E. (2017). Occupancy of free-ranging dogs in relation to infrastructure and habitat on Navarino Island, Cape Horn Reserve, Chile	700 m
		Department of Industry, (2017). NSW Wild Dog Management Strategy 2022-2027	700 m
		McNeill et al (2016), Dingoes at the Doorstep: Home Range Sizes and Activity Patterns of Dingoes and Other Wild Dogs around Urban Areas of North Eastern Australia	700 m

Table 41: Fauna camera trap summary (7 July – 22 July 2025)

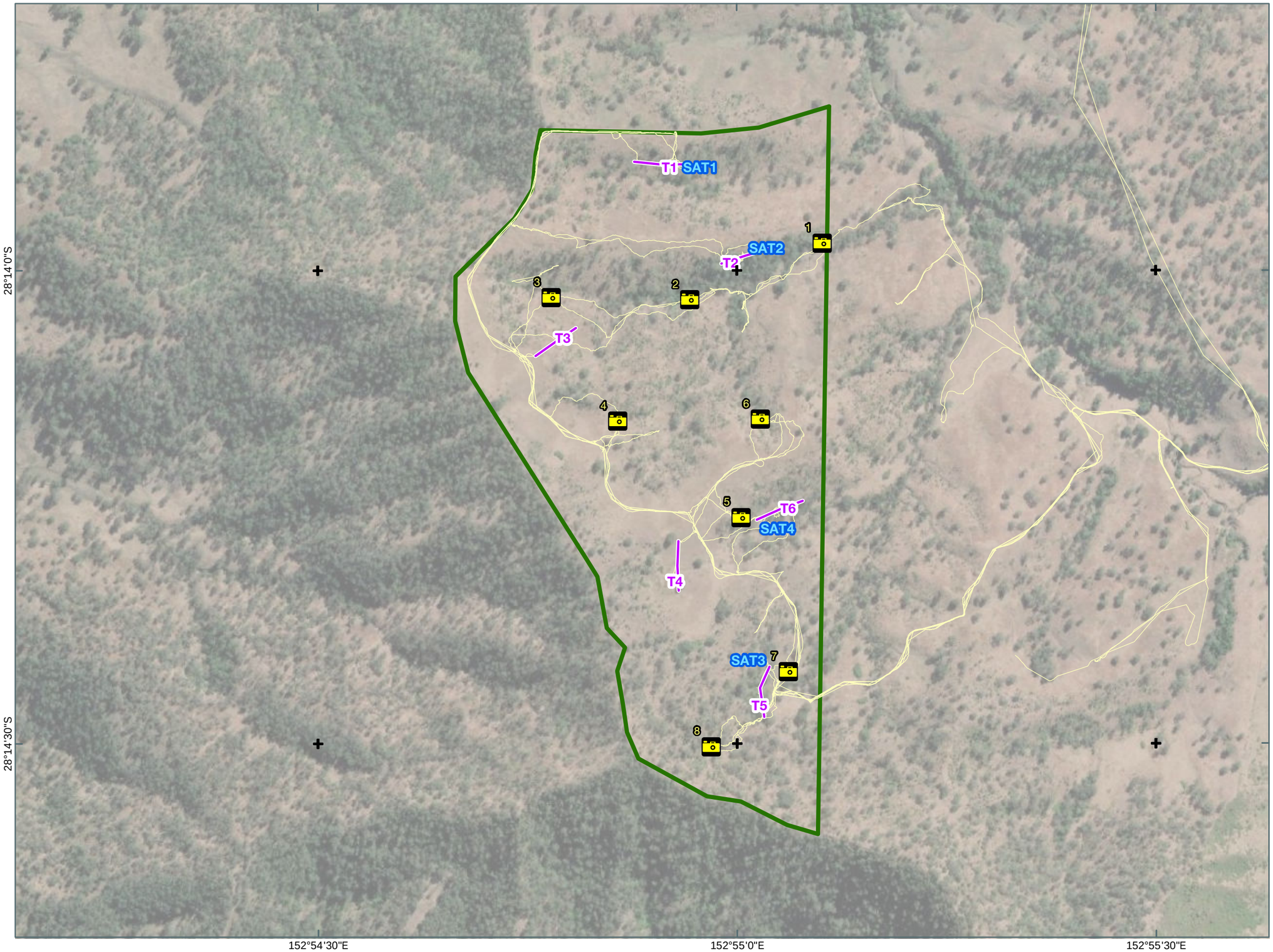
ID	Latitude	Longitude	Photo	Location description
1	28°13'58.28"S	152°55'6.12"E		Camera 1 was deployed along the north-western MVOA boundary adjoining a remnant creek line.
2	28°14'1.87"S	152°54'56.63"E		Camera 2 was deployed in the central northern portion of the MVOA, in the ecotone between remnant and regrowth vegetation along the same creek line as Camera 1.

ID	Latitude	Longitude	Photo	Location description
3	28°14'1.71"S	152°54'46.71"E		Camera 3 was deployed in the north-eastern portion of the MVOA, in regrowth vegetation along the same creek line as Camera 1 and 2.
4	28°14'9.56"S	152°54'51.47"E		Camera 4 was deployed in the central western portion of the MVOA, in non-remnant vegetation adjoining a gully.

ID	Latitude	Longitude	Photo	Location description
5	28°14'9.44"S	152°55'1.68"E		Camera 5 was deployed in the remnant gully vegetation present centrally along the eastern MVOA boundary.
6	28°14'15.66"S	152°55'0.29"E		Camera 6 was deployed centrally along the eastern MVOA boundary, in non-remnant paddock vegetation.

ID	Latitude	Longitude	Photo	Location description
7	28°14'25.46"S	152°55'3.67"E		Camera 7 was deployed in the southern portion of the MVOA, in regrowth vegetation near a gully by the eastern boundary.
8	28°14'30.19"S	152°54'58.14"E		Camera 8 was deployed in the southern portion of the MVOA, in regrowth vegetation near a gully by the south-western boundary.

11. MOUNT VIEW OFFSET AREA - BASELINE FIELD SURVEYS



Notes:
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Layer Sources

Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
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LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]

Field Survey Effort

- Observational Surveys
- MHQA Transects [6]
- Camera Trap Locations [8]
- SAT Survey Locations [4]



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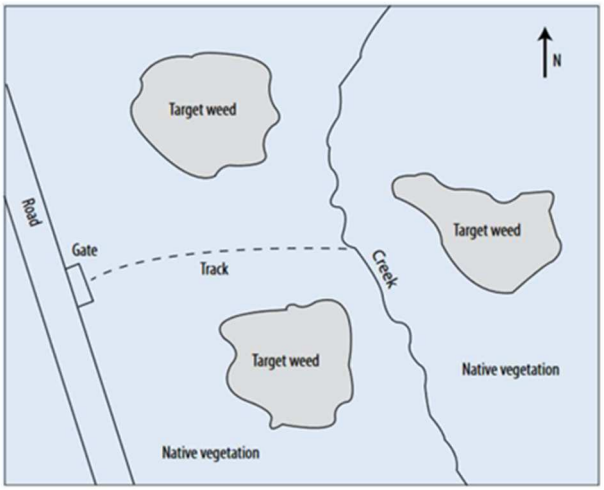
12186 E 11 Baseline Field Surveys B

6.1.5 Weeds of National Significance mapping

The primary weed species located within the MVOA is *Lantana camara* (Lantana) which is identified as a WONS. The percentage cover of WONS was determined using a two-step method detailed in the *Guidelines for Monitoring Weed Control and recovery of native vegetation* (Auld 2009).

Step 1: Delineate weed patches

Using an antenna-based GPS system, the spatial extent or patches of WONS and other weeds within the MVOA were mapped on-ground as polygons to produce a 'mud map' of the site (**Extract 2**). Each polygon was given an initial visual estimate of WONS percent coverage within the following categories: Low (<25%), Moderate (25-50%), and High (>50%). This step is completed to define patches of weeds and subsequently guide the placement of targeted weed transects as a means of accurately estimating percentage cover within a given patch.



Extract 2: 'Mud map' from Auld (2009) – Figure 1

Step 2: Line-transect method

To quantify the percentage cover the mapped areas the line-transect methodology presented in the *Guidelines for Monitoring Weed Control and recovery of native vegetation* (Auld 2009) was implemented.

In this methodology, the ground cover of a weed is a measure of the perpendicular projection of aerial parts of plants to the ground. This method minimises user variability as cover calculations are not reliant on estimations and is instead accurately measured against a tape, typically standardised at 100 m in length. With this technique, the percentage cover of all weed species (WONS and non-WONS) along the line transect is recorded. Because shrubs may overlap plants growing closer to the ground, the total percentage cover of vegetation over an area may be greater than 100%. The data is recorded in metres but can be interpreted as a percentage.

Five (5) 100 m transects were established across the MVOA, within the heavy *Lantana camara* along the eastern gully lines, in the moderate-density *Lantana camara* adjoining the gully line vegetation, and in the cleared open paddock with scattered *Lantana camara* that comprises the balance of the site. Auld (2009) does not prescribe a minimum number of line-transects, a feature of other transect methods such as the BioCondition Assessment Manual. A number of weed transects similar to MHQA transect methodology was completed, with two transects for moderate and low-density mapped areas and one for high-density

due to the small area considered likely to meet this threshold. As such, the location of transects are considered adequate to represent the general condition of the MVOA.

Future surveys to estimate the weed cover will emulate the methodologies completed for baseline surveys as per Auld (2009). In addition, MHQA transects also involve a component of weed cover estimation.

6.2. Offset Area Baseline Assessment Results

6.2.1 Assessment Unit Description

The MVOA is mapped as contain a mixture of Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant) vegetation under the Queensland VMA 1999. On-ground surveys identified the entire site to have been highly modified for rural uses including broad-level slashing, prescribed burn offs and cattle grazing. Therefore, the desktop mapped extent required ground-truthing to establish assessment units. Remnant vegetation was observed to be associated with the steep gully lines where slashing is less likely to have occurred. Notably, dense *Lantana camara* (Lantana) was observed in these locations. Regrowth vegetation was present across the MVOA indicated by some regenerating shrub and ground cover species and scattered canopy species. These areas are being intensively grazed. Cleared areas did not contain regrowth vegetation and were dominated by pasture grasses with some vary sparsely located trees.

The location of the three (3) delineated Assessment Units and their associated MHQA transects are shown on **Plan 10**. Detailed descriptions of each are provided below.

Assessment Unit 1 – Regrowth

AU1 comprises regrowth woodland vegetation through the southern portion of the MVOA and along a few of the northern gully lines, totalling 22.2 ha. This vegetation contains minimal canopy with trees generally juvenile of immature, with areas of *Lantana camara* (Lantana infestation) as shown in **Photo set 1**. Species are generally reflective of the mapped RE 12.8.17, including *Eucalyptus crebra* (Narrow-leaved Ironbark), *E. tereticornis* (Forest Red Gum), *Corymbia tessellaris* (Moreton Bay Ash), and *Corymbia intermedia* (Pink Bloodwood). The ground layer contains a mixture of leaf litter and native and introduced grasses and forbs present across most of the site, including *Heteropogon contortus* (Black Speargrass), *Melinis repens* (Red Natal Grass), *Chrysocephalum apiculatum* (Yellow Buttons), *Onopordum acanthium* (Scotch Thistle), and *Geranium solanderi* (Native Geranium). MHQA Transects 1 and 5 were completed within this AU.

MNES values in this AU are tied to the mature and regrowing native trees which provide potential food and shelter resources for Koala and GHFF. Weed management and assisted natural regeneration techniques would improve the speed and success of the regeneration of these values. Infill planting will be required where natural regeneration is insufficient.



Photo set 1: AU1 vegetation, regrowth mixed woodland in gullies and south of site.

Assessment Unit 2 – Remnant

AU2 comprises two small polygons of disturbed remnant vegetation along gullies in the eastern portion of the MVOA, totalling 3.9 ha. This vegetation contains a moderate canopy and subcanopy of mixed woodland, with a dense presence of *Lantana camara* (Lantana) through the shrub layer (**Photo set 2**). This vegetation has been less externsivly shalshed and grazed resulting in dense weed infestations. The presence of weeds has supressed the recruitment of native species leading to a low species richness of understory species.

Vegetation within this AU is reflective of the mapped RE 12.8.17, with a variety of native canopy species such as *Eucalyptus crebra* (Narrow-leaved Ironbark), *E. tereticornis* (Forest Red Gum), *Angophora subvelutina* (Broad-leaved Apple), and *Corymbia tessellaris* (Moreton Bay Ash) which were typically also found regenerating in the sub-canopy and shrub layers. MHQA Transects 2 and 6 were completed within this AU.

Assisted natural regeneration techniques and extensive weed management will be required to improve habitat values for Koala and GHFF as well as potential infill planting.



Photo set 2: AU2 vegetation, remnant mixed woodland along waterway gully lines.

Assessment Unit 3 – Cleared Paddocks

AU3 comprises the balance of the MVOA (44.9 ha) and consists of cleared grazing paddock with scattered trees and *Lantana camara* (Lantana), as shown in **Photo set 3**. This AU dominates the MVOA. Tree species are extremely sparse in this area. The ground layer is dominated by a combination of native and introduced grasses such as *Heteropogon contortus* (Black Speargrass), *Melinis repens* (Red Natal Grass), and *Sporobolus natalensis* (Giant Rat Tail's Grass) for cattle grazing. Patches and dispersed areas of other weeds such as *Gomphocarpus physocarpus* (Balloon Cotton Ball Bush) and *Lantana camara* (Lantana) are also present, alongside scattered native forbs. MHQA Transects 3 and 4 were completed within this AU.

MNES values in this AU are limited to scattered mature native trees, with weed management and broad revegetation and assisted natural regeneration techniques necessary to restore most of the proposed offset site to functional, quality Koala and GHFF habitat.



Photo set 3: AU3 vegetation, open grazing paddock with scattered trees.

6.2.2 Non-native Vertebrate Pest Abundance Surveys

A combined total of 120 surveys nights (8 cameras for 15 nights) did not detect any non-native vertebrate pest animals, though other native fauna species were captured during this survey, most commonly *Macropus rufogriseus* (Red-necked Wallaby) and *Macropus parryi* (Whiptail Wallaby) (**Photo set 7**). As no observations were made RAI was not calculated, though these methods will continue to monitor for changes in feral animal abundance.

Despite the lack of evidence within MVOA during field survey, it is considered likely that non-native vertebrate pests are present. Public databases contain records of non-native predators in the surrounding landscape, feral dogs are listed as pests by SRRC, and local landowner knowledge confirms the presence of dogs historically. Further, although not recorded within the MVOA during field surveys, motion-sensor fauna camera traps deployed in the wider MVOP recorded multiple Wild Dogs over the broader property (**Photo set 2**). In addition, research by Pest Animal Management QLD (2020) found that the Scenic Rim region contains an abundance of Wild Dogs, with evidence indicating that calf predation has increased significantly in the last decade. Given the property and surrounding properties are utilised for cattle, there is likely a high presence of Wild Dog attracted to calving cattle. As such, pest control is still considered an important management action to maintain low numbers of non-native vertebrate pest animals.



Photo set 4: Camera trap images of *Macropus parryi* (Whiptail Wallaby) (Left) and *Macropus rufogriseus* (Red-necked Wallaby) (Right) on the MVOA.



Photo set 2: Wild Dogs recorded in the wider offset property (MVOP)

6.2.3 Weeds of National Significance Mapping

Weed presence within the MVOA varies from exotic grasses to dense *Lantana Camara* (Lantana) infestations within gully lines. The presence of Lantana is particularly notable as it is a known barrier to Koala access of otherwise suitable habitat trees. The density of infestations within the MVOA ranges from low to high, with scattered patches and specimens through cleared paddock areas and highest concentrations through gully lines. Given the dominance of cleared paddocks within the MVOA, low density WONS coverage (<25%) was recorded across the majority of the MVOA (62.8 ha). A total of 5.7 ha of moderate density (25 – 50 % cover) and 2.6 ha of high density (>50% cover) were recorded across the balance of the MVOA. **Photo sets 4-6** show examples of mapped low, moderate, and high-density Lantana respectively. The location of this mapping is shown on

Plan 12**Plan 12** and a summary of weed coverage transects is provided in **Table 42** below.

Table 42: **WONS coverage transects results summary**

Density Category	Weed cover Transect	WONS coverage (%)	Average WONS coverage (%)	Area (ha)	Relative WONS coverage (ha)
Low (Lantana)	3	14.6	15.95	62.8	10.01
	5	17.3			
Moderate (Lantana)	2	43.6	45.85	5.7	2.61
	4	48.1			
High (Lantana)	1	67.5	67.5	2.6	1.76
Total				71	14.38



Photo set 5: Low-density Lantana through cleared paddock areas



Photo set 6: Moderate-density Lantana adjoining the gully lines

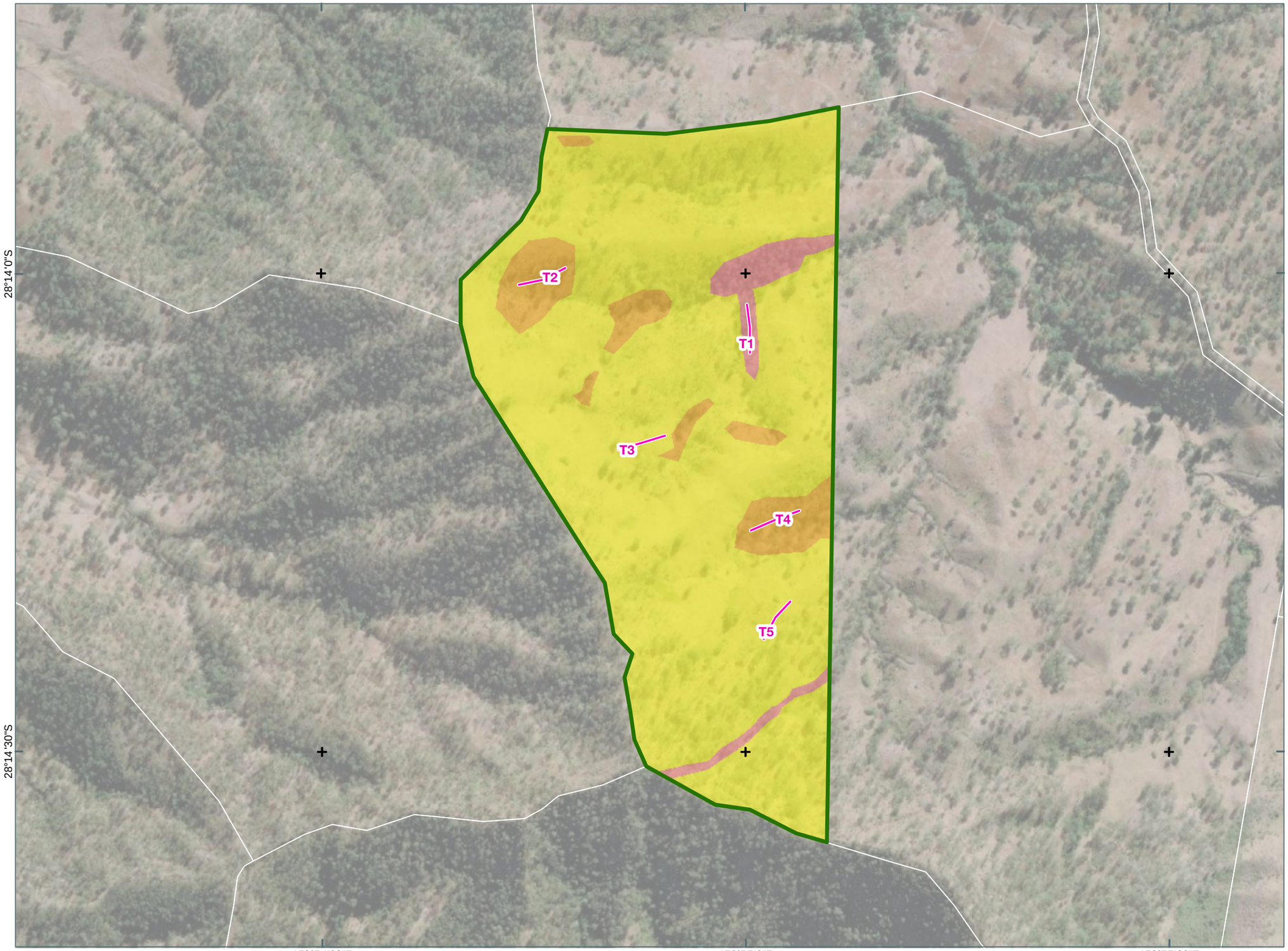


Photo set 7: High-density Lantana through the gully lines

6.2.3.1 Other Weeds

All weeds are recorded as part of the weed cover mapping. The MVOA also contains exotic pasture grasses including *Melinis repens* (Red Natal Grass) and *Sporobolus pyramidalis* (Giant Rat's Tails Grass). The average weed cover across all five (5) transects for non-WONS was **17.42%** with higher coverage within cleared portions of the site where extensive grazing has occurred (i.e weed cover transect 5) (refer **Appendix C** for raw weed cover results)

12. MOUNT VIEW OFFSET AREA - BASELINE WEED MAPPING



Notes:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of Saunders Havill.Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
© State of Queensland (Department of Resources) 2025.
Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/
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LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]

Baseline Weed Mapping

- High density Lantana (> 50%) [2.6 ha]
- Moderate density Lantana (25-50%) [5.7 ha]
- Low density Lantana (<25%) [62.7 ha]
- Weed Cover Transects [5]



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GDA 2020 | Zone 56
1:7,500 @ A3

Address / RPD: *Oaky Creek, QLD*

23/09/2025

12186 E 12 Baseline Weed Mapping A

6.2.4 Koala SAT survey results

Four (4) SAT assessments were completed across the MVOA within AU1 and AU2. SAT surveys could not be completed within AU3 as there were not enough trees present. > 30 non-juvenile trees per ha are required to complete a SAT assessment (refer **Table 43**). No scats were recorded from surveys completed within the MVOA owing to the dominance of open cleared paddocks with only patches of vegetated areas.

Table 43: SAT surveys results from Mount View Offset Area

SAT Site Number	SAT Score	Evidence of Koala Use (%)	Koala Use (High/Medium/Low)
AU1			
SAT 1	0/30	0%	No Use
SAT 3	0/30	0%	No Use
AU2			
SAT 2	0/30	0%	No Use
SAT 4	0/30	0%	No Use
AU3			
N/A – No SAT undertaken due to lack of Koala habitat trees (i.e <30 trees per 1 ha)			
N/A – No SAT undertaken due to lack of Koala habitat trees (i.e <30 trees per 1 ha)			

6.3. Koala MHQA Transects – baseline

Site Condition (30%)

Scores utilised the methodologies described in **Section 2** for the impact area. The Site Condition scoring for the MVOA is summarised in **Table 44**. Refer to **Appendix B** for detailed baseline Koala MHQA scoring and **Appendix C** for raw data.

Table 44: MVOA – Site Condition scores for assessment units

Attribute	AU1	AU2	AU3
Regional Ecosystem	**12.8.17**	**12.8.17**	**12.8.17**
Remnant/Non-remnant/Regrowth	**Regrowth**	**Remnant**	**Non-remnant**
Recruitment of woody perennial species in EDL	**5**	**3**	**0**
Native plant species richness - trees	**2.5**	**5**	**2.5**
Native plant species richness - shrubs	**2.5**	**2.5**	**2.5**
Native plant species richness - grasses	**2.5**	**0**	**0**
Native plant species richness - forbs	**0**	**0**	**0**
Average tree canopy height*	**4**	**4**	**3**
Average tree canopy cover*	**3.5**	**5**	**0**
Shrub canopy cover	**3**	**0**	**3**
Native grass cover	**5**	**3**	**5**
Organic litter	**5**	**3**	**0**
Large trees	**5**	**5**	**5**
Coarse woody debris	**5**	**2**	**0**
Non-native plant cover	**3**	**3**	**5**
Quality and availability of food and foraging habitat	**5**	**5**	**1**



Attribute	AU1	AU2	AU3
Quality and availability of shelter	**1**	**5**	**1**
Total (Out of 100)	**52**	**45.5**	**28**
Score out of 3	**1.56**	**1.37**	**0.84**

Quality and availability of food and foraging and shelter habitat
The site condition values for AU1 scored 5 out of 10 for quality and availability of food and foraging habitat and 1 out of 10 for quality and availability of shelter habitat. AU2 score 5 out of 10 for both attributes and AU3 scored 1 out of 10 for both attributes utilising the methodology described in **Section 3.3**. Results for each of the AUs are provided below.

Koala food and foraging habitat scoring

Table 45: Koala Food Tree Abundance – MVOA

Assessment Unit	RE	Benchmark (trees/ha)	Site Count (trees/ha)	Benchmark Percentile	Score
Offset AU1	12.8.17	580	112.5	19.4%	2/8
Offset AU2	12.8.17	580	95	16.38%	2/8
Offset AU3	12.8.17	580	10	1.72%	2/8

Table 46: Canopy Cover – MVOA

Assessment Unit	RE	Benchmark (% cover)	Site (% cover)	Benchmark Percentile	Score
Offset AU1	12.8.17	48	28.35	59.06%	1.5/2
Offset AU2	12.8.17	48	30.05	62.60%	1.5/2
Offset AU3	12.8.17	48	2.4	5%	0.5/2

Table 47: Quality and availability of food and foraging habitat score – MVOA

Assessment Unit	Total Score	MHQA score
Offset AU1	3.5/10	5/10
Offset AU2	3.5/10	5/10
Offset AU3	2.5/10	1/10



Koala shelter habitat scoring

Table 48: Koala Shelter Tree Abundance – MVOA

Assessment Unit	RE	Benchmark (trees/ha)	Site Count (trees/ha)	Benchmark Percentile	Score
Offset AU1	12.8.17	580	112.5	19.4%	1.5/6
Offset AU2	12.8.17	580	95	16.38%	1.5/6
Offset AU3	12.8.17	580	10	1.72%	1.5/6

Table 49: Large Trees abundance – MVOA

Assessment Unit	RE	Benchmark (trees/ha)	Site (trees/ha)	Benchmark Percentile	Score
Offset AU1	12.8.17	24	5	20.83%	1/4
Offset AU2	12.8.17	24	8	33.33%	2/4
Offset AU3	12.8.17	24	1	4.17%	1/4

Table 50: Quality and availability of shelter score – MVOA

Assessment Unit	Total Score	MHQA score
Offset AU1	2.5/10	1/10
Offset AU2	3.5/10	5/10
Offset AU3	2.5/10	1/10

Site Context (30%)

The site context characteristics for Koala are shown on **Plan 13** and summarised in **Table 51**. Scores utilised the methodology described in **Section 3.3**. and applied the impact area.

Table 51: MVOA – Koala site context scores

	AU1 (Regrowth)	AU2 (Remnant)	AU3 (Non-remnant)
Size of patch	10	10	10
Connectedness	2	2	2
Context	4	4	4
Ecological corridors	6	6	6
Role of the site location to species overall population in the state	5	5	5

	AU1 (Regrowth)	AU2 (Remnant)	AU3 (Non-remnant)
Threats to species	7	7	7
Species mobility capacity	10	10	10
Total (out of 56)	**44**	**44**	**44**
Score (out of 3)	**2.36**	**2.36**	**2.36**

Size of patch
This attribute is a measure of the size of the patch of vegetation in which the assessment unit is located. The scoring reflects the importance of large patches in the landscape and is based on the size of the patch of critical koala habitat connected to the site in this instance. This attribute is scored such that is reflects the fact that larger patches are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller patches. The size of patch attribute was calculated using GIS, and achieved a score of **10 out of 10** as the critical koala habitat patch on-site is connected to a vegetated corridor of greater than 5000 ha (as per the Guideline to determining terrestrial habitat quality methodology. Refer **Plan 13**.

Connectedness
As a landscape level attribute, connectedness aims to assess the degree to which the site is connected with adjacent Koala habitat. Connectedness relates to the capacity of the species to disperse through the landscape between sustainable patches of habitat, and therefore has important implications for species persistence. Connectedness was calculated using GIS, with the percentage of referral area boundary length supporting a koala critical habitat connection off and on site which was calculated at 40%, and consequently this attribute scored a **2 out of 5** as per the Guide to determining terrestrial habitat quality methodology (**Plan 13**).

Context
The context attribute refers to the amount of critical Koala habitat that is retained within a 1 km buffer of the site being assessed and is calculated using GIS. Retained critical koala habitat within a 1 km buffer of the site was calculated at 73.3%, and therefore the context attribute achieved a score of **4 out of 5** as per the Queensland BioCondition Assessment methodology (**Plan 13)**.

Ecological corridors
GIS was utilised to identify the sites' role in any ecological corridors on or adjacent to the site (**Plan 8**). The site is not mapped as containing any ecological corridors or mapped as sharing a common boundary. The context of the referral area including existing and future developments significantly reduces the opportunity for functional ecological corridors. Further wests of the referral area where 'environmental protection' zoning is present aligns with ecological corridor as this are combines existing retained vegetation and future conservation areas. This corridor is anticipated to provide habitat and opportunity for fauna presence and movement with minimised risk of threats (such as vehicle strike).

The MVOA is located partially within a Statewide corridor of regional significance therefore achieves a score of **6 out of 6** (**Plan 8**).

Role of site location to species overall population in the State
This attribute aims to quantify the importance of the site for state Koala populations through a combined approach that considers activity and usage across the site and the importance of habitat for fulfilling the

Koala's life cycle (i.e., foraging and breeding) and thus the effect that removal of habitat would have on a local population and the species as a whole. The MVOA scored a **5 out of 5**.

Threats to species

The 'threats to the species' attribute aims to quantify potential risks to the survival of Koala existing within and adjacent to the MVOA. Key known threats to the survival of the Koala include proximity to main roads increasing the risk of motor vehicle strike, as well as predation by wild or domestic dogs as reference in the conservation advice for the species.

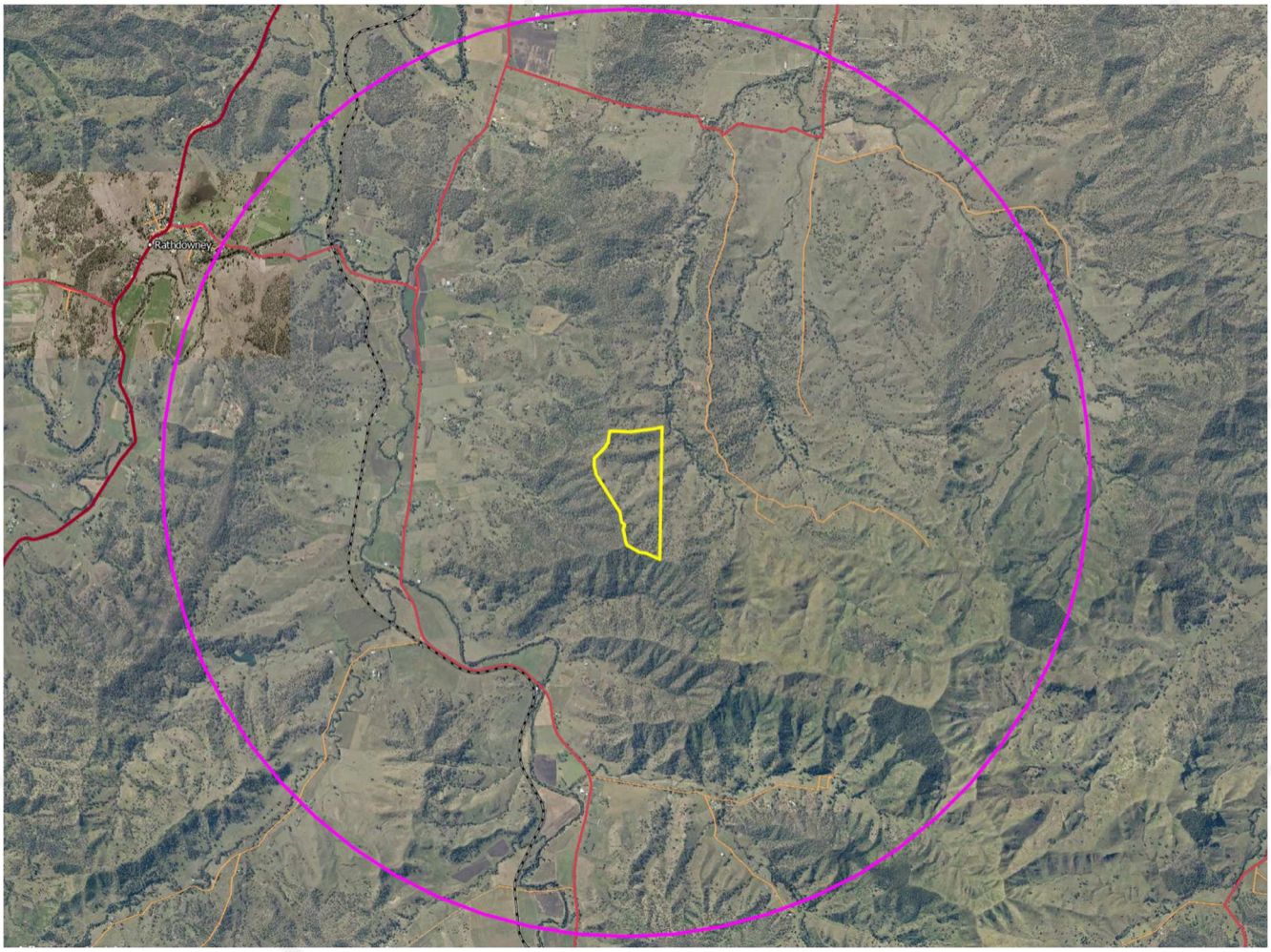
Table 52 provides a risk matrix relative to the conservation advice for the Koala to determine threats to species. Essentially, each of the threats identified within the conservation advice is weighted relative to the identified level of risk, with the weighted scores summed to provide the threat score, noting the MHQA allows for only scores of 1 (high), 7 (moderate) or 15 (low) for threats. An analysis of the scoring attributes for the site is provided below which supports an assessment of a score of **7 out of 15 or 'moderate risk'** as appropriate for the site.

- Clearing and degradation of habitat – The MVOA is zoned as rural with existing land uses including slashing and burning to promote pasture grasses for cattle grazing. The MVOA is highly degraded and if not utilised for as an offset site would continue to be intensively grazed with regrowth periodically slashed. No existing protective mechanism (such as VDec and covenant) are in place for the MVOA. A high-level analysis of degraded land within 5 km of the MVOA identifies a mixture of intensively managed rural land and intact vegetation associated with steeper terrain and gullies. The majority of the surrounding area shows evidence of degradation (between 50% – 70%, refer **Insert 2**) and therefore a weighted score of **2.8** or 'moderate risk' is considered appropriate.
- Inappropriate fire regimes – The MVOA is mapped as contain high, medium bushfire hazard under the Scenic Rim regional council planning scheme. The MVOA retains relatively low fuel lads as a result of predominantly pasture grasses and cleared paddocks across the majority of the area. A non-Koala specific bushfire management plan is not in effect and therefore a weighted score of **2.8** or 'moderate risk' is considered appropriate.
- Vehicle strike – The MVOA offset area is access by Oakey Scrub Road approximately 500 m to the east. This is sealed road which is only utilised to access neighbouring properties. Running Creek Road is present approximately 2.5 km east of the MVOA. The threat of vehicle strike on Koala is considered low given few adjacent roads are present that would cause a significant risk to Koala. A weighted score of **1.5** or 'low risk' is considered appropriate.
- Dog attack – The threat of dogs is likely present within the broader landscape however dogs were not recorded within the MVOA at the time of baseline surveys. Wild dogs have been recorded within the broader offset property. A weighted score of **1.5** or 'low risk' is considered appropriate.

Table 52: Koala Threat Scoring Matrix (green shading indicates applicable scores for the site)

Metric	Low	Moderate	High
Threat Thresholds			
Clearing and Degradation of Habitat	Apply one of the following options in order of priority:	In the absence of justification for scoring as high or low and if: >30% and <70% of the	Apply one of the following options in order of priority:

Metric	Low	Moderate	High
	4. Apply a current legal protective mechanism. 5. The site is zoned for conservation purposes or clearing is not permitted. 6. If ≤30% of the area within a 5 km buffer of the site is cleared or disturbed land.	area within a 5km buffer of the site is cleared or disturbed land.	3. The site is zoned for development. 4. If ≥ 70% of the area within a 5 km buffer of the site is cleared or disturbed land.
Score Weighting	**6**	**2.8**	**0.4**
Inappropriate Fire Regimes **Very High Risk**	Current Government endorsed Bushfire Management Plan (BMP) to protect the Koala is in effect.	Non-Koala specific BMP in effect. or; Low fuel load and low fire risk.	Site has a high fuel load and/or high fire risk.
Score Weighting	**6**	**2.8**	**0.4**
Vehicle Strike **Moderate Risk**	Located more than 1km from a major road AND Minor roads servicing residential or industrial areas located within 500m contain some safe design features	Located <500m from a major road with fauna safe design features) OR Located <1km from a major road accessible for koalas (minimal fauna safe design) AND Minor roads servicing residential or industrial areas are located within 500m	Located <500m from a major road with minimal fauna safe design AND Minor roads servicing residential or industrial areas are located within 500m
Score Weighting	**1.5**	**0.7**	**0.1**
Dog Attack **Moderate Risk**	No dogs recorded on site.	Dogs recorded on site and adequate refuge for Koalas (>70% canopy cover).	Dogs recorded on site and limited refuge for Koalas (<70% canopy cover)
Score Weighting	**1.5**	**0.7**	**0.1**
Threats to Species			
Threshold Analysis	>10	>5 and ≤10	≤5
Score	**15**	**7**	**1**



Insert 2: **High level assessment of degraded land within 5 km of the referral area (50-70%)**

Species mobility capacity

Species mobility capacity is used to quantify the ability of the species to move from the site and through the surrounding landscape to meet survival needs. Species mobility capacity is considered particularly important in response to rapid changes to the surrounding environment, such as the commencement of land clearing. Assessment has been carried out in accordance with method outlined in **Section 3.3** with outcomes provided below (refer **Table 53**). The MVOA is considered unrestricted giving it a score of **10 out of 10**.

Table 53: **Analysis of species mobility capacity for the referral area**

Direction	Description of restriction	Restriction score
North	Land to the north of the MVOA is similarly disturbed rural land with a mixture of cleared areas and regrowth vegetation	No restriction
East	Land to the east of the MVOA is similarly disturbed rural land with a mixture of cleared areas and regrowth vegetation	No restriction

Direction	Description of restriction	Restriction score
South	Land to the south of the MVOA consists of largely vegetated areas	No restriction
West	Land to the west of the MVOA consists of largely vegetated areas	No restriction
	Total restriction score	**0% (No restriction)**

Species Stocking Rate (40%)

Evidence of Koala was not recorded within the MVOA during field surveys, though Koala presence in the area is known from recent confirmed records.

Four (4) SATs were completed at the vegetated MHQA transects 1, 2, 5, and 6 and returned a 'no usage' under the East Coast (med-high) activity category. SAT surveys were not completed for MHQA 3 and 4 due to a lack of trees.

The SAT surveys demonstrate that Koala utilisation of the MVOA is low, as expected given the dominance of cleared paddocks, with capacity to support ecological gain for the Koala with rehabilitation efforts. Koala are known to occur in the locality, having been recorded previously across in the broader landscape, and it is assumed that utilisation of the MVOA will increase over the lifespan of the offset as Site Condition and context improve.

The species stocking rate for Koala scored **20 out of 70** for AU1 and AU2, and **10 out of 70** for AU3 (**Table 54**) Further details on the assessment are provided below:

- No evidence of Koala was recorded within the MVOA however, confirmed records of Koala are present adjacent to the offset, therefore 'presence detected on or adjacent to site' was assigned a score of **5 out of 10** for all assessment units.
- Despite the lack of evidence of Koala within the MVOA, the presence of Koala habitat trees indicates the presence of foraging habitat. No evidence of Koala was recorded within the MVOA however a score of **15 out of 15** 'breeding' has been assigned to AU1 and AU2. AU3 contains significantly fewer trees and is dominated by cleared paddocks, therefore reflecting only dispersal habitat and scoring **5 out of 15**.
- The 'approximate density' was scored **0 out of 30** due to the absence of evidence of utilisation. It is considered that given the variability in the landscape of the greater MVOP matrix (Mount View Offset Property), Koala likely utilise the more heavily treed and connected habitat areas to the west. It is anticipated that the capacity of the MVOA to support Koala will improve with weed management and active regeneration connecting adjacent vegetation to major waterways.
- The Role/importance of species population on site is the extent to which the site is considered a key source population for breeding, dispersal, is necessary for maintaining genetic diversity or near the limit of the species' range. The site is not considered to be a key source population for breeding, dispersal or genetic diversity based on no usage recorded and is not near the limit of the species range. Therefore a score of **0 out of 15** was assigned for role/importance of species population on site



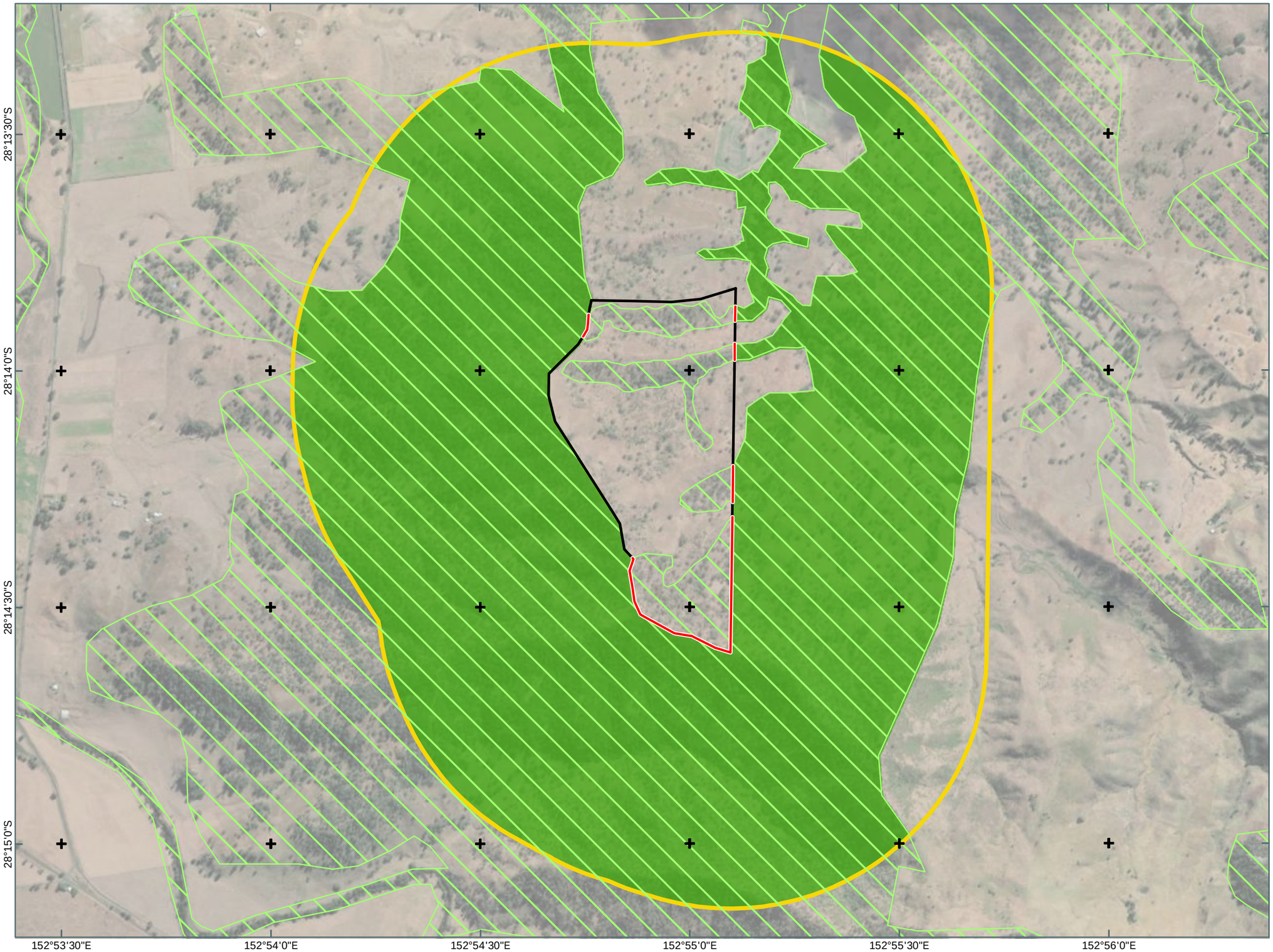
Table 54: MVOA – assessment unit Koala species stocking rate scores

	AU1	AU2	AU3
Presence detected on or adjacent to site (neighbouring property with connecting habitat) (/10)	**5**	**5**	**5**
Species usage of the site (habitat type and evidenced usage) (/15)	**15**	**15**	**5**
Approximate density (per ha) (/30)	**0**	**0**	**0**
Role/importance of species population on site* (/15)	**0**	**0**	**0**
Total species stocking rate score (/70)	**20**	**20**	**10**
Species stocking rate score – out of 4	**1.14**	**1.14**	**0.57**

*SSR supplementary table – total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15

	AU1	AU2	AU3
Key source population for breeding (/5)	0	0	0
Key source population for dispersal (/5)	0	0	0
Necessary for maintaining genetic diversity (/15)	0	0	0
Near the limit of the species range (/15)	0	0	0

13. MOUNT VIEW OFFSET AREA - KOALA CONTEXT ASSESSMENT



Notes:
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Layer Sources
Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
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LEGEND

- Mount View Offset Area [71 ha]
- 1km Mount View Offset Area Buffer
- Percentage of Mount View offset area boundary length supporting a Koala critical habitat connection off and on site - 40%
- Percentage of Koala Critical habitat within 1km of Mount View offset area (73.3%)
- Size of Koala critical habitat patch adjoining Mount View offset area > 5000 ha



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GDA 2020 | Zone 56
N
1:15,000 @ A3

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27/04/2026

12186 E 13 Offset Koala Context B

6.3.1.1 Summary of Koala MVOA baseline scores

The overall habitat quality scores for Koala at the MVOA are presented in **Table 55**.

Table 55: Mount View Offset Area – Koala MHQA score summary

	AU1	AU2	AU3
Site Condition (/3)	1.56	1.37	0.84
Site context (/3)	2.36	2.36	2.36
Species stocking rate (/4)	1.14	1.14	0.57
MHQA score	**5.06 (rounded to 5)**	**4.87 (rounded to 5)**	**3.77 (rounded to 4)**

6.4. Grey-headed Flying-fox FHA

Utilising the FHA scoring methodology detailed in Section 3.3.2, the following scores have been assigned for the baseline condition of the MVOA for GHFF. Refer **Appendix B** for detailed scoring tables and **Appendix C** for raw data)

Site Condition (40%)
The Site Condition achieved a score of **1.92, 2.32 and 1.49 out of 3** for AU1, AU2 and AU3 respectively.

Site Context (30%)
The baseline site context characteristics for GHFF are shown on **Plan 14**.

Size of patch
This attribute is a measure of the size of the patch of vegetation in which the assessment unit is located. The scoring reflects the importance of large patches in the landscape and is based on the size of the patch of potential GHFF habitat connected to the site in this instance. This attribute is scored such that is reflects the fact that larger patches are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller patches. The size of patch attribute was calculated using GIS and determined the impact area to be part of a patch size of larger than 5000 ha. This achieved a score of **10 out of 10** (**Plan 14**).

Connectedness
As a landscape level attribute, connectedness aims to assess the degree to which the assessment unit is connected to other populations of GHFF. Connectedness was calculated by counting the number of active GHFF camps within a 20 km radius. There is 1 active camp within recent surveys, and so the site scored a **3 out of 10** (**Plan 14**).

Context
The context attribute refers to the amount of potential GHFF habitat retained within a 20 km buffer of the proposed site and is calculated using GIS. Existing habitat within a 20 km buffer of the site was calculated at 28.2%, and therefore the context attribute achieved a score of **3 out of 10** (**Plan 14**).

Ecological Corridors
GIS was utilised to identify the role of the site in any ecological corridors on or adjacent to the site. A score of **10 out of 10** was given to the Ecological Corridors component of Site Context as the site is located within a regionally significant ecological corridor (**Plan 8)**

Role of site location to species overall population in the State
This attribute aims to quantify the importance of the site for state GHFF populations by assessing the number of notable populations within 20 km of the site and is calculated using GIS. One (1) GHFF camp has been recorded within 20 km of the site in recent surveys with a population level of 3+, and so this attribute was assigned a score of **6 out of 6** (**Plan 14**).

Threats to the species
The 'threats to the species' attribute quantifies potential risks to the survival of GHFF existing within and adjacent to the impact area. Key known threats to the GHFF include barbed-wire fencing and powerlines. Barbed-wire fencing is present around the permitter of the MVOA and therefore this attribute was scored a **5 out of 10** or 'moderate' threat.

Species Stocking Rate

The final component of the FHA technique is SSR. Species stocking rates are estimates of the GHFF carrying capacity of the site at the time of undertaking the survey. Stem density of GHFF foraging trees was an average of 112.5, 95 and 2 per ha at AU1, AU2 and AU3 and so received SSR scores of **4, 4 and 2 out of 10**, respectively.

6.4.1.1 Summary of GHFF MVOA baseline scores

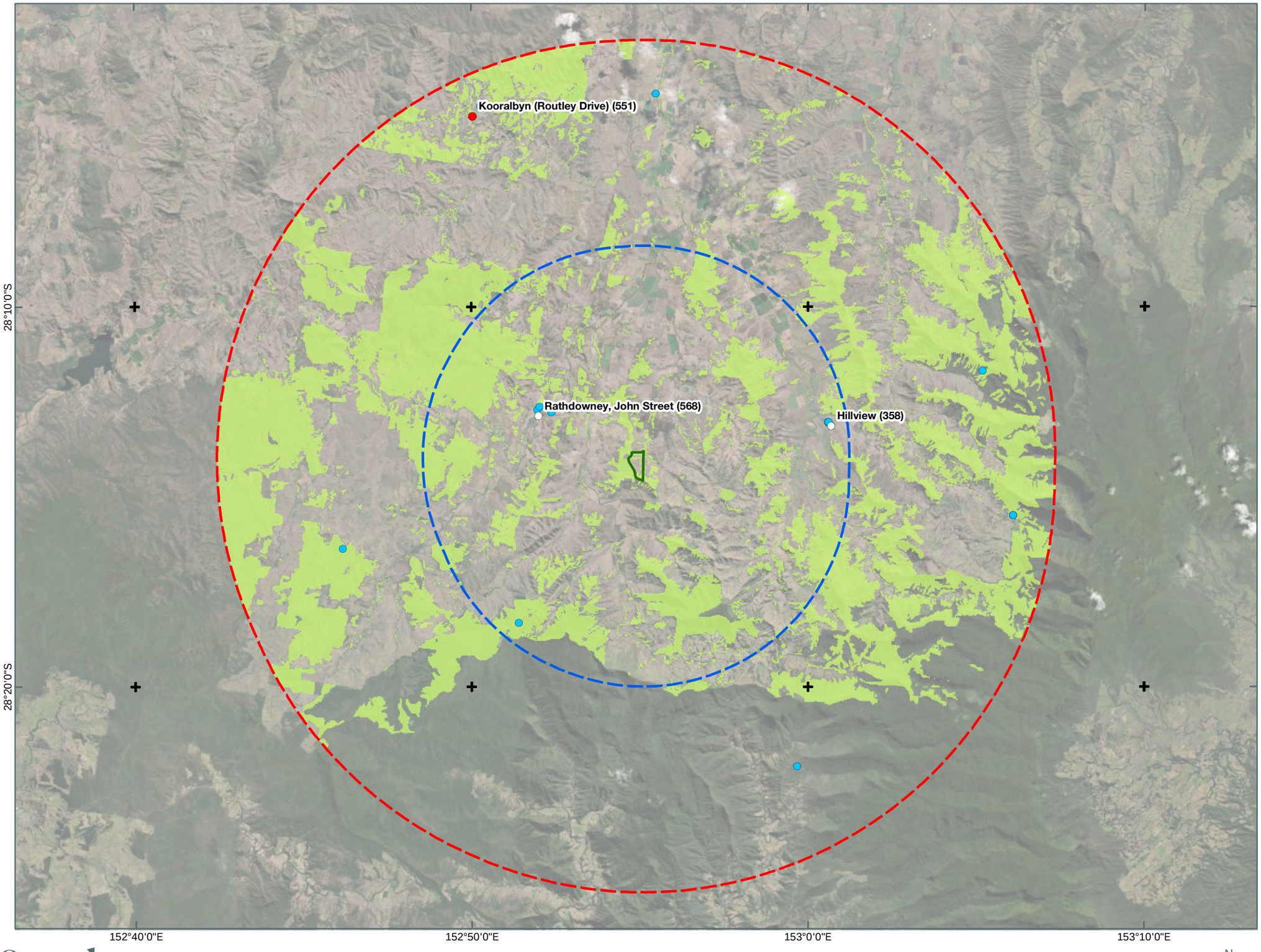
The overall habitat quality scores for GHFF at the MVOA are presented in **Table 56**.

Table 56: MVOA – GHFF FHA assessment score summary

	AU1	**AU2**	**AU3**
Site Condition (/3)	1.92	2.32	1.49
Site context (/3)	1.85	1.85	1.85
Species stocking rate (/4)	1.20	1.20	0.60
MHQA score	**4.97 (rounded to 5)**	**5.37 (rounded to 5)**	**3.74 (rounded to 4)**



14. MOUNT VIEW OFFSET AREA - GREY-HEADED FLYING-FOX CONTEXT ASSESSMENT



Notes:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of Saunders Havill.Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
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Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/

* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

LEGEND

- Mount View Offset Area [71 ha]
- Mount View Offset Area 10km Buffer
- Mount View Offset Area 20km Buffer
- Known and potential Grey-headed Flying-fox foraging habitat within 20km of Mount View Offset area [28.2%]
- Grey-headed Flying-fox records within 20km of Mount View offset area recorded within past 20 years (ALA, 2025) [15]

Grey-headed Flying-fox Roosts (Fed., 2025)

- Grey-headed Flying Fox roost inactive within recent surveys [2]
- Grey-headed Flying Fox roost active within recent surveys [0]
- Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [1]
- Nationally significant Grey-headed Flying Fox roost active within recent surveys [0]
- Nationally significant Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [0]



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12186 E 14 Offset GHFF Context B

7. Environmental Outcomes

This OMP identifies outcomes focused management actions pursuant the EPBC Act for the provision of Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) habitat offset. The management objectives for the MVOA, in alignment with the Environmental Offsets Policy (EOP) will:

- Deliver an overall conservation outcome that improves the viability of habitat for the Koala and GHFF.
- Provide a direct offset that is in proportion to the level of statutory protection that applies to Koala and GHFF habitat.
- Be of a size and scale proportionate to the residual impacts on Koala and GHFF habitat.
- Effectively account for and manage the risks of the offset not being successful within the required management timeframe.
- Provide a conservation gain additional to what is already required by a duty of care or to any environmental planning laws at any level of Government.
- Be efficient, effective, timely, transparent, scientifically robust and reasonable with appropriate transparent governance arrangements in place for measuring, monitoring, auditing and enforcing the management of the MVOA.
- Detailed descriptions of the management actions to be implemented at the MVOA, including responsibilities, monitoring requirements and completion criteria, are provided in Chapter 8. Implementation of these actions will facilitate the proposed environmental outcomes and ecological uplift of habitat at the MVOA.

7.1. Koala

A summary of the baseline and improvement Modified Habitat Quality Assessment (MHQA) scoring for each Assessment Unit (AU) within the MVOA is outlined in **Table 57**. Detailed environmental outcomes showing the specific attributes which will be improved by the offset actions including interim milestones are provided at **Table 64**, **Table 65**, and **Table 66**.

Table 57: Koala baseline MHQA and offset improvement scores

MHQA final scores	**AU1**		**AU2**		**AU3**	
	Baseline	Uplift	Baseline	Uplift	Baseline	Uplift
Site Condition (/3)	1.56	2.70	1.37	2.70	0.84	2.70
Site context (/3)	2.36	2.79	2.36	2.79	2.36	2.79

Species stocking rate (/4)	1.14	2.29	1.14	2.29	0.57	2.29
AU score	5.06	7.77	4.87	7.77	4.01	7.77
Rounded	6	8	5*	8	4	8
AU Area (ha)	**22.2**		**3.9**		**44.9**	

7.2. Grey-headed Flying-fox

A summary of the Foraging Habitat Assessment (FHA) baseline and improvement scoring for each assessment unit within the MVOA is outlined in **Table 58**. Detailed environmental outcomes showing the specific attributes which will be improved by the offset actions including interim milestones are provided at **Table 67**, **Table 68**, and **Table 69**.

Table 58: GHFF baseline FHA and offset improvement scores

FHA final scores	**AU1**		**AU2**		**AU3**	
	Baseline	**Uplift**	**Baseline**	**Uplift**	**Baseline**	**Uplift**
Site Condition (/3)	1.92	4.00	2.32	4.00	1.49	3.52
Site context (/3)	1.85	1.85	1.85	1.85	1.85	1.85
Species stocking rate (/4)	1.20	2.40	1.20	2.40	0.60	2.40
AU score	**4.97**	**8.25**	**5.37**	**8.25**	**3.94**	**7.77**
Rounded	**5**	**8**	**5**	**8**	**4**	**8**
AU Area (ha)	**22.2**		**3.9**		**44.9**	



7.3. Offset Assessment Guide – Calculator

Offset compensation for the impacts on MNES is derived from the EPBC Offset Assessment Guide (OAG) calculator and habitat quality gains achieved from the successful implementation of the management actions. A summary of EPBC OAG calculator inputs for Koala and GHFF are included in **Table 59** and **Table 60** below respectively. Refer to **Appendix D** for the detailed EPBC offset calculator sheets and attribute justifications.

Table 61 and **Table 62** outline a summary of the MNES offset compensation associated with the impacts, being **121.79%** for Koala and **243.29%** for GHFF respectively.

Table 59: Offset Assessment Guide Parameters – Koala

Parameter	Rationale
Impact (Area)	21.7 ha for Koala
Quantum of Impact (Quality)	A score of 6 for Koala
Quantum Impact (Area)	13.02 ha
Risk Related Time Horizon	The proposed MVOA will be legally secured in perpetuity; hence, the maximum score of 20 years.
Time Until Ecological Benefit	Measures prescribed in this MVOA Management Plan are expected to achieve the predicted increase in habitat quality over a period of 20 years. This timeframe is broadly recognised for regrowth vegetation to meet remnant status (50% canopy cover and 70% canopy height, Neldner et al. 2023).
Start Area	71 ha
Start Quality	Refer **Table 61**
Risk of Loss without Offset	It is understood risk of loss is to be set at 0% without any comprehensive evidence to the contrary.
Risk of Loss with Offset	It is understood risk of loss is to be set at 0% without any comprehensive evidence to the contrary.
Confidence in Result (Risk of Loss)	As risk of loss is set at 0%, a high score of 90% is used for confidence in result.
Future Quality without Offset	Existing habitat quality is expected to be maintained or potentially reduce if the current land use / management regime is continued. Under management for grazing over 20 years and without the offset, current habitat quality for Koala is highly unlikely to improve, and some attributes are likely to deteriorate where regrowth is subject to periodic clearing for cattle grazing and/or maintenance/fire regimes. Refer **Table 61.**
Future Quality with Offset	Refer **Table 61.**

Parameter	Rationale
Confidence in Result (Future Quality)	A confidence of 85% is considered suitable for AUs across the site that contain some existing vegetation (AU1 and AU2). A reduced confidence of 75% is considered suitable for cleared AUs (AU3) given the rehabilitation works that will occur. These confidence results are considered appropriate given the intensity of site works, use of established best practice management techniques, high level of detail provided (i.e. the detailed rehabilitation plan) and conservative outcomes used to identify uplift scores.



Table 60: Offset Assessment Guide Parameters – Grey-headed Flying-fox

Parameter	Rationale
Impact (Area)	15.9 ha for GHFF
Quantum of Impact (Quality)	A score of 5 for GHFF
Quantum Impact (Area)	7.95 ha
Risk Related Time Horizon	The proposed MVOA will be legally secured in perpetuity; hence, the maximum score of 20 years.
Time Until Ecological Benefit	Measures prescribed in this MVOA Management Plan are expected to achieve the predicted increase in habitat quality over a period of 20 years. This timeframe is broadly recognised for regrowth vegetation to meet remnant status (50% canopy cover and 70% canopy height, Neldner et al. 2023).
Start Area	71 ha
Start Quality	Refer **Table 62.**
Risk of Loss without Offset	It is understood risk of loss is to be set at 0% without any comprehensive evidence to the contrary.
Risk of Loss with Offset	It is understood risk of loss is to be set at 0% without any comprehensive evidence to the contrary.
Confidence in Result (Risk of Loss)	As risk of loss is set at 0%, a high score of 90% is used for confidence in result.
Future Quality without Offset	Existing habitat quality is expected to be maintained or potentially reduce if the current land use / management regime is continued. Under management for grazing over 20 years and without the offset, current habitat quality for Koala is highly unlikely to improve, and some attributes are likely to deteriorate where regrowth is subject to periodic clearing for cattle grazing and/or maintenance/fire regimes. Refer **Table 62**.
Future Quality with Offset	Refer **Table 62**.
Confidence in Result (Future Quality)	A confidence of 85% is considered suitable for AUs across the site that contain some existing vegetation (AU1 and AU2). A reduced confidence of 75% is considered suitable for cleared AUs (AU3) given the rehabilitation works that will occur. These confidence results are considered appropriate given the intensity of site works, use of established best practice management techniques, high level of detail provided (i.e. the detailed rehabilitation plan) and conservative outcomes used to identify uplift scores.



Table 61: Summary of Koala offset compensation

Impact site			Mount View Offset Area									
Impact area	Impact score	Quantum Impact area	Habitat quality gain (/10)			MVOA (ha)			Impact offset (%)			Total % of impact offset
			AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3	
21.7	6	13.02	5 to 8	5 to 8	4 to 8	22	4	45	33.94	6.17	81.68	121.79%

Table 62: Summary of Grey-headed Flying-fox offset compensation

Impact site			Mount View Offset Area									
Impact area	Impact score	Quantum Impact area	Habitat quality gain (/10)			MVOA (ha)			Impact offset (%)			Total % of impact offset
			AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3	
15.9	5	7.95	5 to 8	5 to 8	4 to 8	22	4	45	67.80	12.33	163.16	243.29

7.3.1 Completion Criteria

The management framework is designed to achieve the proposed environmental outcomes summarised above and detailed in **Section 8**.

A summary of management actions and associated completion criteria required to achieve the environmental outcomes are provided in **Table 63**. The management actions will result in a net gain of the overall habitat quality for Koala and GHFF over the period of effect of the offset through active management, maintenance, monitoring and reporting.

This OMP includes completion criteria and performance targets that evidence protection or improvement of MNES habitat. For the purpose of the plan:

a) **completion criteria** are longer term time-bound values, specified for measurable parameters, that if attained and maintained ensure the plan's environmental outcomes are achieved; and

b) **performance targets** are time-bound short- and medium-term targets guided by prescribed management measures, for management interventions and environmental condition, that are used to monitor, evaluate, review and improve the effectiveness of the plan to offset impacts.

Tracking of progress against the environmental outcomes will be measured at milestone monitoring years using the baseline survey methodologies detailed in **Section 6**. A schedule of monitoring and reporting is provided in **Section 8.12**.



Table 63: Completion criteria and performance targets

Management action	OMP section	Performance targets	Completion criteria
1 – Legally secure MVOA	8.3	Not applicable	• The MVOA will be legally secured prior to commencement of the action via a Voluntary Declaration (VDEC) administered under the Vegetation Management Act 1999 (Qld). • A covenant will be completed within 12 months of commencement of the action under either Chapter 6 Part 4 Division 8A of the Land Act 1994 (Qld) or Part 6 Division 4A of the Land Titles Act 1994 (Qld). If a covenant isn't possible an alternative legally binding mechanism will utilised in consultation with DCCEEW. • The Department is notified of the legal securement within 5 business days of commencing the implementation of the OMP i.e., the date from which the MVOA is legally secured. • The MVOA is not used for other purposes – site access is restricted.
2 – Non-native vertebrate pest management	8.4	• Development and implementation of a property-wide feral animal management program specifying techniques (trapping, baiting, shooting) and ongoing monitoring methods (including datasheets) to be utilised will be completed within Year 1 of the offset. • A suitably qualified pest management contractor will be engaged to manage pests within the MVOA for the life of the offset.	• Reduced risk of injury or death of Koala from non-native predator attacks within the MVOA. • Non-native vertebrate pests and evidence of pests continue to be suppressed within the MVOA.

Management action	OMP section	Performance targets	Completion criteria
3 – Weeds of National Significance management	8.5	• Establish photo monitoring locations in Year 1 of the OMP prior to treatment of Weeds of National Significance (WONS) commencing. • All WONS will receive initial treatment within Year 1 of the offset to allow for planting works to commence. • Follow-up treatment of WONS will occur annually or as required, determined by the suitably qualified regeneration contractor.	• The management actions must reduce the extent of, or maintain, WONS weed cover below 5% of the entire MVOA by the end of Year 10 of the offset and be maintained for the life of the offset.
4 – Bushfire Management Plan	8.6	• A Bushfire Management Plan (BMP) will be developed within 1 year from the date of the approval and implemented in accordance with relevant Queensland guidelines and endorsed by an experienced bushfire practitioner to reduce potential threats from fires to Koala.	• Reduced risk of high intensity fires in the MVOA. • Vegetation composition and restoration regime is not negatively affected by prescribed fire regimes. • Firebreaks and fuel loads are maintained through the life of the offset.
5 – Habitat creation and regeneration	8.7	• MVOA planting completed by the end of Year 2 of the offset.	• Rehabilitated areas are established, regenerated and mapped as remnant vegetation under Queensland's VMA successor legislation by Year 20 which requires 70% of canopy height and 50% of expected cover according to the relevant Regional Ecosystem benchmark to be reached. • Site Condition metrics for Koala improves in accordance with environmental outcomes provided in **Table 64**, **Table 65** and **Table 66.** • Site Condition metrics for GHFF improves in accordance with environmental outcomes provided in **Table 67**, **Table 68** and **Table** 69.

Management action	OMP section	Performance targets	Completion criteria
6 – Fencing and signage	8.8	• Fencing and signage is installed and retrofitted by the end of Year 1 of the offset and maintained for the life of the offset. • Prevention of livestock from the entering the MVOA utilising fauna friendly livestock exclusion fencing.	• Mortalities or injury to Koala and GHFF recorded as a result of fauna friendly barbed-wire fencing is rectified within 2 weeks of being recorded. • Stock breaches or unauthorised access is rectified within 2 weeks of being recorded. • Fence repairs must be completed within 2 weeks of being recorded unless delayed by severe weather or other safety concerns.

Table 64: Koala environmental outcomes – AU1

AU1 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	5	5	5	5	5	Immediate	Recruitment of woody perennial species greater than 75% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the recruitment of woody perennial species will be maintained over 75%. Remedial actions are not anticipated.
Native plant species richness – Trees	2.5	2.5	2.5	5	5	10 years	At least 90% of the expected tree species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree species richness is currently at 64.29% of the benchmark. Recruitment of tree species is to be greater than 75% at 15 years as specified above. If the sub-canopy layer species richness has not improved to greater than 90% at 10 years then remedial actions to improve the prospect of achieving 95% in 15 years will be applied. These include remedial plantings of advanced stock.
Native plant species richness - Shrubs	2.5	2.5	2.5	5	5	10 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub species richness is currently at 70% of the benchmark. If the shrub species richness has not improved to greater than 80% at 5 years then remedial actions to improve the prospect of achieving 90% in 15 years will be applied. These include remedial plantings.
Native plant species richness - Grasses	2.5	2.5	2.5	2.5	5	20 years	All of the expected grass species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Grass species richness is currently at 25% of the benchmark. If the grass species richness has not improved to greater than 75% at 10 years then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Native plant species richness - Forbs	0	0	2.5	2.5	5	Year 20	Native forb species richness greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Forb species richness is currently at 17% of the benchmark. If monitoring indicates that forb species richness is not transitioning to over 90% at Year 15 then remedial actions will be applied. These include remedial plantings.

AU1 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Tree canopy height	4	4	4	4	5	20 years	A median tree height greater than 70% of the benchmark will be achieved as a result of 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Median tree canopy height is currently at 87% (Ecologically Dominant Layer [EDL]) and 65% (sub-canopy) of the benchmark. If average tree height has not transitioned above 70% at 20 years, then the prospect of extending the management period will be investigated. By Year 20 species plantings will be a minimum of 70% of the tree canopy height benchmark.
Tree canopy cover	3.5	3.5	3.5	3.5	5	20 years	Average tree canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree canopy cover is currently at 59% (EDL) and 30% (sub-canopy) of the benchmark. EDL canopy cover is to be maintained between 50 and 200%. If sub-canopy cover has not improved to greater than 40% of the benchmark by Year 15 then remedial actions will be applied to improve the prospect of achieving between 50 and 200% of the benchmark by Year 20.
Shrub canopy cover	3	3	3	3	5	20 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 22% of the benchmark. If the shrub canopy cover has not improved to greater than 30% at 10 years, then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include remedial plantings.
Native perennial grass cover	5	5	5	5	5	Immediate	Native grass cover to be maintained at greater than 90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Native perennial grass cover is currently at 164% of the benchmark. If monitoring indicates a decline to below 90% then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter	5	5	5	5	5	Immediate	Organic litter is to be maintained between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the organic litter will be maintained between 50% and 200%. Remedial actions are not anticipated.
Large trees	5	5	5	5	5	Immediate	The number of large trees will be maintained between 0% and 50% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the number of large trees will be maintained between 0% and 50%. Remedial actions are not anticipated.

AU1 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Coarse woody debris	2	2	2	2	5	20 years	Course woody debris greater than 50% and less than 200% of the benchmark will be achieved by specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Coarse woody debris is currently 32% of the benchmark. If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by Year 15 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	3	5	10	10	10	15 years	Weed coverage will reduce to less than 5% over the course of 10 years by specific management actions 3 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. An additional survey is recommended at Year 8 to track progress to the Year 10 milestone objective.	Weed cover is currently 33% of the benchmark. If improvement to below 10% has not been achieved by the end of Year 8 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	5	10	10	20 years	Quality and availability of food and foraging habitat will be improved to high by specific management actions 1, 4 and 5 outlined in **Table 63.** Management action 5, habitat creation and regeneration, will increase the availability of koala foraging trees through planting of tubestock, direct seeding and natural regeneration.	aseline attributes are established. Photo monitoring points will be established at commencement of the offset. Canopy cover and Koala foraging trees with a DBH >100mm will be calculated over a 100m x 20m plot at each habitat quality transect. Transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. Photo monitoring will be completed Bi-annually in Years 1-5 (minimum 4 months between events) and annually from years 6-20 until the WONS and habitat completion criteria have been met for 3 consecutive years without active management.	Quality and availability of food and foraging habitat is currently moderate based on the number of foraging trees and canopy cover. Rehabilitation will improve these attributes achieving a high rating.
Quality and availability of shelter	1	1	5	10	10	20 years	Quality and availability of shelter will be improved to high by specific management actions 1, 4 and 5 outlined in **Table 63**. Management action 5, habitat creation and regeneration, will increase the availability of shelter trees by protecting established trees and through planting of tubestock, direct seeding and natural regeneration.	Baseline attributes are established. Photo monitoring points will be established at commencement of the offset. Shelter trees with a DBH >100mm will be calculated over a 100m x 20m plot at each habitat quality transect. Transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. Photo monitoring will be completed Bi-annually in Years 1-5 (minimum 4 months between events) and	Quality and availability of shelter habitat is currently low based on the number of large trees and potential shelter trees present. Rehabilitation will improve these attributes achieving a high rating.

AU1 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
								annually from years 6-20 until the WONS and habitat completion criteria have been met for 3 consecutive years without active management.	
Site Condition Score	**52**	**54**	**62.5**	**77.5**	**90**				
Overall Site Condition Score out of 3	**1.56**	**1.62**	**1.88**	**2.33**	**2.70**				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	7	7	15	15	15 years	Threats to species will be reduced from moderate to low following specific management actions 1, 2, 4 & 6 outlined in **Table 63.**	Baseline attributes are established. This criterium is reliant upon legally protecting the MVOA and establishment active management including the suppression of pests and reduction in bushfire risk as per pest management program and bushfire management plan.	If monitoring indicates an increase in pest species are recorded within the MVOA, then corrective actions will be implemented to supress threats across the MVOA. Furthermore, if monitoring of other associated management actions indicate that completion criteria are not being met adaptive management will be implemented to ensure outcomes proposed are being achieved
Species mobility capacity	10	10	10	10	10	Immediate	Species mobility capacity will be maintained to minor restriction (<25%) by specific management actions 1 to 6 outlined in **Table 63.**	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	All Site Condition remedial actions, as well as threat reductions also apply to this criterium maintaining a high rating.
Site Context Score	**44**	**44**	**44**	**52**	**52**				
Overall Site Context Score (out of 3)	**2.36**	**2.36**	**2.36**	**2.79**	**2.79**				
Presence	5	5	5	10	10	15 years	It is anticipated that under the management actions 1 through 6 outlined in **Table 63** Koala will recognise and utilise the site as habitat.	Koala Spot Assessment Technique (SAT) surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Koala presence was not detected on site during baseline surveys but with all site remedial actions improving the condition, context, and other stocking rate factors of the MVOA, it is anticipated that the presence of Koala on site will be detected by the end of Year 15.

AU1 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Usage	15	15	15	15	15	Immediate	It is recognised that despite lack of evidence, AU1 is considered foraging habitat owing the presence of Koala habitat trees.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	AU1 on-site is considered breeding habitat which is not likely to change. Remedial actions are not anticipated
Approximate Density	0	0	0	10	10	15 Years	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in **Table 63** at least low level Koala activity (non-zero scats recorded using the East Coast med-high population category) will be present.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Baseline SAT surveys did not detect any presence of Koala on site. If density levels are not transitioning toward low level at the 15-year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly.
Role of the population	0	0	0	5	5	15 years	No evidence of Koala has been recorded within the MVOA therfore not a key source population. Management Actions 1 – 6 are proposed to increase the value and extent of Koala habitat which will be utilised by the species.	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Evidence of Koala occurrence is anticipated by Year 15 following habitat creation across the MVOA. Evidence of Koala within the MVOA will be considered a key source population for dispersal at a minimum.
Species Stocking Rate [SSR] Score out of 70	**20**	**20**	**20**	**40**	**40**				
SSR Score out of 4	**1.14**	**1.14**	**1.14**	**2.29**	**2.29**				
Total Habitat Quality Scores	**5.06**	**5.12**	**5.38**	**7.40**	**7.77**				

Table 65: Koala environmental outcomes – AU2

AU2 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	3	3	5	5	5	10 years	Recruitment of EDL dominant species will increase to >75% as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Recruitment is currently 75% of the benchmark. If improvement to greater than 75% has not been achieved at the 10-year mark, then then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness – Trees	5	5	5	5	5	Immediate	Native tree species richness greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the native tree species richness will be maintained over 90%. Remedial actions are not anticipated.
Native plant species richness - Shrubs	2.5	2.5	2.5	5	5	15 years	Native shrub species richness greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub species richness is currently at 30% of the benchmark. If the shrub species richness has not improved to greater than 60% at Year 10 then remedial actions to improve the prospect of achieving 90% in 15 years will be applied. These include remedial plantings.
Native plant species richness - Grasses	0	0	2.5	2.5	5	10 years	Native grasses species richness greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Grass species richness is currently at 21% of the benchmark. If monitoring indicates that grass species richness is not transitioning to over 50% at Year 10 then remedial actions will be applied to improve the prospect of achieving 90% by Year 20. These include remedial plantings.
Native plant species richness - Forbs	0	0	2.5	2.5	5	20 years	Native forb species richness greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Forb species richness is currently at 17% of the benchmark. If monitoring indicates that forb species richness is not transitioning to over 90% at Year 15 then remedial actions will be applied. These include remedial plantings.
Tree canopy height	4	4	4	4	5	20 years	Tree canopy height greater than 70% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Median tree canopy height is currently 76% (EDL) and 70% (sub-canopy). It is anticipated that the tree sub-canopy height will be achieve greater than 70% by Year 20. Remedial actions are not anticipated.

AU2 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Tree canopy cover	5	5	5	5	5	Immediate	Tree canopy cover between 50% and 200% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree canopy cover is currently 63% (EDL) and 56% (sub-canopy). It is anticipated that the tree canopy cover will be maintained between 50% and 200%. Remedial actions are not anticipated.
Shrub canopy cover	0	0	3	3	5	20 years	Shrub canopy cover between 50% and 200% of the benchmark will be achieved as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 0% of the benchmark. If monitoring indicates that shrub canopy cover is not between 10 and 50% at year 10 then remedial actions will be applied to improve prospects of achieving between 50 and 200% by Year 20. These include remedial plantings.
Native perennial grass cover	3	3	3	5	5	15 years	Native perennial grass cover greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Native perennial grass cover is currently at 80% of the benchmark. If the native perennial grass cover has not improved to greater than 85% in 10 years then remedial actions to improve the prospect of 90% by Year 20 will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter	3	3	3	3	5	20 years	Organic litter is to be between 50% and 200% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Organic litter is currently at 43% of the benchmark. If organic litter has not improved to greater than 50% at 15 years then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees	5	5	5	5	5	Immediate	The number of large trees will be maintained between 0% and 50% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the number of large trees will be maintained between 0% and 50%. Remedial actions are not anticipated.
Coarse woody debris	2	2	2	2	5	20 years	Course woody debris greater than 50% and less than 200% of the benchmark will be achieved by specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Coarse woody debris is currently 17% of the benchmark. If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by Year 15 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and

AU2 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
									importing native tree debris if necessary.
Weed cover	3	5	10	10	10	10 Years	Weed coverage will reduce to less than 5% at 10 years by specific management actions 3 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. An additional survey is recommended at Year 8 to track progress to the Year 10 milestone objective.	Weed cover is currently 50% of the benchmark. If improvement to below 10% has not been achieved by the end of Year 8 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	10	10	10	10 years	Quality and availability of food and foraging habitat will be improved to high by specific management actions 1, 4 and 5 outlined in **Table 63**. Management action 5, habitat creation and regeneration, will increase the availability of koala foraging trees through planting of tubestock, direct seeding and natural regeneration.	Baseline attributes are established. Photo monitoring points will be established at commencement of the offset. Canopy cover and Koala foraging trees with a DBH >100mm will be calculated over a 100m x 20m plot at each habitat quality transect. Transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. Photo monitoring will be completed Bi-annually in Years 1-5 (minimum 4 months between events) and annually from years 6-20 until the WONS and habitat completion criteria have been met for 3 consecutive years without active management.	Quality and availability of food and foraging habitat is currently moderate based on the number of foraging trees and canopy cover. Rehabilitation will improve these attributes achieving a high rating.
Quality and availability of shelter	5	5	10	10	10	15 years	Quality and availability of shelter will be improved to high by specific management actions 1, 4 and 5 outlined in **Table 63.** Management action 5, habitat creation and regeneration, will increase the availability of shelter trees by protecting established trees and through planting of tubestock, direct seeding and natural regeneration.	Baseline attributes are established. Photo monitoring points will be established at commencement of the offset. Shelter trees with a DBH >100mm will be calculated over a 100m x 20m plot at each habitat quality transect. Transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. Photo monitoring will be completed Bi-annually in Years 1-5 (minimum 4 months between events) and annually from years 6-20 until the WONS and habitat completion criteria have been met for 3 consecutive years without active management.	Quality and availability of shelter habitat is currently moderate based on the number of large trees and potential shelter trees present. Rehabilitation will improve these attributes achieving a high rating.

AU2 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Site Condition Score	**45.5**	**47.5**	**72.5**	**77**	**90**				
Overall Site Condition Score out of 3	**1.37**	**1.43**	**2.18**	**2.31**	**2.7**				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	7	7	15	15	15 years	Threats to species will be reduced from moderate to low following specific management actions 1, 2, 4 & 6 outlined in **Table 63.**	Baseline attributes are established. This criterium is reliant upon legally protecting the MVOA and establishment active management including the suppression of pests and reduction in bushfire risk as per pest management program and bushfire management plan.	If monitoring indicates an increase in pest species are recorded within the MVOA, then corrective actions will be implemented to supress threats across the MVOA. Furthermore, if monitoring of other associated management actions indicate that completion criteria are not being met adaptive management will be implemented to ensure outcomes proposed are being achieved
Species mobility capacity	10	10	10	10	10	Immediate	Species mobility capacity will be maintained to minor restriction (<25%) by specific management actions 1 to 6 outlined in **Table 63.**	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	All Site Condition remedial actions, as well as threat reductions also apply to this criterium maintaining a high rating.
Site Context Score	**44**	**44**	**44**	**52**	**52**				
Overall Site Context Score (out of 3)	**2.36**	**2.36**	**2.36**	**2.79**	**2.79**				
Presence	5	5	5	10	10	15 years	It is anticipated that under the management actions 1 through 6 outlined in **Table 63** Koala will recognise and utilise the site as habitat.	Koala Spot Assessment Technique (SAT) surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Koala presence was not detected on site during baseline surveys but with all site remedial actions improving the condition, context, and other stocking rate factors of the MVOA, it is anticipated that the presence of Koala on site will be detected by the end of Year 15.
Usage	15	15	15	15	15	Immediate	It is recognised that despite lack of evidence, AU2 is considered foraging habitat owing the presence of Koala habitat trees.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	AU2 on-site is considered breeding habitat which is not likely to change. Remedial actions are not anticipated
Approximate Density	0	0	0	10	10	15 years	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in **Table 63** at least low level Koala activity (non-zero	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Baseline SAT surveys did not detect any presence of Koala on site. If density levels are not transitioning toward low level at the 15-year mark, then broader

AU2 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
							scats recorded using the East Coast med-high population category) will be present.		Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly.
Role of the population	0	0	0	5	5	15 Years	No evidence of Koala has been recorded within the MVOA therfore not a key source population. Management Actions 1 – 6 are proposed to increase the value and extent of Koala habitat which will be utilised by the species.	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Evidence of Koala occurrence is anticipated by Year 15 following habitat creation across the MVOA. Evidence of Koala within the MVOA will be considered a key source population for dispersal at a minimum.
SSR Score out of 70	**20**	**20**	**20**	**40**	**40**				
SSR Score out of 4	**1.14**	**1.14**	**1.14**	**2.29**	**2.29**				
Total Habitat Quality Scores	**4.87**	**4.93**	**5.68**	**7.38**	**7.77**				

Table 66: Koala environmental outcomes – AU3

AU3 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	0	0	3	5	5	15 years	Recruitment of EDL dominant species will increase to >75% as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Recruitment is currently 0% of the benchmark. If improvement to greater than 50% has not been achieved at the 10 year mark then then remedial actions to improve recruitment will be applied to achieve >75% by 15 years. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness – Trees	2.5	2.5	2.5	5	5	15 years	Native tree species richness is to be greater than 90% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree species richness is currently at 29% of the benchmark. Recruitment of tree species is to be greater than 75% at 15 years. If the sub-canopy layer species richness has not improved to greater than 95% at 10 years then remedial actions to improve the prospect of achieving >75% tree species richness in 15 years will be applied. These include remedial plantings of advanced stock.
Native plant species richness - Shrubs	2.5	2.5	2.5	5	5	15 years	Greater than 90% of benchmark shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub species richness is currently at 30% of the benchmark. If the shrub species richness has not improved to greater than 75% at 10 years then remedial actions to improve the prospect of achieving 90% in 15 years will be applied. These include remedial plantings.
Native plant species richness - Grasses	0	0	0	2.5	5	15 years	Greater than 90% of benchmark grass species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Grass species richness is currently at 13% of the benchmark. If the grass species richness has not improved to greater than 75% at 10 years, then remedial actions to improve the prospect of achieving 90% in 15 years will be applied. These include remedial plantings.
Native plant species richness - Forbs	0	0	0	2.5	5	15 years	Native forb species richness greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Forb species richness is currently at 4% of the benchmark. If the forb species richness has not improved to greater than 75% at 15 years, then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.

AU3 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Tree canopy height	3	3	3	3	5	20 years	A median tree height greater than 70% of the benchmark will be achieved as a result of 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Median tree canopy height is currently at 34% (EDL) and 30% (sub-canopy) of the benchmark. If tree height has not transitioned above 70% at 20 years, then the prospect of extending the management period will be investigated. By Year 20 species plantings to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy cover	0	0	2	2	5	20 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 55, 10, 15 and 20 years.	Tree canopy cover is currently at 5% (EDL) and 3% (sub-canopy) of the benchmark. If tree canopy cover is not greater than 30% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include remedial plantings of advanced stock.
Shrub canopy cover	3	3	3	5	5	15 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 28% of the benchmark. If the shrub canopy cover has not improved to greater than 40% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 15 years will be applied. These include remedial plantings.
Native perennial grass cover	5	5	5	5	5	Immediate	Native grass cover to be maintained at >90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Native perennial grass cover is currently at 234% of the benchmark. If monitoring indicates a decline to below 90% then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter	0	0	3	3	5	20 years	Organic litter to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Organic litter is currently at 0% of the benchmark. If organic litter has not improved to greater than 30% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees	5	5	5	5	5	Immediate	The number of large trees will be maintained between 0% and 50% of the benchmark as a	Baseline Site Condition attributes are established. Habitat quality transects to be completed by	It is anticipated that the number of large trees will be maintained between 0% and 50%.

AU3 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
							result of management actions 1, 3, 4 & 5 outlined in **Table 63.**	suitably qualified professionals at 5, 10, 15 and 20 years.	Remedial actions are not anticipated.
Coarse woody debris	0	0	2	2	5	20 years	Course woody debris greater than 50% and less than 200% of the benchmark will be achieved by specific management actions 1, 3, 4 & 5 outlined in **Table 63**.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Coarse woody debris is currently 2% of the benchmark. If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	5	5	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 10 years by specific management actions 3 & 5 outlined in **Table 63.**	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. An additional survey is recommended at Year 8 to track progress to the Year 10 milestone objective.	Weed cover is currently 15% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 10 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	1	1	5	5	10	20 Years	Quality and availability of food and foraging habitat will be improved to high by specific management actions 1, 4 and 5 outlined in **Table 63.** Management action 5, habitat creation and regeneration, will increase the availability of koala foraging trees through planting of tubestock, direct seeding and natural regeneration.	Baseline attributes are established. Photo monitoring points will be established at commencement of the offset. Canopy cover and Koala foraging trees with a DBH >100mm will be calculated over a 100m x 20m plot at each habitat quality transect. Transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. Photo monitoring will be completed Bi-annually in Years 1-5 (minimum 4 months between events) and annually from years 6-20 until the WONS and habitat completion criteria have been met for 3 consecutive years without active management.	Quality and availability of food and foraging habitat is currently low based on the number of foraging trees and canopy cover. Rehabilitation will improve these attributes achieving a high rating.
Quality and availability of shelter	1	1	5	5	10	20 Years	Quality and availability of shelter will be improved to high by specific management actions 1, 4 and 5 outlined in **Table 63.** Management action 5, habitat creation and regeneration, will increase the availability of shelter trees by protecting established trees and through planting of tubestock, direct seeding and natural regeneration.	Baseline attributes are established. Photo monitoring points will be established at commencement of the offset. Shelter trees with a DBH >100mm will be calculated over a 100m x 20m plot at each habitat quality transect. Transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. Photo monitoring will be completed Bi-annually in Years 1-5 (minimum 4	Quality and availability of shelter habitat is currently low based on the number of large trees and potential shelter trees present. Rehabilitation will improve these attributes achieving a high rating.

AU3 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
								months between events) and annually from years 6-20 until the WONS and habitat completion criteria have been met for 3 consecutive years without	
Site Condition Score	**28**	**28**	**51**	**65**	**90**				
Overall Site Condition Score out of 3	**0.84**	**0.84**	**1.53**	**1.95**	**2.70**				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	7	7	15	15	15 years	Threats to species will be reduced from moderate to low following specific management actions 1, 2, 4 & 6 outlined in **Table 63.**	Baseline attributes are established. This criterium is reliant upon legally protecting the MVOA and establishment active management including the suppression of pests and reduction in bushfire risk as per pest management program and bushfire management plan.	If monitoring indicates an increase in pest species are recorded within the MVOA, then corrective actions will be implemented to supress threats across the MVOA. Furthermore, if monitoring of other associated management actions indicate that completion criteria are not being met adaptive management will be implemented to ensure outcomes proposed are being achieved
Species mobility capacity	10	10	10	10	10	Immediate	Species mobility capacity will be maintained to minor restriction (<25%) by specific management actions 1 to 6 outlined in **Table 63.**	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	All Site Condition remedial actions, as well as threat reductions also apply to this criterium maintaining a high rating.
Site Context Score	**44**	**44**	**44**	**52**	**52**				
Overall Site Context Score (out of 3)	**2.36**	**2.36**	**2.36**	**2.79**	**2.79**				
Presence	5	5	5	10	10	15 years	It is anticipated that under the management actions 1 through 6 outlined in **Table 63** Koala will recognise and utilise the site as habitat.	Koala Spot Assessment Technique (SAT) surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Koala presence was not detected on site during baseline surveys but with all site remedial actions improving the condition, context, and other stocking rate factors of the MVOA, it is anticipated that the presence of Koala on site will be detected by the end of Year 15.

AU3 Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Usage	5	5	5	15	15	15 Years	It is anticipated that under management actions 1 to 6 outlined in **Table 63.** Koala usage as a measure of habitat type and evidence of usage will increase through the direct planting of Koala habitat trees the will reach non-juvinile status by Year 15. It is considered that with the reinstatement of key habitat values, the entire MVOA will be considered breeding habitat by Year 15 as per the conservation advice.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	AU3 on-site is considered dispersal habitat only due to a lack of Koala habitat trees. If surveys indicate that revegetation efforts have not produced non-juvenile Koala habitat trees by year 15, remedial works will be required including remedial planting of advanced stock.
Approximate Density	0	0	0	10	10	15 Years	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in **Table 63** at least low level Koala activity (non-zero scats recorded using the East Coast med-high population category) will be present.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Baseline SAT surveys did not detect any presence of Koala on site. If density levels are not transitioning toward low level at the 15-year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly.
Role of the population	0	0	0	5	5	15 Years	No evidence of Koala has been recorded within the MVOA therfore not a key source population. Management Actions 1 – 6 are proposed to increase the value and extent of Koala habitat which will be utilised by the species.	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Evidence of Koala occurrence is anticipated by Year 15 following habitat creation across the MVOA. Evidence of Koala within the MVOA will be considered a key source population for dispersal at a minimum.
SSR Score out of 70	**10**	**10**	**10**	**40**	**40**				
SSR Score out of 4	**0.57**	**0.57**	**0.57**	**2.29**	**2.29**				
Total Habitat Quality Scores	**3.77**	**3.77**	**4.46**	**7.02**	**7.77**				

Table 67: Grey-headed Flying-fox environmental outcomes – AU1

Assessment Unit - Regional Ecosystem	**AU 1 – Regrowth 12.8.17**											
Site Reference	Transect 1 Raw Data	Transect 5 Raw Data	Max Score	Average score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
Vegetation Condition	10	10	**20**	**10**	**10**	**10**	**10**	**20**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** AU1 vegetation will attain Remnant status as defined under the Vegetation Management Act within 15 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	AU1 vegetation is to reach Remnant status in 15 years, which require 70% of height and 50% of expected cover to be reached. If the vegetation is not progressing toward Remnant status at Year 10, remedial actions will be applied. These include remedial plantings of advanced stock.
Species Richness	4	5	**20**	**4.5**	**10**	**10**	**10**	**20**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** the assessment unit 'Species Richness' will be improved to greater than six foraging species.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to be improved to greater than six foraging species. If the species diversity is not progressing towards this by year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Flower Score	0.634	0.563	**10**	**0.5985**	**8**	**8**	**8**	**10**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** 'Flower Score' will improve to ten by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is expected that 'Flower Score' will improve to ten by Year 15. If the 'Flower Score' is not progressing towards this requirement at Year 10, then remedial actions will be applied, including remedial plantings of advanced stock.
Timing of Biological Shortages	10	10	**10**	**10**	**10**	**10**	**10**	**10**	**10**	It is not anticipated that the timing of biological shortages will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the flower score shows decline then remedial actions will be implemented.
Quality of Foraging Habitat	3	3	**20**	**3**	**5**	**5**	**10**	**20**	**20**	It is expected that management actions 1, 3, 4 & 5 outlined in **Table 63** will result in an improvement to at least four significant food tree species being established by Year 10 and greater than six by Year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality of foraging habitat within AU1 is to achieve at least four species by Year 10, and greater than six by Year 15. If the species present do not reflect this requirement at Year 10, then remedial actions will be applied including plantings of advanced stock.
Non-native Plant Cover	20%	45%	**20**	**32.5%**	**5**	**10**	**20**	**20**	**20**	Non-native Plant Cover' is currently high within AU1. It is anticipated that actions 3 & 5 outlined in **Table 63** will improve non-native plant cover to below 5% within 10 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at 10 years then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score					**48**	**53**	**68**	**100**	**100**			
MAX Site Condition Score					**100**	**100**	**100**	**100**	**100**			
Site Condition Score - out of 4					**1.92**	**2.12**	**2.72**	**4**	**4**			

Assessment Unit - Regional Ecosystem	**AU 1 – Regrowth 12.8.17**											
Size of patch	Patch size is greater than 5000 ha	Patch size is greater than 5000 ha	**10**	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Connectedness	1 active camp within 20 kilometres (km)	1 active camp within 20 km	**10**	**3**	**3**	**3**	**3**	**3**	**3**	NA	NA	NA
Context	31-75%	31-75%	**10**	**3**	**3**	**3**	**3**	**3**	**3**	NA	NA	NA
Ecological Corridors	Within ecological corridor	Within ecological corridor	**10**	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 roost within 20 km	1 active Level 3 roost within 20 km	**10**	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Threats to the species	Moderate (barbed wire fencing)	Moderate (barbed wire fencing)	**10**	**5**	**5**	**5**	**5**	**5**	**5**	The proposed offset site is currently fenced with barbed wire, a recognised threat to Flying-foxes. Management action 6 outlined in **Table 63** will retrofit barbed wire.	Baseline attributes have been established. This criterium is reliant upon the management of barbed wire fencing.	The removal of barbed wire will provide a reduction in threats however for the purposes of scoring outcomes. The threat score is maintained at 5.
Site Context Score					**37**	**37**	**37**	**37**	**37**			
MAX Site Context Score					**60**	**60**	**60**	**60**	**60**			
Site Context Score - out of 3					**1.85**	**1.85**	**1.85**	**1.85**	**1.85**			
GHFF Foraging Tree Density / ha	60	165	**10**	**112.5**	**4**	**4**	**4**	**6**	**8**	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in **Table 63** will improve stem densities of GHFF foraging trees within AU1 to greater than 315 per ha by Year 15 and 533 by Year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem density within AU1 is to achieve at 315 per ha by Year 15 and 533 by Year 20. If the stem density is not progressing towards this by Year 5 then remedial actions will be applied. These include remedial plantings of advanced stock.
Species Stocking Rate Score					**4**	**4**	**4**	**6**	**8**			
MAX Species Stocking Rate Score					**10**	**10**	**10**	**10**	**10**			
Species Stocking Rate Score - out of 3					**1.2**	**1.2**	**1.2**	**2.4**	**2.4**			
Total					**4.97**	**5.17**	**5.77**	**7.65**	**8.25**			

Table 68: Grey-headed Flying-fox environmental outcomes – AU2

Assessment Unit - Regional Ecosystem	**AU 2 – Remnant 12.8.17**											
Site Reference	Transect 2 Raw Data	Transect 6 Raw Data	Max Score	Average Score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
Vegetation Condition	20	20	**20**	**20**	**20**	**20**	**20**	**20**	**20**	It is not anticipated that the vegetation status will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the vegetation status shows decline then remedial actions will be implemented.
Species Richness	3	6	**20**	**4.5**	**10**	**10**	**20**	**20**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** the assessment unit 'Species Richness' will be improved to greater than six foraging species by Year 10.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within AU2 is to be improved to greater than six foraging species by Year 10. If the species diversity is not progressing towards this by Year 5, then remedial actions will be applied. These include remedial plantings of advanced stock.
Flower Score	0.588	0.578	**10**	**0.5830**	**8**	**8**	**8**	**10**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** 'Flower Score' will improve to ten by Year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is expected that 'Flower Score' will improve to ten by Year 15. If the 'Flower Score' is not progressing towards this requirement at Year 10, then remedial actions will be applied, including remedial plantings of advanced stock.
Timing of Biological Shortages	10	10	**10**	**10**	**10**	**10**	**10**	**10**	**10**	It is not anticipated that the timing of biological shortages will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the flower score shows decline then remedial actions will be implemented.
Quality of Foraging Habitat	2	3	**20**	**2.5**	**5**	**5**	**10**	**20**	**20**	It is expected that management actions 1, 3, 4 & 5 outlined in **Table 63** will result in an improvement to at least four significant food tree species being established by Year 10 and greater than six by Year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality of foraging habitat within AU1 is to achieve at least four species by Year 10, and greater than six by Year 15. If the species present do not reflect this requirement at Year 10, then remedial actions will be applied including plantings of advanced stock.
Non-native Plant Cover	65%	35%	**20**	**50%**	**5**	**10**	**20**	**20**	**20**	Non-native Plant Cover' is currently high within AU1. It is anticipated that actions 3 & 5 outlined in **Table 63** will improve non-native plant cover to below 5% within 10 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at 10 years then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score					**58**	**63**	**88**	**100**	**100**			
MAX Site Condition Score					**100**	**100**	**100**	**100**	**100**			
Site Condition Score - out of 4					**2.32**	**2.52**	**3.52**	**4**	**4**			

Assessment Unit - Regional Ecosystem	**AU 2 – Remnant 12.8.17**											
Size of patch	Patch size is greater than 5000 ha	Patch size is greater than 5000 ha	**10**	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Connectedness	1 active camp within 20 km	1 active camp within 20 km	**10**	**3**	**3**	**3**	**3**	**3**	**3**	NA	NA	NA
Context	31-75%	31-75%	**10**	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Ecological Corridors	Within ecological corridor	Within ecological corridor	**10**	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 roost within 20 km	1 active Level 3 roost within 20 km	**10**	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Threats to the species	Moderate (barbed wire fencing)	Moderate (barbed wire fencing)	**10**	**5**	**5**	**5**	**5**	**5**	**5**	The proposed offset site is currently fenced with barbed wire, a recognised threat to Flying-foxes. Management action 6 outlined in **Table 63** will retrofit barbed wire.	Baseline attributes have been established. This criterium is reliant upon the management of barbed wire fencing.	The removal of barbed wire will provide a reduction in threats however for the purposes of scoring outcomes. The threat score is maintained at 5.
Site Context Score					**37**	**37**	**37**	**37**	**37**			
MAX Site Context Score					**60**	**60**	**60**	**60**	**60**			
Site Context Score - out of 3					**1.85**	**1.85**	**1.85**	**1.85**	**1.85**			
GHFF Foraging Tree Density / ha	85	105	**10**	**95**	**4**	**4**	**4**	**6**	**8**	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in **Table 63** will improve stem densities of GHFF foraging trees within AU2 to greater than 315 per ha by Year 10 and 533 by Year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem density within AU2 is to achieve at 315 per ha by Year 10 and 533 by Year 15. If the stem density is not progressing towards this by Year 5 then remedial actions will be applied. These include remedial plantings of advanced stock.
Species Stocking Rate Score					**4**	**4**	**4**	**6**	**8**			
MAX Species Stocking Rate Score					**10**	**10**	**10**	**10**	**10**			
Species Stocking Rate Score - out of 3					**1.2**	**1.2**	**1.2**	**1.8**	**2.4**			
Total					**5.37**	**5.57**	**6.57**	**7.65**	**8.25**			

Table 69: Grey-headed Flying-fox environmental outcomes – AU3

Assessment Unit - Regional Ecosystem	**AU 3 - Non-remnant (pre-clear RE 12.8.17)**											
Site Reference	Transect 4 Raw Data	Transect 5 Raw Data	Max Score	Average Score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
Vegetation Condition	Cat X	Cat X	**20**	**5**	**5**	**5**	**5**	**10**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** the assessment unit 'Vegetation Condition' will attain Regrowth status as defined under the Vegetation Management Act within 15 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	AU3 is to reach regrowth status in 15 years, which requires 70% of benchmark height and 50% of benchmark cover to be reached. If the vegetation is not progressing toward regrowth status at Year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Species Richness	1	3	**20**	**2**	**5**	**5**	**10**	**20**	**20**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** AU3 'Species Richness' will be improved to at least four foraging species by Year 10 and greater than six by Year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within AU3 is to be improved to at least four foraging species by Year 10 and greater than six foraging species by Year 15. If the species diversity is not progressing towards this by Year 5, then remedial actions will be applied. These include remedial plantings of advanced stock.
Flower Score	0.4	0.558	**10**	**0.479**	**5**	**5**	**8**	**8**	**8**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** 'Flower Score' will improve to eight by Year 10 and ten by Year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is expected that 'Flower Score' will improve to eight by Year 10. If the 'Flower Score' is not progressing towards this requirement at Year 5, then remedial actions will be applied, including remedial plantings of advanced stock.
Timing of Biological Shortages	4.5	10	**10**	**7.25**	**7.25**	**7.25**	**9**	**10**	**10**	It is expected that with management actions 1, 3, 4 & 5 outlined in **Table 63** AU3 'Timing of Biological shortages' will improve to cover all shortages based on flora species presence by Year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Timing of biological shortages within the assessment unit is to cover all shortages by Year 15. If the species diversity does not approach this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Quality of Foraging Habitat	0	2	**20**	**1**	**5**	**5**	**5**	**10**	**20**	It is expected that management actions 1, 3, 4 & 5 outlined in **Table 63** will result in an improvement to at least three significant food tree species being established by Year 15, and greater than six by Year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality of foraging habitat within AU3 is to achieve at least one species by Year 10, and greater than six by Year 15. If the species present do not reflect this requirement at Year 10, then remedial actions will be applied including plantings of advanced stock.
Non-native Plant Cover	20%	10%	**20**	**15%**	**10**	**10**	**20**	**20**	**20**	Non-native Plant Cover is low-moderate within AU3. Weed management actions 3 & 5 outlined in **Table 63** will improve this to below 5% within 10 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at Year 10 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score					**37.25**	**37.25**	**57**	**88**	**88**			
MAX Site Condition Score					***100***	***100***	***100***	***100***	***100***			

Assessment Unit - Regional Ecosystem	**AU 3 - Non-remnant (pre-clear RE 12.8.17)**											
Site Condition Score - out of 4					**1.49**	**1.49**	**2.28**	**3.52**	**3.6**			
Size of patch	Patch size is greater than 5000 ha	Patch size is greater than 5000 ha	**10**	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Connectedness	1 active camp within 20 km	1 active camp within 20 km	**10**	**3**	**3**	**3**	**3**	**3**	**3**	NA	NA	NA
Context	31-75%	31-75%	**10**	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Ecological Corridors	Within ecological corridor	Within ecological corridor	**10**	**10**	**10**	**10**	**10**	**10**	**10**	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 roost within 20km	1 active Level 3 roost within 2km	**10**	**6**	**6**	**6**	**6**	**6**	**6**	NA	NA	NA
Threats to the species	Moderate (barbed wire fencing)	Moderate (barbed wire fencing)	**10**	**5**	**5**	**5**	**5**	**5**	**5**	The proposed offset site currently has barbed wire fencing, a recognised threat to Flying-foxes. Management action 6 outlined in **Table 63** will control and retrofit barbed wire.	Baseline attributes have been established. This criterium is reliant upon the management of barbed wire fencing.	The removal of barbed wire will provide a reduction in threats however for the purposes of scoring outcomes. The threat score is maintained at 5.
Site Context Score					**37**	**37**	**37**	**37**	**37**			
MAX Site Context Score					**60**	**60**	**60**	**60**	**60**			
Site Context Score - out of 3					**1.85**	**1.85**	**1.85**	**1.85**	**1.85**			
GHFF Foraging Tree Density / ha	5	15	**10**	**10**	**2**	**2**	**4**	**6**	**8**	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in **Table 63** will improve stem densities of GHFF foraging trees within AU3 to greater than 74 per ha by Year 10, greater than 315 by Year 15, and greater than 533 by Year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem density within AU3 is to be greater than 74 per ha by Year 10, greater than 315 by Year 15, and greater than 533 by Year 20. If the stem density is not progressing towards this by Year 5 then remedial actions will be applied. These include remedial plantings of advanced stock.
Species Stocking Rate Score					**2**	**2**	**4**	**6**	**8**			
MAX Species Stocking Rate Score					**10**	**10**	**10**	**10**	**10**			
Species Stocking Rate Score - out of 3					**0.6**	**0.6**	**1.2**	**1.8**	**2.4**			
Total					**3.74**	**3.74**	**5.33**	**7.17**	**7.77**			

8. Management Framework

This section outlines the management framework to be implemented for the life of the offset (20 years) including management measures to be implemented by the Offset Provider or appointed contractor, annual monitoring requirements, and interim milestone monitoring of environmental outcomes for relevant management actions to be completed by a suitably qualified person at Years 5, 10, 15 and 20 of the offset. These management actions are designed to minimise the risks associated with key threatening processes to the Koala and Grey-headed Flying-fox and enhance the quality of the habitat within the MVOA. The proposed monitoring actions are summarised in a monitoring and reporting schedule in **Section 8.12**.

8.1. Management Approach

The measures outlined in the following subsections are considered effective for the listed status of the Koala and GHFF in addition to the size and scale of the offset and the focus on priority management actions, which are efficient, timely and transparent (i.e., able to be monitored and are auditable). Additionally, a number of these measures correspond to Priority Management Actions outlined in the following documents:

- Approved Conservation Advice for *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory) (Koala Northern Designable Unit).
- National Recovery Plan for the Koala *Phascolarctos cinereus*.
- National Recovery Plan for the Grey-headed Flying-Fox (*Pteropus policephalus*).

Although the measures have been developed to achieve the required offset environmental outcomes as a priority, they will deliver an overall improvement in the condition and quality of a wide range of native species present within the MVOA.

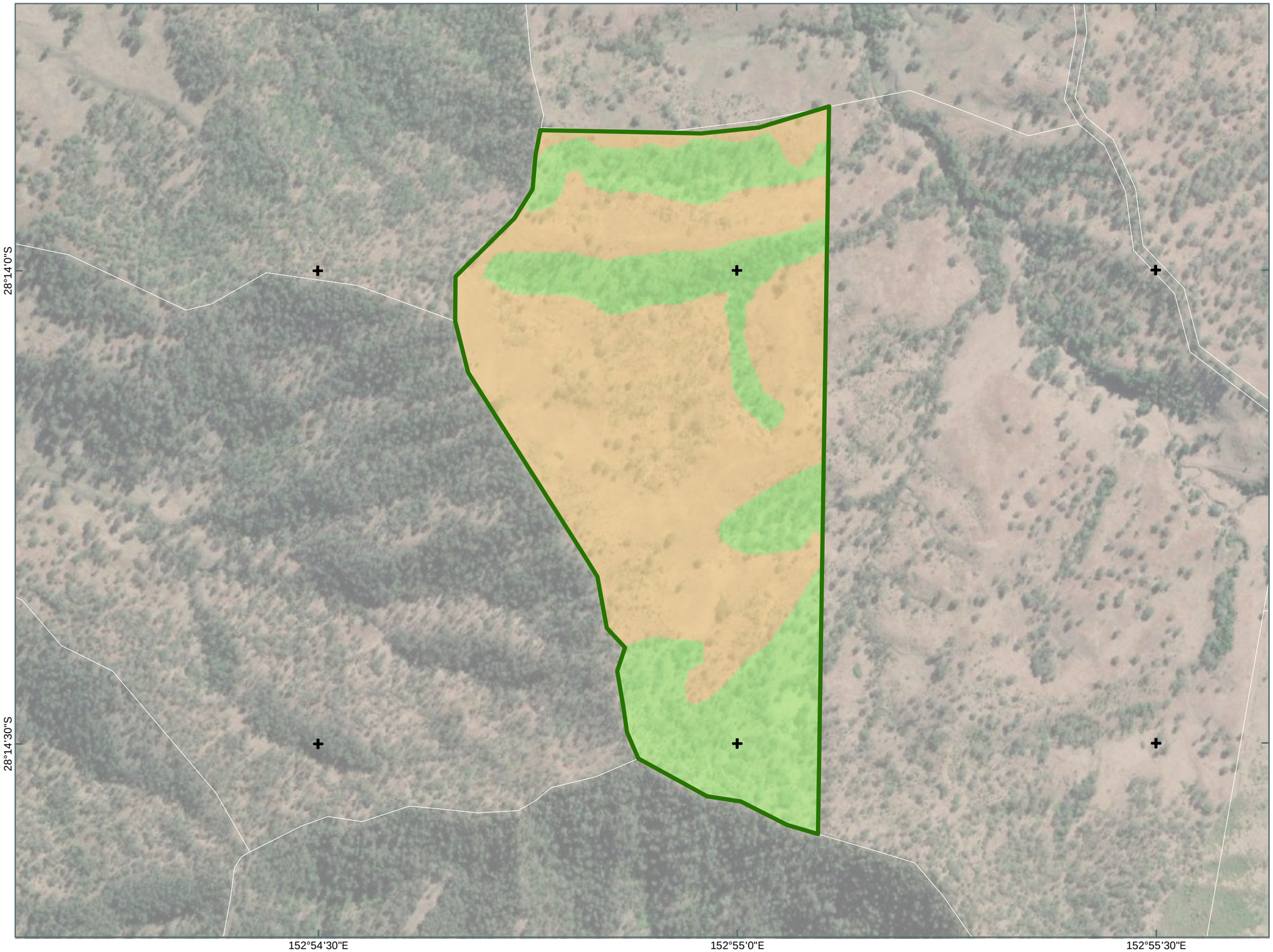
8.2. Operational Management Units

For the purpose of the management framework, Operational Management Units (OMUs) have been included to better target management actions necessary for the differing values present within each Assessment Unit. The OMUs detail the different actions required to achieve the environmental outcomes. The MVOA has been delineated into two OMUs representing areas of the MVOA that contain some existing vegetation (AU1 and AU2) and cleared area (AU3). Details of these OMUs are presented in **Table 70** and shown on **Plan 15**.

Table 70: Mount View Offset Area – Operational Management Units

OMU	Area (ha)	Assessment Units	VMA Status	Regional Ecosystems
1	26.1	AU1 & AU2	Category B(remnant) and C (high-value regrowth)	12.8.17
2	44.9	AU3	Category X (non-remnant)	Pre-clear 12.8.17/12.8.16/12.8.14 (50/30/20%)

15. MOUNT VIEW OFFSET AREA - MANAGEMENT AREAS



Notes:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of Saunders Havill.Unless a development approval states otherwise, this is not an approved plan.

Layer Sources
Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
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Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/
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LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]

Management Areas

- Operation Management Unit 1 [26 ha]
- Operation Management Unit 2 [45 ha]



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HB QLD Pty Ltd

Oaky Creek

0 50 100 150 200 m
Transverse Mercator
GDA 2020 | Zone 56

N
1:7,500
@ A3

Address / RPD: *Oaky Creek, QLD*

27/04/2026

12186 E 15 Offset Area OMUs B

8.3. Management Action 1 – Legally Secure MVOA

The MVOA must be protected and managed against known and potential threats for the Koala and GHFF in perpetuity to attain a conservation gain. The MVOA will be legally secured using multiple mechanisms:

- Prior to commencement of the action via a Voluntary Declaration (VDec) administered under the VMA. Notification of declaration will be supplied to DCCEEW.
- A covenant under either Chapter 6 Part 4 Division 8A of the Land Act 1994 (Qld) or Part 6 Division 4A of the Land Titles Act 1994 (Qld) will be registered within 12 months of commencing the action.
- If a covenant is not possible an alternative legally binding mechanism will be implemented in consultation with DCCEEW.

Land subject to a voluntary declaration is mapped as Category A vegetation on a Property Map of Assessable Vegetation (PMAV). Category A vegetation is afforded the highest level of protection under the VMA, meaning:

- Clearing is generally prohibited and may only occur if expressly allowed under a development approval, statutory exemption, or restoration order.
- The declaration prevents broadscale or incremental clearing that could otherwise occur under general assessment pathway.

Any permitted activities must be consistent with the purpose of the declaration (which aligns with the purpose of this OMP) and the broader objectives of the VMA.

A covenant under the Land Act 1994 is a statutory, legally binding agreement registered over non-freehold (State-owned) land, such as leasehold land, that imposes ongoing restrictions or obligations on how the land may be used. A covenant can provide strong protection by:

- restricting or prohibiting clearing of native vegetation;
- limiting infrastructure, buildings or other forms of development;
- controlling land-use activities to ensure consistency with conservation objectives; and
- requiring land management actions to maintain or enhance ecological values.

In the case of the offset area, the covenant will align with the objectives and requirements of the OMP.

The declared area will be recognised as making significant contribution to the conservation of biodiversity. The Offset Provider will continue to manage the MVOA for the life of the offset whilst reporting required milestones and data to the proponent annually. Legally securing the MVOA is listed in the Conservation Advice as a Priority Management Action, under “Habitat Loss, Disturbance and Modification”.

Demonstration of this management action will be provided in the ACRs.

8.3.1 Management Action Completion Criteria

Table 71: Completion criteria for legally securing the MVOA

Timing	Completion Criteria
Prior to commencing the Action	Legally secure the MVOA via a Voluntary Declaration (VDec) administered under the VMA and notify DCCEEW.
Year 1	Register a covenant under the Land Act 1994 (Qld) and notify DCCEEW within 20 business days. If a covenant is not possible an alternative legally binding mechanism will be implemented in consultation with DCCEEW.

8.4. Management Action 2 – Non-native Vertebrate Pest Management

8.4.1 Justification

Feral or unwanted domestic dogs are a key threatening process under the EPBC Act and are confirmed as a direct predation risk to Koalas. Managing animal predation is listed as a Priority Management Action under the Koala Conservation Advice.

Predation rates by wild dogs are difficult to quantify because attacks often occur in locations infrequently visited by people and the carcasses of the killed animals are buried, eaten, or may go undetected (Beyer et al. 2018). Wild dog attack is routinely cited as one of the main causes of mortality of Koalas (Rhodes et al. 2011; Gonzalez-Astudillo et al. 2017; Beyer et al. 2018). Wild dogs are also identified as regional pest species by Scenic Rim Regional Council.

Removal of the wild dog threat produced significant gains in the survival of Koalas in a study where the causes of mortality of 291 Koalas were tracked over four years (Beyer et al. 2018). Wild dogs were confirmed as the cause of death for 117 (40.2% of total) deaths during the study. In addition, wild dogs were attributed to but not confirmed for another 38 (13.1% of the total) deaths. Population growth rates of Koala in the study increased from 0.659 in the first year to 1.20 in the fourth year of the project through a combination of reduction in predation and disease treatment. Modelling indicated that the population would increase in size by 21% within a decade with continued management (Beyer et al. 2018).

It is also acknowledged that although they are not listed as a direct threatening process to the target MNES species, feral pigs are opportunistic omnivores and widely known to cause significant environmental destruction to soil and vegetation via consumption, digging, and spreading weeds, particularly surrounding waterbodies. Therefore, feral pigs cause destruction of habitat value and water resources which has the potential to indirectly impact essential habitat areas for Koala. This is similarly the case for feral Rusa Deer (*Cervus timorensis*) which are known to damage native vegetation, spread weed seeds, and foul water, and European Rabbit (*Oryctilagus cuniculus*) which impact native vegetation. Feral deer alongside other non-native predators such as *Felis catus* (feral cat) and *Vulpes vulpes* (European red fox), also have the potential to attack and stress Koalas making them more susceptible to disease.

Key species assessed as high priority to receive management measures, and their associated risks, are presented in **Table 72**.

Table 72: Feral animal species management priorities

Priority (category)	Scientific name (Common name)	Queensland Biosecurity Act 2014 status	Risks (potential and actual)	Distribution and prevalence	Objective
1 (high)	Canis familiaris (Wild Dog)	Class 2	Actual impacts on agricultural production values – HIGH Actual impacts on native fauna – MEDIUM	Widespread occurrence in low to medium densities	**Control**
2 (medium)	Felis catus (Feral Cat)	Class 2	Actual impacts on native fauna – HIGH	Widespread occurrence in low to medium densities	**Control**
3 (medium)	Vulpes vulpes (Red Fox)	Class 2	Actual impacts on native fauna – MEDIUM Actual impacts on agricultural production values – LOW	Widespread occurrence in low to medium densities	**Control**
4 (low)	Cercus timorensis (Rusa Deer) *Sus scrofa* (Feral Pig) Oryctolagus cuniculus (European Hare)	Class 2	Actual impacts on native fauna – LOW Actual impacts on ecosystems native fauna rely on – MEDIUM	Widespread occurrence in low to medium densities	**Control**

8.4.2 Baseline Surveys

Wild dog presence within the MVOA was targeted using baited motion-triggered camera traps. Camera trap design, set up, and deployment was conducted as per the Queensland Government *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (June 2022), and is detailed within **Section 6.1**.

Eight baited camera traps were installed across the MVOA for a period of 15 nights from 7 to 22 July 2025. Baseline motion-triggered camera trapping did not detect the presence of non-native vertebrate pests such as wild dogs. However, contemporary confirmed records of such species are present on the Queensland WildNet database within 20 km of the site, including two *Canis familiaris* (Wild Dog), five *Vulpes vulpes* (Red Fox), one *Felix catis* (feral cat), and one *Lepus europaeus* (European Brown Hare). Wild dogs in particular have large home ranges and frequent daily movements. The on-going monitoring of feral animals will continue to monitor for changes in abundance and species within the MVOA.

Detailed baseline survey results are detailed in **Section 6.2.2**.

8.4.3 Management Action Measures

The control and prevention of invasive animal incursions will be undertaken in accordance with the relevant legislation (such as the *Commonwealth Biosecurity (Consequential Amendments and Transitional Provisions) Act 2015* and the *Queensland Biosecurity Act 2014*) and include the control of non-native predators by legal methods by suitably qualified pest management contractor(s). Any required hazardous materials must be handled and stored in accordance with the material's safety data sheets and the *Approved Code of Practice for the Storage and Handling of Dangerous Goods*. Non-native predator control will be undertaken in a humane manner.

Management measures will be implemented by the Offset Provider for the life of the offset (20 years) for the control of the pest species identified in **Table 72** across the MVOA include:

- Development and implementation of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) and ongoing monitoring methods (including datasheets) will be utilised, completed within Year 1 of the offset
- Adjacent land holders will be consulted for the potential of collaboration in a localised landscape-wide pest management effort. As vertebrate pest management is best achieved on a property-wide scale, this will occur across adjacent offset holdings at a minimum.
- Cooperative participation in non-native predator management planning and implementation with local land managers (government departments, local governments and utility providers) will occur to ensure effective management in the locality of the MVOA, being Scenic Rim Regional Council.
- Signage installation informing that feral animal control being undertaken within the MVOA.
- Annual review of the feral animal management plan by a suitably qualified expert to ensure it utilises the most appropriate and best practice techniques for the MVOA.

8.4.4 Pest Animal Management Plan (PMP)

Pest animal management at the site will be undertaken using an integrated approach combining monitoring, baiting, ground-based shooting, opportunistic control, habitat assessment and removal of predator harbour/denning opportunities where appropriate. A range of control methods that will implemented at the discretion of the suitably qualified pest contractor for predator species are listed in

Table 73 and **Table 74** (adapted from Wool Producers Australia 2014). Primary control measures will include:

- Baiting during periods of elevated pest activity and where monitoring confirms the need for control.
- Ground-based shooting undertaken periodically to target pest species detected during monitoring or where baiting alone is not sufficient.
- Inspection and removal of predator denning habitat where artificial or unnatural harbour opportunities are identified and where removal can occur without adverse impact on native species or habitat values.
- Ongoing surveillance and monitoring to detect pest presence, abundance, movement corridors and evidence of denning or repeat activity.

Control measures will be timed to maximise effectiveness while minimising risk to non-target species, native fauna and personnel. Timing will be informed by:

- monitoring results;
- seasonal pest activity;
- breeding periods of target and non-target fauna;
- weather conditions; and
- accessibility of the site.

All control methods will be used in consultation with local residents and authorities.

Table 73: Offset Property recommended control methods for identified pest species

Scientific Name	Common Name	Baiting	Fencing	Shooting	Trapping
Canis familiaris	Wild Dog	Y	Y	Y	Y
Felis catus	Feral Cat	Y	Y	Y	Y
Vulpes vulpes	Red Fox	Y	Y	Y	Y
Sus scrofa	Feral Pig	Y	Y	Y	Y
Bos taurus	Domestic Cow	N	Y	N	N

**** Y indicates appropriate management action; N indicates inappropriate management action***

Table 74: Predator species control methods - adapted from WoolProducers Australia 2014

Method	Efficacy	Cost effectiveness	Target specificity	Humaneness acceptability	Comment
Ground baiting with 1080	Effective for wild dogs, feral pigs, hare, fox	Cost-effective	High	Conditionally acceptable	Currently the most cost-effective technique available. Poison baits are made from raw animal meat or offal or manufactured baits are used. Average and minimum weights vary between states. Sodium fluoroacetate (1080) is the main toxin used for control of wild dogs – reference to relevant State directions for use will be required.
Shooting to euthanise trapped feral pest species	Effective	Cost-effective	High	Acceptable	Effective technique although will require to be completed in accordance with existing State laws and guidelines.
Ground shooting	Can be effective to target individual dogs / foxes / deer / pig – largely opportunistic	Moderately expensive and time consuming	Moderate to high	Conditionally acceptable, dependent on skillset of shooter. Welfare issues arise if animal is not shot humanely	Limited effectiveness for broadscale population reduction, however, can achieve sustained control within a local area.
Exclusion fencing	Effective in suitable areas, particularly where revegetation is occurring to protect from feral pig, deer and hare.	Expensive	Can be effective in specific situations	Acceptable	Requires substantial resource input both initially, during installation, and in an ongoing capacity due to high maintenance requirements. Electric fencing can be an effective barrier when used appropriately and in conjunction with supplementary management techniques. Often adequate defense against reinvasion of controlled areas. Due to high levels of maintenance and upkeep required, fencing can be difficult to effectively maintain.

Method	Efficacy	Cost effectiveness	Target specificity	Humaneness acceptability	Comment
Aversion techniques	Not known	Not known	Not certain – possible short-term until target species become familiar with technique	Acceptable	Suggested aversion methods include flashing lights, sounding alarms, objects flapping in the wind and chemicals.

Baiting and shooting will be carried out by a suitably licensed and experienced person and will not occur under unsafe weather conditions, during periods of restricted access, or where there is an unacceptable risk to non-target fauna, neighbouring land uses or site personnel. Site specific protocols, including a specific risk matrix, will be developed for the PMP based on the following standard requirements.

Baiting Protocol

Safety and Planning

The following actions will be completed prior to baits being installed:

- review of recent monitoring data to confirm pest activity and target locations;
- identification of sensitive receptors, including waterways, habitat features, neighbouring properties and areas used by non-target fauna; and
- notification of relevant land managers, adjoining landholders and site personnel where required.

Timing and Frequency

Baiting will not occur in conditions likely to reduce effectiveness or increase environmental risk, including:

- heavy rainfall or forecast prolonged rainfall;
- high winds;
- flooding or waterlogged conditions;
- extreme heat where bait degradation is likely; and
- any condition that makes safe access or monitoring impracticable.

To avoid unsuitable conditions baiting will generally occur in late autumn to winter (April – September) for a period of 4 to 6 weeks. Baits will be checked at least every 14 days while deployed.

Bait Types

Baiting programs targeting wild dogs would utilise approved toxin-based baits in accordance with relevant State and Commonwealth legislation, product labels and permit conditions. Typical bait types may include:

- 1080 (sodium fluoroacetate) meat baits, commonly prepared using fresh or manufactured meat substrates (e.g. kangaroo meat or commercially produced shelf-stable baits); and
- Commercially manufactured wild dog baits and approved for use in the State of Qld.

Where applicable, baits will be placed along known travel corridors, fence lines, tracks and areas of confirmed activity, with spacing and density determined by site conditions and monitoring data.

Field records

For each baiting event, records will include:

- date and time of bait deployment and collection;
- name of authorised person undertaking the works;
- target pest species;
- bait type and quantity;
- GPS referenced bait station or bait placement locations;
- weather conditions at the time of deployment and inspection;

- signs of pest activity and observation of injury or mortality to any MNES species;
- evidence of non-target activity;
- inspection outcomes, including bait take rates; and
- corrective actions or cessation of works where required.

Records will be retained by the offset provider until the completion of the OMP.

Mapping

A baiting location map will be maintained and updated for each program. The map will include the following at a minimum:

- bait station or bait placement points;
- exclusion zones around sensitive habitat features or infrastructure;
- access tracks;
- monitoring locations; and
- adjacent land tenure or boundary information where relevant.

Post-baiting

Following completion of each baiting program:

- all unused or recovered bait will be removed and disposed of in accordance with regulatory requirements;
- results would be reviewed to determine efficacy;
- any non-target incidents are documented and reported as required; and
- future control measures are adjusted accordingly.

Field records and maps for each baiting event will be retained by the offset provider and included in the Offset Area Annual Report (OAAR).

Shooting Protocol

Safety and Planning

- all shooting will only be undertaken by authorised, competent and appropriately licensed persons;
- a site-specific risk assessment and safe work method statement will be prepared prior to works;
- exclusion zones and safe shooting directions will be established prior to commencing shooting;
- shooting will not occur or will be halted where visibility, weather, adjacent land use, public access or other factors create an unacceptable safety risk; and
- notification of relevant land managers, adjoining landholders and site personnel where required.

Timing and Frequency

Shooting will occur on an as-needed basis informed by monitoring results and evidence of pest activity. Frequency will increase during periods of elevated pest abundance or where follow-up control is needed after baiting.



Field Records

For each shooting event, records will include:

- date, time and duration of works;
- name of authorised person undertaking the works;
- location of control activities;
- target species and number observed/controlled;
- signs of pest activity and observation of injury or mortality to any MNES species
- weather and site conditions;
- corrective actions or cessation of works where required.

Records will be retained by the offset provider until the completion of the OMP and included in the OAAR.

Process for Searching and Removing Denning Habitat

In addition to baiting and shooting the site will be inspected for predator denning habitat as part of routine ecological monitoring and pest surveillance activities. This will include searches for:

- burrows, hollows or cavities being used by pest predators;
- dense debris piles or artificial structures providing harbour;
- erosion voids, spoil heaps or disturbed areas that may facilitate denning; and
- repeat signs of pest occupation, including tracks, scat, scratching or prey remains.

Where potential predator denning habitat is detected, the following process will be implemented:

- the location will be recorded;
- surrounding habitat will be checked, where practicable, to confirm whether it is active and whether there is any risk to native fauna;
- if confirmed as pest-related denning habitat and suitable for removal, it will be removed, collapsed, filled or otherwise treated in a controlled manner;
- removal will occur within 3 months of detection, subject to access, weather, ecological constraints; and
- the area will be monitored for a period of 3 months post removal using a motion activated camera to determine whether repeat occupation occurs.

Removal of denning habitat will only occur where with an approved permit and without unintended impact on native species, native habitat or erosion stability. If any denning habitat is removed the details including timing, locations and pests identified will be reported in the applicable OAAR.

8.4.5 Management Action Responsibility

The offset provider is responsible for establishing, funding, and resourcing the PMP. To ensure effective implementation, the following are required:

1. All contractors for all pest control measures will be suitably qualified.

2. Pest control contractors will be responsible for the upkeep of appropriate training for all pest control staff.
3. Pest control contractors will be responsible for the data collection and upkeep of all pest control and monitoring data and provide the data to the proponent when available and required for annual reporting and in 5-yearly summaries of previous outcomes.
4. Lethal controls will consist of best practice management measures as outlined.

8.4.6 Management Action Completion Criteria

Timing	Completion Criteria
Year 1	PMP with a focus on wild dog management to be developed by a suitably licensed and experienced person. The PMP will include the following site-specific information as a minimum: • Baiting protocol including safety and communication requirements, map of baiting locations, bait types and post baiting procedures • Shooting protocol including safety and communication requirements • Processes for searching and removing denning habitat • Field record pro-formas The PMP will be included in the Year 1 ACR.
Year 2 – 20	Implement the PMP by a suitably licensed and experienced person to ensure: • Suppression of feral animal species (predators and herbivores) and their impacts within the offset area particularly wild dogs. • Minimise MNES injury and mortality to the greatest extent possible within the offset area for the life of the offset. • Minimise potential damage to rehabilitation plantings and areas to receive plantings through management of feral pigs and other non-native herbivore species – timing to be in conjunction with rehabilitation.
Year 20	PMP implemented for the 20-year period with all records and reporting provided in accordance with the OMP.

<u>Koala Mortality Rate and Caveats</u>

With relevance to the completion criteria, assessment of Koala injury or death attributable to feral animals needs to be assessed. Koala mortality is typically recorded through passive means including incidental observation of deceased Koalas determined from physical observation of the kill site and the deceased individual (Hanger et al. 2017). In some studies of Koala mortality researchers are interested in discerning between predator species and domestic and wild animals in peri-urban environments and in these studies utilise genetic analysis of the deceased individual to confirm the identity of the predator (Gentle et al. 2019, Hanger et al. 2017). However, it is considered that for the purposes of implementing this OMP, which is primarily concerned with documenting the extent to which predators are generally responsible for Koala mortality, the cause of mortality (i.e., predation or other) can be understood through physical observation of the deceased Koala at the kill site. Due to the context of the site, it is most likely that the cause of Koala mortality would be due to predators rather than urban mortality drivers such as vehicle strike.

Incidental observation is used as the primary means for detection of Koala mortality and will be integrated into the broader baseline survey effort of the offset site including during non-fauna targeted assessments such as surveys for vegetation Site Condition and weed mapping.

8.4.7 Management Action Monitoring

Pest management actions will be measured and monitored annually through field records completed for all activities.

Specific non-native vertebrate pest monitoring will be carried out by a suitably qualified ecologist before the end of Years 5, 10, 15 and 20 of the offset with the aim of demonstrating:

- Abundance of non-native vertebrate pests on-site with;
- Feral animal scat / track or imprint evidence at targeted survey locations;
- Site population census using infrared drone and/or baited remote sensor camera surveys;
- Occurrence of injury or mortality on MNES attributed to vertebrate pest species.

The monitoring methodology for milestone reports will include the following actions:

Desktop Assessment

- Review previous survey mapping and camera locations, field datasheets, photos and notes.

Field Survey

- Motion detection camera deployment for minimum of 14 nights in the same locations during each milestone monitoring event. Additional cameras will be utilised where required as rehabilitation works occur across cleared portions of the MVOA. GPS coordinates and photos to be recorded. New camera monitoring locations will be established during Year 1 of the offset within the offset area to enable the collection of offset area-specific data to be repeated for the life of the offset.
- Field datasheet will detail the time of year of the monitoring event, record observed scats or tracks, photo location and notes of any evidence of positive and/or negative changes in non-native predator occurrence.
- A GPS will be used to locate the presence of non-native predator species, with a focus on species identified during baseline field surveys via notable tracks or scats.
- Transfer GPS data to spatial data programs to generate non-native predator occurrences and collate all data in excel spreadsheets and save all digital photos to file for ongoing monitoring and reporting purposes.
- Where non-native predator presence is detected, targeted trapping and baiting programs, will be implemented on completion of the monitoring program.

8.4.8 Management Action Reporting

All field records compiled by the by the suitably qualified person including details on detected species, control efforts, and total trapped/baited individuals during the given management period will be included in the relevant OAAR long with a summary of outcomes. The OOAR will be included in the Annual Compliance Report (ACR).



Monitoring survey results will be reported by the suitably qualified person in the 5-, 10-, 15-, and 20-Year Milestone Report and included in the ACR. This will provide detail on survey methodologies and detected predator abundance with reference to the baseline survey data.

8.4.9 Adaptive Management for Non-native Predator Species

Without intervention and active management, the risk of feral animal impacts on MNES and their habitat are assessed as 'high'. This is based on regional and local government data on feral animals combined with evidence of livestock predation recorded on-site and an abundance of research in the surrounding area indicating the prevalence of feral dogs, European fox and feral cats. The pest management strategies incorporate intensive implementation methods and three major data collection survey events for confirming base case and successful reduction of pest management impacts.

The pest management program will use a combination of pest management monitoring data collected from pest management contractors and monitoring data collected through annual or 5-yearly surveys to inform site management. Major survey and review periods for the OMP are set at Years 5, 10 and 15 to ensure the program achieves long-term reduction and does not respond to specific stochastic events such a contextual fluctuation in pest populations such as wild dogs.

Triggers for adaptive management include:

- Following positive records from pest monitoring, implemented control efforts do not yield expected pest animal kills.
- Feral animals are recorded during scheduled monitoring post-control efforts.
- Opportunistic observations of feral animal activity, including sightings of animals, their tracks or scats during general offset site management works.
- Confirmed or potential damage to rehabilitation plantings or areas prepared to receive plantings such as that caused by non-native herbivores (pigs, deer).

Adaptive management measures include:

- Spatially and temporally expanding monitoring efforts (*i.e.,* more sites, more often in more locations) to ensure greater site coverage.
- Increasing frequency of monitoring and control events relevant to target species beyond existing events outlined earlier.
- Sporadic controls triggered by ad hoc pest animal sightings or evidence of potential impact, including pest species additional to those detected and identified as target species for pest management upon completion of baseline pest surveys.
- Working more closely with adjoining land holders on landscape scale controls.
- Applying multiple control measures in unison to improve control efficacy.

If monitoring data indicate that the PMP is not meeting its timing, responsibility, monitoring and control targets, the program will be adjusted using the following strategies:

- Spatially and temporally expanding monitoring efforts (*i.e.,* more sites, more often in more locations) to ensure greater site coverage.
- Increasing frequency of monitoring and control events beyond those outlined above.

- Sporadic controls triggered by ad hoc pest animal sightings, including pest species additional to those detected and identified as target species for pest management upon completion of baseline pest surveys.
- Working more closely with adjoining land holders on landscape scale controls.
- Applying multiple control measures in unison to improve control efficacy.
- Review responsibility where lapsed and advise alternative roles and / or personnel.

This adaptive management approach ensures regulatory compliance, continuous improvement, long-term effectiveness, and alignment with broader conservation and threat abatement goals.

8.5.

Management Action 3 – Management of Weeds of National Significance

8.5.1 Justification

Weed control is fundamental to improving biodiversity and the ecological condition of habitat within the MVOA. Historical land uses across the MVOA have resulted in the introduction, spread, and persistence of a variety of environmental weeds. Whilst there have been a variety of environmental weeds recorded across the MVOA, the key species to be controlled in the MVOA is *Lantana camara* (Lantana), a WONS. The estimated cover of Lantana varies throughout the MVOA from 0-25% within areas of relatively low weed persistence, 25-50% in areas adjoining gully line vegetation, and 50-100% along gully lines. Furthermore, Lantana has the potential to rapidly spread and colonise area particular where neighbouring infestations are present. Continued management is therefore necessary to prevent infestations from returning after initial treatment.

The listing and prioritisation of WONS is a joint initiative of the States, Territories and Australian Government and their long-term control is of national interest. *L. camara* and its impact on Koala movement is listed as a key threatening process, prolonging time spent on the ground and therefore increasing susceptibility to predators (Paull et al. 2019, The Honourable Leeanne Enoch 2019). The Queensland Koala Strategy 2020-2025 lists Koala habitat restoration, including removal of weeds, as a key priority, and these recommendations were developed at the advice of the Koala expert panel (Queensland Government 2019).

As well as limiting movement for Koalas and other fauna, *L. camara* also changes the structure and health of the ecosystem, which can lead to a decline in the health and quality of Koala food and habitat. *L. camara* is a transformer weed, altering wildfire behaviour, potentially resulting in destruction of native trees on a larger scale (Berry et al 2011, DAF 2016). *L. camara* also supresses eucalypt recruitment, both through its allelopathic properties and its capacity to shade out other species. Without management intervention this leads to an overall decline in habitat health (Threatened Species Scientific Committee, 2010). If eucalypt species cannot recruit the succession of vegetation is interrupted, threatening the future health of the ecosystem.

In addition to *L.camara* other weeds species were observed across the MVOA in varying densities including *Melinis repens* (Red Natal Grass) and *Sporobolus pyramidalis* (Giant Rat's Tails Grass) (refer **Appendix C**). Although not listed as WONS and not listed as a direct threat or key threatening process to MNES, ground cover weeds have potential to suppress native regeneration ultimately reducing habitat quality for the species. All weed species will be controlled across the MVOA to ensure habitat quality metric improve. WONS are specifically considered in this section owing their potential invasiveness and direct impact to MNES.

It is not possible to remove *L. camara* from the MVOA on a single occasion, as persistent seed banks of the species remain viable for long periods of time. Germination can occur rapidly after the parent plant has been removed due to increases in light and resource availability (i.e., availability of soil nutrients, moisture content and space). Therefore, repeat visits to the MVOA following the initial treatment for follow-up weed control, is critical to prevent seed set and dispersal.

8.5.2 Weed Management Measures

Weed management will be implemented as follows

- Complete baseline monitoring in accordance with the method outlined in **Section 6.1.5**.
- Carry out weed treatment and removal in accordance with the Rehabilitation Management Plan (RMP - refer **Appendix F**).
- Manage weeds of national significance (WONS), SRRC declared weeds and other weeds which may have an impact on habitat regeneration in the offset area in accordance with the RMP. The RMP will focus on suppression of the spread of *Lantana camara* due to its status as a WONS.
- Prevent the further spread or establishing of new *Lantana camara* outbreaks by excluding cattle and controlling pest species within the offset area.
- Vehicles, machinery and equipment is to be cleaned prior to entering the offset area to remove seeds and sediment to prevent the introduction of new weed species into the offset area.

Weed removal will prioritise WONS, specifically *L. camara*, which is known to impact Koala mobility, with supplementary weed management completed on a priority system. Weed management strategies are listed in **Table 75** for *L.camara* and other WONS in **Table 76**

Table 75: Lantana management strategies

Type of infestation	Physical	Mechanical	Chemical	Fire	Biological
Small (few plants, small area)	Hand grubbing only suitable for seedlings. Wear gloves for protection from thorns.	Not suitable.	Spot spray plants less than 2 m in height between summer and autumn with a registered herbicide.	Not suitable.	There are four useful biological control agents. They are already distributed throughout their potential range.
Medium (medium density, medium total area)		Bulldoze, plough, stick-rake or slash infestations. Soil disturbance will lead to mass seed germination, so follow up with further controls. Do not use mechanical control in areas susceptible to erosion. A permit may be required.	Spraying is uneconomical for medium or large infestations. Helicopter spraying is used when there is no access for mechanical control, eg very steep slopes.	Under permit, burn in summer with good fuel load of grass and/or mechanically cleared lantana. Also use as follow-up. Do not burn in rainforests.	
Large (many plants, many ha)					

Note: table extracted from CRC for Australian Weed Management, 2003, Weed Management Guide, Lantana – *Lantana camara*, Commonwealth Department of the Environment and Heritage.

Table 76: Weed Treatment and Removal Methods

No.	Family	Scientific name	Common name	Non-chemical control	Chemical control
1	Amaranthaceae	*Alternanthera philoxeroides*	Alligator Weed	Refer to Business Queensland: Invasive Plants at https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/landmanagement/health-pests-weeds-diseases/weeds-diseases/invasive-plants for additional guidance. Or WONS weed management guides available at https://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority issued off-label permit where applicable. Also refer to: Business Queensland: Invasive Plants at https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/landmanagement/health-pests-weeds-diseases/weeds-diseases/invasive-plants for additional guidance. Southeast Queensland Ecological Restoration Framework WONS weed management guides available at https://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html
2	Gramineae	*Andropogon gayanus*	Gamba Grass		
3	Annonaceae	*Annona glabra*	Pond Apple		
4	Basellaceae	*Anredera cordifolia*	Madeira Vine		
5	Asparagaceae	*Asparagus aethiopicus cv. Sprengeri*	Asparagus Ground Fern		
6	Asparagaceae	*Asparagus africanus*	Asparagus Fern		
7	Asparagaceae	*Asparagus asparagoides*	Bridal Creeper		
8	Asparagaceae	*Asparagus declinatus*	Bridal Veil		
9	Asparagaceae	*Asparagus plumosus*	Asparagus Fern		
10	Asparagaceae	*Asparagus scandens*	Climbing Asparagus Fern		
11	Cactaceae	*Austrocylindropuntia spp.*	Prickly Pears		
12	Cabombaceae	*Cabomba caroliniana*	Cabomba		
13	Asteraceae	*Chrysanthemoides monilifera subsp. Monilifera*	Boneseed		
14	Asteraceae	*Chrysanthemoides monilifera subsp. rotundata*	Bitou Bush		
15	Asclepiadaceae	*Cryptostegia grandiflora*	Rubber Vine		
16	Cactaceae	*Cylindropuntia spp.*	Prickly Pears		
17	Fabaceae	*Cytisus scoparius*	Common Broom		
18	Bignoniaceae	*Dolichandra (Macfadyena) unguis-cati*	Cat's Claw Creeper		
19	Pontederiaceae	*Eichhornia crassipes*	Water Hyacinth		
20	Fabaceae	*Genista linifolia*	Flax-leaved Broom,		
21	Fabaceae	*Genista monspessulana*	Montpellier Broom		
22	Poaceae	*Hymenachne amplexicaulis*	Hymenachne		
23	Euphorbiaceae	*Jatropha gossypifolia*	Bellyache Bush		
24	Verbenaceae	*Lantana camara var. camara*	Lantana		
25	Solanaceae	*Lycium ferocissimum*	African Boxthorn		
26	Mimosaceae	*Mimosa pigra*	Giant Mimosa		
27	Gramineae	*Nassella neesiana*	Chilean Needle Grass		



No.	Family	Scientific name	Common name	Non-chemical control	Chemical control
28	Gramineae	*Nassella trichotoma*	Serrated Tussock		
29	Cactaceae	*Opuntia spp.*	Prickly Pears		
30	Cactaceae	*Parkinsonia aculeata*	Parkinsonia		
31	Asteraceae	*Parthenium hysterophorus*	Parthenium Weed		
32	Mimosaceae	*Prosopis pallida*	Algaroba		
33	Rosaceae	*Rubus fruticosus aggregate*	Blackberry		
34	Alismataceae	*Sagittaria platyphylla*	Delta Arrowhead		
35	Salicaceae	*Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii*	Willows (except Weeping Willow, Pussy Willow, and Sterile Pussy Willow)		
36	Salviniaceae	*Salvinia molesta*	Salvinia		
37	Asteraceae	*Senecio madagascariensis*	Fireweed		
38	Solanaceae	*Solanum elaeagnifolium*	Silver Nightshade		
39	Tamaricaceae	*Tamarix aphylla*	Athel Pine		
40	Fabaceae	*Ulex europaeus*	Gorse, Furze		

Weed notes

Weed management typically comprises a major part of rehabilitation site works. Weed management provides the basis of aiding natural regeneration and assisted natural regeneration.

Weed Management will be undertaken in accordance with the SEQ Ecological Restoration Framework (SEQERF Primary, Follow-up and Maintenance works notes above targeting WONS.

Critical skills for Weed Management include:

- Knowledge of relevant legislation.
- Plant Identification skills.
- Knowledge of different weed management techniques.

Knowledge of different weed management techniques

A range of weed management techniques are available to combat varying weed species and scenarios. Refer to the following for a summary of contemporary weed management techniques extracted from the SEQERF.

Table 77: Weed treatment schedules (source: SEQERF)

Method	Description
Herbicide	The herbicide weed control techniques described below provide a range of proven methods that can be used on a restoration site
Cut- scrape - paint	Cut the stem of the plant close to the ground (approximately 1-2cm) ensuring that soil does not come in contact with the cut surface. The cut can be made at a slight angle in order to increase the surface area that is exposed to the chemical. Apply herbicide immediately to the cut stump using poison pot and brush or dripper bottle. Using a knife, scrape the sides of the stump thoroughly to expose the green tissue. Apply herbicide to the scraped stump. The chemical must be applied within 10 seconds of the cut or scrape being made in order for it to be fully effective.
Cut– paint	Cut the stem of the plant close to ground level. Apply herbicide to the cut stump using poison pot and brush or dripper bottle. This method is best suited to easy-to-treat weeds such as small-leaved privet (*Ligustrum sinense*), provided that the diameter of the stem at ground level is less than approximately three centimetres. If a glyphosate-/ metsulfuron methyl herbicide mix is being used in the poison pot, a greater range of weeds can be controlled using this method e.g., Easter cassia.
Scrape - paint	Scrape as much of the stem as possible (one side of the stem) using a knife and apply herbicide to the scrape. Leave a small section of the vine unscraped, and then twist the vine so that the next scrape is made on the opposite side of the stem to the preceding scrape. Continue along the length of the vine, scraping and painting as much of the stem as possible, with scraping to be concentrated along the thicker stems close to the root of the plant. This is the best method to use for madeira vine, as it allows the chemical to translocate to the underground storage organs and aerial tubers which may be hanging in large clusters above head height. This avoids the potential problem of tubers from cut stems left hanging in the trees from dropping to the ground and sprouting. When scraping madeira vine stems a deep scrape is advisable - scrape right through to the fibrous, stringy section of the stem, taking care not to sever the vine. This method is also suitable for treatment of ochna.
Over-spraying	Over-spraying involves the use of knapsacks or power sprayers to treat large expanses of weed such as lantana thickets. The foliage must be covered with herbicide but not to the point of running off the plant. The dead plants remain in place and can be cut down at a later stage. Prior to over-spraying, any weeds that are growing closely around established native plants must be hand removed or treated by cut-scrape-paint.

Method	Description
Oil-hang	Vines such as mile-a-minute (*Ipomoea cairica*) which produce long stolons extending many metres along the surface of the ground, are suited to the oil- hang method. Locate the base of the plant and carefully pull up the runners and roll them up. The resulting roll of vine is then hung in the fork of a tree to dry out as if it is left on the ground it is likely to re-shoot. Where runners are climbing up into a tree they are cut off at head height prior to the runner being rolled up - there is no need to pull cut vines down from trees as this action is likely to damage the tree. The base of the vine is treated using the cut scrape- paint method.
Gouge-paint	This method applies to plant species that have a fleshy underground storage organ, such as the large tuber that is often found at the base of madeira vine. It is also particularly appropriate for the treatment of climbing asparagus (*Protasparagus plumosus*). If using this technique on climbing asparagus, first cut the stems that are growing into the canopy at head height and also at the base. The fleshy rhizome can then be gouged, or alternatively in the case of climbing asparagus, it may be struck several times firmly with the head of a pair of loppers, allowing the brown outer covering of the crown to peel away exposing the white fleshy inner section of the rhizome for application of herbicide. Gouge out sections of the fleshy base with a knife and apply herbicide using a paint pot and brush or dripper bottle within 10 seconds
Basal Barking	This method involves mixing an oil soluble herbicide in diesel/kerosene and painting or spraying the full circumference of the trunk or stem of the plant from ground level to a height of approximately 45cm. Basal bark application is suitable for thin-barked woody weeds including saplings, regrowth and multi- stemmed shrubs. The method will usually result in the mortality of difficult-to-control woody weeds at any time of the year, provided the bark is not wet or too thick to enable the herbicide to penetrate. The method must not be used in wet weather, adjacent to waterways or in areas where native trees and shrubs are located. The use will be restricted to situations where a weed is particularly difficult to control e.g., cherry guava and where other methods have been unsuccessful.
Splatter Gun	This small gas-powered injector kit is fitted into a knapsack for easy carrying and delivers large droplets in a stream over the weed. The gun is used to deliver a concentrated herbicide (glyphosate or metsulfuron methyl) across large dense expanses of weed The method is used for species such as lantana (ratio of 1:9 of glyphosate water). Splatter gun involves spraying strips at one to two metre intervals over the thicket. The herbicide is then translocated throughout the entire plant. The method does not require the whole plant to be covered as in over-spray
Spot-spraying	A knapsack filled with an appropriate herbicide mix is used by the operator to selectively control environmental weeds. A keen eye and an ability to distinguish between the native and weed species likely to be present, especially at seedling stage, is essential. Marker dye is added to the chemical mix to allow the operator to see what has already been sprayed, thus covering the ground weeds comprehensively and thoroughly Glyphosate and metsulfuron methyl are the main herbicides used for spot-spraying in ecological restoration, together with the addition of a penetrant and/or surfactant and marker dye
Stem Injection	Large woody weeds such as camphor laurel, coral trees (Erythrina spp, Privet Ligustrum spp) and umbrella trees are generally treated by stem-injection. Holes are drilled at regular intervals around the base of the tree and exposed roots using a drill. A tree injection syringe attached to a small capacity knapsack is used to fill the holes with the herbicide. Stem-injection of trees can also be undertaken using a hatchet to create cuts in a brickwork pattern in trunks of trees for the application of herbicide (known as tree filling). Frilling is more labour intensive than drilling. The greatest benefit of stem injection is that the trees can be left standing in situ as they die, provided there is no risk to humans or infrastructure from falling limbs. This creates convenient roosts for birds and other animals, and prevents the formation of large amounts of debris on the ground and damage to understorey plants which would result if the trees were to be cut down using a chainsaw.

Method	Description
Wick Wiping	Wick wipers can be manually used with a sponge or wick applicator, attached to a container filled with herbicide or as an attachment towed by a tractor. The manual method can be used to selectively apply herbicide to the leaves of weeds growing in sensitive situations. The hand held container can leak and generally spot spraying would be recommended The use of a tractor drawn wick wiper is used to control taller growing species such as introduced grasses and to encourage the growth of lower growing species. This method could be used in preparation for planting.
Mechanical	Mechanical weed control involves the use of powered and non-powered equipment such as brushcutters, chainsaws, slashers, shovels, pruners, saws, etc. These methods are best used in situations where there is a large, uninterrupted stand of weeds.
Dig and Bag	Dig and remove tuberous/ rhizomatous root systems. Remove roots or whole plant in hard/ compacted soils. Place in suitable container and remove from site, dispose of by deep burial, burn or burial at a land fill, must not place declared weed species in recycling (mulch).
Hand-pull	Remove totally from ground by hand (human). Perform when soil is moist. Applicable to small infestations or areas of environmental sensitivity (including sensitive watercourses, when frogs are breeding, or presence of threatened species).
General Mechanical	May involve use of machinery (e.g., brushcutter, chainsaw, slasher, dozer, excavator). Suitable for large infestations and weed trees. Initially cost-effective, but requires immediate revegetation of site or matting/ mulch application and extensive maintenance periods, Generates excessive soil and vegetation disturbance

8.5.3 Management Action Responsibility

The Offset Provider will be responsible for establishing, resourcing and funding all weed management actions detailed in the OMP and RMP including management and monitoring actions.

8.5.4 Management Action Completion Criteria

Timing	Completion Criteria
Year 1	Complete baseline monitoring in accordance with the method outlined in Section 6.1.5 Implement the RMP and ensure WONS are treated within 12-months of the commencement of the offset
Year 10	Reduce WONS to <5% by the end of Year 10
Year 10 – 20	Maintain WONS cover at <5% for the life of the offset

8.5.5 Management Action Monitoring

A number of monitoring actions relating to the presence of WONS and other weeds are proposed as part of the implementation of the OMP and RMP. The rehabilitation monitoring program including photo monitoring is detailed in the RMP with the following monitoring frequency:

- Bi-annually in Years 1-5 with a minimum of 4 months between monitoring events.

- Annually from years 6-20 or WONS and habitat creation and regeneration completion criteria have been met for three consecutive years without any active management.

Baseline monitoring will be completed prior to the commencement of weed treatment works occurring. Refer to Appendix C for further details regarding the weed monitoring methodology. This is proposed as additional to the MHQA surveys.

A suitably qualified person will complete monitoring for WONS before the end of Years 5, 10, 15 and 20 of the offset to track against the interim milestone and completion criteria in the environmental outcomes see **Table 64** to **Table 69**). Surveys will include a repeat of baseline survey methodologies MHQA transects which both provides measures of weed coverage. The following procedures will be implemented to ensure that the monitoring events align with the baseline survey methodology:

Desktop Assessment

- Reviewing previous survey mapping, field datasheets, photos and notes including WONS priority areas.
- Reviewing weed and bush regeneration records for the last year.

Field Survey

- MHQA transects are carried out at baseline survey locations.
- Utilising the weed cover assessment methodology discussed in **Section 6.1.5**, inspect previously identified WONS infestations. Mapping of WONS infestation areas using GPS unit and quantify using weed cover transects and previous locations. Additional weed cover transects will be utilised if required depending on the weed cover assessment.
- Record non-native flora species.
- Provide photo monitoring at established locations to be set up in Year 1 of the offset with photo location and direction.
- Note positive and/or negative changes in weed density and coverage.

8.5.6 Management Action Reporting

Reporting of WONS management will include the following:

- The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports (OAARs) to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.
- Photo Monitoring Reports to be prepared at frequencies specified in the RMP by a suitably qualified person (refer Appendix C).
- Milestone weed and MHQA monitoring survey results will be reported by the suitably qualified person in the 5, 10, 15 and 20 Year Milestone Report. This will provide detail on survey methodologies and detected WONS and other weed presence with reference to the baseline survey data.
- Implementation of the weed management actions within the RMP will be detailed annually by the Offset Provider in OAARs.

8.5.7 Management Action Adaptive Management

The dominant WONS species present within the offset area is lantana with some occurrence of fireweed. A range of other exotic grass and herbaceous species are present, indicative of the high level of disturbance. In the event weed management targets are not met within the prescribed timeframes of the OMP and the RMP, adaptive management will be triggered which includes:

- Adopting different management techniques
- Increasing the use of successful techniques
- Increasing the intensity/frequency of management program

Changing the timing or locality of proposed target treatment locations or events

8.6. Management Action 4 – Bushfire Management Plan

8.6.1 Justification

The MVOA and the broader property are mapped as containing medium to very high high-risk fuel loads for wildfire by the State Government (**Plan 16**). Fire management of the MVOA is critical to achieving the intended outcomes and conservation gains over the management period. Managing the vegetation to promote natural regeneration and reduce the impacts of uncontrolled wildfire within the MVOA will ensure management objectives are achieved. Uncontrolled wildfire is considered a key threat to Koala populations, with impacts inclusive of mortality, injury, and loss of or altered habitat resulting in a reduction in food source and potentially increased exposure to predators.

The management measures contained in this OMP will be used to assess baseline fuel loads and indicate management techniques and planning, specific to the MVOA in the context of the surrounding landscape. The overall objective is to prevent fire-induced Koala mortality and impact to Koala and GHFF habitat via targeted fuel hazard reduction and prescribed fire management. Managing the vegetation to promote natural regeneration and reduce the impacts of uncontrolled wildfire within the MVOA will ensure management objectives are achieved.

Under current Queensland legislation, landowners are required to prepare and plan for bushfire hazards by being aware of fire management issues in the area, trimming trees, mowing grass, removing flammable material around the home, and clearing vegetation, particularly if land boundaries are shared with bushland. It is important to balance undertaking these activities and preventing harm to the natural environment and areas of cultural heritage. This can be achieved through property planning or preparing and implementing a land and water management system. At present, the MVOA and broader offset property has internal tracks and access along existing fence lines that have the potential to act as fire trails. Specific actions as directed by the local authorities will be implemented including prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads if required.

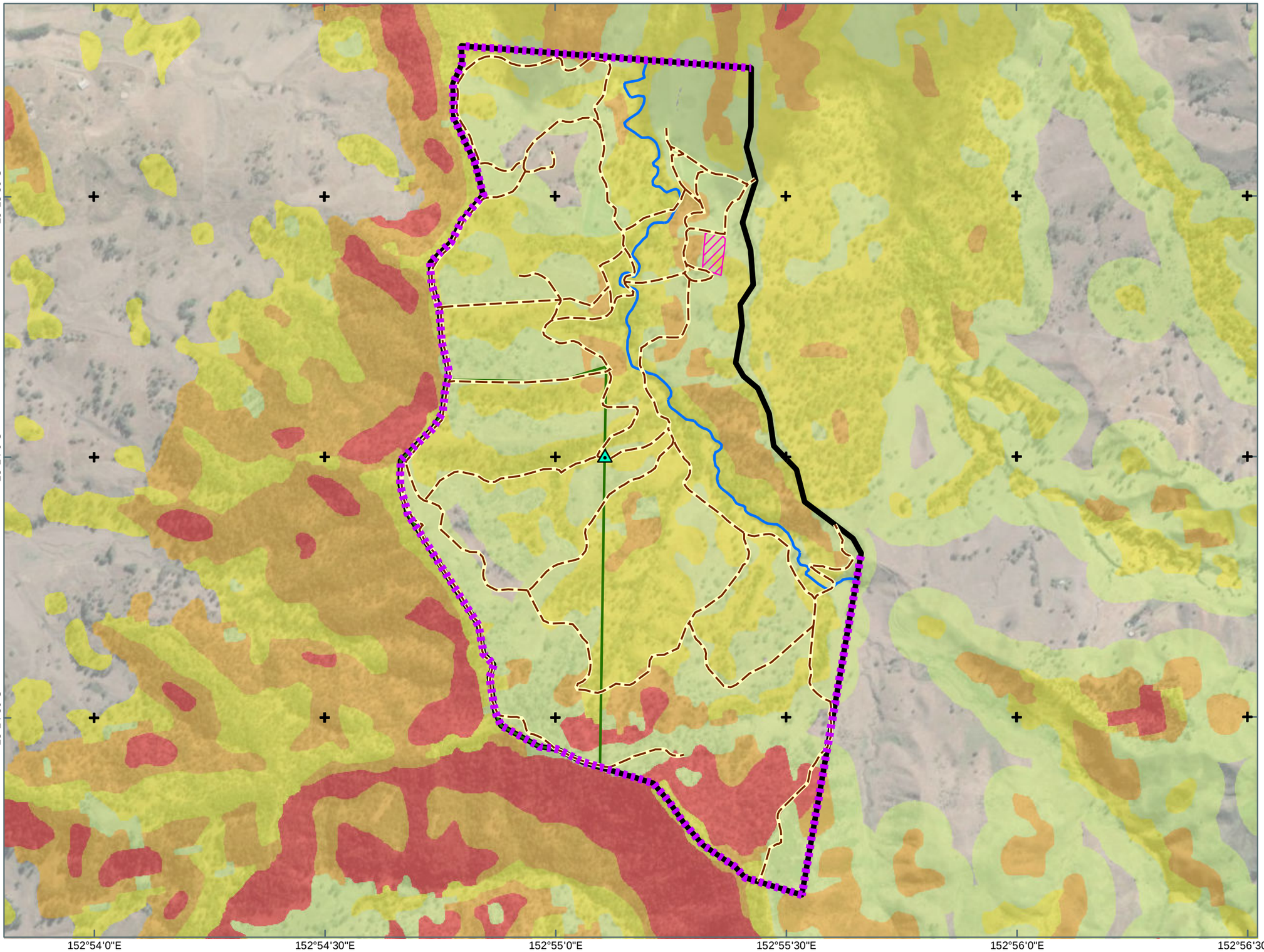
8.6.2 Management Action Measures

A site-specific Bushfire Management Plan (BMP) will be developed in accordance with relevant Queensland guidelines and endorsed by an experienced bushfire practitioner to reduce potential threats from fires to Koala. The BMP will be completed for the MVOA within 1 year from the date of the approval. The BMP will assess baseline fuel loads and aim for no Koala mortalities to occur from fuel hazard reduction action. Management actions addressed by the BMP will include:

- Maintaining strategic access for inspection and emergency response.
- Managing fuel loads in high-risk areas through planned slashing, selective vegetation management and/or prescribed burning where appropriate.
- Maintaining boundary fire breaks and internal strategic breaks where required.
- Reducing unmanaged accumulations of dry biomass near boundaries, access tracks and infrastructure.
- Monitoring ignition risk areas, including interfaces with roads, neighbouring land uses and work areas.
- Ensuring fire management resources and access points are identified and maintained.

- Coordinating with relevant fire authorities, local Yugambeh Aboriginal cultural burn specialist, land managers and neighbouring landholders where cross-boundary risk exists.

16. MOUNT VIEW OFFSET AREA - PRELIMINARY BUSHFIRE RISK MANAGEMNT PLAN



Notes:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of Saunders Havill.Unless a development approval states otherwise, this is not an approved plan.

Layer Sources

Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
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Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/
* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]
- Mount View offset property
- Existing Dams/Waterbodies
- Indicative Equipment Storage and Maintenance Area
- Existing fire management lines/fire breaks
- Water Soruce (Waterway)
- 10m Fire Breaks
- Indicative Site Access Point

Scenic Rim Regional Council Bushfire Hazard

- Potential Impact Buffer
- Medium Potential Bushfire Intensity
- High Potential Bushfire Intensity
- Very High Potential Bushfire Intensity



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Risk Areas

Potential ignition sources are present within and outside of the offset site. All sources will be identified by the BMP and, where possible, physical locations will be identified on a site bushfire risks and management plan. Potential offsite ignition sources include:

- Adjoining rural or grazing land.
- Neighbouring land management burns or escaped burns.
- Public or private roads adjoining the site.
- Utility easements.
- Machinery use or vehicle access on neighbouring properties.
- Unauthorised public access or deliberate ignition from adjacent areas.
- Ember attack from bushfire events occurring in the broader surrounding landscape.

External interface areas would typically be identified on the site fire map as elevated-risk boundaries requiring monitoring and maintained access. These are shown on **Plan 16** as bushfire hazard risk areas.

Potential internal ignition sources may include:

- Vehicles or machinery used during management activities.
- Maintenance works involving mechanical equipment.
- Accidental ignition associated with contractors or authorised site users.
- Electrical faults, pumps or other site infrastructure.
- Unauthorised entry and human-caused ignition.
- lightning strikes during storm events.

Management of these risks will include controls on site activities during high fire danger periods, vehicle and equipment checks, designated equipment maintenance areas and restrictions on hot works or other ignition-causing activities unless specifically authorised.

Fire Breaks

The broader offset area contains internal tracks and access along existing fence lines that will be retained and managed as fire breaks (Refer to **Plan 16** for indicative fire breaks). Buffers will be added where tracks are not currently present along the northern, western and southern boundaries to protect the site from potential bushfire sources in adjacent properties. Internal and boundary buffers will be maintained to a width of 10m as recommended by the Queensland Government's Clearing for Bushfire Management Guidance.

This fire management system will be maintained as the offset property transitions from open pasture to MNES habitat restoration as specific offset activities are sequentially completed. Specific actions as directed by the local authorities must be implemented which may include burn plans, prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads.

Specific actions as directed by the local authorities will be implemented including burn plans, prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads.

Fire Management Resources

The BMP will identify the approximate location of available or proposed fire management resources, including:

- Dams or other static water sources.
- Location of water tanks for firefighting use, where required.
- Pump or hose access points where required.
- Equipment storage areas for fire response tools.
- Turnaround points for response vehicles.

An indicative location for equipment storage and maintenance is provided on **Plan 16**. Management resources will be reviewed as part of the annual report to ensure they remain accessible and functional.

Prescribed Burns

Prescribed low intensity burning as a bushfire management technique is widely employed and generally agreed upon as an effective means of reducing widespread and severe bushfire risk particularly when implemented in line with Indigenous cultural burning practices. The National Recovery Plan for Koala acknowledges the scope of impacts of prescribed burning on Koala population dynamics is not well understood. While the risk of wildfire can be reduced through prescribed burning regimes, it is acknowledged that the effectiveness of this is determined by the scale and severity of the bushfire, as exemplified by the 2019-2020 summer bushfires which affected areas that were considered low risk to bushfire.

Instead of conducting a full ecological burn through a larger area of the offset, low intensity hazard reduction burns will be undertaken to reduce the locally abundant fire fuel loads and in turn reducing the risk of a high intensity wildfire spreading throughout the offset. A hazard reduction action will be used around fire exclusion zones (i.e. revegetation zones) to reduce the risk of any fire spread into these areas. Prescribed burns at the MVOA will generally be carried out in the following manner:

- Burns will be planned, low-intensity and mosaic in nature, rather than broad-scale high-intensity burns.
- The objective of any burn is to reduce fuel loads while retaining habitat heterogeneity and refuge areas for native fauna.
- Burns will be designed and implemented by appropriately qualified fire management personnel, in consultation with land managers and relevant fire authorities.
- The frequency of prescribed burning will depend on vegetation type, fuel accumulation rates, ecological requirements and prevailing fire risk, but will generally occur on a multi-year cycle rather than annually.
- Burn planning will consider weather, fuel moisture, season, smoke management, protection of habitat values and post-burn recovery.

Prescribed burning would only be undertaken where it is consistent with ecological objectives for the offset area and where approvals, weather conditions and operational resources permit.

Livestock Grazing

New research is emerging which supports the benefits of low intensity temporary grazing for the management of bushfire fuel loads and the broader benefits in avoiding the impacts of wildfire on conservation values. At the time of drafting this OMP DCCEEW does not support any level of grazing as a preferred bushfire load management tool when compared to traditional controlled burns. As such, no grazing is proposed by this OMP will only occur if specific approval is provided by DCCEEW post approval of this OMP.

It is noted that the use of cattle grazing for bushfire reduction has only been included as a potential management activity and to provide complete review of strategies. Cattle grazing is not proposed and will not occur within the MVOA unless approved by the department separately to this OMP.

8.6.3 Management Action Responsibility

The Offset Provider is responsible for:

- Liaising and coordinating with Queensland rural fire service (QRFS) and SRRC to develop BMP and implement bushfire management measures.
- Maintaining existing bushfire breaks.
- Carrying out additional rehabilitation as required to account for losses from uncontrolled bushfire.

8.6.4 Completion Criteria

Table 78: Bushfire Management - Completion criteria

Timing	Completion Criteria
Year 1	• Develop BMP and include in the Year 1 ACR • Complete consultation with SRRC and QRFS • Maintain existing firebreaks within offset area
Year 2 – 20	• Implement BMP • Monitor and maintain fuel loads within the offset area • Maintain firebreaks

8.6.5 Management Action Monitoring

Monitoring of the MVOA will be undertaken by the Offset Provider annually and as required to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques such as use of livestock. Fuel loads and bushfire breaks will be monitored annually by the Offset Provider as required depending on seasonal variation in fuel loads.

Bushfire monitoring will occur prior to and after implementing prescribed burns. Monitoring will assess the outcomes of the any burns and inform future implementation. Information identified through the monitoring program will include:

- Fuel hazard reduction in comparison to targets.
- Any impacts to vegetation within the offset area.
- Tree size and species that did or did not survive burn off.

Land management actions or schedules will be adjusted based on the outcomes of the assessment.

The fuel hazard, vegetation condition and fire management tracks will be comprehensively assessed annually, as well as periodically as part of regular property activity, and especially before the start of the bushfire season (August – November).

Fuel hazard monitoring

Fuel hazard monitoring will be used to identify triggers for implementing proposed fuel reduction measures to evaluate the effectiveness of these measures. The Overall Fuel Hazard Assessment Guide (OFHAG) (Hines et al., 2010) provides a quick and representative estimate of fuel hazard on site that can be used for ongoing fuel hazard monitoring to inform management intervention. The OFHAG methodology is based on the structure and availability of fuels within various strata categories (bark, elevated, near surface and surface) and is widely used by land managers across southeast Queensland. The BMP will detail the proposed fuel management prescriptions and monitoring triggers for the offset site.

Bushfire Audit

If a bushfire affects the offset site, a post-fire site audit will be undertaken once emergency response activities (if applicable) have concluded and it is safe to access the area. The purpose of the audit is to confirm site safety, identify environmental and asset risks, and determine the actions required to stabilise and recover the habitat values within the site.

The bushfire audit will address the following at a minimum:

- Confirm site safety prior to works recommencing, including identification of unsafe areas, exclusion zones, and access restrictions.
- Inspect for fire-related hazards, such as unstable or fire-damaged trees, ash pits, weakened ground surfaces, damaged structures, and compromised services or utilities.
- Assess the extent and severity of fire impacts, including source of the fire, the distribution of burnt areas, loss of vegetation and ground cover, and evidence of soil exposure or heat damage.
- Review soil condition and erosion risk, with particular attention to slopes, areas of bare ground, and locations where ash or sediment could be mobilised during rainfall.
- Inspect waterways and drainage features, where present, to identify ash, debris, or sediment accumulation and potential impacts to water quality or drainage performance.
- Check for contamination or hazardous materials, including damaged fuel or chemical storage areas, burnt infrastructure materials, asbestos-containing debris, or other potential sources of pollution.
- Assess impacts to vegetation and habitat, including plant survival, natural regeneration potential, loss of fauna shelter, and increased weed or pest risk.
- Inspect site infrastructure and assets, such as access tracks, fences, culverts, erosion controls, signage, buildings, and hardstand areas, to identify damage and restoration needs.

- Identify and prioritise risks, distinguishing between immediate safety or environmental risks, short-term stabilisation requirements, and longer-term rehabilitation actions.
- Document findings and recommended actions, including photographs and summary notes, to support decision-making, recovery planning, and regulatory compliance.

The bushfire audit will provide recommendations for stabilisation and rehabilitation of the offset area including actions to reduce the risk of future bushfire events. Recommendations from the audit will be used to update the BMP and develop an offset area recovery plan to guide re-instatement of the offset area.

8.6.6 Management Action Reporting

The BMP will be endorsed by an experienced bushfire practitioner and QRFS and will adhere to all relevant Queensland legislation and guidelines including, but not limited to:

- QFES Bushfire safety guide and risk mitigation plan template - Guidance on fuel load management, fire breaks and hazard reduction
- DES Environmental Management Guidelines - Guidance on erosion, sediment and pollution control following disturbance (including fire)
- Queensland Herbarium Regional Ecosystem Fire Guidelines – Guidance to maintain and enhance biodiversity.

Implementation of the BMP will be reported annually by the Offset Provider in the MVOA Annual Report and will provide detail on maintenance and monitoring activities undertaken under the BMP such as maintenance of access tracks and fire breaks, records of seasonal fuel loads and outcomes of controlled burns or other management techniques such as use of livestock. Notes of any evidence of positive and/or negative changes will be recorded and documented. Annual monitoring and reporting is important to ensure any possible negative impacts are identified early and management processes are appropriately adapted to ensure conservation outcomes are achieved.

Bushfire audits will be completed once emergency response activities (if applicable) have concluded and it is safe to access the area. The audit, including recommended updates to the BMP, and a offset area recovery plan will be issued to DCCEEW within 3 months of the date of the audit.

8.6.7 Management Action Adaptive Management

Management actions to reduce the risk of bushfire impacts within the offset area include:

- Maintaining existing bushfire breaks between adjacent landholders in particular along the boundaries where the State Planning Policy bushfire hazard mapping indicates there is a ‘high’ or ‘very high’ risk of bushfire occurring (refer to **Plan 16**).
- Cooperating with the local QRFS, SRRC and adjoining landholders to minimise bushfire risk at a regional scale.
- Undertaking a feasibility assessment on insurance for plant stock replacement.

The overall assessment of bushfire risk is that their occurrence is unlikely within the life of the offset and consequences of such an event would be moderate. With intervention and management, bushfire is evaluated as a moderate risk to this offset project. Refer to Appendix E for more details.

In the event a bushfire does occur within the offset area, adaptive management will involve:

- The provision of additional rehabilitation works where bushfire has occurred and damage or losses to plantings has resulted.
- Review of the adequacy of risk management measures to determine factors that may have resulted in the bushfire occurring and an assessment of any other management measures that could be implemented to reduce the risk further.

8.7. Management Action 5 – Habitat Creation and Regeneration

8.7.1 Justification

Habitat creation and regeneration is a key management action that will improve existing habitat values within the MVOAs and expand habitat values in areas that have been subject to weed infestation. In addition, regeneration is a Priority Management Action listed under "Habitat Loss, Disturbance and Modification" of the Conservation Advice for the Koala and under "Recovery Objective 1 – Action 1.4" of the GHFF National Recovery Plan. Rehabilitation aims to enhance degraded areas through Management Action 3 (WONS removal), excluding cattle grazing, large scale plantings in highly disturbed areas, and assisted natural regeneration.

A range of recent studies demonstrate that rehabilitation of disturbed land can successfully provide functional habitat for koalas when rehabilitation is appropriately designed and implemented.

Cristescu et al. (2013) investigated koala use of post-mining rehabilitated areas on North Stradbroke Island and found that koalas actively re-occupied rehabilitated sites less than 15 years old. Individuals using rehabilitated areas accessed suitable food and roost trees, exhibited good body condition, and demonstrated high reproductive output, with no discernible difference in predation when compared to adjacent undisturbed habitats. The study concluded that rehabilitated sites were capable of providing habitat comparable to undisturbed environments.

Other studies support these findings. FitzGibbon et al. (2012) recorded koala recolonisation of rehabilitated mine landscapes in central Queensland, identifying availability of suitable food tree species and proximity to existing koala populations as key determinants of successful habitat use. Where these elements were present, rehabilitated areas were utilised by koalas.

Guidance for revegetating koala habitat developed by the Australian National University (Beale et al. 2022) carried out a review of peer-reviewed literature finding that rehabilitated habitats can contribute meaningfully to koala conservation where revegetation incorporates preferred food tree species, sufficient structural complexity, and landscape connectivity.

Overall, the available scientific evidence demonstrates that rehabilitation of disturbed areas can provide suitable koala habitat, provided that rehabilitation targets species composition, structure and connectivity consistent with koala ecology.

In addition to koala, multiple studies have shown that flying-foxes (including GHFF) routinely forage in human-modified and restored environments, including revegetated landscapes, provided that appropriate food resources are present.

Yabsley et al. (2021) demonstrated that GHFF extensively utilise human-modified landscapes, including revegetated areas and planted vegetation, where flowering and fruiting resources are available. The study found that habitat usage by GHFF was more strongly related to resource distribution and quality than to land-use category, indicating that restored habitats can function effectively as foraging habitat once larger forage trees are established.

Similarly, McConkey and Drake (2015) and Markus and Hall (2004) showed that flying-foxes rapidly respond to the establishment or flowering of suitable food trees, irrespective of whether vegetation is

remnant or restored, highlighting the capacity for rehabilitated landscapes to contribute meaningfully to foraging habitat availability.

Assisted natural regeneration applies to areas where the native plant community is largely healthy and functioning or where native plant seed is still stored in the soil, can easily disperse from nearby natural areas, or be readily dispersed by animals. It is applied when limited human intervention, such as weed control, minor soil amelioration, fencing works or cessation of slashing etc., is sufficient to trigger the recovery process and natural regeneration. Planting only occurs where necessary (i.e. where large canopy caps exist) and does not interfere with natural process.

Management Actions 3 to 5 will work together to improve habitat quality through weed removal/control, bushfire management and native species establishment.

Benchmarks for rehabilitation efforts are derived from the definition of remnant vegetation under the *Vegetation Management Act 1999*. Vegetation can be mapped as remnant vegetation and associated essential habitat for Koalas if the canopy is 70% of the height, 50% of the cover and similar species composition of the appropriate pre-clearing RE (Queensland Government 2015). Therefore, the final benchmark at 20 years for rehabilitation is 50% of the reference benchmark cover (for canopy, shrub and ground-layer) and 70% of the reference benchmark height (for canopy and shrub layer) of the appropriate RE.

On-site regrowth regional ecosystem vegetation communities (OMU1) and pre-clear regional ecosystem communities (OMU2) indicate the MVOA contains a broad distribution of the following regional ecosystem type (Code plus Dominant Species):

- RE12.8.17 – *Mixed woodland with combinations of Eucalyptus crebra, E. melanophloia, E. tereticornis, Corymbia tessellaris, C intermedia woodland*

The Queensland Herbarium biocondition benchmarks for RE 12.8.17 indicate remnant canopy tree height as 19 m and subcanopy 10 m, whilst the remnant tree canopy coverage is 48%, sub-canopy coverage 20% and shrub canopy coverage 5%. Therefore, once vegetation within the MVOA revegetation reaches 70% of these prescribed heights and 50% of these prescribed canopy coverages it can be considered remnant.

Within particularly disturbed areas of non-remnant vegetation, the objectives of this plan are long term and have the potential to take longer than 15 years after commencement of implementation, particularly as the Queensland Herbarium quotes that in general it takes 30 years for a disturbed site to regain remnant status. However, the goal of regeneration actions is to re-establish an ecosystem that is self-regenerating and self-sustaining and therefore will persist against disturbance (SEQ Restoration Framework, 2012). The SEQ Restoration Framework indicates that in order to achieve the self-sustaining ecosystem at least 2 – 5 years of implementation and maintenance needs to occur. Thus, the offset project provides a sufficient maintenance and implementation period that sets the revegetation areas towards remnant status following the completion of maintenance. Interim benchmarks via MHQA transects are to be conducted at regular intervals which will inform the progress of the rehabilitation/revegetation efforts towards achieving this plan's outcomes. Given this, adaptive management approaches can also be employed to redirect restoration approaches, if interim benchmarks are not being met.

8.7.2 Management Action Measures

The OMUs listed in **Section 8.2** will be established across the MVOA. They range from remnant vegetation to cleared grazing paddocks, and as such the extent of native tree abundance and WONS infestation differs between these OMUs. Consequently, the key management actions across the OMUs will differ (refer below and **Table 79** for summary). Key management actions will include assisted natural regeneration practises to expand patches of regrowth throughout areas where high levels of weed management are required (OMU 1) and reconstruction and infill planting within the non-remnant areas to assist in vegetation coverage and composition (OMU2).

Table 79: Operational Management Unit rehabilitation method summary

OMU	Description	Rehabilitation Method
Remnant and regrowth vegetation RE 12.8.17 (OMU 1)	Discontinuous to continuous canopy vegetation	• Assisted natural regeneration • Weed removal/control • Bushfire management • Infill planting where necessary
Non-remnant vegetation, pre-clear RE 12.8.17 (OMU 2)	Cleared paddocks, some scattered native vegetation	• Reconstruction • Weed removal/control • Bushfire management • Planting

On-ground works proposed within the OMUs include are detailed below.

<u>OMU 1 - Remnant and regrowth vegetation, RE 12.8.17</u>

- Implementation of rehabilitation techniques that aim to promote the regeneration of native vegetation and improve habitat values:
    - Where natural regeneration is ineffective, seeding with native endemic seeds,
    - Where natural regeneration and/or seeding is ineffective, planting of endemic trees and shrubs specifically selected to provide Koala/GHFF habitat.
- Stop activities reducing habitat values, specifically production grazing.
- Introduce management practices which support and favour habitat increase (e.g. bushfire management)
- Removal of impediments to Koala movement such as old, unused fences
- Assisted natural regeneration practices where weed treatment results in open areas – replanting with locally endemic species (infill planting - if necessary only).
- Maintain and manage the land for the life of the offset, including direct monitoring of Koala/GHFF usage.

OMU 2 - Non-remnant vegetation, pre-clear RE 12.8.17

- Reconstruction and direct planting in cleared areas with endemic native trees and shrubs
- Implementation of rehabilitation techniques that aim to promote the regeneration of native vegetation and improve habitat values:
    - Where natural regeneration is occurring, supplementary seeding with native endemic seeds,
    - Where natural regeneration and/or seeding is ineffective, planting of endemic trees and shrubs specifically selected to provide Koala habitat.
- Assisted natural regeneration practices where weed treatment results in open areas – replanting with locally endemic species (infill planting)
- Removal of impediments to Koala movement such as old, unused fences.
- Introduce management practices which support and favour habitat increase (e.g. bushfire management)
- Maintain and manage the land for the life of the offset, including direct monitoring of Koala usage.

Within the mapped regrowth and remnant areas, natural regeneration rehabilitation is less invasive and thus the preferred method to enhance remnant vegetation. Where natural regeneration is unsuccessful, infill planting will be implemented to facilitate recovery (if required). In non-remnant areas where there is little vegetation, reconstruction will be required through encouraging natural regrowth, seeding and direct plantings.

8.7.3 Rehabilitation Methodology

Following the resolution of site analysis and management areas as part of rehabilitation design, prioritising site works will be considered. Prior to rehabilitation commencing, the site will be secured from degrading impacts such as grazing by stock, unauthorised access and rubbish. Some factors that may require immediate attention include:

- The presence of highly invasive weed species which may disperse further prior to substantial site works commencing.
- The presence of weed species which may have a long-term impact on ecological communities such as exotic and weed varieties of vines.
- Flammable materials (including weed thickets, grasses and vines).
- Damaging and easy access by 4WD, motorbikes, and pedestrians into core retained vegetation and ecological restoration areas. This may require installation of temporary fencing if deemed appropriate.
- Improving internal site access through implementation of 4WD tracks to facilitate ongoing rehabilitation requirements.

Site works can be typically broken down into the following categories:

- Primary Works
- Follow-up Works
- Maintenance Works

8.7.3.1 Primary Works

Primary works, or initial works, within the MVOA or a section of the MVOA will commonly involve a sequence of activities such as the control of all groundcover weeds, woody weeds in the understorey and exotic vines prior to the control of weed trees. Primary work has the effect of creating a large degree of disturbance which will stimulate the germination of native and exotic species. Therefore, continuing works will be scheduled shortly after the initial visit to allow for timely control of the newly regenerating weeds. Highly invasive weeds will be treated as a priority during primary work in order to avoid invasion of newly disturbed areas. Some weeds will need to be treated in steps e.g., where weeded areas are being used by nesting birds or where the staged removal of canopy weed trees is required. Techniques used during primary work commonly involve spot spray, cut-scrape paint, cut-paint, scrape-paint, roll-hang and over spraying (source: SEQERF).

Following completion of weed management, rehabilitation such as assisted natural regeneration, construction, and fabrication planting can occur in areas unaffected by weed management activities or areas where primary weed management activities have concluded. At the end of primary work, the zone will have been comprehensively and systematically worked, ready for follow-up works.

8.7.3.2 Follow-up Works

At intervals, which will vary according to the type of weed impacting the MVOA and growing conditions, follow up work will be necessary. This generally involves the spot-spraying of newly germinating weeds and re-sprouting sections of woody weeds and vines. It is at this stage that observational visits will be made to the area to assess the progress of vegetation regeneration and determine whether follow up work is necessary. An area that receives poorly-timed, too frequent, or too little follow-up will rapidly experience setbacks, as weed propagules will quickly become established in the newly disturbed areas.

Germinating native seedlings may be outcompeted by weeds or damaged by inexperienced operators thereby exhausting the seed bank. Unless adequate follow-up can be ensured when planning restoration works, there is little point in commencing primary work, as time and resources are consumed with no substantial gain achieved (source: SEQERF).

8.7.3.3 Maintenance Works

By the maintenance stage, the vegetation community supports germination and establishment of native plant species and canopy formation. Weed density decreases as the native plants, which have been supported through restoration works, are able to out-compete the weed species. One of the fundamental principles of ecological restoration involves creating or re-establishing a self-sustaining ecosystem. Therefore, the underlying goal is that maintenance will progressively decrease. While this goal is not always possible due to factors such as the continual reintroduction of weed propagules to the site from adjoining properties, unfavourable seasons or significant weather events, persistent weed species, or global influences such as the enhanced greenhouse effect, it will be the primary aim (source: SEQERF).

Maintenance works may include minor, ongoing weed management and infill planting depending on Site Conditions. All rehabilitation works are to be carried out by a suitably qualified bush regeneration contractor.

8.7.4 Management Action Responsibility

The Offset Provider is responsible for:

- Funding the appointment of trained and experienced bushland regenerators or revegetation contractors for the completion of all rehabilitation activities in accordance with the RMP (site preparation, planting, establishment and maintenance).
- Commissioning and funding tertiary trained ecologists for the survey, monitoring and reporting of interim and milestone revegetation outcomes.

8.7.5 Completion Criteria

Timing	Completion Criteria
Year 1	Complete Site Preparation work in accordance with RMP including: • Establish phot monitoring locations • Tilling / cultivating grazed grass areas for treatment of pasture grass seedbank in preparation for planting • Undertake soil testing for both the modified planting soil and for the planting locations • Commence seed collection and propagation in coordination with an external nursery
Year 3	Complete all offset area planting in accordance with planting palettes and densities proposed in the RMP provided weather conditions are suitable for broadscale planting
Years 1 – 20	Implement the RMP to ensure performance indicators are achieved particularly the mortality rate of plants (focusing on trees) is <20% during the contractor establishment phase (3 to 5 years)

8.7.6 Management Action Monitoring

A combination of informal and formal monitoring techniques are proposed as part of the offset program to allow for an effective monitoring regime that will promote adaptive management and high achieving offset outcomes. This includes methods prescribed in the RMP and habitat quality monitoring methods under the OMP.

Monitoring will comprise a mix of informal and formal methods to track progress against the proposed environmental outcomes for each management action. The rehabilitation monitoring program is detailed in the RMP with the following monitoring frequency:

- Bi-annually in Years 1-5 with a minimum of 4 months between monitoring events.
- Annually from years 6-20 or WONS and habitat creation and regeneration completion criteria have been met for three consecutive years without any active management.

Informal or qualitative monitoring techniques will be employed as part of the offset monitoring. Informal monitoring methods are less time-consuming and technical and are an important tool for determining

ecological restoration success. Informal monitoring will include photo monitoring, and visual assessment. Photo monitoring locations (2-4 per OMU) will be established in Year 1 prior to works commencing.

Formal monitoring of rehabilitation works involves collecting quantitative data at prescribed monitoring intervals using a combination of monitoring methods and techniques. Formal monitoring provides data that cannot be measured by informal observations and can be easily compared against quantitative attributes. Formal monitoring will be completed at 5-yearly intervals (5, 10, 15 and 20 years) following the commencement of the offset with specific measures to include:

- MHQA and FHA transects completed in accordance with the baseline survey methodologies described in **Section 3.3.3**.
- Koala SAT surveys as described in **Section 6.1.2**.
- Motion triggered camera trapping as described in **Section 6.1.3**

Refer to **Appendix F** for further details regarding the proposed monitoring methodology within the RMP.

8.7.7 Management Action Reporting

Photo Monitoring Reports

The results of informal (photo monitoring and visual assessment) will be detailed in bi-annual/five-yearly monitoring reports. Following each photo monitoring event, a Photo Monitoring Report will be prepared which will include the following information:

- Photo set at each monitoring location.
- Commentary on mortality rate and presence of WONS/other weeds at a minimum with any additional relevant observations to inform adaptive management such as species-specific responses or herbivory.
- Adaptive management (if required).

These reports will include commentary of overall success rate (namely of tree species), any degrading factors at the site that may or are currently affecting survival success and any recommended adaptive management measures.

Milestone Reporting

Formal monitoring will be completed by a suitably qualified ecologist before the end of Years 5, 10, 15, and 20 of the offset to assess against the interim milestones and environmental outcomes (see **Table 64** to **Table 69**).

Offset Area Annual Reports

Rehabilitation progress will be reported by the suitably qualified regeneration contractor or Offset Provider in the OAAR. The suitably qualified regeneration contractor will complete annual monitoring tasks until establishment of plantings is achieved (typically between three to five years).

8.7.8 Management Action Adaptive Management

Multiple corrective action triggers for adaptive management will be adopted. This includes:

- Native plant mortality >20% during the initial contractor establishment phase (3-5 years) of the plantings

- WONS cover >5% after Year 10

A survival rate of 80% of tree species will be achieved for the offset area. The 80% survival rate is to be achieved throughout the 3-5 year contractor establishment phase, after which the plantings are considered self-sustaining. It is anticipated the overall density of plantings will normalise to typical eucalypt forest density during the successional phase of the offset (5-20 years post planting).

Where survival rates are observed to be less than 80% as per qualitative and quantitative monitoring methods during the contractor establishment phase, this may indicate the presence of a degrading factor not previously identified or considered at the site and may require adaptive management measures to be considered and implemented. Degrading factors are to be identified as part of regular monitoring and will form the basis for actioning adaptive management.

Adaptive management measures may include a combination of the following:

- Identify and address the degrading factor (e.g. soil issue, pests, species failure).
- Remedial plantings in areas of dieback to bolster survival rates to above 80% during the contractor establishment phase.
- Introduce a different species i.e., if one plant species consistently dies on a site, consider using in its place a species that is performing well.
- Adjust planting methods such as using advanced tube stock or direct seeding, modifying site preparation techniques.
- Modify weed management techniques or frequency where WONS exceed 5% after year 10.

8.8.

Management Action 6 – Fencing and Signage

The MVOA is to be suitably fenced and marked with signage to discourage trespass, indicate biosecurity restrictions, and keep out cattle. Gates leading to the MVOA will have signage installed for added protection.

In addition, cattle will be managed as specified in this OMP via a combination of temporary and existing paddock fencing and, in time, temporary fencing will be upgraded where required to permanent or removed when the broader offset property as land is secured as an offset and managed under approvals.

Fences that include barbed wire will also be retrofitted to further reduce threats to the GHFF. Barbed wire should be removed from the top strand or covered with poly pipe (Bat Conservation & Rescue Qld Inc. (2022)) or tagged to reduce potential impacts to the threatened species Where the MVOA is adjacent to other EPBC approved offset areas in the future, fencing will be removed altogether to facilitate movement.

For proposed MVOA fencing and signage, **Plan 17** shows existing barbed-wire fencing that will be retrofitted or replaced with fauna friendly fencing in accordance with the Koala Sensitive Design Guidelines (DES 2022). New fencing will also be installed to exclude livestock where required.

8.8.1 Management Action Measures

Management actions to reduce the risk of livestock control and access and trespass management impacts on the offset property include:

- Ownership of the MVOA land by the offset provider and therefore any grazing activities will be excluded from offset land unless expressly approved by DCCEEW.
- Implementation of a legally binding mechanism (Voluntary Declaration under the *Vegetation Management Act 1999*) which provides protection of existing and created habitat values. The Voluntary Declaration applies the regulations of the *Vegetation Management Act 1999* to the land title which remains regardless of the transfer of ownership or sale of the land.
- Retrofitted or replace barbed wire with fauna friendly fencing in accordance with the Koala Sensitive Design Guidelines (DES 2022).
- Livestock to be excluded from the MVOA on approval of the VDec with Fauna friendly livestock exclusion fencing installed around the perimeter of the wider MVOP within 6 months.

8.8.2 Management Action Responsibility

The Offset Provider is responsible for funding and undertaking all actions relating to fencing and signage.

8.8.3 Completion Criteria

Table 80: Fencing and Signage – completion criteria

Timing	Completion Criteria
Year 1	• Inspection and rectification of all external fence boundaries • Removal of all unnecessary barbed wire fencing within offset area
Year 1 – 20	• Maintain offset area perimeter fencing and signage at vehicle access points to prevent unauthorised access to offset area • No new access tracks through offset unless to support offset outcomes

8.8.4 Management Action Monitoring

The Offset Provider will monitor all fence lines at least quarterly or as required to detect:

- Areas of disrepair requiring maintenance; and
- Evidence of trespass and unauthorised activities.

8.8.5 Management Action Reporting

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent for each offset period for inclusion in the Approved Project Annual Compliance Report.

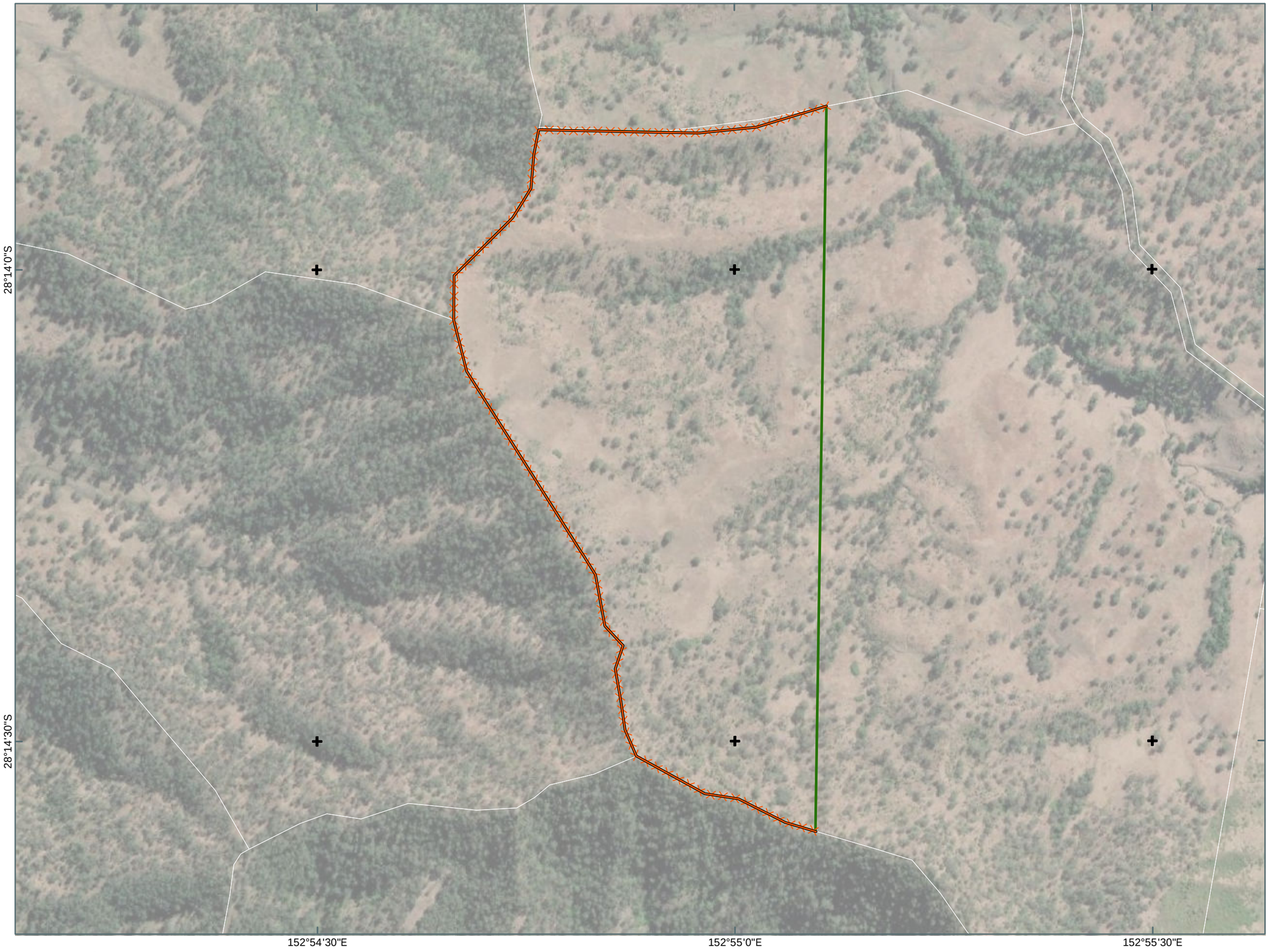
8.8.6 Management Action Adaptive Management

Triggers for adaptive management may include evidence of repeated unauthorised vehicle track use or evidence of multiple breaches by cattle. Adaptive management for general trespass management and unauthorised offset area activities includes:

- More frequent fence line monitoring
- Use of photo monitoring at strategic locations or where breaches have occurred
- Review of offset area signage, locations and install additional signage where necessary
- Installation of soft physical barriers such as logs or rocks at track heads where there is evidence of unauthorised access

Enforcement options are available if necessary, however, it is considered a last resort where adaptive management measures are ineffective. Further, access restrictions will be detailed in the covenant terms providing a pathway for enforceable action where required.

17. MOUNT VIEW OFFSET AREA - PROPOSED FENCING



Notes:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of Saunders Havill.Unless a development approval states otherwise, this is not an approved plan.

Layer Sources

Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
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Updated data available at
http://qldspatial.information.qld.gov.au/catalogue/

* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

LEGEND

- Qld DCDB
- Mount View Offset Area [71 ha]
- Existing barbed wire fence to be retrofitted with fauna-friendly fencing



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HB QLD Pty Ltd

Oaky Creek

0 50 100 150 200 m

Transverse Mercator
GDA 2020 | Zone 56

N

1:7,500
@ A3

Address / RPD: *Oaky Creek, QLD*

27/04/2026

12186 E 17 Offset Area Fencing B

8.9. Monitoring and Reporting Framework

8.9.1 Report Types

A range of report types will be prepared as part of the overall offset monitoring. The report types, timing and responsible party for each of the reports are detailed in **Table 81**.

Table 81: Summary of Reports Required and Responsible Parties

Report	Purpose	Frequency	Responsible party
Offset Area Annual Report Details implementation of management actions against the OMP and RMP including rehabilitation progress review.	Designed to document all offset activities completed and/or commissioned by the Offset Provider and demonstrated against the timeframes and completion criteria of the OMP and includes a review and progress update of rehabilitation works (planting and weed management). Required as part of the commercial agreement between the Proponent, to be provided (1) month after each year of the offset.	Annually following the legal securement of the offset area	Offset Provider
Milestone Survey Report Details the results of MHQA, and GHFF FHA habitat assessment**.**	Designed to demonstrate increase in value of offset area for Matters of National Environmental Significance (koala, grey-headed flying-fox, swift parrot and regent honeyeater) as proposed under the OMP. This will include an assessment of whether each environmental outcome has been or is likely to be achieved and advise of any circumstance/s which they consider is/are affecting the achievement of each outcome. The findings of each assessment will be documented and published within 3 months of the end of the relevant year of the offset in which the assessment is undertaken.	Five-yearly at Years 5, 10, 15 and 20	Suitably qualified Ecologist as appointed by the Proponent
Photo Monitoring Report Qualitative monitoring report showing photos of the offset area, commentary on rehabilitation progress and recommended adaptive management measures.	Designed to provide regular assessment of the offset area and feedback to engaged rehabilitation contractors to guide on-ground works.	Bi-annually in Years 1-5 with a minimum of 4 months between monitoring events. Annually from years 6-20 or until WONS and habitat creation completion criteria have been met for three consecutive years without any active management.	Suitably qualified Rehabilitation Contractor or Ecologist as appointed by the Offset Provider

Annual Compliance Report Required to be prepared as part of the approved project decision notice.	Designed to document activities and demonstrate compliance against the EPBC Act approval conditions for the project. Other subsidiary reporting may be included as evidence of compliance with approval conditions.	Annually, timing specified in approval conditions	Suitably qualified person as appointed by the Proponent

8.10. Annual Compliance Report Inclusions

ACRs will be completed in line with ACR Guidelines for EPBC reporting. Ultimate inclusions within an ACR will be subject to the final approval documents (Preliminary Documentation and OMP) and the approval conditions. However, the following headings/section titles are typically included within ACRs.

General Descriptions

- Approval Details
- Reporting Period
- Roles and responsibilities
- Description of Key Activities

Impact Management Details

- Commencement of the Action
- Vegetation clearing protocols and pre-starts
- Review of Impacts
- Fauna spotter catcher reports
- Other mitigations measures proposed (i.e exclusion fencing)

Mount View Offset Area Management

- Offset Area securement
- Offset Area management activities
- Performance and completion criteria relevance (detailed in milestone reports)
- Monitoring and adaptive implementation outcomes

Compliance

- Non-compliance matters
- Approval conditions compliance table

8.11. Data Management

The Proponent, Offset Provider and engaged suitably qualified person appointed by the Proponent and/or Offset Provider will be responsible for the management of data, including interpretation, reporting and presentation. The Proponent will be responsible for the ownership, distribution and availability of data to the Department.

8.12. Monitoring and Reporting Schedule

A monitoring and reporting schedule has been provided in Table 82 detailing when and who is responsible for the various reports required to ensure management actions are occurring. A diagram has been provided as **Insert 3** detailing how various management plans are relevant.

8.13. SMART Principle

The SMART principle is a widely adopted framework for setting effective objectives. It ensures that goals are:

- Specific – Clearly defined and focused.
- Measurable – Quantifiable to track progress.
- Achievable – Realistic and attainable within available resources.
- Relevant – Aligned with broader objectives and priorities.
- Time-bound – Linked to clear deadlines or timeframes.

Applying SMART to environmental offset management ensures that actions are transparent, auditable, and deliver tangible ecological outcomes.

The Offset Management Plan for the Mount View Offset Area (MVOA) integrates SMART principles across all management actions. Each action is:

- Specific: Clearly described tasks such as legal securement, weed control, pest management, bushfire planning, habitat restoration, and fencing are described.
- Measurable: Defined performance targets and completion criteria (e.g., <5% weed cover by Year 10, Koala MHQA uplift from 4 to 8).
- Achievable: Based on proven, industry best practice ecological restoration methods, supported by baseline surveys and confidence levels (75–85%).
- Relevant: Directly addresses EPBC Act offset requirements, conservation advice, and recovery plans for Koala and Grey-headed Flying-fox.
- Time-bound: Includes clear timelines for implementation and monitoring (Year 1 securement, Year 2 planting, annual reporting and milestone reviews at Years 5, 10, 15, and 20).

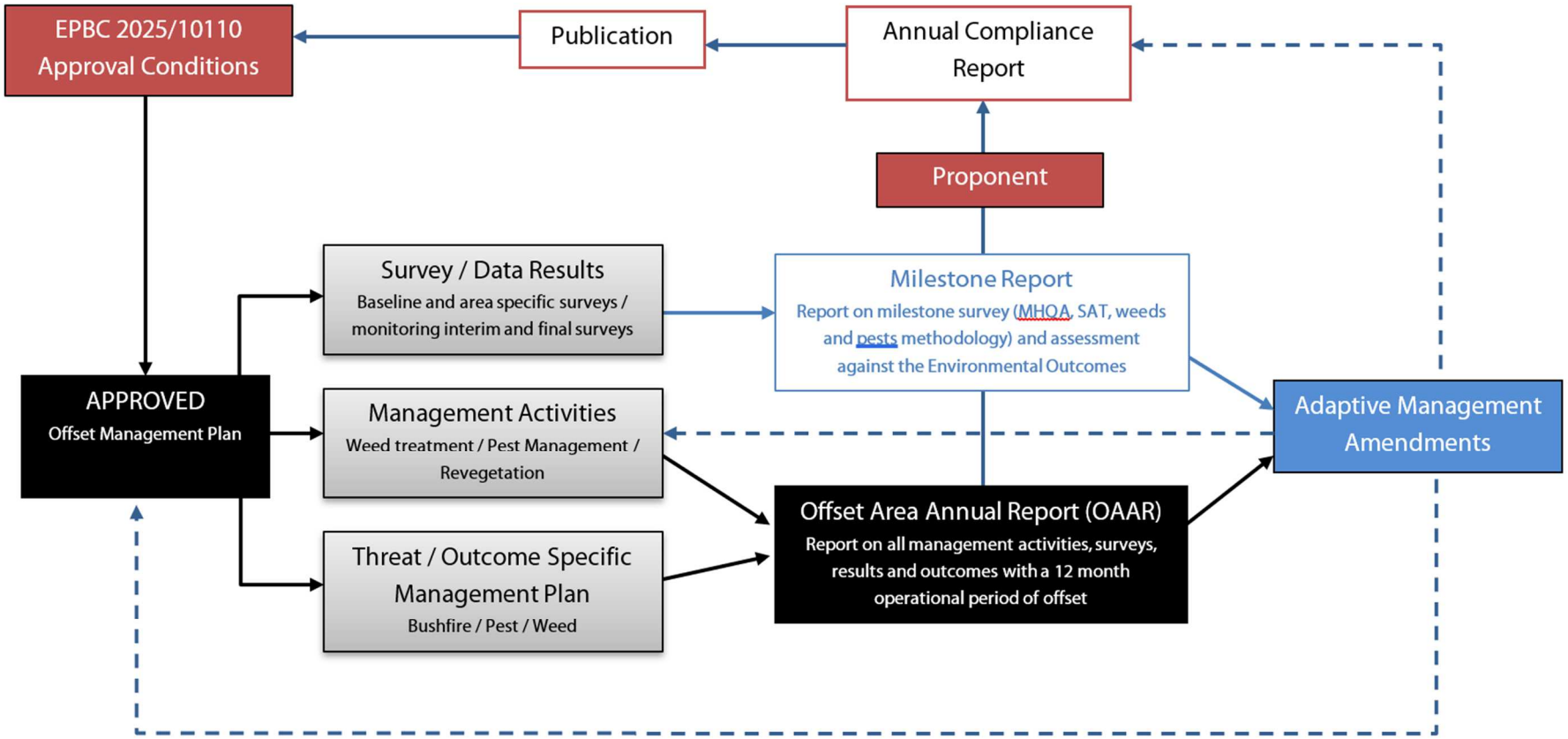
The application of the SMART principle to management actions is summarized in **Table 83**.

Table 82: Timeline for monitoring and reporting actions

Management action	Monitoring action(s)	Reporting action and timing	Responsible person(s) for activity/reporting
1 – Legally secure MVOA	The MVOA is legally secured within 12 months of the approval. Legal securement will be completed via a Voluntary Declaration (VDEC) administered under the Vegetation Management Act 1999 (Qld). A covenant will be completed within 12 months of commencement of the action under either Chapter 6 Part 4 Division 8A of the Land Act 1994 (Qld) or Part 6 Division 4A of the Land Titles Act 1994 (Qld). If a covenant isn't possible an alternative legally binding mechanism will utilised in consultation with DCCEEW.	The Department will be notified that the MVOA has been secured. Evidence in the form of the shapefiles and confirmation of declaration from the Queensland Department of Resources will be provided with the notification. Details will be included in the Annual Compliance Report (ACR).	Suitably qualified person as appointed by the Proponent
2 – Non-native vertebrate pest management	Monitoring will occur before the end of Milestone Report years and will include a repeat of baseline survey methodologies (i.e., motion triggered detection camera deployment) and sightings (direct and indirect) with evidence of non-native predators GPS recorded. Evidence of pest presence within the MVOA and pest management implementation will be extracted from the MVOA Annual Report (OAAR) and used in assessments of the relative success of the management of threats and progress towards the environmental outcomes and milestone criteria.	An OAAR will be completed annually within one (1) month of the end of each offset year detailing pest management implementation. Milestone Reports will be prepared three (3) months after the completion of milestone surveys at Years 5, 10, 15, and 20 of the offset and included in the ACR.	Offset Provider and Suitably qualified pest management contractor as appointed by the Offset Provider. Suitably qualified person as appointed by the Proponent.
3 – WONS management	Photo monitoring will be completed annually during the first three (3) years of the offset and recorded in the OAAR to document on-ground progress. Photo monitoring coordinates will be recorded and occur in the same location each survey period. Weed cover surveys and mapping, and MHQA surveys will be conducted before the end of Milestone Report years in	An OAAR will be completed within one (1) month of the end of each offset year detailing WONS management implementation and progress against the performance targets. OAARs will be included in the ACR. Milestone Reports will be prepared three (3) months after the completion of milestone surveys	Offset Provider and suitably qualified weed management contractor as appointed by the Offset Provider.

Management action	Monitoring action(s)	Reporting action and timing	Responsible person(s) for activity/reporting
	accordance with baseline survey methodologies to track progress against interim milestone targets and completion criteria and identify any issues for rectification. Monitoring will be undertaken during the same time of year at every monitoring event, to ensure that the timing is consistent and aligns with the baseline assessment.	at Years 5, 10, 15, and 20 of the offset and included in the ACR.	Suitably qualified person as appointed by the Proponent.
4 – Bushfire Management Plan	Annual monitoring requirements to review access tracks, fire breaks, seasonal fuel loads and outcomes of controlled burns or other management in accordance with the associated Bushfire Management Plan.	An OAAR will be completed within one (1) month of the end of each offset year which documents bushfire management actions undertaken under the direction of the local authority or recommended in consultation with the Queensland Rural Fire Brigade. OAARs will be included in the ACR.	Offset Provider and suitably qualified bushfire management contractor as appointed by the Offset Provider.
5 – Habitat creation and regeneration	Photo monitoring will be completed annually during the first three (3) years of the offset and documented in the OAAR. Photo monitoring will encompass areas of assisted natural regeneration and reconstruction to document on-ground progress. Photo monitoring coordinates are to be recorded and occur in the same location each survey period. Reconstruction areas subject to infill planting will be annually monitored after the completion of planting works until establishment is reached. The monitoring timing is dependent on the planting cycle of the engaged bush regeneration contractor. Monitoring will occur regularly after initial planting in accordance with watering schedules. MHQA surveys will be conducted before the end of Years 5, 10, 15, and 20 of the offset in accordance with baseline survey methodologies to track progress against interim milestone targets and completion criteria and identify any issues for rectification.	An OAAR will be completed within one (1) month of the end of each year to document: • Planting/seedling events, • Watering schedule, • Implemented corrective actions, • Success/failure rates within initial maintenance period/watering period until establishment. • Certificate of practical completion of planting works; • Certificate/sign off that establishment has been reached. OAARs will be included in the ACR. Milestone Reports prepared three (3) months after the completion of milestone surveys at Years	Offset Provider and suitably qualified bush regeneration contractor as appointed by the Offset Provider. Suitably qualified person as appointed by the Proponent.

Management action	Monitoring action(s)	Reporting action and timing	Responsible person(s) for activity/reporting
		5, 10, 15, and 20 of the offset and will be included in the ACR.	
6 – Fencing and signage	Status of fencing and signage and any issues requiring rectification will be identified through monthly site inspections to be determined by the Offset Provider.	Installation and maintenance of fencing will be reported in the Year 1 OAAR. Ongoing status of fencing/signage and any rectification works will be reported in OAARs for the relevant offset year and subsequently in the ACR for the project period.	Offset Provider



Insert 3: **Diagram of reporting requirements**

Table 83: Application of SMART Principles to Management Measures

Management Action	Specific	Measurable	Achievable	Relevant	Time-bound
Legal Securement	Legally protect MVOA under Voluntary Declaration	Declaration completed	Process supported by legislation	Meets EPBC offset requirement	Prior to commencement of the action
Weed Management	Target WONS using best practice methods (Lantana, Fireweed)	<5% cover by Year 10	Uses SEQ best practice restoration methods	Improves Koala & GHFF habitat	All weeds treated within 18 months
Pest Control	Control Wild Dogs, Cats, Foxes, Pigs	Zero evidence in monitoring	Nationally endorsed strategies	Reduces predation on Koalas	Ongoing from Year 1
Bushfire Management	Implement Bushfire Management Plan from qualified expert	Fuel load reduction will be documented	Plan aligns with QLD guidelines and industry standards	Protects offset vegetation	Annual review
Habitat Restoration	Assist natural regeneration & planting	Koala MHQA uplift to >7.5	Uses SEQ best practice restoration methods	Restores critical habitat	Progress reported in detail every 5 years
Fencing & Signage	Install & maintain exclusion fencing	Installation within 12 Repairs within 2 weeks	Standard fencing practices	Prevents livestock intrusion	Implemented year 1 & ongoing

9. Adaptive Management

Adaptive management processes for each management action are outlined in **Section 8**. An adaptive implementation program will be used to ensure uncertainty is reduced over time, and that completion criteria are attained and maintained for the life of the offset. As more information becomes available following ongoing performance monitoring, the management and monitoring regime will be reviewed and revised to maximise the likelihood of attaining and maintaining the outcomes to be achieved by implementing the OMP. Any updates to the Offset Management Plan which do not result in a material change to the environmental outcomes, performance and completion criteria will be made by the Offset Provider and/or The Proponent without the requirement of approval from DCCEEW (however a copy of OMP changes will be sent to DCCEEW for record keeping).

Adaptive management will be used to incorporate changes in any of the following areas:

1. Assimilation of new data or information - such as, updates to conservation advice or new threat abatement plans relevant to the Koala and GHFF.
2. Project coordination and scheduling – to manage unforeseen disruptions to schedule such as inclement weather on contractor works for management actions and environmental consultant monitoring events.
3. Annual review of risks – to refresh the mitigation measures should new threats be identified or stochastic events such as unplanned fires or floods occur.
4. Annual review of management measure effectiveness – to increase the frequency or change the method of management actions where monitoring performance criteria are not met.
5. Contingency for unplanned incidents – such as stochastic events including unplanned fires or floods.

An audit of OMP completed every five (5) years with consideration to the areas identified above and will be directed by the Offset Provider and an appointed suitably qualified person by the proponent.

9.2. Corrective Action Process

If performance targets or completion criteria outlined in **Table 84** are not achieved, or monitoring indicates they're unlikely to be achieved, in the specified timeframes corrective actions will be undertaken including the following information:

- Identification of performance targets and completion criteria not or unlikely to be achieved.
- A description of the proposed corrective action including identification of specific management measures to be altered, how they will be implemented and expected timeframes for the performance target or completion criteria to be achieved.
- Proposed monitoring and reporting regime to demonstrate the corrective action is achieving the specified outcomes. Initial monitoring and reporting must occur within 3 months of the correction action being implemented.
- If the target outcomes have not been achieved reporting must include response actions and ongoing monitoring requirements.

In the event of urgent or preventative corrective actions, for example increasing boundary buffers or removal of understorey vegetation in response to an intense bushfire in adjacent properties, actions will be implemented immediately at the direction of a suitably qualified expert with notification sent to DCCEEW as soon as practical but no more than 10 bd after the corrective actions is implemented. Initial monitoring and reporting of the outcomes of the urgent action will be provided within 3 months and include at a minimum the information outlined above.

9.3. Uncertainty

The plan identifies and manages uncertainty. To this end the plan specifies:

a) key data/information used to formulate the plan;

b) the limitations and/or uncertainty associated with the use of that data/information;

c) the risks that limitation and/or uncertainty represents for plan failure; and

d) how limitations and/or uncertainty, and associated risks, are mitigated during plan implementation. For example, where a margin of safety is applied to management measures until uncertainty is reduced to an acceptable level or performance targets/completion criteria are attained/maintained.

To identify and manage uncertainty, the OMP used regulatory and policy context to formulate the plan, listed below.

Regulatory and Policy Context

This document has been prepared taking into account the following technical guidelines and legislation:

- National Recovery Plan for the Koala Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DAWE 2022)
- The National Recovery Plan for the Grey-headed Flying-fox *Pteropus poliocephalus* (DAWE, 2021)
- *EPBC Act Survey guidelines for Australia's threatened bats* (Department of the Environment, Water, Heritage and the Arts, 2010);
- EPBC Act environmental offsets policy (Department of Sustainability, Environment, Water, Population and Communities, 2012);
- EPBC Act Environmental Management Plan Guidelines (DoEE, 2014)
- Policy Statement: Advanced environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999;
- *Vegetation Management Act 1999* (legally securing the offset through a Voluntary Declaration under Section 19F);
- *Queensland Environmental Offsets Act 2014*; and
- *Queensland Environmental Offsets Regulation 2014*.

9.4. Risk of Failure

The plan assesses the risk of failure to achieve the plan's performance targets and/or completion criteria. To this end the plan:

a) states the plan's performance targets and/or completion criteria;

b) identifies events or circumstances that prejudice attainment/maintenance of performance targets and/or completion criteria. The events or circumstances must address scientific/ecological uncertainty, stochastic events and legal/land use planning factors that may represent risks;

c) includes a qualitative assessment of the likelihood and consequence of those events or circumstances, and the residual risk of failure to achieve those criteria due to identified events or circumstances (assuming management measures will be implemented);

d) characterises risk as low, medium, high or severe, and derived from likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical); and

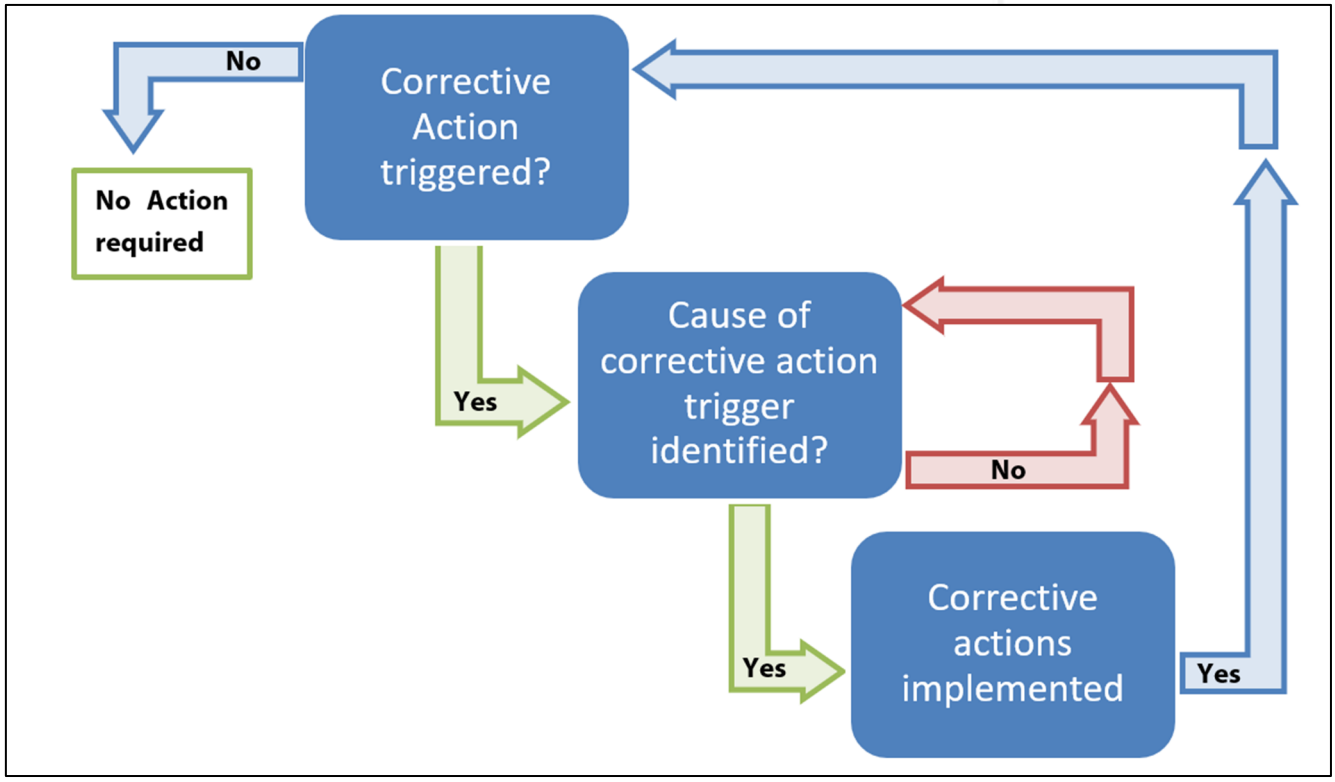
e) outlines how consequence, likelihood and risk level for each risk have been determined.

To identify the risk of failure, **Table 84** states the management action, completion criteria, corrective action triggers and corrective actions. In addition, a risk assessment has been completed in **Appendix E**.

9.4.1 Corrective Action Flowchart

Table 84 identifies corrective action triggers and actions however it is equally relevant to identify the cause of corrective action triggers in the adaptive management process. Identifying the cause of triggers allows suitable management actions to occur while also minimising the risk of repeat events. **Insert 2** broadly details the process of corrective action trigger through to corrective actions occurring.

To ensure suitable corrective actions are implemented, it is necessary for the cause of the corrective action trigger to be identified. Only when the cause is identified can suitable management take place.



Insert 2: Corrective actions flowchart

Table 84: Risk of failure table and corrective actions

Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
Legally secure the MVOA	The MVOA is legally secured via a Voluntary Declaration (VDEC) administered under the Vegetation Management Act 1999 (Qld). A covenant will be completed under either Chapter 6 Part 4 Division 8A of the Land Act 1994 (Qld) or Part 6 Division 4A of the Land Titles Act 1994 (Qld). If a covenant is not possible an alternative legally binding mechanism will be implemented in consultation with DCCEEW. The Department is notified of the legal securement within 5 business days of commencing the implementation of the OMP *i.e.,* the date from which the MVOA is legally secured. The MVOA is not used for other purposes – site access is restricted.	MVOA is not legally secured.	Administrative issues or timings	The MVOA is legally secured prior to commencement of the action. Covenant to be registered within 12 months of commencing the action. If a covenant is not possible alternative options will be discussed with DCCEEW.
Non-Native Vertebrate Pest Management	PMP implemented for the 20-year period with all records and reporting provided in accordance with the OMP.	Pest management is not implemented in accordance with the PMP Monitoring actions and OAARs identify ongoing presence of predator pest species above the baseline levels.	The suitably qualified pest management contractor will investigate the cause of the corrective action trigger.	Where pest management is not being implemented in accordance with the PMP, corrective actions will occur within 3 months. These actions include supplementary control measures, such as increase frequency of control events and other management actions as recommended by suitably qualified pest contractor. Risk management, corrective actions and adaptive management are to be integrated as

Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
		Monitoring actions and OAARs detect an increase in non-native predators from the previous survey or relative to the baseline. Non-native predators, are recorded within the MVOA.		required throughout the offset management period in response to changes or natural events. If key milestones and performance criteria is not achieved by the timeframes outlined, the corrective actions will continue until achieved, extending the management period.
WONS management	The management actions must reduce the extent of or maintain WONS weed cover below 5% of the MVOA by the end of Year 10 and be maintained for the life of the offset (20 years).	Weed cover has increased or remained constant relative to the previous monitoring event. The extent of weed cover has not been reduced as required to reach the environmental outcome as identified in the OAARs and Milestone Reports.	Investigate the cause of the correction actions being triggered. Example causes include: • Climatic conditions promoting weed spread • Adjacent land management practices • Weed spread from vehicle access or machinery Infrequent or unsuccessful weed management techniques	Weed control program will be expanded/adapted to improve outcomes within 3 months following a monitoring event where the weed extent has not decreased or been maintained. Risk management, corrective actions and adaptive management will be integrated as required throughout the offset management period in response to changes or natural events. If key milestones and performance criteria are not achieved by the timeframes outlined in **Table 64** to **Table 69** the corrective actions will continue until achieved, extending the management period.
Bushfire management	Reduced risk of high intensity fires in the MVOA. Vegetation composition and restoration regime is not negatively affected by prescribed fire regimes.	Bushfire management measures not implemented and/or a high intensity	Investigate the cause of the correction actions being triggered is to be completed. Example causes include: • Climatic conditions	Following annual monitoring of fuel loads, implement actions as directed by the local authority (example actions include prescribed burning undertaken in consultation with the Queensland Rural Fire Brigade) to manage fuel

Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
	Firebreaks and fuel loads are maintained through the life of the offset.	bushfire impacts the MVOA. Unexpected bushfire event and resurgence of weeds/decreased habitat. Inappropriate fire regime negatively impacts vegetation composition and restoration	• Accidental ignition by people or machinery • Bushfire management measures unsuitable	loads within 3 months or as soon as safe to implement. Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events. If evidence of vegetation composition decline because of inappropriate fire regimes is observed re-assessment of the Bushfire Management Plan will occur, and remedial works will occur within 3 months or when conditions are favourable. In the event of bushfire, undertake audit to inspect impacts within 2 weeks of the event (or as soon as it is considered safe to access) and identify if any MNES mortality or injury has occurred. The audit will identify the need for recovery actions including weed control and management and infill planting to ensure the habitat quality performance criteria are achieved within the management period. Any recovery actions will be commenced within 3 months following the audit or when weather conditions are favourable.
Habitat creation and regeneration management	Rehabilitated areas are established, regenerated and mapped as remnant vegetation under Queensland's VMA successor legislation by Year 20, which requires 70% of canopy height and 50% of expected cover according to the relevant Regional	Regeneration measures not implemented as proposed; Site Condition metrics do not improve according to proposed	Investigate the cause of the correction actions being triggered is to be completed. Example causes include: monitoring): • Climatic conditions	Appropriate rehabilitation techniques will be implemented in accordance with the rehabilitation plan (Appendix F) within 3 months of the MHQA survey intervals. Monitoring will be undertaken monthly until establishment by the Offset Provider or appointed suitably qualified regeneration contractor after planting in accordance with

Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
	Ecosystem benchmark to be reached. Site Condition metrics for Koala and GHFF improves in accordance with environmental outcomes (see **Table 64 to Table 69**	environmental outcomes. OAARs indicate that the rate of plant stock failure is greater than 10%. Habitat does not achieve performance criteria as identified in Milestone Reports within the management period, implement corrective actions.	• Unsuitable methods of habitat creation or regeneration • Infrequent or insufficient monitoring/maintenance	watering schedules (depending on rainfall) of infill planting and supplementary direct seeding, planting, weed control, fertilizer, amelioration or other management actions will be implemented as required to enhance success rate and stimulate tree growth and establishment. Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events. The management period will be extended to ensure environmental outcomes are able to be achieved if required.
Fencing and Signage	Mortalities or injury to Koala or GHFF recorded as a result of fauna friendly barbed-wire fencing is rectified within 2 weeks of being recorded. Stock breaches or unauthorised access is rectified as soon as possible once the breach has been identified.	Fencing or signage not installed or retrofitted as proposed causing Koala injury, stock breaches, or other unauthorised access.	Investigate the cause of the correction actions being triggered is to be completed, i.e. continued stock breaches will require additional management actions • Fencing type or extent not suitable • Illegal access	Monitoring of fencing will be undertaken monthly by the Offset Provider to identity damaged fencing or Koala/GHFF mortalities as a result of fencing. Cattle or other stock animals are to be removed from active rehabilitation areas as soon as possible once a breach has been identified and excluded from the area until repairs occur. Any damaged fencing is repaired within two weeks of being recorded if possible (i.e weather conditions suitable).
Stochastic or nuisance events	While such events (e.g. fire, flood, drought, vandalism etc) are rare and can be managed by the contractor,	Evidence of damage to revegetation plantings and/or fencing as a result of	Investigate the cause of the correction actions being triggered is to be completed.	Inspection of the MVOA will occur within a month of the extreme weather event (if safe to do so) to assess plant stock and fencing.

Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
	where events take place, restoration works are to replace losses and reporting to the DCCEEW is required	extreme weather events, natural disaster or vandalism.	• Cause internal or external to offset site	Implement supplementary planting and revegetation measures within 3 months of extreme weather events. Repair any fencing damage within 3 months of extreme weather event. Evidence of impacts and rectification measures are to be issued to the DCCEEW within 3 months.

9.5. Climate Change

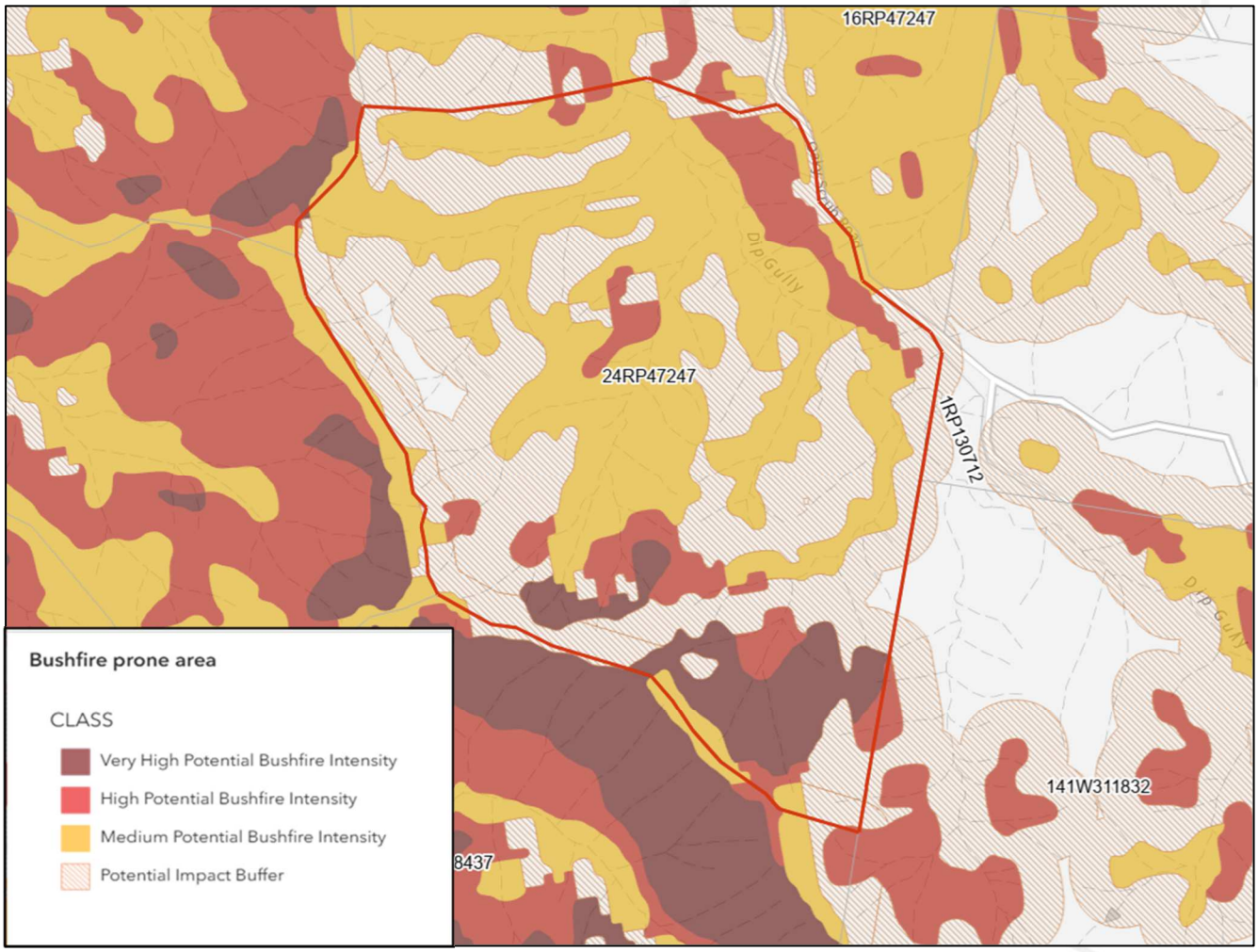
In addition to the risk of failure, corrective actions and triggers of the key management actions detailed in **Table 84**, the risk Climate Change imposes on the MVOA has been included in this section and includes the following:

Wildfire

The offset land retains little vegetation, however, its proximity to surrounding vegetation increases the risk of wildfire on the site, and as such, it is reflected as medium to high-risk fuel loads for wildfire in State Government Mapping (**Insert 4**). A review of QGlobe fire scar mapping overlay indicates the northern portion of the MVOA was exposed to wildfire in 2024, 2021, and 2020. The offset land retains vegetation through gully lines, interspersed with open paddock and includes a minimal system of boundary line firebreaks and access tracks for the protection of stock and farming infrastructure. This fire management system will be evolved and maintained as parts of the site transfer from open pasture to revegetation as specific Offset Works are sequentially completed.

Wildfire Management Actions:

- Maintain the existing bushfire breaks between adjacent land holders and access tracks through and around areas of mature and regrowth vegetation.
- Establish new tracks and fire breaks as necessary as part of the increased vegetation cover created through revegetation and rehabilitation.
- Establish an MVOA Wildfire Management Plan which caters for excessive dry periods and/or high-risk build-up of wildfire fuel loads. If necessary, undertake mosaic understory low intensity back burning exercises to reduce fuel load risks.
- Work with local Qld Rural Fire Brigade, Scenic Rim Regional Council representatives and adjoining landowners to minimise wildfire risks at the regional scale.
- Consider insurance for plant stock replacements.



Insert 4: Queensland Government State Panning – Natural Hazard Risk and Resilience Mapping

Flooding

The local township of Rathdowney and surrounding creek and river catchments are known to periodically flood. However, the MVOA retains only small drainage lines. As such, no flooding overlay is mapped within the MVOA with flooding associated with Dip Gully to the east. As the entirety of the offset is outside of potential flood prone areas, the potential flood risk is considered low.

Flooding Management Actions

- Include stabilization matting, tree stakes, etc for plantings within higher risk zones of erosion from rising flood waters or fast movement channel or embankment flows, such as within gully lines.

Drought

According to the nearest Bureau of Meteorology rainfall Station (040754), the MVOA received significantly lower annual rainfall in 2019, a total 236 mm, well below the annual average of 781.3 mm. This suggests the region can be severely impacted by drought. However, rainfall data to August for 2025, at 757 mm, is already near the total average annual rainfall.

Climate Change Adaptation Strategies for the Koala prepared by Christine Adams-Hosking concluded that the highest probability of Koala presence occurred at a mean annual rainfall of 700 mm (Adams-Hosking, et al, 2011). Therefore, despite unprecedented drought conditions, the offset site has maintained an average annual rainfall amount >700 mm, similar to the optimal range to support Koala presences.

Preparation and management will still be key in maintaining resilience and habitat value long-term as extreme weather conditions become more frequent.

Drought Management Actions:

- Ensure offset design includes replanting and connection to higher moisture content soils associated with alluvial and riparian areas of the broader site.
- Maintain existing drainage features in offset rehabilitation works and as water sources for native animals.

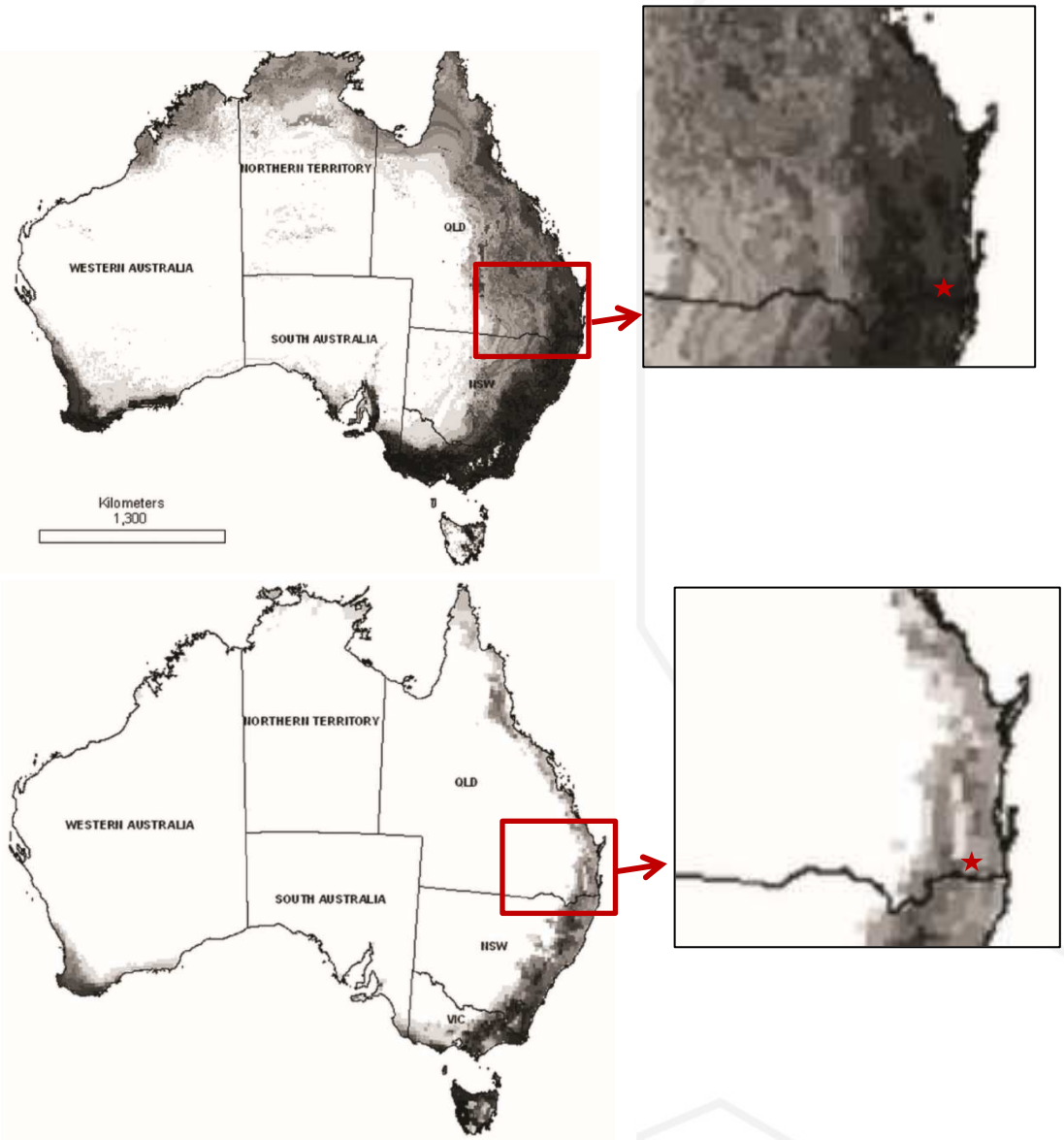
Climate Factors - Shifting Habitat Range

Several contemporary case studies and research papers have investigated the impact of combined climate change weather characteristics on the current and future distribution of suitable Koala habitat. Koalas are particularly affected by changing and/or extreme climate conditions as they have a low tolerance for environmental change and are already threatened by a variety of anthropogenic factors such as increased disease, vehicle strike, and habitat destruction and fragmentation. The high mobility of Grey-headed Flying-fox allows a higher level of adaptability, but both species and their habitat have been recently affected at a national level by the 2019-2020 bushfires. As such, large-scale extreme weather events as well as continuous shifts in weather patterns may alter the distribution of these species.

The Climate Change Adaptation Strategies for the Koala by Christine Adams-Hosking applied climate change distribution models for the Koala and five of its essential food trees to a conservation prioritisation framework ('Zonation') to determine which Queensland local government areas (LGAs) were the highest priority for Koala conservation and adaptation. The study included current (2011) and predicted (2070) Koala habitat distribution which showed a substantial eastward migration. The study further concludes that:

"*The highest probability of Koala presence occurred at a mean maximum summer temperature of approximately 27°C and a mean annual rainfall of approximately 700 mm*" (Adams-Hosking, C., Grantham, H. S., Rhodes, J.R., McAlpine, C. and Patrick T. Moss (2011). Modelling climate-change-induced shifts in the distribution of the Koala. Wildlife Research, 38, 122–130)

As previously stated, average annual rainfall near the MVOA is 781 mm. Additionally, the land is also located within the current and 2070 Koala habitat distribution maps based on the A1F1 climate change scenario (Adams-Hosking, et al., 2011). Refer to **Insert 5** for estimated location of the Offset Site based on predicted changes in habitat distributions in 2070.



Insert 5: Modelled Habitat Distribution – Adams-Hosking, et al. 2011. *Top:* 2011 distribution. *Bottom:* predicted 2070 distribution. Darker shading indicates a higher probability of Koala occurrence. MVOA indicated by red star.

9.6. Limitations

Although an adaptive management plan will be implemented across the MVOA for life of the offset (20 years), potential limitations to achieving these include:

- Associated risks and uncertainty in predicting the occurrence and extent of natural disasters or extreme weather events, including drought and flooding.
- Uncertainty of the rate at which vegetation will re-establish.
- The ability of native fauna (i.e., Koala) to recognise and utilise the site.
- Uncertainty of future predator occurrence and the effectiveness of the pest management measures.
- Coordinated approaches between local governments and the MVOA holder to ensure effective implementation of management plans.

The implementation of adaptive management measures will ensure that identified limitations are avoided and/or the subsequent impacts are mitigated where possible. The implementation of the various described management actions along with continuous abundance monitoring will promote suitable habitat on site and encourage species utilisation.

Further, regular review of this Offset Management Plan inclusive of the management actions and monitoring methodologies detailed within it will assist in identifying areas for improvement, as well as identify successful methodologies. Whether management plans or on-site works have had success or required amendments will be assessed annually during the completion of the ACR.

To ensure correct assessment of the progress towards environmental outcomes and completion criteria, baseline surveys have been developed to be repeatable and comparable against the completion criteria. Surveys are to be repeated in the same manner and location throughout the management period to ensure a consistent approach and accurate representation of the conservation values within the MVOA.

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11. Appendices

Appendix A

Koala MHQA scores (Impact area)

GHFF FHA scores (Impact area)

Appendix B

Mount View Offset Area –

Koala MHQA scoring (Baseline)

GHFF HFA scoring (Baseline)

Appendix C

Mount View Offset Area

Raw MHQA and SAT data

Raw Weed Cover data

Appendix D

Offset Assessment Guide Calculator results

Appendix E

Risk Assessment

Appendix F

Rehabilitation Management Plan

Appendix A

Koala MHQA scores (Impact area)

GHFF FHA scores (Impact area)

Impact site – AU1 (Koala)

Assessment Unit - Regional Ecosystem	AU1 Cat X (RE12.9-10.2)					
	RE12.9-10.2 Benchmark	Transect 3	Transect 4	Average of transects	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	33	33	33.00	33.00	3
Native plant species richness - trees	6	4	5	4.50	75.00	2.5
Native plant species richness - shrubs	7	2	5	3.50	50.00	2.5
Native plant species richness - grasses	7	5	3	4.00	57.14	2.5
Native plant species richness - forbs	13	2	0	1.00	7.69	0
Tree canopy height (Canopy)*	21	18	18	18	85.71	5
Tree canopy height (Sub-canopy)*	12	13	12	12.5	104.1666667	5
					*Average tree canopy height	5
Tree canopy cover (Canopy)**	64	26.3	33.9	30.1	47.03	2
Tree canopy cover (Sub-canopy)**	20	36.6	16	26.30	131.50	5
					**Average tree canopy cover	3.5
Shrub canopy cover	6	6.5	9.7	8.10	135.00	5
Native grass cover*	21	74	62	68.00	323.81	5
Organic litter*	48	14	18	16.00	33.33	3
Large trees (euc plus non-euc) (per ha)	38	0	4	2.00	5.26	5
Coarse woody debris (per ha)	506	148	202	175.00	34.58	2
Non-native plant cover	0	45	35	40.00	40.00	3
Quality and availability of food and foraging habitat	NA			-	-	10
Quality and availability of shelter	NA			-	-	20
					Site Condition Score (/100)	62
					Overall Site Condition Score - out of 3	1.86
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					4
Context	5					4

Ecological Corridors	**6**					4
Role of site location to species overall population in the state	**5**					5
Threats to the species	**15**					7
Species mobility capacity	**10**					7
					Site Context Score (/56)	**41**
					Overall Site Context Score - out of 3	**2.20**
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	**70**					**40**
					Species Stocking Rate Score (/70)	**0.57**
					Overall Species Stocking Rate Score - out of 4	**2.29**
					Overall Assessment Unit Score	**6.34**

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10/10
Species usage of the site (habitat type and evidenced usage)	15/15
Approximate density (per ha)	10/30
Role/importance of species population on site*	5/15
Total Species Stocking Rate Score	40/70
Species Stocking Rate Score – out of 4	**2.29**

*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15	
Key source population for breeding	0/10
Key source population for dispersal	5/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

Impact site – AU2 (Koala)

Assessment Unit - Regional Ecosystem	AU2 Cat X (RE12.9-10.7)					
	RE12.9-10.7 Benchmark	Transect 1	Transect 2	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	100	100.00	100	5
Native plant species richness - trees	3	5	7	6.00	200.00	5
Native plant species richness - shrubs	5	4	5	4.50	90.00	2.5
Native plant species richness - grasses	8	6	4	5.00	62.50	2.5
Native plant species richness - forbs	26	2	4	3.00	11.54	0
Tree canopy height (Canopy)*	21	24	19	21.50	102.38	5
Tree canopy height (Sub-canopy)*	10	8	10	9.00	90.00	5
					*Average tree canopy height	5
Tree canopy cover (Canopy)**	40	17.8	6.4	12.10	30.25	2
Tree canopy cover (Sub-canopy)**	8	14.6	45.5	30.05	375.63	3
					**Average tree canopy cover	2.5
Shrub canopy cover	3	10.6	5.9	8.25	275.00	3
Native grass cover*	61	20	5	12.50	20.49	1
Organic litter*	20	5	12	8.50	42.50	3
Large trees (euc plus non-euc) (per ha)	18	4	4	4.00	22.22	5
Coarse woody debris (per ha)	272	27	256	141.50	52.02	5
Non-native plant cover	0	80	80	80.00	80.00	0
Quality and availability of food and foraging habitat	N/A			5	-	5
Quality and availability of shelter	N/A			5	-	5
					Site Condition Score (/100)	49.5
					Overall Site Condition Score - out of 3	1.49
SITE CONTEXT						
Size of patch	10			10		10
Connectedness	5			4		4
Context	5			4		4

Ecological Corridors	**6**			4		4
Role of site location to species overall population in the state	**5**			5		5
Threats to the species	**15**			7		7
Species mobility capacity	**10**			7		7
					Site Context Score (/56)	**41**
					Overall Site Context Score - out of 3	**2.20**
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	**70**					**40**
					Species Stocking Rate Score (/70)	**0.57**
					Overall Species Stocking Rate Score - out of 4	**2.29**
					Overall Assessment Unit Score	**5.97**

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10/10
Species usage of the site (habitat type and evidenced usage)	15/15
Approximate density (per ha)	10/30
Role/importance of species population on site*	5/15
Total Species Stocking Rate Score	40/70
Species Stocking Rate Score – out of 4	**2.29**

*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15	
Key source population for breeding	0/10
Key source population for dispersal	5/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

Impact site – AU3 (Koala)

Assessment Unit - Regional Ecosystem	AU3 - Cleared areas					
	RE12.9-10.7 Benchmark	Transect 5	Transect 6	Average of transects	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	0	100	50	50	3
Native plant species richness - trees	3	0	2	1	33.33333333	2.5
Native plant species richness - shrubs	5	4	2	3	60	2.5
Native plant species richness - grasses	8	2	3	2.5	31.25	2.5
Native plant species richness - forbs	26	3	0	1.5	5.769230769	0
Tree canopy height (Canopy)*	21	0	0	0	0	0
Tree canopy height (Sub-canopy)*	10	4	4	4	40	3
					*Average tree canopy height	1.5
Tree canopy cover (Canopy)**	40	0	0	0	0.00	0
Tree canopy cover (Sub-canopy)**	8	0	0	0	0.00	0
					**Average tree canopy cover	0
Shrub canopy cover	3	14	17.6	15.8	526.67	3
Native grass cover*	61	29	17	23	37.70	1
Organic litter*	20	48	10	29	145.00	5
Large trees (euc plus non-euc) (per ha)	18	0	0	0	0.00	0
Coarse woody debris (per ha)	272	0	0	0	0.00	0
Non-native plant cover	0	35	5	20	20.00	5
Quality and availability of food and foraging habitat	NA			1	-	1
Quality and availability of shelter	NA			1	-	1
					Site Condition Score (/100)	28
					Overall Site Condition Score - out of 3	0.84
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					4
Context	5					4

Ecological Corridors	**6**					4
Role of site location to species overall population in the state	**5**					5
Threats to the species	**15**					7
Species mobility capacity	**10**					7
					Site Context Score (/56)	**41**
					Overall Site Context Score - out of 3	**2.20**
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	**70**					**30**
					Species Stocking Rate Score (/70)	**0.43**
					Overall Species Stocking Rate Score - out of 4	**1.71**
					Overall Assessment Unit Score	**4.75**

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10/10
Species usage of the site (habitat type and evidenced usage)	5/15
Approximate density (per ha)	10/30
Role/importance of species population on site*	5/15
Total Species Stocking Rate Score	30/70
Species Stocking Rate Score – out of 4	**1.71**

*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15	
Key source population for breeding	0/10
Key source population for dispersal	5/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

Impact Site – AU1 (GHFF)

Assessment Unit - Regional Ecosystem	AU 1 - RE12.9-10.2				
Site Reference	Transect 3	Transect 4	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	5.0	5.0	5.00	5	20
Species Richness	4.0	4.0	4.00	10	20
Flower Score	0.581	0.548	0.5645	8	10
Timing of Biological Shortages	10	10	10.00	10	10
Quality of Foraging Habitat	3	2	2.50	5	20
Non-native Plant Cover	45.00	35.00	40.00	5	20
Site Condition Score				43	X
MAX Site Condition Score				100	X
Site Condition Score - out of 4				1.72	X
Size of patch	10	10	10	10	10
Connectedness	6	6	6	6	10
Context	6	6	6	6	10
Ecological Corridors	6	6	6	6	10
Role of site location to species overall population in the state	6	6	6	6	10
Threats to the species	10	10	10	10	10
Site Context Score				44	X
MAX Site Context Score				60	X
Site Context Score - out of 3				2.20	X
GHFF Foraging Tree Density - Recorded	69	47	58.00		
GHFF Foraging Tree Density - per hectare	345	235	290.00	6	10
Species Stocking Rate Score				6	X
MAX Species Stocking Rate Score				10	X
Species Stocking Rate Score - out of 3				1.80	X
Total				5.72	

Impact Site – AU2 (GHFF)

Assessment Unit - Regional Ecosystem	AU 2 - RE12.9-10.7				
Site Reference	Transect 1	Transect 2	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	5.0	5.0	5.00	5	20
Species Richness	4.0	5.0	4.50	10	20
Flower Score	0.634	0.605	0.6195	8	10
Timing of Biological Shortages	10	10	10.00	10	10
Quality of Foraging Habitat	3	3	3.00	5	20
Non-native Plant Cover	80.00	80.00	80.00	1	20
Site Condition Score				39	*X*
MAX Site Condition Score				*100*	*X*
Site Condition Score - out of 4				1.56	*X*
Size of patch	10	10	10	10	10
Connectedness	6	6	6	6	10
Context	6	6	6	6	10
Ecological Corridors	6	6	6	6	10
Role of site location to species overall population in the state	6	6	6	6	10
Threats to the species	10	10	10	10	10
Site Context Score				44	*X*
MAX Site Context Score				*60*	*X*
Site Context Score - out of 3				2.20	*X*
GHFF Foraging Tree Density - Recorded	25	39	32.00		
GHFF Foraging Tree Density - per hectare	125	195	160.00	4	10
Species Stocking Rate Score				*4*	*X*
MAX Species Stocking Rate Score				*10*	*X*
Species Stocking Rate Score - out of 3				1.20	*X*
Total				4.96	

Appendix B

Mount View Offset Area – Koala MHQA scoring (Baseline) GHFF HFA scoring (Baseline)

MVOA – AU1 (Koala baseline)

Assessment Unit - Regional Ecosystem	AU 1 - Regrowth (RE12.8.17)					
	RE12.8.17 Benchmark	Transect 1	Transect 5	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	80	90	90	5
Native plant species richness - trees	7	4	5	4.5	64.29	2.5
Native plant species richness - shrubs	5	5	2	3.5	70.00	2.5
Native plant species richness - grasses	12	3	3	3	25.00	2.5
Native plant species richness - forbs	27	4	5	4.5	16.67	0
Tree canopy height (Canopy)*	19	16	17	16.5	86.84	5
Tree canopy height (Sub-canopy)*	10	5	8	6.5	65.00	3
					*Average tree canopy height	4
Tree canopy cover (Canopy)**	48	7.6	49.1	28.35	59.06	5
Tree canopy cover (Sub-canopy)**	20	8.48	3.6	6.04	30.20	2
					**Average tree canopy cover	3.5
Shrub canopy cover	5	2.2	0	1.1	22.00	3
Native grass cover*	32	54	51	52.5	164.06	5
Organic litter*	21	0	29	14.5	69.05	5
Large trees (euc plus non-euc) (per ha)	24	6	4	5	20.83	5
Coarse woody debris (per ha)	234	0	375	187.5	80.13	5
Non-native plant cover	0	20	45	32.5	32.50	3
Quality and availability of food and foraging habitat	NA	NA	NA	5	-	5
Quality and availability of shelter	NA	NA	NA	5	-	1
					Site Condition Score (/100)	52
					Overall Site Condition Score - out of 3	1.56
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					2
Context	5					4

Ecological Corridors	6					6
Role of site location to species overall population in the state	5					5
Threats to the species	15					7
Species mobility capacity	10					10
					Site Context Score (/56)	44
					Overall Site Context Score - out of 3	2.36
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	70					20
					Species Stocking Rate Score (/70)	20.00
					Overall Species Stocking Rate Score - out of 4	1.14
Overall Assessment Unit Score						5.06

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	5/10
Species usage of the site (habitat type and evidenced usage)	15/15
Approximate density (per ha)	0/30
Role/importance of species population on site*	0/15
Total Species Stocking Rate Score	20/70
Species Stocking Rate Score – out of 4	**1.14**

*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15	
Key source population for breeding	0/10
Key source population for dispersal	0/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

MVOA – AU2 (Koala baseline)

Assessment Unit - Regional Ecosystem	AU 2 - Remnant (RE12.8.17)					
	RE12.8.17 Benchmark	Transect 2	Transect 6	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	50	75	75	3
Native plant species richness - trees	7	4	9	6.5	92.86	5
Native plant species richness - shrubs	5	2	1	1.5	30.00	2.5
Native plant species richness - grasses	12	3	2	2.5	20.83	0
Native plant species richness - forbs	27	7	2	4.5	16.67	0
Tree canopy height (Canopy)*	19	12	17	14.5	76.32	5
Tree canopy height (Sub-canopy)*	10	7	7	7	70.00	3
					*Average tree canopy height	4
Tree canopy cover (Canopy)**	48	15.3	44.8	30.05	62.60	5
Tree canopy cover (Sub-canopy)**	20	16.1	6.1	11.1	55.50	5
					**Average tree canopy cover	5
Shrub canopy cover	5	0	0	0	0.00	0
Native grass cover*	32	18	33	25.5	79.69	3
Organic litter*	21	0	18	9	42.86	3
Large trees (euc plus non-euc) (per ha)	38	4	12	8	21.05	5
Coarse woody debris (per ha)	234	65	130	97.5	41.67	2
Non-native plant cover	0	65	35	50	50.00	3
Quality and availability of food and foraging habitat	NA	NA	NA	5	-	5
Quality and availability of shelter	NA	NA	NA	5	-	5
					Site Condition Score (/100)	45.5
					Overall Site Condition Score - out of 3	1.37
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					2
Context	5					4

Ecological Corridors	**6**					**6**
Role of site location to species overall population in the state	**5**					**5**
Threats to the species	**15**					**7**
Species mobility capacity	**10**					**10**
					Site Context Score (/56)	**44**
					Overall Site Context Score - out of 3	**2.36**
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	**70**					**20**
					Species Stocking Rate Score (/70)	**20.00**
					Overall Species Stocking Rate Score - out of 4	**1.14**
Overall Assessment Unit Score						**4.87**

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	5/10
Species usage of the site (habitat type and evidenced usage)	15/15
Approximate density (per ha)	0/30
Role/importance of species population on site*	0/15
Total Species Stocking Rate Score	20/70
Species Stocking Rate Score – out of 4	**1.14**

*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15	
Key source population for breeding	0/10
Key source population for dispersal	0/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

MVOA – AU3 (Koala baseline)

Assessment Unit - Regional Ecosystem	AU 3 - Cleared Paddocks					
	RE12.8.17 Benchmark	Transect 3	Transect 4	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	0	0	0	0	0
Native plant species richness - trees	7	1	3	2	28.57	2.5
Native plant species richness - shrubs	5	2	1	1.5	30.00	2.5
Native plant species richness - grasses	12	1	2	1.5	12.50	0
Native plant species richness - forbs	27	1	1	1	3.70	0
Tree canopy height (Canopy)*	19	0	13	6.5	34.21	3
Tree canopy height (Sub-canopy)*	10	3	3	3	30.00	3
					*Average tree canopy height	3
Tree canopy cover (Canopy)**	48	0	4.8	2.4	5.00	0
Tree canopy cover (Sub-canopy)**	20	0	1.1	0.55	2.75	0
					**Average tree canopy cover	0
Shrub canopy cover	5	1.8	1	1.4	28.00	3
Native grass cover*	32	62	88	75	234.38	5
Organic litter*	21	0	0	0	0.00	0
Large trees (euc plus non-euc) (per ha)	38	0	2	1	2.63	5
Coarse woody debris (per ha)	234	20	0	10	4.27	0
Non-native plant cover	0	20	10	15	15.00	5
Quality and availability of food and foraging habitat	NA	NA	NA	1	-	1
Quality and availability of shelter	NA	NA	NA	1	-	1
					Site Condition Score (/100)	28
					Overall Site Condition Score - out of 3	0.84
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					2
Context	5					4

Ecological Corridors	6					6
Role of site location to species overall population in the state	5					5
Threats to the species	15					7
Species mobility capacity	10					10
					Site Context Score (/56)	44
					Overall Site Context Score - out of 3	2.36
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	70					10
					Species Stocking Rate Score (/70)	10.00
					Overall Species Stocking Rate Score - out of 4	0.57
Overall Assessment Unit Score						3.77

Species Stocking Rate Table	
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	5/10
Species usage of the site (habitat type and evidenced usage)	5/15
Approximate density (per ha)	0/30
Role/importance of species population on site*	0/15
Total Species Stocking Rate Score	10/70
Species Stocking Rate Score – out of 4	**0.57**

*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15	
Key source population for breeding	0/10
Key source population for dispersal	0/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

MVOA – AU1 (GHFF baseline)

Assessment Unit - Regional Ecosystem	AU 1 regrowth - RE12.8.17				
Site Reference	Transect 1	Transect 5	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	10.0	10.0	10.00	**10**	**20**
Species Richness	4.0	5.0	4.50	**10**	**20**
Flower Score	0.634	0.563	0.5985	**8**	**10**
Timing of Biological Shortages	10	10	10.00	**10**	**10**
Quality of Foraging Habitat	3	3	3.00	**5**	**20**
Non-native Plant Cover	20.00	45.00	32.50	**5**	**20**
Site Condition Score				**48**	***X***
MAX Site Condition Score				***100***	***X***
Site Condition Score - out of 4				**1.92**	***X***
Size of patch	10	10	**10**	**10**	**10**
Connectedness	3	3	**3**	**3**	**10**
Context	3	3	**3**	**3**	**10**
Ecological Corridors	10	10	**10**	**10**	**10**
Role of site location to species overall population in the state	6	6	**6**	**6**	**10**
Threats to the species	5	5	**5**	**5**	**10**
Site Context Score				**37**	***X***
MAX Site Context Score				***60***	***X***
Site Context Score - out of 3				**1.85**	***X***
GHFF Foraging Tree Density - Recorded	12	33	**22.50**		
GHFF Foraging Tree Density - per hectare	60	165	**112.50**	**4**	**10**
Species Stocking Rate Score				***4***	***X***
MAX Species Stocking Rate Score				***10***	***X***
Species Stocking Rate Score - out of 3				**1.20**	***X***
Total				**4.97**	

MVOA – AU2 (GHFF baseline)

Assessment Unit - Regional Ecosystem	AU 2 remnant - RE12.8.17				
Site Reference	Transect 2	Transect 6	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	20.0	20.0	20.00	**20**	**20**
Species Richness	3.0	6.0	4.50	**10**	**20**
Flower Score	0.588	0.578	0.5830	**8**	**10**
Timing of Biological Shortages	10	10	10.00	**10**	**10**
Quality of Foraging Habitat	2	3	2.50	**5**	**20**
Non-native Plant Cover	65.00	35.00	50.00	**5**	**20**
Site Condition Score				**58**	***X***
MAX Site Condition Score				***100***	***X***
Site Condition Score - out of 4				**2.32**	***X***
Size of patch	10	10	**10**	**10**	**10**
Connectedness	3	3	**3**	**3**	**10**
Context	3	3	**3**	**3**	**10**
Ecological Corridors	10	10	**10**	**10**	**10**
Role of site location to species overall population in the state	6	6	**6**	**6**	**10**
Threats to the species	5	5	**5**	**5**	**10**
Site Context Score				**37**	***X***
MAX Site Context Score				***60***	***X***
Site Context Score - out of 3				**1.85**	***X***
GHFF Foraging Tree Density - Recorded	17	21	**19.00**		
GHFF Foraging Tree Density - per hectare	85	105	**95.00**	**4**	**10**
Species Stocking Rate Score				***4***	***X***
MAX Species Stocking Rate Score				***10***	***X***
Species Stocking Rate Score - out of 3				**1.20**	***X***
Total				**5.37**	

MVOA – AU3 (GHFF baseline)

Assessment Unit - Regional Ecosystem	AU 3 Cleared areas				
Site Reference	Transect 3	Transect 4	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	5.0	5.0	5.00	**5**	**20**
Species Richness	1.0	3.0	2.00	**5**	**20**
Flower Score	0.400	0.558	0.4790	**5**	**10**
Timing of Biological Shortages	4.5	10	7.25	**7.25**	**10**
Quality of Foraging Habitat	0	2	1.00	**5**	**20**
Non-native Plant Cover	20.00	10.00	15.00	**10**	**20**
Site Condition Score				**37.25**	***X***
MAX Site Condition Score				***100***	***X***
Site Condition Score - out of 4				**1.49**	***X***
Size of patch	10	10	10	10	**10**
Connectedness	3	3	3	3	**10**
Context	3	3	3	3	**10**
Ecological Corridors	10	10	10	10	**10**
Role of site location to species overall population in the state	6	6	6	6	**10**
Threats to the species	5	5	5	5	**10**
Site Context Score				**37**	***X***
MAX Site Context Score				***60***	***X***
Site Context Score - out of 3				**1.85**	***X***
GHFF Foraging Tree Density - Recorded	1	3	**2.00**		
GHFF Foraging Tree Density - per hectare	5	15	**10.00**	**2**	**10**
Species Stocking Rate Score				***2***	***X***
MAX Species Stocking Rate Score				***10***	***X***
Species Stocking Rate Score - out of 3				**0.60**	***X***
Total				**3.94**	

Appendix C

Mount View Offset Area Raw MHQA and SAT data Raw Weed Cover data

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	1	Job Number / Property	12186 - offset

Part B - Site Data

Recorders	LB/TM	Date	8/07/2025

Assessment Unit:	Assessment Unit Area (ha)	Mapped RE	Confirmed RE	Biocondition Number
na		12.8.17		

Site description and Location (including details of discrete polygons within the assessment unit)
Cat C. RE12.8.17 Scattered mature *Eucalyptus crebra.* Regrowth *Eucalyptus tereticornis* and *Corymbia tesselaris.* North facing slope, low -moderate weeds. Dense weeds present in the gully.

Part C - Median Tree Heights and Regeneration

Median Tree Canopy Height Measurements	Canopy:	16	Sub-canopy:	5	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	100

Part D - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	4			EDL / Dom / R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark	Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	Dom / R
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	Dom / R
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood	Dom / R
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	5		
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum
Scientific Name	*Acacia melanoxylon*	Common Name	Australian Blackwood
Scientific Name	*Alphitonia excelsa*	Common Name	Soap Tree
Scientific Name	*Acacia salicina*	Common Name	Sally Wattle
Scientific Name		Common Name	

Grass species richness:			
Total number of species	3		
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Speargrass
Scientific Name	*Panicum decompositum*	Common Name	Native Millet
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	4		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Lobelia purpurascens*	Common Name	White Root
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Lomandra multiflora*	Common Name	Many Flowered Mat Rush
Scientific Name		Common Name	

Part E - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	20.00%		
Scientific Name	*Senecio madagascariensis*	Common Name	Fireweed
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Heliotropium arborescens*	Common Name	Purple Heliotrope
Scientific Name	*Bidens pilosa*	Common Name	Cobbler's Pegs
Scientific Name	*Asclepias curassavica*	Common Name	Red-headed Cotton Bush
Scientific Name	*Onopordum acanthium*	Common Name	Scotch Thistle
Scientific Name	*Ambrosia artemisiifolia*	Common Name	Annual Ragweed
Scientific Name	*Sida rhombifolia*	Common Name	Common Sida
Scientific Name	*Conyza sumatrensis*	Common Name	Tall Fleabane
Scientific Name		Common Name	

Part F - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	7.6%	Sub-canopy:	8.48%	Emergent:	
Shrub canopy cover %	2.20%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	1.1	1.1	T2	22.4	24.0	1.6
T1	72.2	78.7	6.5	T2	25.0	26.2	1.2
T1			0.0	T2	63.3	64.0	0.7

T1			0.0	**T2**	81.0	83.9	2.9
T1			0.0	**T2**	96.0	98.1	2.1
T1			0.0	**T2**			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	5.4	6.9	1.5	**Shrub**			0.0
Shrub	7.1	7.5	0.4	**Shrub**			0.0
Shrub	59.3	59.6	0.3	**Shrub**			0.0
Shrub			0.0	**Shrub**			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part G: GHFF Stem Count

Species Name	Stem Count
Eucalyptus tereticornis	9
Corymbia tessellaris	1
Eucalyptus crebra	1
Corymbia intermedia	1

Part H - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	0.00		
1		**16**	
2		**17**	
3		**18**	
4		**19**	
5		**20**	
6		**21**	
7		**22**	
8		**23**	
9		**24**	
10		**25**	
11		**26**	
12		**27**	
13		**28**	
14		**29**	
15		**30**	

Part I - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	55%	60%	30%	50%	75%	54%
Native other grass						
Native forbs and other species						
Native shrubs						
Non-native grass	20%	20%	60%	40%	20%	32%
Non native forbs and shrubs	20%	15%	10%	10%	5%	12%
Litter						
Rock						
Bare Ground	5%	5%	0%	0%	0%	2%
Cryptogram						
Total	100%	100%	100%	100%	100%	100%

Part J- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	**Number of large eucalypt trees:**	3
Non- Eucalypt Large tree DBH benchmark used:	NA	**Number of large non eucalypt trees:**	0
Total number of large trees recorded:	3		
Total Number Large Trees per ha:	6		

Part K: SAT Survey Results

SAT Survey ID	NA			
Tree Number	**Scientific Name**	**Common Name**	**DBH**	**Scat (Y/N)**
1	*Eucalyptus tereticornis*	Forest Red Gum	150	N
2	*Eucalyptus tereticornis*	Forest Red Gum	100	N
3	*Eucalyptus tereticornis*	Forest Red Gum	100	N
4	*Corymbia intermedia*	Pink Bloodwood	130	N
5	*Corymbia intermedia*	Pink Bloodwood	140	N
6	*Corymbia intermedia*	Pink Bloodwood	150	N
7	*Eucalyptus tereticornis*	Forest Red Gum	110	N
8	*Eucalyptus crebra*	Narrow-leaved Ironbark	360	N
9	*Eucalyptus tereticornis*	Forest Red Gum	100	N
10	*Corymbia intermedia*	Pink Bloodwood	140	N

11	*Eucalyptus tereticornis*	Forest Red Gum	100	N
12	*Eucalyptus crebra*	Narrow-leaved Ironbark	606	N
13	*Eucalyptus tereticornis*	Forest Red Gum	200	N
14	*Corymbia tessellaris*	Moreton Bay Ash	106	N
15	*Eucalyptus tereticornis*	Forest Red Gum	150	N
16	*Eucalyptus tereticornis*	Forest Red Gum	110	N
17	*Corymbia intermedia*	Pink Bloodwood	110	N
18	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	N
19	*Eucalyptus tereticornis*	Forest Red Gum	120	N
20	*Eucalyptus tereticornis*	Forest Red Gum	110	N
21	*Corymbia tessellaris*	Moreton Bay Ash	100	N
22	*Eucalyptus tereticornis*	Forest Red Gum	100	N
23	*Eucalyptus tereticornis*	Forest Red Gum	150	N
24	*Eucalyptus tereticornis*	Forest Red Gum	130	N
25	*Eucalyptus tereticornis*	Forest Red Gum	150	N
26	*Angophora subvelutina*	Broad-leaved Apple	130	N
27	*Eucalyptus moluccana*	Gum-topped Box	100	N
28	*Corymbia tessellaris*	Moreton Bay Ash	100	N
29	*Corymbia tessellaris*	Moreton Bay Ash	100	N
30	*Angophora subvelutina*	Broad-leaved Apple	100	N
Total				0

Attach Landscape Photos Here

North



South





East



West





Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	2	Job Number / Property	12186 - offset

Part B - Site Data

Recorders	LB/TM	Date	8/07/2025

Assessment Unit:	Assessment Unit Area (ha)	Mapped RE	Confirmed RE	Biocondition Number
na		12.8.17		

Site description and Location (including details of discrete polygons within the assessment unit)
Mapped remnant 12.8.17. Very steep and high disturbance. *Eucalyptus crebra* and *Eucalyptus tereticornis* dominated

Part C - Median Tree Heights and Regeneration

Median Tree Canopy Height Measurements	Canopy:	12	Sub-canopy:	7	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	100

Part D - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	4			EDL / Dom / R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark	Dom / R
Scientific Name	*Allocasuarina littoralis*	Common Name	Black She-oak	Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	Dom / R
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	Dom / R
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	2		
Scientific Name	*Allocasuarina littoralis*	Common Name	Black She-oak
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash
Scientific Name		Common Name	

Grass species richness:			
Total number of species	3		
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Heteropogon contortus*	Common Name	Black Speargrass
Scientific Name	*Panicum decompositum*	Common Name	Native Millet
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	7		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Dianella caerulea*	Common Name	Blue Flax-lily
Scientific Name	*Cheilanthes distans*	Common Name	Bristle Cloak Fern
Scientific Name	*Lomandra multiflora*	Common Name	Many Flowered Mat Rush
Scientific Name	*Lobelia purpurascens*	Common Name	White Root
Scientific Name	*Glycine tabacina*	Common Name	Variable Glycine
Scientific Name	*Geitonoplesium cymosum*	Common Name	Scrambling Lily
Scientific Name		Common Name	

Part E - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	65.00%		
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Onopordum acanthium*	Common Name	Scotch Thistle
Scientific Name	*Bidens pilosa*	Common Name	Cobbler's Pegs
Scientific Name	*Senecio madagascariensis*	Common Name	Fireweed
Scientific Name	*Desmodium uncinatum*	Common Name	Silver-leaf Desmodium
Scientific Name	*Neonotonia wightii*	Common Name	Green Glycine
Scientific Name	*Conyza sumatrensis*	Common Name	Tall Fleabane
Scientific Name		Common Name	

Part F - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	15.3%	Sub-canopy:	16.10%	Emergent:	
Shrub canopy cover %	0.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	9.6	11.7	2.1	T2	12.7	17.3	4.6
T1	30.6	39.6	9.0	T2	44.2	45.0	0.8
T1	57.7	60.2	2.5	T2	51.1	54.0	2.9
T1	98.3	100.0	1.7	T2	56.9	59.0	2.1
T1			0.0	T2	65.0	70.7	5.7
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part G: GHFF Stem Count

Species Name	Stem Count
Allocasuaraina littoralis	7
Eucalyptus tereticornis	4
Eucalyptus crebra	4
Corymbia tessellaris	2
Total	17

Part H - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	65.00		
1	3.50	16	
2	3.00	17	
3		18	
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

Part I - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0%	70%	5%	0%	15%	18%
Native other grass						
Native forbs and other species						
Native shrubs						
Non-native grass						
Non native forbs and shrubs	100%	30%	90%	80%	60%	72%
Litter						
Rock						
Bare Ground	0%	0%	5%	20%	25%	10%
Cryptogram						
Total	100%	100%	100%	100%	100%	100%

Part J- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	2
Non- Eucalypt Large tree DBH benchmark used:		Number of large non eucalypt trees:	0
Total number of large trees recorded:	2		
Total Number Large Trees per ha:	4		

Part K: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	*Corymbia tessellaris*	Moreton Bay Ash	160	N
2	*Eucalyptus tereticornis*	Forest Red Gum	110	N
3	*Allocasuaraina littoralis*	Black She-oak	110	N
4	*Corymbia tessellaris*	Moreton Bay Ash	100	N
5	*Eucalyptus crebra*	Narrow-leaved Ironbark	310	N
6	*Eucalyptus tereticornis*	Forest Red Gum	140	N
7	*Eucalyptus tereticornis*	Forest Red Gum	120	N
8	*Corymbia tessellaris*	Moreton Bay Ash	100	N
9	*Corymbia tessellaris*	Moreton Bay Ash	100	N
10	*Eucalyptus crebra*	Narrow-leaved Ironbark	350	N
11	*Eucalyptus crebra*	Narrow-leaved Ironbark	370	N
12	*Eucalyptus tereticornis*	Forest Red Gum	140	N
13	*Eucalyptus tereticornis*	Forest Red Gum	100	N
14	*Eucalyptus tereticornis*	Forest Red Gum	100	N
15	*Eucalyptus crebra*	Narrow-leaved Ironbark	300	N
16	*Eucalyptus crebra*	Narrow-leaved Ironbark	260	N
17	*Eucalyptus crebra*	Narrow-leaved Ironbark	250	N
18	*Eucalyptus tereticornis*	Forest Red Gum	100	N

19	*Allocasuaraina littoralis*	Black She-oak	200	N
20	*Eucalyptus tereticornis*	Forest Red Gum	200	N
21	*Corymbia intermedia*	Pink Bloodwood	110	N
22	*Eucalyptus crebra*	Narrow-leaved Ironbark	100	N
23	*Eucalyptus crebra*	Narrow-leaved Ironbark	110	N
24	*Allocasuaraina littoralis*	Black She-oak	190	N
25	*Eucalyptus tereticornis*	Forest Red Gum	190	N
26	*Allocasuaraina littoralis*	Black She-oak	370	N
27	*Eucalyptus crebra*	Narrow-leaved Ironbark	100	N
28	*Allocasuaraina littoralis*	Black She-oak	160	N
29	*Corymbia tessellaris*	Moreton Bay Ash	100	N
30	*Allocasuaraina littoralis*	Black She-oak	180	N
Total				0

Attach Landscape Photos Here

North



South



East



West





Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	3	Job Number / Property	12186 - offset

Part B - Site Data

Recorders	LB/TM	Date	8/07/2025

Assessment Unit:	Assessment Unit Area (ha)	Mapped RE	Confirmed RE	Biocondition Number
na		12.8.17		

Site description and Location (including details of discrete polygons within the assessment unit)
Open paddock with scattered mature eucalypts and regrowth (shrub) eucalypts (*Corymbia tessellaris*).

Part C - Median Tree Heights and Regeneration

Median Tree Canopy Height Measurements	Canopy:	0	Sub-canopy:	3	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	0

Part D - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	1			EDL / Dom / R
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	D
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	2		
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood
Scientific Name		Common Name	

Grass species richness:			
Total number of species	1		
Scientific Name	*Heteropogon contortus*	Common Name	Black Speargrass
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	1		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name		Common Name	

Part E - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	20.00%		
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Sporobolus natalensis*	Common Name	Giant Rat's Tail Grass
Scientific Name		Common Name	

Part F - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	0.0%	Sub-canopy:	0.00%	Emergent:	
Shrub canopy cover %	1.80%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	22.2	23.6	1.4	Shrub			0.0
Shrub	43.1	43.5	0.4	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part G: GHFF Stem Count

Species Name	Stem Count
Corymbia tessellaris	1

Part H - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	20.00		
1	2.00	16	
2		17	
3		18	
4		19	
5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

Part I - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	55%	70%	70%	40%	75%	62%
Native other grass						
Native forbs and other species						
Native shrubs	5%	0%	0%	0%	0%	1%
Non-native grass	40%	30%	25%	60%	25%	36%
Non native forbs and shrubs	0%	0%	5%	0%	0%	1%
Litter						
Rock						
Bare Ground						
Cryptogram						
Total	100%	100%	100%	100%	100%	100%

Part J- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	0
Non- Eucalypt Large tree DBH benchmark used:	NA	Number of large non eucalypt trees:	0
Total number of large trees recorded:	0		
Total Number Large Trees per ha:	0		

Part K: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

Not 30 trees within 1 ha area to conduct SAT survey

30				
Total				

Attach Landscape Photos Here

North



South





East



West





Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	4	Job Number / Property	12186 - offset

Part B - Site Data

Recorders	LB/TM	Date	8/07/2025

Assessment Unit:	Assessment Unit Area (ha)	Mapped RE	Confirmed RE	Biocondition Number
na		12.8.17		

Site description and Location (including details of discrete polygons within the assessment unit)
Open sloping paddock with scattered mature eucalypts and some regrowth eucalypts.

Part C - Median Tree Heights and Regeneration

Median Tree Canopy Height Measurements	Canopy:	13	Sub-canopy:	3	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	0

Part D - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	3			EDL / Dom / R
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark	Dom
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	1		
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash
Scientific Name		Common Name	

Grass species richness:			
Total number of species	2		
Scientific Name	*Heteropogon contortus*	Common Name	Black Speargrass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	1		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name		Common Name	

Part E - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	10.00%		
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Hypochaeris glabra*	Common Name	Annual Flatweed
Scientific Name	*Sporobolus natalensis*	Common Name	Giant Rat's Tail Grass
Scientific Name		Common Name	

Part F - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	4.8%	Sub-canopy:	1.10%	Emergent:	
Shrub canopy cover %	1.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	88.4	93.2	4.8	T2	40.0	41.1	1.1
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	0.0	0.9	0.9	Shrub			0.0
Shrub	29.5	29.6	0.1	Shrub			0.0
Shrub			0.0	Shrub			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part G: GHFF Stem Count

Species Name	Stem Count
Corymbia tessellaris	1
Eucalyptus tereticornis	1
Eucalyptus crebra	1

Part H - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	0.00		
1	0.00	16	
2		17	
3		18	
4		19	

5		20	
6		21	
7		22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

Part I - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	100%	85%	85%	85%	85%	88%
Native other grass						
Native forbs and other species	0%	5%	0%	0%	0%	1%
Native shrubs						
Non-native grass	0%	0%	10%	10%	10%	6%
Non native forbs and shrubs	0%	10%	5%	5%	0%	4%
Litter						
Rock						
Bare Ground	0%	0%	0%	0%	5%	1%
Cryptogram						
Total	100%	100%	100%	100%	100%	100%

Part J- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	1
Non- Eucalypt Large tree DBH benchmark used:	NA	Number of large non eucalypt trees:	0
Total number of large trees recorded:	1		
Total Number Large Trees per ha:	2		

Part K: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
Total				

Not 30 trees wtihin 1 ha area to conduct SAT survey

Attach Landscape Photos Here

North





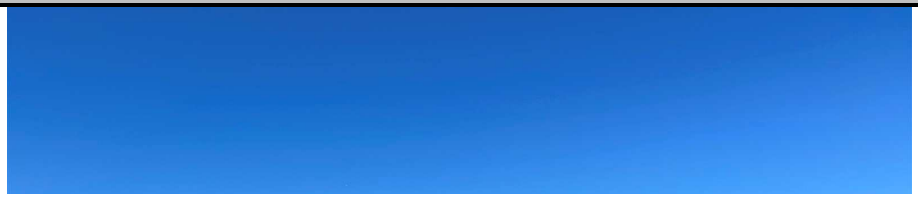
South



East



West





Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	5	Job Number / Property	12186 - offset

Part B - Site Data

Recorders	TM/SK	Date	21/07/2025

Assessment Unit:	Assessment Unit Area (ha)	Mapped RE	Confirmed RE	Biocondition Number
na		12.8.17		

Site description and Location (including details of discrete polygons within the assessment unit)
Eucalyptus regrowth along hillside. Moderate weeds. *Euclayptus crebra/Corymbia tessellaris/ Angophora subvelutina* dominated. Intersects small gully

Part C - Median Tree Heights and Regeneration

Median Tree Canopy Height Measurements	Canopy:	17	Sub-canopy:	8	Emergent:	

Percentage of ecologically dominant layer species regenerating:	80%

Part D - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	5			EDL / Dom / R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark	EDL / Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	EDL / R
Scientific Name	*Corymbia tessellaris*	Common Name	Moreton Bay Ash	EDL / Dom / R
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood	EDL
Scientific Name	*Angophora subvelutina*	Common Name	Broad-leaved Apple	EDL / Dom / R

Shrub species richness:			
Total number of species	2		
Scientific Name	*Xanthorrhoea glauca*	Common Name	Grass Tree
Scientific Name	*Exocarpos cupressiformis*	Common Name	Native Cherry

Grass species richness:			
Total number of species	3		
Scientific Name	*Heteropogon contortus*	Common Name	Black Speargrass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name	*Panicum decompositum*	Common Name	Native Millet

Forbs and others (non grass ground) species richness:			
Total number of species	5		
Scientific Name	*Chrysocephalum apiculatum*	Common Name	Yellow Buttons
Scientific Name	*Glycine tabacina*	Common Name	Variable Glycine
Scientific Name	*Adiantum aethiopicum*	Common Name	Soft Maidenhair Fern
Scientific Name	*Geranium solanderi*	Common Name	Native Geranium
Scientific Name	*Centaurium erythraea*	Common Name	Common Centaury

Part E - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	45.00%		
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Sporobolus natalensis*	Common Name	Giant Rat's Tail Grass
Scientific Name	*Onopordum acanthium*	Common Name	Scotch Thistle
Scientific Name	*Senecio madagascariensis*	Common Name	Fireweed
Scientific Name	*Passiflora suberosa*	Common Name	Corky Passion Vine
Scientific Name	*Ageratum houstonianum*	Common Name	Blue Billygoat Weed
Scientific Name	*Erigeron sumatrensis*	Common Name	Tall Fleabane
Scientific Name	*Desmodium uncinatum*	Common Name	Silver-leaf Desmondium

Part F - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	49.1%	Sub-canopy:	3.60%	Emergent:	
Shrub canopy cover %	0.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	11.2	30.1	18.9	T2	0.0	1.4	1.4
T1	60.0	62.3	2.3	T2	34.4	35.5	1.1
T1	72.1	100.0	27.9	T2	36.9	38.0	1.1

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0
Shrub			0.0	Shrub			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part G: GHFF Stem Count

Species Name	Stem Count
Eucalyptus crebra	9
Angophora subvelutina	10
Corymbia tessellaris	5
Corymbia intermedia	4
Eucalyptus tereticornis	5

Part H - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	375.00		
1	12.00	16	
2	4.00	17	
3	2.00	18	
4	3.50	19	
5	3.00	20	
6	7.00	21	
7	6.00	22	
8		23	
9		24	
10		25	
11		26	
12		27	
13		28	
14		29	
15		30	

Part I - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	65%	40%	65%	66%	20%	51%
Native other grass						
Native forbs and other species	0%	5%	5%	4%	10%	5%
Native shrubs	0%	0%	0%	0%	20%	4%
Non-native grass	0%	0%	5%	0%	5%	2%
Non native forbs and shrubs	35%	10%	10%	5%	15%	15%
Litter		45%	15%	25%	30%	29%
Rock						
Bare Ground						
Cryptogram						
Total	100%	100%	100%	100%	100%	106%

Part J- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	2
Non- Eucalypt Large tree DBH benchmark used:	NA	Number of large non eucalypt trees:	0
Total number of large trees recorded:	2		
Total Number Large Trees per ha:	4		

Part K: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	*Eucalyptus crebra*	Narrow-leaved Ironbark	360	N
2	*Corymbia tessellaris*	Moreton Bay Ash	140	N
3	*Corymbia tessellaris*	Moreton Bay Ash	120	N
4	*Eucalyptus crebra*	Narrow-leaved Ironbark	330	N
5	*Corymbia tessellaris*	Moreton Bay Ash	100	N
6	*Corymbia tessellaris*	Moreton Bay Ash	100	N
7	*Eucalyptus crebra*	Narrow-leaved Ironbark	340	N
8	*Eucalyptus crebra*	Narrow-leaved Ironbark	290	N
9	*Eucalyptus crebra*	Narrow-leaved Ironbark	380	N
10	*Corymbia tessellaris*	Moreton Bay Ash	130	N
11	*Angophora subvelutina*	Broad-leaved Apple	120	N
12	*Angophora subvelutina*	Broad-leaved Apple	110	N
13	*Angophora subvelutina*	Broad-leaved Apple	140	N
14	*Angophora subvelutina*	Broad-leaved Apple	160	N
15	*Eucalyptus crebra*	Narrow-leaved Ironbark	480	N
16	*Angophora subvelutina*	Broad-leaved Apple	100	N
17	*Eucalyptus tereticornis*	Forest Red Gum	100	N
18	*Eucalyptus tereticornis*	Forest Red Gum	110	N
19	*Angophora subvelutina*	Broad-leaved Apple	120	N
20	*Angophora subvelutina*	Broad-leaved Apple	170	N
21	*Angophora subvelutina*	Broad-leaved Apple	100	N
22	*Angophora subvelutina*	Broad-leaved Apple	140	N
23	*Angophora subvelutina*	Broad-leaved Apple	120	N
24	*Eucalyptus crebra*	Narrow-leaved Ironbark	280	N
25	*Angophora subvelutina*	Broad-leaved Apple	210	N
26	*Angophora subvelutina*	Broad-leaved Apple	150	N
27	*Angophora subvelutina*	Broad-leaved Apple	160	N

28	*Eucalyptus tereticornis*	Forest Red Gum	120	N
29	*Angophora subvelutina*	Broad-leaved Apple	150	N
30	*Angophora subvelutina*	Broad-leaved Apple	150	N
Total				0

Attach Landscape Photos Here

North



South



East



West





Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	6	Job Number / Property	12186 - offset

Part B - Site Data

Recorders	TM/SK	Date	21/07/2025

Assessment Unit:	Assessment Unit Area (ha)	Mapped RE	Confirmed RE	Biocondition Number
na		12.8.17		

Site description and Location (including details of discrete polygons within the assessment unit)
Scattered mature eucalypts through gully. Grass cover. Weeds throughout centre.*Angophora, Eucalyptus tereticornis dominated*

Part C - Median Tree Heights and Regeneration

Median Tree Canopy Height Measurements	Canopy:	17	Sub-canopy:	7	Emergent:	

Percentage of ecologically dominant layer species regenerating:	50%

Part D - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	9			EDL / Dom / R
Scientific Name	*Eucalyptus tereticornis*	Common Name	Forest Red Gum	EDL / Dom / R
Scientific Name	*Angophora subvelutina*	Common Name	Broad-leaved Apple	EDL / Dom / R
Scientific Name	*Eucalyptus crebra*	Common Name	Narrow-leaved Ironbark	EDL / Dom
Scientific Name	*Acacia melanoxylon*	Common Name	Australian Blackwood	
Scientific Name	*Jagera psurdorhus*	Common Name	Foam Bark	
Scientific Name	*Corymbia intermedia*	Common Name	Pink Bloodwood	EDL
Scientific Name	*Angophora floribunda*	Common Name	Rough-barked Apple	EDL / Dom
Scientific Name	*Eucalyptus tindaliae*	Common Name	Tindale's Stringybark	EDL
Scientific Name	*Mallotus phillipensis*	Common Name	Red Kamala	
Scientific Name		Common Name		

Shrub species richness:			
Total number of species	1		
Scientific Name	*Xanthorrhoea glauca*	Common Name	Grass Tree
Scientific Name		Common Name	

Grass species richness:			
Total number of species	2		
Scientific Name	*Heteropogon contortus*	Common Name	Black Speargrass
Scientific Name	*Imperata cylindrica*	Common Name	Blady Grass
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	2		
Scientific Name	*Goodenia rotundifolia*	Common Name	Star Goodenia
Scientific Name	*Lomandra multiflora*	Common Name	Many Flowered Mat Rush
Scientific Name		Common Name	

Part E - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	35.00%		
Scientific Name	*Gomphocarpus physocarpus*	Common Name	Balloon Cotton Bush
Scientific Name	*Lantana camara*	Common Name	Lantana
Scientific Name	*Melinis repens*	Common Name	Red Natal Grass
Scientific Name	*Sporobolus natalensis*	Common Name	Giant Rat's Tail Grass
Scientific Name	*Onopordum acanthium*	Common Name	Scotch Thistle
Scientific Name	*Senecio madagascariensis*	Common Name	Fireweed
Scientific Name	*Asclepias curassavice*	Common Name	Red-headed Cotton Bush
Scientific Name	*Neonotonia wightii*	Common Name	Green Glycine
Scientific Name	*Momordica charantia*	Common Name	Bitter Melon
Scientific Name	*Bidens pilosa*	Common Name	Cobbler's Pegs
Scientific Name		Common Name	

Part F - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	44.8%	Sub-canopy:	6.10%	Emergent:	
Shrub canopy cover %	0.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	24.8	40.3	15.5	T2	67.1	69.3	2.2
T1	41.6	47.0	5.4	T2	87.1	88.3	1.2
T1	51.3	75.2	23.9	T2	92.0	93.9	1.9
T1			0.0	T2	99.2	100.0	0.8
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval

Shrub			0.0	**Shrub**			0.0
Shrub			0.0	**Shrub**			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part G: GHFF Stem Count

Species Name	Stem Count
Angophora woodsiana	8
Stringybark sp.	1
Eucalyptus crebra	1
Eucalyptus tereticornis	5
Corymbia intermedia	1
Angophora subvelutina	5
Total	21

Part H - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	130.00		
1	2.90	**16**	
2	0.90	**17**	
3	1.70	**18**	
4	5.00	**19**	
5	1.20	**20**	
6	1.30	**21**	
7		**22**	
8		**23**	
9		**24**	
10		**25**	
11		**26**	
12		**27**	
13		**28**	
14		**29**	
15		**30**	

Part I - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	60%	15%	60%	10%	20%	33%
Native other grass						
Native forbs and other species	4%	5%	5%	10%	4%	6%
Native shrubs						
Non-native grass						
Non native forbs and shrubs	6%	35%	10%	40%	6%	19%
Litter	17%	10%	15%	20%	30%	18%
Rock	3%	0%	0%	0%	0%	1%
Bare Ground	10%	35%	10%	0%	40%	19%
Cryptogram	0%	0%	0%	20%	0%	4%
Total	100%	100%	100%	100%	100%	100%

Part J- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	**Number of large eucalypt trees:**	6
Non- Eucalypt Large tree DBH benchmark used:	NA	**Number of large non eucalypt trees:**	0
Total number of large trees recorded:	6		
Total Number Large Trees per ha:	12		

Part K: SAT Survey Results

SAT Survey ID	NA			
Tree Number	**Scientific Name**	**Common Name**	**DBH**	**Scat (Y/N)**
1	*Eucalyptus crebra*	Narrow-leaved Ironbark	350	N
2	*Eucalyptus crebra*	Narrow-leaved Ironbark	320	N
3	*Eucalyptus crebra*	Narrow-leaved Ironbark	310	N
4	*Eucalyptus crebra*	Narrow-leaved Ironbark	350/120	N
5	*Angophora subvelutina*	Broad-leaved Apple	220	N
6	*Eucalyptus crebra*	Narrow-leaved Ironbark	490	N
7	*Eucalyptus crebra*	Narrow-leaved Ironbark	100	N
8	*Eucalyptus crebra*	Narrow-leaved Ironbark	290	N
9	*Corymbia tessellaris*	Moreton Bay Ash	130	N
10	*Angophora subvelutina*	Broad-leaved Apple	120	N
11	*Corymbia tessellaris*	Moreton Bay Ash	100	N
12	*Corymbia tessellaris*	Moreton Bay Ash	100	N
13	*Eucalyptus crebra*	Narrow-leaved Ironbark	310	N

Transect 1 Date: 22/07/2025

Start	End	Distance (m)	Ground Cover	Species
0	11.9	11.9	Exotic Shrub	*Lantana camara (Lantana)*
11.9	16.6	4.7	Native Grass	*Imperata cylindrica (Blady Grass)*
16.6	35.6	19	Exotic Shrub	*Lantana camara (Lantana)*
35.6	40.4	4.8	Native Grass	*Imperata cylindrica (Blady Grass)*
40.4	52	11.6	Exotic Shrub	*Lantana camara (Lantana)*
52	57	5	Native Grass	*Imperata cylindrica (Blady Grass)*
57	62.5	5.5	Exotic Shrub	*Lantana camara (Lantana)*
62.5	74.5	12	Native Grass	*Imperata cylindrica (Blady Grass)*
74.5	80	5.5	Exotic Shrub	*Lantana camara (Lantana)*
80	86	6	Native Grass	*Imperata cylindrica (Blady Grass)* *Heteropogon contortus (Black Speargrass)*
86	100	14	Exotic Shrub	*Lantana camara (Lantana)*

Native	32.0%
WONS - Lantana	67.5%
All weeds	0%
Litter	0%
Bare Ground	0%

North



South



East



West



Transect 2

Date: 22/07/2025

Start	End	Distance (m)	Ground Cover	Species
0	4.9	4.9	Exotic Shrub	*Lantana camara (Lantana)*
4.9	11.3	6.4	Native Grass	*Imperata cylindrica (Blady Grass)*
11.3	13.7	2.4	Exotic Shrub	*Lantana camara (Lantana)*
13.7	22	8.3	Exotic Grass	*Sporobolus pyramidalis (Giant Rat's Tail Grass*
22	35.3	13.3	Exotic Shrub	*Lantana camara (Lantana)*
35.3	39.3	4	Native Grass	*Imperata cylindrica (Blady Grass)*
39.3	41.9	2.6	Exotic Shrub	*Lantana camara (Lantana)*
41.9	43.6	1.7	Native Grass	*Imperata cylindrica (Blady Grass)*
43.6	45.5	1.9	Exotic Shrub	*Lantana camara (Lantana)*
45.5	53.3	7.8	Native Grass	*Imperata cylindrica (Blady Grass)*
53.3	71.8	18.5	Exotic Shrub	*Lantana camara (Lantana)*
71.8	80.2	8.4	Native Grass	*Imperata cylindrica (Blady Grass)*
80.2	86.7	6.5	Exotic Grass	*Melinis repens (Red Natal grass)*
86.7	100	13.3	Native Grass	*Imperata cylindrica (Blady Grass)*
		0		
		0		
		0		

Native	41.6%
WONS - Lantana	43.6%
All weeds	58.4%
Litter	0%
Bare Ground	0%

North



South



East



West



Transect 3 Date: 22/07/2025

Start	End	Distance (m)	Ground Cover	Species
0	1.7	1.7	Native Grass	*Heteropogon contortus (Black Speargrass)*
1.7	3.4	1.7	Exotic Grass	*Sporobolus pyramidalis (Giant Rat's Tail Grass*
3.4	12.6	9.2	Native Grass	*Heteropogon contortus (Black Speargrass)*
12.6	20.8	8.2	Exotic Shrub	*Lantana camara (Lantana)*
20.8	24	3.2	Native Grass	*Heteropogon contortus (Black Speargrass)*
24	25.1	1.1	Exotic Grass	*Melinis repens (Red Natal grass)*
25.1	39.9	14.8	Native Grass	*Heteropogon contortus (Black Speargrass)*
39.9	46.3	6.4	Exotic Shrub	*Lantana camara (Lantana)*
46.3	54	7.7	Native Grass	*Heteropogon contortus (Black Speargrass)*
54	55.1	1.1	Exotic Grass	*Sporobolus pyramidalis (Giant Rat's Tail Grass*
55.1	57	1.9	Native Grass	*Heteropogon contortus (Black Speargrass)*
57	58	1	Exotic Grass	*Sporobolus pyramidalis (Giant Rat's Tail Grass*
58	100	42	Native Grass	*Heteropogon contortus (Black Speargrass)*
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		

Native	80.5%
WONS - Lantana	14.6%
All weeds	19.5%
Litter	0%
Bare Ground	0%

North



South



East



West



Transect 4

Date: 22/07/2025

Start	End	Distance (m)	Ground Cover	Species
0	1	1	Native Grass	*Imperata cylindrica (Blady Grass)*
1	14.3	13.3	Exotic Shrub	*Lantana camara (Lantana)*
14.3	18.4	4.1	Exotic Grass	*Sporobolus pyramidalis (Giant Rat's Tail Grass*
18.4	29	10.6	Exotic Shrub	*Lantana camara (Lantana)*
29	31.8	2.8	Native Grass	*Imperata cylindrica (Blady Grass)*
31.8	61.8	30	Native Grass	*Imperata cylindrica (Blady Grass)* *Heteropogon contortus (Black Speargrass)*
61.8	78.6	16.8	Exotic Shrub	*Lantana camara (Lantana)*
78.6	82.6	4	Native Grass	*Imperata cylindrica (Blady Grass)*
82.6	90	7.4	Exotic Shrub	*Lantana camara (Lantana)*
90	100	10	Native Grass	*Heteropogon contortus (Black Speargrass)*

Native	47.8%
WONS - Lantana	48.1%
All weeds	52.2%
Litter	0%
Bare Ground	0%

North



South



East



West



Transect 5

Date: 22/07/2025

Start	End	Distance (m)	Ground Cover	Species
0	3.1	3.1	Native Grass	*Heteropogon contortus (Black Speargrass)*
3.1	6.1	3	Exotic Grass	*Sporobolus pyramidalis (Giant Rat's Tail Grass*
6.1	9.7	3.6	Native Grass	*Heteropogon contortus (Black Speargrass)*
9.7	25	15.3	Exotic Shrub	*Lantana camara (Lantana)*
25	82.1	57.1	Exotic Grass	*Sporobolus pyramidalis (Giant Rat's Tail Grass*
82.1	84.1	2	Exotic Shrub	*Lantana camara (Lantana)*
84.1	87.3	3.2	Exotic Grass	*Sporobolus pyramidalis (Giant Rat's Tail Grass*
87.3	100	12.7	Native Grass	*Heteropogon contortus (Black Speargrass)*
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		
		0		

Native	19.4%
WONS - Lantana	17.3%
All weeds	80.6%
Litter	0%
Bare Ground	0%

North



South



East



West



Appendix D

Offset Assessment Guide Calculator results

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

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Matter of National Environmental Significance	
Name	Koala
EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	**1.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	21.7	Hectares	
			Quality	**6**	Scale 0-10	
			Total quantum of impact	13.02	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes				Count	
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	13.02	Adjusted hectares	AU1	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	22	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	4.42	33.94%	No	$2,130,000.00	EIANZ
									Future area without offset (adjusted hectares)	22.0	**Future area with offset (adjusted hectares)**	22.0								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**5**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**8**	3.00	85%	2.55	2.01				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No			0																
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	13.02	4.42	33.94%	**No**	$2,130,000.00	$52,339,667.30	$54,469,667.30
Area of community	0				$0.00		$0.00
					$2,130,000.00	**$52,339,667.30**	**$54,469,667.30**

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EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	**1.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	21.7	Hectares	
			Quality	**6**	Scale 0-10	
			Total quantum of impact	13.02	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes				Count	
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	13.02	Adjusted hectares	AU2	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	4	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	0.80	6.17%	No	$2,130,000.00	EIANZ
									Future area without offset (adjusted hectares)	4.0	**Future area with offset (adjusted hectares)**	4.0								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**5**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**8**	3.00	85%	2.55	2.01				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No			0																
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	13.02	0.80	6.17%	**No**	$2,130,000.00	$9,060,260,896.56	$9,062,390,896.56
Area of community	0				$0.00		$0.00
					$2,130,000.00	**$9,060,260,896.56**	**$9,062,390,896.56**

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Name	Koala
EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	**1.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	21.7	Hectares	
			Quality	**6**	Scale 0-10	
			Total quantum of impact	13.02	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes				Count	
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	13.02	Adjusted hectares	AU3	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	45	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	10.63	81.68%	No	$2,130,000.00	EIANZ
									Future area without offset (adjusted hectares)	45.0	**Future area with offset (adjusted hectares)**	45.0								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**4**	**Future quality without offset (scale of 0-10)**	**4**	**Future quality with offset (scale of 0-10)**	**8**	4.00	75%	3.00	2.36				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No			0																
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	13.02	10.63	81.68%	**No**	$2,130,000.00	$1,778,786.96	$3,908,786.96
Area of community	0				$0.00		$0.00
					$2,130,000.00	**$1,778,786.96**	**$3,908,786.96**

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Matter of National Environmental Significance	
Name	GHFF
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**0.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	15.9	Hectares	
			Quality	**5**	Scale 0-10	
			Total quantum of impact	7.95	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes				Count	
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	7.95	Adjusted hectares	AU1	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	22	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	5.39	67.80%	No	$2,130,000.00	EIANZ
									Future area without offset (adjusted hectares)	22.0	**Future area with offset (adjusted hectares)**	22.0								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**5**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**8**	3.00	85%	2.55	2.45				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No			0																
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	7.95	5.39	67.80%	**No**	$2,130,000.00	$4,703,696.67	$6,833,696.67
Area of community	0				$0.00		$0.00
					$2,130,000.00	**$4,703,696.67**	**$6,833,696.67**

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EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**0.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	15.9	Hectares	
			Quality	**5**	Scale 0-10	
			Total quantum of impact	7.95	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes				Count	
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	7.95	Adjusted hectares	AU2	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	4	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	0.98	12.33%	No	$2,130,000.00	ELANZ
									Future area without offset (adjusted hectares)	4.0	**Future area with offset (adjusted hectares)**	4.0								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**5**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**8**	3.00	85%	2.55	2.45				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No			0																
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	7.95	0.98	12.33%	**No**	$2,130,000.00	$1,134,826,283.01	$1,136,956,283.01
Area of community	0				$0.00		$0.00
					$2,130,000.00	**$1,134,826,283.01**	**$1,136,956,283.01**

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Annual probability of extinction Based on IUCN category definitions	**0.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	15.9	Hectares	
			Quality	**5**	Scale 0-10	
			Total quantum of impact	7.95	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	Yes				Count	
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	7.95	Adjusted hectares	AU3	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	45	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	12.97	163.16%	Yes	$2,130,000.00	ELANZ
									Future area without offset (adjusted hectares)	45.0	**Future area with offset (adjusted hectares)**	45.0								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**4**	**Future quality without offset (scale of 0-10)**	**4**	**Future quality with offset (scale of 0-10)**	**8**	4.00	75%	3.00	2.88				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No			0																
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	7.95	12.97	163.16%	**Yes**	$2,130,000.00	N/A	$2,130,000.00
Area of community	0				$0.00		$0.00
					$2,130,000.00	**$0.00**	**$2,130,000.00**

Appendix E

Risk Assessment

Risk Assessment for Mount View Offset Area

A qualitative risk assessment which considers the risks of achieving the objectives and outcomes for the MVOA is presented in the table below. The risk assessment is completed in accordance with the EPBC Act Environmental Management Plan Guidelines (2014) and characterises risk as low, medium, high or severe, as derived from the likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical) risk matrix.

The risk analysis assesses the risk of failure to achieve the OMP management objectives. It is necessary to re-evaluate and modify the risk analysis and contingency measures throughout the period of EPBC Act approval, particularly if any unforeseen risks emerge or any negative outcomes identified are greater than expected. During the first five (5) years of monitoring and Annual Compliance Reporting, the Offset Provider and/or The Proponent will review management commitments in this Offset Management Framework, and if the review results in the need to revise the framework it will be revised and submitted for approval. It is noted that events are only addressed once in the risk assessment under the most relevant management objective, however, some events are likely to impact on multiple management objectives.

Note, potential impacts from the occurrence of cyclones have been included within the risk analysis table. Cyclones, if to occur proximal to the MVOA, are likely to result in indirect impacts only, including increased rainfall and wind events. Whilst the pathway of and occurrence of cyclones can change easily, becoming difficult to determine, an assessment of the potential associated risks has been completed. According to BoM (2019), cyclones have not traversed inland SEQ for at least the last 20 years, with the exception of Cyclone Debbie in 2017. While the risk of cyclones occurring south of 25°S has increased in more recent years, it is unlikely a formed cyclone would occur at the MVOA location, nor proximal to them. This is due to a range of factors, including surrounding changes in topography, modified urban environment and lack of warm open water to provide continued energy generation[1].

[1] Bureau of Meteorology 2019, *Past Tropical Cyclones*, BoM, Australian Government, accessed at http://www.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/history/past-tropical-cyclones/

Risk framework

		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

Likelihood and consequence

Qualitative measure of likelihood (how likely is it that this event/circumstances will occur after management actions have been put in place/are being implemented)	
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances
Qualitative measure of consequences (what will be the consequence/result if the issue does occur)	
Minor	Minor risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing low cost, well characterised corrective actions.
Moderate	Moderate risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing well characterised, high cost/effort corrective actions.
High	High risk of failure to achieve the plan's objectives. Results in medium-long term delays to achieving plan objectives, implementing uncertain, high cost/effort corrective actions.

Major	The plan’s objectives are unlikely to be achieved, with significant legislative, technical, ecological and/or administrative barriers to attainment that have no evidenced mitigation strategies.
Critical	The plan’s objectives are unable to be achieved, with no evidenced mitigation strategies.

Risk assessment and management

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
To legally secure approved offset properties for conservation.	Failure to legally secure approved MVOA. Legislative reform prejudices proposed tenure arrangements for offset properties.	Management action 1: • Legally secure the MVOA via a suitable method including a voluntary declaration under the *Vegetation Management Act 1999* and covenant under the *Land Act 1994* or *Land Titles Act 1994*.	R	Mod	Low	Clearing of the 22 ha impact area cannot occur without legally securing the MVOA.	N/A
Pest management	Failure to reduce the threat of introduced predators.	Management Action 2: • Conduct baseline surveys and determine relative abundance index. • Implement predator control program. • Conduct follow-up monitoring and implement further control.	U	Mod	Low	Monitoring of the presence of introduced predators through the use of remote motion-activated cameras; Survey the site to record the presence / absence of signs of introduced predator (sightings, killings and/or scats and tracks).	• Should the introduced predator control measures not result in a maintenance of low introduced predator numbers (compared to baseline survey), introduced predator program to be expanded/adapted to improve outcomes. • Any incidence of injury/mortality resulting from introduced predator attack will initiate supplementary monitoring and control measures. In the event that an offset species is found injured, transport immediately to a local vet, or suitably qualified and experienced wildlife carer.
WONS management	Failure to control WONS.	Management Action 3:	U	Mod	Low	Annual (photo monitoring and mapping of weed	If weed survey indicates weed cover is not reduced since

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
		• Develop and implement a weed strategy, with a particular focus on weeds listed with particularly ability to impact on movement and structural vegetation composition (predominantly *Lantana camara*), and under the *Biosecurity Act 2014*, to reduce weed cover to target thresholds. • Undertake weed management in accordance with the OMP.				infestations) and 5-year Targeted transects and MHQA) surveys of non-native plant cover to ensure reduction across MVOA. Surveys in-line with weed management strategy. Repeated surveys of baseline data including 5 yearly habitat monitoring data as part of the framework.	previous survey, weed control program to be expanded/ adapted to improve outcomes.
High intensity fire	A high intensity uncontrolled fire occurs within the MVOA which causes loss of habitat.	Management Action 4: Actions as directed by the local authority which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade and controlled grazing to manage fuel loads.	P	M	Med	Annual monitoring requirements to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques such as use of livestock.	If a wildfire occurs in the MVOA, the following actions will be undertaken: • Implement fire control • Repair any fire breaks and access tracks. • Stay informed through the Rural Fire Service. • Assess damage caused by the wildfire and monitor for natural regeneration. • Monitoring to occur 3-6 months post event or after the next wet weather event (whichever is sooner).

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
							• Where natural regeneration is failing to thrive, assist natural regeneration through direct seeding and planting
Achieve performance targets and completion criteria for habitat	Landowner-approval holder agreements fail to adequately address management commitments in the offset plan.	Management Action 1-5: • The MVOA has been legally secured for conservation purposes. The development of this framework outlines specific management actions to achieve performance criteria.	U	Mod	Low	Scheduled monitoring/surveys and Annual Compliance Reports	• Review Offset Management Framework • Implement adaptive management and corrective actions
	The MVOA fails to naturally regenerate.	Management Action 3: • Remove incompatible land uses. • WONS management (refer Management Action 3). • Sufficient rest period.	U	Mod	Low	After a sufficient rest period the repeat MHQA will indicate progress towards performance criteria.	• infill planting/ revegetation to be implemented after sufficient rest period.

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
	Failure to increase habitat for offset species.	Management Action 1: • legally secure MVOA and remove incompatible land uses. Management Action 3: • Reduce the extent of weed as per criteria; and • Implement infill planting if required.	U	Mod	Low	Annual surveys (photo monitoring & audit of revegetation works) of revegetation area to ensure plant survival. Repeated surveys of baseline data including 5 yearly MHQA habitat monitoring data and annual observational data as part of the AOMP.	If MHQA transects indicate habitat less than performance indicators, implement infill planting in weed control areas. Should plant stock fail supplementary planting, direct seeding, weed control, fertiliser, amelioration or other management actions necessary to stimulate tree growth.
	If infill planting is required and there is high plant stock failure.	Management Action 3: • Adhere to planting method and watering schedule.				Annual plant stock audit (first 5 years). Planting and monitoring event schedules by the qualified bush regenerator.	If there is a high rate of plant stock failure adaptive management and corrective actions will be implemented and may include, additional supplementary planting, direct seeding, weed control, fertiliser, water spike, mulching, tree guards, etc.

Appendix F

Rehabilitation Management Plan

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan

DWG NO.	DRAWING TITLE	ISSUE	DATE
12186 E 01 DRP B	COVER SHEET	B	13/04/2026
12186 E 02 DRP B	INTRODUCTION AND NOTES	B	13/04/2026
12186 E 03 DRP B	REHABILITATION ZONES	B	13/04/2026
12186 E 04 DRP B	PLANTING SPECIES SCHEDULE	B	13/04/2026
12186 E 05 DRP B	WEED NOTES	B	13/04/2026
12186 E 06 DRP B	PLANTING NOTES	B	13/04/2026
12186 E 07 DRP B	MAINTENANCE AND MONITORING	B	13/04/2026
12186 E A01-A03 DRP B	APPENDIX A: WEED TREATMENT AND REMOVAL	B	13/04/2026



Saunders Havill

PATHWAYS TO SUCCESS

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan - *Introduction and Notes*

INTRODUCTION

This Rehabilitation Plan (RP) has been prepared by **Saunders Havill (SH)** for **HB Qld Pty Ltd** for the Mount View Offset Area associated with works at 103 – 175 Bayliss Road, South Ripley, QLD, 4306 (EPBC 2025/10110).

The primary objective of this DRP is to provide a practical guide for the recreation of resilient, fully-functioning vegetation communities that achieve the Environmental Outcomes proposed under the Offset Management Plan.

This DRP is to function as a guide and reference document for the proposed rehabilitation techniques and planting palettes proposed for the EPBC 2025/10110 offset area.

BACKGROUND

A substantial amount of rehabilitation research has been conducted and compiled as part of the "South East Queensland Ecological Restoration Framework (SEQERF)" and subsequently endorsed by the majority of South East Queensland councils. Given this, information provided within this RP will largely utilize information derived from this framework.

Rehabilitation or "Ecological Restoration" can be described as "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed" (source: Society for Ecological Restoration International).

The ability of an ecosystem to recover naturally depends on the existing natural regeneration capacity of the ecosystem i.e. resilience potential, and the level and type of disturbance, degradation or damage that has occurred. Generally, the ability of an ecosystem to naturally recover declines with increased disturbance, degradation or damage.

Determination of the resilience potential and level of degradation will assist practitioners to determine the level of effort required to restore the ecosystem. The following four ecological restoration approaches are listed under the SEQERF guidelines and are described in further detail on *Sheet 03*.

- Natural Regeneration
- Assisted Natural Regeneration
- Reconstruction
- Fabrication

In practice, sites with higher resilience potential should adopt the Natural Regeneration and Assisted Natural Regeneration approaches as these are generally the most cost-effective and encourage recruitment of locally occurring species that are adapted to local conditions. Adversely, highly degraded sites with poor resilience and an exhausted soil seed bank will likely require Reconstruction or Fabrication approaches i.e. planting to restore the ecosystem.

A key aspect of ecological restoration is that structure and function are returned to site, improving site stability, and improved habitat for fauna and flora. Structure includes vegetation height and density, canopy cover and appropriate species, as well as habitat features such as fallen logs and site rock. Function refers to the natural and self-sustaining processes occurring within the site including regeneration capacity, succession and cycling of nutrients. Activities required to achieve these objectives may include controlling environmental weeds, re-establishment of wildlife corridors and or stabilisation of creek banks.

As restoration work progresses on a site, ongoing changes to the structure and diversity of the vegetation will become apparent. These changes tend to occur in a cyclical manner, with the initial disturbance to the vegetation (either natural or man-made) being the trigger for changes. It is important to recognize that the vegetation will have to pass through a variety of stages of succession first, often over a period of years.

While disturbance as part of restoration works often has a negative connotation, it can also be useful for site restoration. Regeneration of native plant species is stimulated by mimicking natural disturbances. The techniques used will depend on the individual species and vegetation community, as they have evolved to respond to disturbances in different ways. Some examples of these techniques are:

- Control of competing vegetation, especially environmental weeds;
- Controlled burns or burn piles in vegetation communities adapted to fire;
- Soil disturbances such as ripping or raking; and or
- Alterations to hydrology in wetlands to reinstate natural movement.

The SEQERF also highlights that consistent follow up is critical for success of ecological restoration. This ensures that beneficial, permanent changes can occur within the vegetation community benefiting both fauna and flora. In order to be able to confirm these changes are occurring, ongoing site monitoring may also be required.

Ecological restoration is a complicated and evolving field. It requires careful consideration for all ecosystem aspects to try and minimise any unexpected interactions, although is generally accepted that not all can be fully known about each complex ecosystem. Given this, it is necessary to remain flexible throughout this process to adapt to site and natural changes.

REHABILITATION - APPROACHES

Ecological Restoration Approaches	
Assisted Natural Regeneration	
Applies:	To natural areas where the native plant community is largely healthy and functioning. When native plant seed is still stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water. Where the natural regeneration processes (seedling germination, root suckering, etc.) are being inhibited by external factors, such as weed invasion, soil compaction, cattle grazing, mechanical slashing, etc. When limited human intervention, such as weed control, minor amelioration of soil conditions, erection of fencing, cessation of slashing, etc. will be enough to trigger the recovery processes through natural regeneration. When the main management issue is weed infestation and/or current land use practices.
Role of planting:	Planting in such areas can work against the aims of restoration by interfering with natural regeneration except where species cannot return to site without direct intervention.
Goal vegetation community:	The re-establishing plant community will be substantially similar in structure, composition and diversity to the original vegetation.
Reconstruction	
Applies:	Where the site is highly degraded or altered. When the degree of disturbance has been so great and long-standing that the pre-existing native plant community cannot recover by natural means. To sites such as areas of fill, sites affected by stormwater flow, areas that have been drastically cleared, even though there may be a few remaining native trees or shrubs. When a greater degree of human intervention is required, such as weed control, cessation of grazing and/or slashing, amelioration of soil conditions such as importation of soils, drainage works or re-shaping of the landscape.
Role of planting:	Importation of native species to the area is required, either through planting or direct seeding (in some situations). natural regeneration and recruitment is insufficient to initially re-establish the original vegetation. Depending on the prevailing circumstances, the planting of a broad diversity of species from the target ecosystem may be unnecessary and the use of pioneers may be sufficient to re-establish ecological processes.
Goal vegetation community:	The re-establishing planted community should be similar to the original vegetation in structure, composition and diversity.

Note: Table adapted from Gold Coast City Council's 'Guideline for the preparation of a Rehabilitation Plan'

REHABILITATION - METHODOLOGY

Detailed assessment of site conditions prior to commencement of documentation is essential. As part of most rehabilitation scopes, it is worth considering an appropriate methodology for both compiling documentation and site works. This can be broken down into the following items:

- Site assessment
- Rehabilitation Design Documentation (this plan)
- Site Works
- Maintenance and monitoring

METHODOLOGY – SITE ASSESSMENT

Detailed assessment of site conditions prior to commencement of documentation is essential in the establishment of a site-specific ecological restoration methodology. In accordance with the SEQERF. The following checklist will form part of the site assessment process:

- Describe the history and background of the site
- Describe the soil, drainage, topography and aspect
- Describe the native vegetation on the site and along site boundaries
- Describe the weeds on site
- Describe the vegetation dispersal and structure
- Describe the fauna use onsite
- Describe estimated native regeneration response.

The responses to the above checklist will provide the basis of the proposed restoration approach from Natural Regeneration to Fabrication for each treatment area within this Rehabilitation Plan.

Consideration should be made in the importance of integrating site-specific measures for fauna habitat and movement. With many fauna species having specific habitat requirements, foraging patterns and movement patterns. During the site assessment process, the following provisions should be taken into consideration:

- Fauna movement opportunities via easements, tracts, utility corridors and or infrastructure pathways;
- Diversity and type of fauna and distribution on site;
- Habitat opportunities e.g. Dense foliage, roosting areas, log hollows and potential nesting boxes;
- Fauna disturbance and vicinity of works to significant nesting areas and or fauna movement;
- Distribution of significant specialized food resources e.g. Koala trees; and
- Stage weed removal and or altering of weed control technique if the weeds are currently forming a significant fauna habitat.

For the sake of keeping this plan concise, site analysis results are compiled under a separate template, and may or may not be included in this set, however the analysis outcomes derive the Rehabilitation design methodology.

METHODOLOGY – REHABILITATION DESIGN

This documentation has been compiled through processes outlined in the SEQERF, site analysis and previous rehabilitation project experiences. The rehabilitation design—comprising distinct management zones—provides assessment managers, clients and contractors a clear methodology to assist the recovery of an ecosystem(s) that has been degraded, damaged or destroyed. Rehabilitation zones were identified through detailed site analysis and are described on *Sheet 03*.

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References:
South East Queensland Ecological Restoration Framework (2012)

AMENDMENTS

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
A	6/01/2026	CLIENT DRAFT	LS	SM
B	13/04/2026	AMENDMENTS	LS	LB

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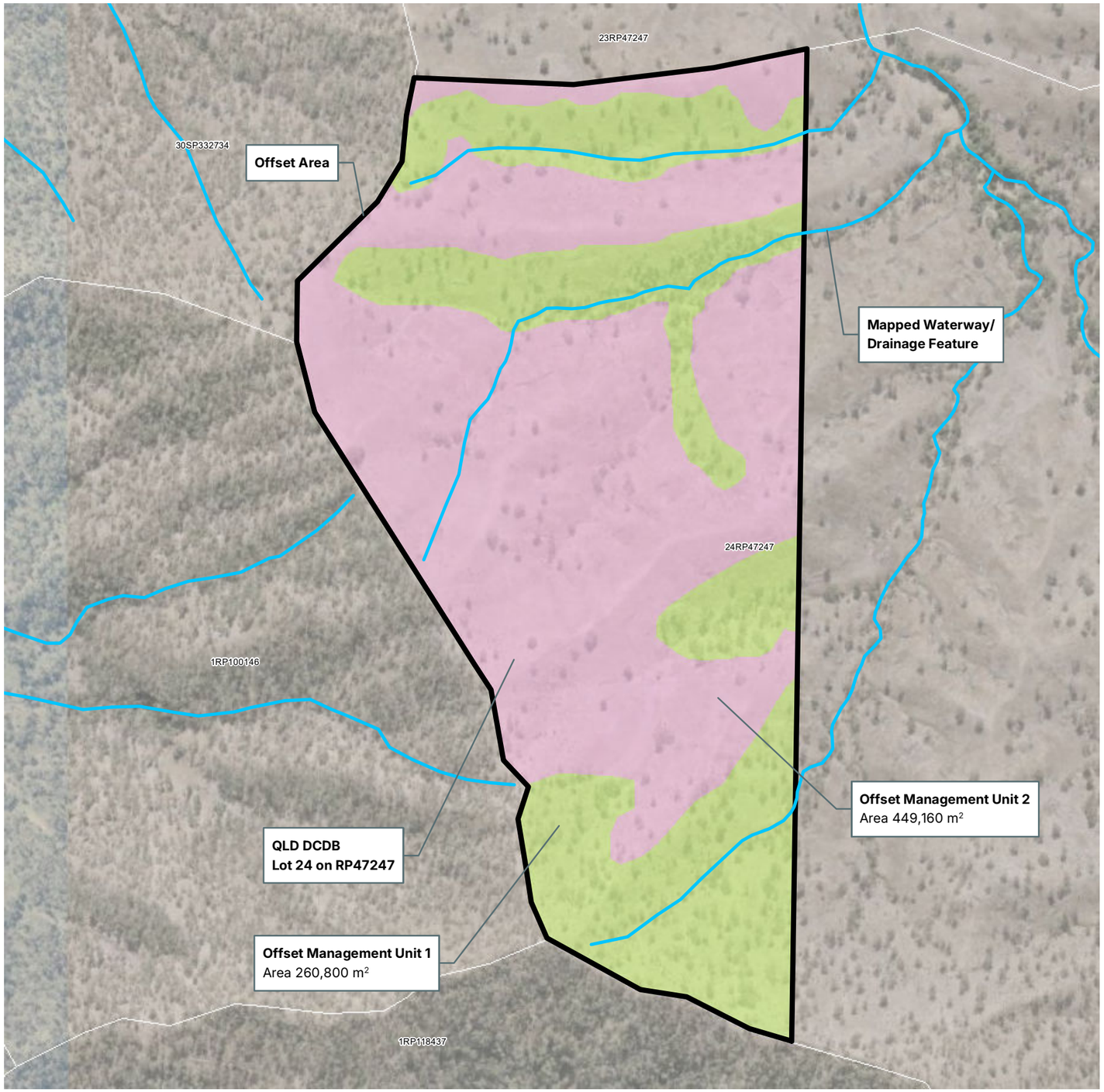
PROJECT
BAYLISS ROAD
SOUTH RIPLEY

DRAWING TITLE
DETAILED
REHABILITATION PLAN

DRAWING NO.
12186 E 02 DRP B

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan - *Rehabilitation Zones*



MANAGEMENT ZONES LEGEND

Offset Management Unit 1 – Remnant and Regrowth Vegetation RE 12.8.17 Assisted Natural Regeneration

Existing native trees, shrubs and groundcovers to be protected and retained. RE12.8.17 vegetation communities include similar tress species within the canopy and therefore should be subjected to the same management actions.

Appropriate (sensitive) weed management methodology within this zone to encourage natural regeneration, minimise damage to existing native vegetation and stabilise soil.

Assisted regeneration including direct seeding will occur where open areas are present, or where weed removal results in cleared open areas. Where required, and as guided by the regeneration contractor, trees shrubs and ground covers will be planted at a density not exceeding 1:10m^2, 1:5m^2 and 1:1m^2 respectively. The ultimate density is driven by on-ground features/ existing vegetation and guided by a regeneration contractor.

Refer to Rehabilitation Notes for additional details, plant species and densities.

Offset Management Unit 2 – Non-remnant Vegetation, RE 12.8.17 Reconstruction

Primary weed management in accordance with Southeast Queensland Ecological Restoration Framework (SEQERF) to encourage natural regeneration, minimise damage to existing native vegetation, and stabilise soil.

Rehabilitation works within the first two years will focus primarily on establishing trees. Systematic infill seeding and plating of shrubs and groundcovers will then be completed as necessary to achieve the environmental outcomes and interim targets proposed in the Offset Management Plan. In areas where no existing groundcovers are occurring, any bare, eroded or erosion-prone areas may require cultivation, topsoil and blanket mulched with 100mm thick aged forest mulch). Blanket mulch within areas prone to inundation to be secured with a natural fibre netting or substituted with a natural fibre matting in heavily eroded/inundated areas.

Tree species selected will focus on trees from RE 12.8.17 that are currently lacking from the site which will benefit both Koala and GHFF outcomes. Entire zone to be rehabilitation with a mixture of trees, shrubs and groundcovers at rates not exceeding 1:10m^2, 1:5m^2 and 1:1m^2 respectively or at densities to support foraging habitat offset species requirements.

Refer to Rehabilitation Notes for additional details, plant species and densities.

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N

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References:
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12186 E 03 DRP B

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan - *Planting Species Schedule*

Planting Species Schedule				
SCIENTIFIC NAME	**COMMON NAME**	**SPECIES BENEFIT**	**PLANT FORM**	**RE 12.8.17**
TREES				
Eucalyptus tereticornis	Forest Red Gum	Koala (L*) GHFF (F/I*)	T1	✓
Eucalyptus melliodora	Yellow-box	Koala GHFF (F*)	T1	✓
Eucalyptus crebra	Narrow-leaved Iron Bark	Koala (L*) GHFF (F/I*)	T1	✓
Angophora subvelutina	Broad-leaved Apple	Koala (A*) GHFF (F*)	T1	✓
Angophora floribunda	Rough-barked Apple	Koala (A*) GHFF (F*)	T1	✓
Eucalyptus melanophloia	Silver-leaved Ironbark	Koala (L*) GHFF (F*)	T1	✓
Corymbia intermedia	Pink Bloodwood	Koala (A*) GHFF (F/I*)	T1	✓
Corymbia tessellaris	Moreton Bay Ash	Koala (A*) GHFF (F*)	T1	✓
Corymbia clarksoniana	Clarkson's Bloodwood	Koala GHFF (F*)	T1	✓
Allocasuarina torulosa	Forest Sheoak		T2	✓
Alphitonia excelsa	Soap Tree		T2 / S1	
Acacia fimbriata	Brisbane Wattle		T2 / S1	✓
SHRUBS				
Jacksonia scoparia	Dogwood		S1	✓
GROUND COVERS				
Cymbopogon refractus	Barbed-wire Grass		G	✓
Aristida vagans	Threeawn aristida		G	✓
Aristida personata	Purple Wiregrass		G	✓
Bothriochloa decipiens	Pitted Bluegrass		G	✓
Themeda triandra	Kangaroo Grass		G	✓
Heteropogon contortus	Black-spear Grass		G	✓
Desmodium brachypodum	Large tick-foil		G	✓
Gahnia aspera	Variable Saw Sedge		G	✓
Lomandra longifolia	Spiky-headed Mat-rush		G	✓

L Locally important Koala habitat trees – Koala (ANU 2021)*
A Ancillary Koala habitat trees – Koala (ANU 2021)*
F Foraging tree – GHFF (Department of Environmental and Climate Change NSW 2008)*
I Important/significant foraging tree – GHFF (Department of Environmental and Climate Change NSW 2008)*
L Locally important Koala habitat trees – Koala (ANU 2021)*

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Detailed Rehabilitation Plan - *Weed Notes*

METHODOLOGY – WEED NOTES

Weed management typically comprises a major part of rehabilitation site works. Weed management provides the basis of aiding natural regeneration and assisted natural regeneration. It also forms part of the preliminary work required for reconstruction and fabrication scopes.

Weed Management is to be undertaken in accordance with the SEQERF Primary, Follow-up and Maintenance works notes above. Weed management shall encompass all species declared at the commonwealth, state and local level, and any weeds that appear to be invasive at the site.

Critical skills for Weed Management include:

- Knowledge of relevant legislation
- Plant Identification skills
- Knowledge of different weed management techniques

Knowledge of Relevant Legislation

It is expected contractors have a depth of knowledge of relevant legislation to complete site rehabilitation works. This includes invasive plant classifications and control obligations under the Queensland *Biosecurity Act 2014* and local Biosecurity Plans (Refer to adjacent schedules for classification of weeds under the Act).

Bush regenerators must also comply with the requirements of the *Workplace Health and Safety Act 2011* or, when working on Commonwealth lands, the Commonwealth's Occupational Health and Safety (Commonwealth Employment) Act 1991.

Contractors should also obtain all relevant permits required under State and Commonwealth legislation (e.g. *Nature Conservation Act 1992*, *Fisheries Act 1994, Vegetation Management Act 1999, Biosecurity Act 2014*). Contractors must also be aware of and adhere to cultural heritage protection obligations under the *Aboriginal Cultural Heritage Act 2003* and where chemicals are in use, the *Agricultural Chemicals Distribution Control Act 1966*.

In addition to the above, contractors should also be familiar with local government body requirements (e.g. Local Codes, Policies and Guidelines).

Plant Identification Skills

Both native and weed species should be identified prior to primary weed removal works and ongoing throughout the follow-up and maintenance periods. This is to maximise natural regeneration and reducing likelihood of accidental weed spraying to native vegetation. Regenerating species to be treated and maintained in a similar manner to newly planted revegetation tube stock. If contractor is unsure of species, advice should be sought by botanist, specialist contractor or confirmed with Queensland Herbarium. Refer to indicative Weed Treatment schedules derived from Queensland Herbarium for an indication of weed species and treatments.

Knowledge of Different Weed Management Techniques

A range of weed management techniques are available to combat a variety of weeds and scenarios. Refer to adjacent schedules and Appendix A for an indication of weed management techniques.

RESTRICTED MATTERS (*BIOSECURITY ACT 2014*)	
Category	**Description**
1	must be reported to an inspector within 24 hours if it is present in, or on, something in your possession or under your control or at a place where you are the occupier, unless an appropriately authorised officer has already been advised or you possess a permit for the restricted matter. Includes red imported fire ants, electric ants, Asian honey bees, and certain animal diseases, aquatic diseases and pathogens.
2	must be reported to an inspector within 24 hours if it is present in, or on, something in your possession or under your control or at a place where you are the occupier, unless an appropriately authorised officer has already been advised or you possess a permit for the restricted matter. includes certain noxious fish, weeds and pest animals
3	You must not distribute this restricted matter. It must not be given as a gift, sold, traded or released into the environment unless the distribution or disposal is authorised in a regulation or under a permit. Deliberate human distribution or disposal contrary to the legislation is a key source of spread into other areas. includes weeds, pest animals and noxious fish
4	You must not move this restricted matter to ensure that it does not spread into other areas of the state. includes specific weeds, pest animals and noxious fish
5	You must not possess or keep this restricted matter under your control. These pests have a high risk of negatively impacting on the environment. You may only keep this restricted matter under a permit of the *Biosecurity Act 2014* or another Act. includes weeds, pest animals and noxious fish
6	You must not feed this category of restricted matter. Feeding this restricted matter may cause their numbers to increase and negatively impact the economy or the environment. Feeding for the purpose of preparing for or undertaking a control program is exempted. Includes invasive animals such as feral deer, foxes, rabbits and wild dogs and noxious fish such as carp, gambusia and tilapia.
7	If you have these noxious fish in your possession, you must kill the restricted matter and dispose of the carcass by burying the whole carcass in the ground above the high tide water mark or placing it in a waste disposal receptacle. Includes noxious fish such as carp, weather loach, climbing perch and gambusia

WEED MANAGEMENT TECHNIQUES	
METHOD	**DESCRIPTION**
Herbicide	**The herbicide weed control techniques described below provide a range of proven methods that can be used on a restoration site.**
Cut - Scrape-Paint	Cut the stem of the plant close to the ground (approximately 1-2cm) ensuring that soil does not come in contact with the cut surface. The cut can be made at a slight angle in order to increase the surface area that is exposed to the chemical. Apply herbicide immediately to the cut stump using poison pot and brush or dripper bottle. Using a knife, scrape the sides of the stump thoroughly to expose the green tissue. Apply herbicide to the scraped stump. The chemical must be applied within 10 seconds of the cut or scrape being made in order for it to be fully effective.
Cut - Paint	Cut the stem of the plant close to ground level. Apply herbicide to the cut stump using poison pot and brush or dripper bottle. This method is best suited to easy-to-treat weeds such as small-leaved privet (Ligustrum sinense), provided that the diameter of the stem at ground level is less than approximately three centimetres. If a glyphosate-/ metsulfuron methyl herbicide mix is being used in the poison pot, a greater range of weeds can be controlled using this method e.g. Easter cassia.
Scrape - Paint	Scrape as much of the stem as possible (one side of the stem) using a knife and apply herbicide to the scrape. Leave a small section of the vine unscraped and then twist the vine so that the next scrape is made on the opposite side of the stem to the preceding scrape. Continue along the length of the vine, scraping and painting as much of the stem as possible, with scraping to be concentrated along the thicker stems close to the root of the plant. This is the best method to use for madeira vine, as it allows the chemical to translocate to the underground storage organs and aerial tubers which may be hanging in large clusters above head height. This avoids the potential problem of tubers from cut stems left hanging in the trees from dropping to the ground and sprouting. When scraping madeira vine stems a deep scrape is advisable – scrape right through to the fibrous, stringy section of the stem, taking care not to sever the vine. This method is also suitable for treatment of ochna.
Over-spraying	Over-spraying involves the use of knapsacks or power sprayers to treat large expanses of weed such as lantana thickets. The foliage must be covered with herbicide but not to the point of running off the plant. The dead plants remain in place and can be cut down at a later stage. Prior to over-spraying, any weeds that are growing closely around established native plants must be hand removed or treated by cut-scrape-paint.
Spot-spraying	A knapsack filled with an appropriate herbicide mix is used by the operator to selectively control environmental weeds. A keen eye and an ability to distinguish between the native and weed species likely to be present, especially at seedling stage, is essential. Marker dye is added to the chemical mix to allow the operator to see what has already been sprayed, thus covering the ground weeds comprehensively and thoroughly Glyphosate and metsulfuron methyl are the main herbicides used for spot-spraying in ecological restoration, together with the addition of a penetrant and/or surfactant and marker dye.
Splatter Gun	This small gas-powered injector kit is fitted into a knapsack for easy carrying and delivers large droplets in a stream over the weed. The gun is used to deliver a concentrated herbicide (glyphosate or metsulfuron methyl) across large dense expanses of weed. The method is used for species such as lantana (ratio of 1:9 of glyphosate:water). Splatter gun involves spraying strips at one to two metre intervals over the thicket. The herbicide is then translocated throughout the entire plant. The method does not require the whole plant to be covered as in over-spray.
Oil-hang	Vines such as mile-a-minute (Ipomoea cairica) which produce long stolons extending many metres along the surface of the ground, are suited to the roll-hang method. Locate the base of the plant and carefully pull up the runners and roll them up. The resulting roll of vine is then hung in the fork of a tree to dry out as if it is left on the ground it is likely to re-shoot. Where runners are climbing up into a tree they are cut off at head height prior to the runner being rolled up – there is no need to pull cut vines down from trees as this action is likely to damage the tree. The base of the vine is treated using the cut scrape-paint method.
Gouge-paint	This method applies to plant species that have a fleshy underground storage organ, such as the large tuber that is often found at the base of madeira vine. It is also particularly appropriate for the treatment of climbing asparagus (Protasparagus plumosus). If using this technique on climbing asparagus, first cut the stems that are growing into the canopy at head height and also at the base. The fleshy rhizome can then be gouged, or alternatively in the case of climbing asparagus, it may be struck several times firmly with the head of a pair of loppers, allowing the brown outer covering of the crown to peel away exposing the white fleshy inner section of the rhizome for application of herbicide. Gouge out sections of the fleshy base with a knife and apply herbicide using a paint pot and brush or dripper bottle within 10 seconds.
Basal Barking	This method involves mixing an oil-soluble herbicide in diesel/kerosene and painting or spraying the full circumference of the trunk or stem of the plant from ground level to a height of approximately 45cm. Basal bark application is suitable for thin-barked woody weeds including saplings, regrowth and multi-stemmed shrubs. The method will usually result in the mortality of difficult-to-control woody weeds at any time of the year, provided the bark is not wet or too thick to enable the herbicide to penetrate. The method should not be used in wet weather, adjacent to waterways or in areas where native trees and shrubs are located. The use should be restricted to situations where a weed is particularly difficult to control e.g. cherry guava and where other methods have been unsuccessful.
Stem Injection	Large woody weeds such as camphor laurel, coral trees (Erythrina spp, Privet Ligustrum spp) and umbrella trees are generally treated by stem-injection. Holes are drilled at regular intervals around the base of the tree and exposed roots using a drill. A tree injection syringe attached to a small capacity knapsack is used to fill the holes with the herbicide. Stem-injection of trees can also be undertaken using a hatchet to create cuts in a 'brickwork pattern' in trunks of trees for the application of herbicide (known as tree frilling). Frilling is more labour intensive than drilling. The greatest benefit of stem injection is that the trees can be left standing in situ as they die, provided there is no risk to humans or infrastructure from falling limbs. This creates convenient roosts for birds and other animals and prevents the formation of large amounts of debris on the ground and damage to understorey plants which would result if the trees were to be cut down using a chainsaw.
Wick Wiping	Wick wipers can be manually used with a sponge or wick applicator, attached to a container filled with herbicide or as an attachment towed by a tractor. The manual method can be used to selectively apply herbicide to the leaves of weeds growing in sensitive situations. The handheld container can leak, and generally spot spraying would be recommended. The use of a tractor drawn wick wiper is used to control taller growing species such as introduced grasses and to encourage the growth of lower growing species. This method could be used in preparation for planting.
Mechanical	**Mechanical weed control involves the use of powered and non-powered equipment such as brush cutters, chainsaws, slashers, shovels, pruners, saws, etc. These methods are best used in situations where there is a large, uninterrupted stand of weeds.**
Dig and Bag	Dig and remove tuberous/ rhizomatous root systems. Remove roots or whole plant in hard/ compacted soils. Place in suitable container and remove from site, dispose of by deep burial, burn or burial at a land fill, must not place declared weed species in recycling (mulch).
Hand-Pull	Remove totally from ground by hand (human). Perform when soil is moist. Applicable to small infestations or areas of environmental sensitivity (including sensitive watercourses, when frogs are breeding, or presence of threatened species).
General Mechanical	May involve use of machinery (e.g. brush cutter, chainsaw, slasher, dozer, excavator). Suitable for large infestations and weed trees. Initially cost-effective but requires immediate revegetation of site or matting/ mulch application and extensive maintenance periods. Generates excessive soil and vegetation disturbance.

Note: Table adapted from a table in SEQERF

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References:

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AMENDMENTS

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
A	6/01/2026	CLIENT DRAFT	LS	SM
B	13/04/2026	AMENDMENTS	LS	LB

CLIENT
HB QLD PTY LTD

PROJECT
BAYLISS ROAD
SOUTH RIPLEY

DRAWING TITLE
DETAILED
REHABILITATION PLAN

DRAWING NO.
12186 E 05 DRP B

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan - *Planting Notes*

METHODOLOGY – PLANTING INSTALLATION

The following outlines the preferred installation methodology for revegetation works within the rehabilitation areas. It has been designed to maximise plant establishment success rates and minimise plant mortality. Revegetation works shall be either undertaken or directly supervised by an experienced and qualified contractor. All works shall be in accordance with the provisions of this DRP, and local government policies and Australian Standards.

Techniques are determined based on individual site conditions and will vary from bare seed, seed pods, drone seeding, seedling planting by ground machine, or spades/mattocks, or a combination of several techniques across the site.

Where cultivation has occurred, seedlings are planted into the prepared rip-lines. Seedlings should be planted in cultivated or uncultivated sites at a depth to make good contact with moist soil, and the soil then compressed around the seedling to remove any air pockets.

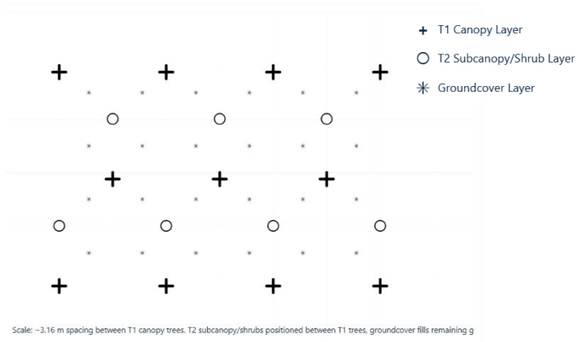
Planting should be of sufficient depth to ensure the entire root ball is buried with a minimum of five centimetres of natural ground covering the top of the root ball/potting mix. The stem of the seedling should be as vertical as possible.

Spreading bare seeds onto the top of the ground by hand or machine has a very low germination rate and requires high volumes of seed and good soil to seed contact to be successful. A high degree of pre-plant preparation is required before direct seeding is undertaken. Relatively flat open sites with little ground layer competition and sandy soils could be suitable for direct seeding by machine. Inaccessible sites with good pre-plant ground layer vegetation control could be suitable for drone dispersal.

Tube stock of native trees and shrubs should be planted into moist soil with good soil to seed contact at an optimum depth to maximise the seed germination. Seeds of the same species combined with various materials (e.g. clay) into a small pod shape can be used to reduce seed predation by insects, protect the seeds from adverse weather conditions, and increase germination. Inaccessible sites with good pre-plant ground layer vegetation control may be suitable for drone or manual dispersal of seed pods.

- **Weather events** such as dry weather conditions, extreme high temperatures, and extreme low temperatures will have a negative impact on seed germination and seedling survival.
- **Timing** must occur during seasons of high rainfall and mild temperatures.
- **Seedling types** must be a variety of local provenance genetics to ensure future resilience and ecological benefits. Multiple seedlings can be grown in a solid tray or individually in 50mm tube stock pots. Transplanting the tallest, most mature seedlings with solid mature root ball density maximises the survival and early growth rate of the seedlings.
- **Fertilising** seedlings is important just prior to planting. Alternately a liquid fertilizer can be added to the water when the seedlings are soaked on the day of planting. A complete, slow-release fertiliser is recommended, and is to be administered appropriately during planting. Topdressing with slow-release fertiliser is preferred to avoid toxic levels of fertiliser accumulating in the plant hole around the plant roots.
- **Moisture** is a key element to reduce seedling transplant shock. The ground should have a full moisture profile, the seedlings should be soaked fully before planting, and there should be a high chance of rain after planting. Hand watering planted seedlings should be considered only as a last resort. Planting seedlings provides an opportunity to have the greatest control over forest design.
- **Maps**, including species combinations, will inform the planting contractors of the species mix for each planting site, the density and spacing of the seedlings and the specific location of each species mix across the site. Seedlings of the same species can be planted in small groups or spread randomly across the site.
- **Quality control** is undertaken at the time of planting. Clear instructions to planting contractor is required to ensure the planting quality standard is understood. This is usually best undertaken on the same day as contractor induction to make sure the planters understand the quality standards from day one. Any trees not planted correctly, or planted at the incorrect spacing, will need to be reworked at the contractor's cost. Further inspection of the planting work will be undertaken prior to completion of the planting work to ensure the standard and spacing requirements have been met. Invoices received from the planting contractor cannot be paid until the final inspection has been undertaken and any problems rectified. Work that does not meet the standard will need to be re-done as soon as possible at the expense of the contractor.

T2/shrub species are to be planted between T1 canopy tree rows. Groundcovers are to be dispersed evenly throughout the area.



Proposed planting arrangement for complete reconstruction (above)

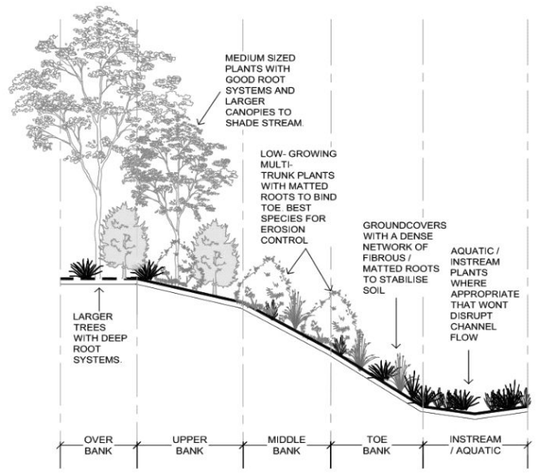


Figure 2: Categories of channel vegetation adapted from the Brisbane City Council Natural Channel Design Guidelines.

METHODOLOGY – POST PLANTING

Once weed removal/control has been completed the engaged suitably qualified environmental consultant will be notified to monitor natural regeneration. Photo point monitoring and GPS locational and extent survey will be utilised.

Rehabilitation and Planting Monitoring

The following elements will be noted on a field datasheet:

- The success of the rehabilitation stock (a physical count of alive plants in the ground).
- The average health of the rehabilitation stock.
- The average height of the rehabilitation stock.
- The presence of weeds within the rehabilitation extent.
- Natural regeneration of native species.

Photo Monitoring

Photo point monitoring and GPS locational and extent survey will be utilised. The coordinates of the initial photo monitoring will be recorded using the handheld GPS. Photo point monitoring will be undertaken during monitoring events, at the same location and (if possible) time of the year, before and after planting has commenced. If natural regeneration should fail, infill planting will be implemented. Following infill planting, monitoring will commence.

The photos provide the baseline imagery to compare future photo point monitoring. A record of the photos will be maintained which includes:

- GPS coordinates of the photo point.
- Date, time and number of each photo.
- Direction in which the photo was taken (north, south, east and west).
- After each photo monitoring event, a GPS waypoint of the location of the rehabilitation and a GPS polyline of the extent will be recorded.

Annual Monitoring and Reporting

Rehabilitation progress reports will be prepared by the suitably qualified regeneration contractor and included in the MVOA Annual Report. A suitably qualified regeneration contractor will complete annual monitoring tasks until establishment of plantings is achieved (typically after five years).

Milestone Monitoring

The suitably qualified person as appointed by the Proponent will complete MHQA surveys before the end of Years 5, 10, 15, and 20 of the offset to assess against the interim milestones and environmental outcomes.

This will include:

- MHQA transects at baseline sampling locations;
- Weed line transects; and
- direct and indirect surveys to target Koala presence, including SAT surveys and motion triggered camera trapping.

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CLIENT: HB QLD PTY LTD

PROJECT: BAYLISS ROAD SOUTH RIPLEY

DRAWING TITLE: DETAILED REHABILITATION PLAN

DRAWING NO.: **12186 E 06 DRP B**

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan - *Maintenance and Monitoring*

METHODOLOGY – MAINTENANCE

By the maintenance stage, the vegetation community is at a point where native plant species are germinating and establishing. Weed density is starting to decrease as the native plants are able to out-compete the weeds. One of the fundamental principles of ecological restoration is that it attempts to create or re-establish an ecosystem that is self-sustaining. Therefore, it is the underlying goal that maintenance will eventually be decreased to a minimum. While this is not always possible, due to factors such as the continual reintroduction of weed propagules to the site from surrounding areas; unfavourable seasons or weather event; persistent weed species; or global influences such as the enhanced greenhouse effect, it should always be strived for (source: SEQERF). Maintenance works include watering, follow-up weed management, pest management and remedial planting as informed by adaptive management.

Watering regime – if required based on site conditions

Watering is a critical component during the establishment phase of ecological restoration where site conditions are unsuitable for plant growth. Watering regime is to be adjusted based on site conditions, species, and seasonal variability. Indicative intensive watering regime is as below.

Primary Establishment Phase (0–12 months)

- Frequency:
  - Weeks 1–4: Water every 2–3 days, especially in sandy or well-drained soils.
  - Weeks 5–12: Reduce to twice weekly, depending on rainfall and soil moisture.
  - Months 4–12: Weekly deep watering during dry spells.
- Volume:
  - Apply 10–20 litres per plant for trees and shrubs.
  - Groundcovers require less water, but will require full root zone saturation.
- Method:
  - Use drip irrigation, tree bags, or slow-release watering systems to minimise runoff and evaporation.
  - Avoid overhead watering to reduce disease risk.
- Seasonal Adjustments
  - Summer (Dec–Feb): Increase frequency due to high evapotranspiration.
  - Autumn/Winter (Mar–Aug): Reduce watering unless dry conditions persist.
  - Spring (Sep–Nov): Resume intensive watering as temperatures rise.
- Monitoring and Adaptation
  - Check soil moisture at root depth using probes or manual inspection.
  - Observe plant stress indicators: wilting, leaf drop, discoloration.
  - Adjust watering based on species needs.

Pest management

Non-native vertebrate pests will be managed as part of the broad management of the offset prescribed under the OAMP. Management will target non-native vertebrate predator and herbivore species which have potential to damage regenerating habitat areas. This includes wild dogs, European red foxes, feral cats, feral pigs and deer.

Weed control

Intensive weed control maintenance will be undertaken for at least two years after planting is completed, or until the planted seedlings are tall enough to access full sunlight and adequate soil moisture free from adjacent competing plants. Ongoing weed maintenance activities will be completed throughout the life of the offset with a focus on WONS. Care should be taken to ensure weed control approaches do not impact planted seedlings and herbicide application is used precisely and selectively to ensure no dieback to the plantings or developing understorey. Herbicide application must be undertaken by licensed and experienced contractors, and in accordance with registered label conditions and safety data sheet requirements at all times. Mechanical methods will be used where appropriate.

MONITORING AND REPORTING FRAMEWORK

Monitoring

Monitoring will comprise a mix of informal and formal monitoring methods to track progress against the proposed completion criteria for each management action and objectives of this RMP. All monitoring will be undertaken by a suitably qualified Rehabilitation Contractor/Landscape consultant and/or Ecologist.

It is important for the long-term success of a habitat establishment project that both growth and survival are monitored at regular intervals. The proposed monitoring program includes informal monitoring (i.e. photo monitoring) of the offset area bi-annually (minimum 4 months between monitoring events) during years 1 to 5 and annually from years 6 to 20. Annual monitoring may cease before year 20 if WONS and habitat creation and regeneration completion criteria have been achieved for three consecutive years without any active management. Formal monitoring techniques (i.e. MHQA transects) will be completed in years 5, 10, 15 and 20.

Informal

Informal or qualitative monitoring techniques will be employed as part of the offset monitoring. Informal monitoring methods are less time-consuming and technical but are an important tool for determining ecological restoration success. Informal monitoring will occur through site inspections at the prescribed monitoring intervals and will include the following techniques:

1. Photo monitoring, and
2. Visual assessment.

Photo monitoring

Photo monitoring is a cost-effective and objective method to visually assess plant survival and growth. Photo monitoring can be used to build a consistent reference point for rehabilitation progress and provide a visual time series of the offset area from a baseline state to a self-sustaining state. Permanent photo points will be established in the first year of the offset commencement prior to any works commencing on-site (weed management or planting) using a star picket marked with fluorescent yellow safety cap or painted timber stakes. This will enable photos to be taken of the site at regular intervals as it is being restored. Photo point locations will be spread between EMZs at representative locations of each EMZ. Indicative photo monitoring locations will be established by the overseeing qualified Rehabilitation Contractor/Landscape Consultant and/or Ecologist. Photo monitoring will use the following method to ensure adequate data collection and consistency across monitoring events as recommended by the Guide to photo monitoring of ecological restoration projects (OEH, 2018):

- Each photo will include the established star picket demarcating the photo point location to create a fixed reference object in the field of view.
- Point the camera towards an established compass bearing (e.g. 55° North) for the photo point location.
- Take multiple photos (left, right, centre) allowing for each image to overlap or use the panoramic view function on the camera. This will increase the coverage and representativeness of the scene/subject.
- Always take the photo from the same point, and at the same height.
- Where practical, use the same camera or the same type of camera each time the photo is taken.
- Minimise sun glare and shadow in the photo and try to take photos at the same time of day.
- Identify key species that will be visible in the photo.
- Take along copies of the original photos for reference when returning to the photo points to help match the field of view contents.

Visual assessment

At each photo monitoring location, a visual assessment will also be completed whereby general observations such as plant mortality rate, species, weed/WONS presence and other degrading factors are recorded.

Reporting

Following each photo monitoring event, a Photo Monitoring Report will be prepared which will include the following information:

- Photo set at each monitoring location.
- Commentary on mortality rate and presence of WONS/other weeds at a minimum with any additional relevant observations to inform adaptive management such as species-specific responses or herbivory.
- Adaptive management actions (if required).

Photo Monitoring Reports will be distributed to the rehabilitation contractor to instigate rectification works. After each monitoring event, photos will be transferred to a master photo monitoring data template, designed to show changes in each photo monitoring location between events.

Formal

Formal monitoring of rehabilitation works involves collecting quantitative data at prescribed monitoring intervals using a combination of monitoring methods and techniques. Formal monitoring provides data that cannot be measured by informal observations and can be easily compared against quantitative performance indicators. This will include:

MHQA Surveys

MHQA transects at 5-yearly intervals (5, 10, 15 and 20 years) following the commencement of the offset. Transects will be repeated at baseline locations before the end of the relevant monitoring interval (e.g. before the end of Year 5) and will be completed in accordance with the baseline survey methodologies described in the OAMP.

Reporting and Monitoring – Summary

The results of informal monitoring (photo monitoring and visual assessment) will be detailed in bi-annual monitoring reports and formal monitoring (MHQA surveys) in Milestone Survey Reports. Bi-annual monitoring reports will include a summary of estimated success rate (namely of tree species), any degrading factors at the site that may or are currently affecting survival success and any recommended adaptive management measures while Milestone Survey Reports will report on habitat quality improvements relative to the baseline survey condition and proposed Environmental Outcomes detailed in the OAMP.

The reporting schedule for the monitoring program is summarised in the table below.

Report	Purpose	Frequency	Responsible party
Milestone Survey Report *Details the results of MHQA, GHFF and FHA foraging habitat assessment.*	Designed to demonstrate increase in value of offset area for Matters of National Environmental Significance (koala and grey-headed flying-fox) as proposed under the OAMP.	Five-yearly at Years 5, 10, 15 and 20	Suitably qualified Ecologist as appointed by the Proponent
Photo Monitoring Report *Qualitative monitoring report showing photos of the offset area, commentary on rehabilitation progress and recommended adaptive management measures.*	Function is to provide regular assessment of the offset area and feedback to engaged rehabilitation contractors to guide on-ground works.	Bi-annually from Years 1 to 5 (min 4 months between events. Annual from Years 6 to 20	Suitably qualified Rehabilitation Contractor, Landscape Consultant or Ecologist as appointed by Offset Provider

ADAPTIVE MANAGEMENT

Adaptive management is a systematic approach for improving rehabilitation outcomes by learning from existing management techniques. It is a cyclic process that involves:

1. Identification of unsuccessful treatments and new threats during monitoring events
2. Investigation of new and alternative treatments
3. Implementation of new / alternative management strategies based on best available knowledge
4. Review of new / alternative management strategies during monitoring

Adopting an adaptive approach to rehabilitation works is recommended to maximise environmental outcomes for the site. Once an area is revegetated, the survival and growth of plants needs to be assessed, monitored and managed. Plans need to be adaptive in order to respond to identified issues on the site.

Multiple corrective action triggers for adaptive management are proposed. This includes:

- Native plant mortality >20% during the initial contractor establishment phase (3-5 years) of the plantings
- WONS cover >5% after Year 10
- Planting with groundcover species (grasses and forbs) if required to improve species richness targets as determined through MHQA monitoring. Indicative species palette is provided in this RMP.

A survival rate of 80% of tree species is the target for the offset area during the establishment phase of the plantings (3-5 years). This is required to achieve the proposed offset outcomes for the species under the OMP. After the initial 3-5 year contractor establishment phase, surviving plants are considered self-sustaining. It is anticipated the overall density of plantings will normalise to typical eucalypt forest density during the successional phase of the offset (5-20 years post planting). Where survival rates are observed to be less than 80% during the contractor establishment phase, this may indicate the presence of a degrading factor not previously identified or considered at the site and may require adaptive management measures to be considered and implemented. Degrading factors are to be identified as part of regular monitoring and will form the basis for actioning adaptive management.

Adaptive management measures may include a combination of the following:

- Identify and address the degrading factor (e.g. soil issue, species failure).
- Remedial plantings in areas of dieback to bolster survival rates to above 80% during the contractor establishment phase.
- Introduce a different species *i.e.,* if one plant species consistently dies on a site, consider using in its place a species that is performing well.
- Adjust planting methods such as using advanced tube stock or direct seeding, modifying site preparation techniques.
- Modify weed management techniques or frequency where WONS exceed 5% after Year 10.

REHABILITATION TEAM RESPONSIBILITIES

It is critical for all parties to understand their responsibilities within the rehabilitation 'team'.

PARTY	DESCRIPTION
Proponent	Ensure all consultants, contractors, sub-contractors or others utilising the area are aware of the Rehabilitation Management Plan. Appoint appropriate consultants and contractors to undertake works as prescribed on the drawings. Provide security via an uncompleted works bond and maintenance bond for the cost of works if required. Cover costs of all resources to ensure works are completed as per approved plans.
Consultants	Brief proponent on their requirements in implementing and maintaining works as per the Rehabilitation Management Plan. Attend monitoring inspections. Undertake monitoring and reporting as per this plan. Be available to respond to technical queries to the approved documentation when on-site conditions require changes. Liaise with team throughout all stages of approval, initial works and maintenance of works.
Assessment Manager	Provide technical expertise via commentary on the approval of documentation. Attend monitoring inspections. Reduce and release securities held against works at the completion of successful milestone inspections. Be available to respond to technical queries to the approved documentation when on-site conditions require changes. Accept and review maintenance reports as dictated (if required)
Land Manager / Contractor	Ensuring implementation of works and compliance with this Rehabilitation Management Plan. Attend monitoring inspections. Has a minimum Certificate III in Conservation and Land Management, or a Certificate III in Horticulture, or a Certificate III in Rehabilitation Construction, or equivalent experience in rehabilitation. Hold relevant licenses in applicable weed management/ revegetation/ fauna management, any required insurances for scope of works and an understanding of required Laws, Act, Policies and Guidelines. Recommend changes to the documentation when specific experience or on-site conditions require so.

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CLIENT: HB QLD PTY LTD

PROJECT: BAYLISS ROAD SOUTH RIPLEY

DRAWING TITLE: DETAILED REHABILITATION PLAN

DRAWING NO.: **12186 E 07 DRP B**

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan - APPENDIX A *Weed Treatment and Removal (i)*

Queensland Herbarium Invasive Naturalised Plants In South East Queensland

Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
1	Mimosaceae	Acacia boliviana (Bolivian wattle)	1	1	4	T/O	Mechanical or chain removal.	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
2	Mimosaceae	Acacia farnesiana (mimosa bush)	6	15	3	T/A	Mechanical removal of small plants.	
3	Mimosaceae	Acacia nilotica subsp. indica (prickly acacia)	3	3	4.4	T/A	Mechanical or chain removal.	
4	Cactaceae	Acanthocereus tetragonus (sword pear)	1	1	3	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
5	Polygonaceae	Acetosa sagittata (rambling dock)	4	18	4	V/U	Tubers: Dig up, bag and remove.	
6	Agavaceae	Agave americana (century plant)	4	9	4	S/OA	Dig out by hand or machine	
7	Agavaceae	Agave sisalana (sisal)	2	4	4	S/OA	Dig out by hand or machine	
8	Agavaceae	Agave vivipara var. vivipara (sisal)	2	3	4	S/OA	Dig out by hand or machine	
9	Asteraceae	Ageratina adenophora (crofton weed)	6	38	5	H/O	Hand pull and hang to dry.	
10	Asteraceae	Ageratina riparia (mistflower)	5	38	5	H/O	Hand pull and hang to dry.	
11	Asteraceae	Ageratum houstonianum (blue billygoat weed)	8	81	4	H/UO	N/A	
12	Simaroubaceae	Ailanthus altissima (tree of heaven)	1	3	4	T/O	Seedlings: Hand pull	
13	Amaranthaceae	Alternanthera philoxeroides (alligator weed)	1	3	5	Ha/U	Physical removal of plant should not be attempted	
14	Poaceae	Andropogon virginicus (whisky grass)	6	14	4	H/A	Hand pull or dig out small infestations.	
15	Basellaceae	Anredera cordifolia (madeira vine)	8	16	5	V/O	Small Vines & Tubers: Hand pull. Bag and dispose.	
16	Asclepiadaceae	Araujia sericifera (mothvine)	9	38	4	V/O	Seedlings & Vines: Hand pull. Bag and remove fruit.	
17	Aristolochiaceae	Aristolochia elegans (Dutchman's pipe)	8	30	4	V/O	Stems: Hand pull; Fruit: Bag and remove.	
18	Poaceae	Arundo donax (giant reed)	1	4	4	H/O	Physical removal of small infestations.	
19	Asclepiadaceae	Asclepias curassavica (red cotton bush)	9	43	3	S/O	Hand pull; Slash	
20	Asparagaceae	Asparagus aethiopicus cv. Sprengeri (asparagus ground fern)	5	35	5	H/O	Dig out unwanted plants and dispose of at the appropriate council landfill. Remove the entire crown of underground stem of plant to prevent regrowth	
21	Asparagaceae	Asparagus africanus (ornamental asparagus, asparagus fern)	7	26	5	V/O	Dig out roots and dispose of at local council landfill site. Remove entire crown and underground stem to prevent regrowth	
22	Asparagaceae	Asparagus plumosus (asparagus fern)	4	8	4	V/O	Rhizomes: crown and hang to dry.	
23	Poaceae	Axonopus compressus (broad leaved carpet grass)	5	23	4	H/AO	Cut stems from roos.	
24	Asteraceae	Baccharis halimifolia (groundsel bush)	10	168	5	S/O	Seedlings: Hand pull	
25	Asteraceae	Bidens pilosa (cobbler's pegs)	10	110	4	H/U	Hand pull or cultivation.	
26	Poaceae	Brachiaria decumbens (signal grass)	4	14	4	H/A	Grazing	
27	Poaceae	Brachiaria mutica (para grass)	6	18	4	Ha/A	Grazing	
28	Crassulaceae	Bryophyllum daigremontianum x B. delagoense (hybrid mother-of millions)	6	15	5	H/O	Hand pull and dispose	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
29	Crassulaceae	Bryophyllum delagoense (mother of millions)	8	38	5	H/O	Hand pull and dispose	
30	Crassulaceae	Bryophyllum pinnatum (resurrection plant)	6	17	4	H/O	Hand pull and dispose	
31	Buddlejaceae	Buddleja madagascariensis (buddleja)	5	6	3	S,V/O	N/A	
32	Cabombaceae	Cabomba caroliniana (cabomba, fanwort)	4	12	5	Ha/F	Mechanical removal of small infestations	
33	Caesalpiniaceae	Caesalpinia decapetala (thorny poinciana)	4	20	4	S,V/O	Seed-heads: Bag and remove.	
34	Brassicaceae	Cakile edentula (American sea rocket)	4	24	4	H/U	Manually grub and destroy.	
35	Commelinaceae	Callisia fragrans (purple succulent)	3	9	4	H/O	N/A	
36	Cannaceae	Canna indica (canna lily)	3	9	3	H/O	Dig out entire plant	
37	Sapindaceae	Cardiospermum grandiflorum (balloon vine)	7	31	4	V/O	Seedlings & Small Vines: Hand Pull	
38	Apocynaceae	Cascabela thevetia (syn. Thevetia peruviana) (yellow oleander)	5	9	3	ST/O	Hand pull small infesttions. Slashing can be used but should be followed up by herbicide application.	
39	Apocynaceae	Catharanthus roseus (pink periwinkle)	5	22	4	S/O	Hand pull	
40	Ulmaceae	Celtis sinensis (Chinese celtis)	8	19	5	T/O	Remove when small. Hand pull or dig out small seedlings. Combine dozing, burning and controlled grazing for large infestations	
41	Poaceae	Cenchrus ciliaris (buffel grass)	4	15	4	H/A	Hand or mechanical removal of young plants	
42	Poaceae	Cenchrus echinatus (Mossman river grass)	8	43	3	H/A	Hand or mechanical removal of young plants	
43	Solanaceae	Cestrum parqui (green cestrum)	6	36	4	S/O	Seedlings: Hand pull	
44	Caesalpiniaceae	Chamaecrista rotundifolia (round-leaf cassia)	6	14	3	ST/A	Seedlings: Hand pull	
45	Poaceae	Chloris gayana (Rhodes grass)	9	55	4	H/A	Hand pulling and removal and digging of larger clumps	
46	Asteraceae	Chrysanthemoides monilifera subsp. rotundata (bitou bush)	3	23	5	S/OA	N/A	
47	Lauraceae	Cinnamomum camphora (camphor laurel)	7	25	5	T/O	Seedlings: Hand pull	
48	Rubiaceae	Coffea arabica (coffee)	3	7	3	ST/A	Saplings: Hand pull	
49	Arecaceae	Colocasia esculenta (taro)	3	4	3	H/AO	Hand pull.	
50	Commelinaceae	Commelina benghalensis (hairy wandering jew)	4	7	4	H/O	Collect and Bag	
51	Asteraceae	Conyza bonariensis (flax-leaf fleabane)	7	38	3	H/U	Hand or mechanical removal of small infestations	
54	Poaceae	Cortaderia selloana (pampas grass)	2	1	4	H/O	Small Plants: dig out by hand or machine	
55	Asclepiadaceae	Cryptostegia grandiflora (rubber vine)	6	19	4	V/O	Scattered or medium-density infestations: Where possible, repeated slashing close to ground level is recommended.	
56	Poaceae	Cynodon dactylon (couch, Bahama grass introduced cultivars)	10	45	4	H/OA	Hand pull small infestations, removing all roots or smother with mulch.	
57	Cyperaceae	Cyperus brevifolius (Mullumbimby couch)	8	53	3	H/O	Each has to be dug out with a spade and the entire plant turned over, exposing the root system while making sure all aerial parts of the plant are completely covered.	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
58	Cyperaceae	Cyperus involucratus (African sedge)	6	15	4	Ha/OF	Each has to be dug out with a spade and the entire plant turned over, exposing the root system while making sure all aerial parts of the plant are completely covered.	
59	Fabaceae	Desmodium intortum (greenleaf desmodium)	4	11	3	H/A	Hand pull or crown and dispose	
60	Fabaceae	Desmodium uncinatum (silverleaf desmodium)	5	14	4	H/A	Hand pull or crown and dispose	
61	Poaceae	Digitaria didactyla (Queensland blue couch)	9	70	4	H/A	Hand pull or cultivation	
62	Poaceae	Digitaria eriantha (pangola grass)	5	20	3	H/A	Hand pull or cultivation	
63	Verbenaceae	Duranta erecta (duranta)	6	14	4	ST/O	Shrubs: CS&P (1:1.5)	
64	Poaceae	Echinochloa colona (awnless barnyard grass)	9	44	3	H/A	Hand or mechanical removal of small infestations	
65	Poaceae	Echinochloa crus-galli (barnyard grass)	6	34	4	H/A	Hand pull or dig out small infestations.	
66	Hydrocharitaceae	Egeria densa (egeria waterweed)	2	7	4	Ha/F	Hand pulling, cutting and digging with machines effective	
67	Pontederiaceae	Eichhornia crassipes (water hyacinth)	4	8	5	Ha/OF	Mechanical removal of small infestations	
68	Poaceae	Eleusine indica (crowsfoot grass)	8	55	4	H/A	Pull and chip. Replant with native couch.	
69	Poaceae	Eragrostis curvula (African lovegrass)	7	29	4	H/U	Chipped out before they flower. When chipping out the plant ensure that the tussock crowns are removed, as this will prevent regrowth. If in seed, the stems must be cut and bagged first.	
70	Rosaceae	Eriobotrya japonica (loquat)	3	5	3	T/O	Seedlings: Hand pull	
71	Fabaceae	Erythrina crista-galli (cockspur coral tree)	2	4	4	T/O	N/A	
72	Myrtaceae	Eugenia uniflora (Brazilian cherry)	4	19	4	ST/O	N/A	
73	Euphorbiaceae	Euphorbia cyathophora (painted spuge)	8	20	3	H/O	Hand pull	
74	Euphorbiaceae	Euphorbia heterophylla (milk weed)	5	12	3	H/O?	Hand pull	
75	Agavaceae	Furcraea foetida (Cuban hemp)	3	4	4.3	S/OA	Dig out by hand or machine	
76	Agavaceae	Furcraea selloa (hemp)	1	2	4	S/OA	Dig out by hand or machine	
77	Caesalpiniaceae	Gleditsia triacanthos (honey locust)	7	12	4	T/O	For the control of dense infestations on grazing land, burning followed by spot spraying is an economical control method.	
78	Colchicaceae	Gloriosa superba (glory lily)	3	26	4	V/O	N/A	
79	Asclepiadaceae	Gomphocarpus physocarpus (balloon cotton bush)	10	132	4	S/OU	Slash in winter and burn cuttings. Wanderer Butterfly can also be used as biological control.	

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References:

South East Queensland Ecological Restoration Framework (2012)

AMENDMENTS

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
A	6/01/2026	CLIENT DRAFT	LS	SM
B	13/04/2026	AMENDMENTS	LS	LB

CLIENT: HB QLD PTY LTD

PROJECT: BAYLISS ROAD SOUTH RIPLEY

DRAWING TITLE: DETAILED REHABILITATION PLAN

DRAWING NO.: **12186 E A01 DRP B**

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan - APPENDIX A *Weed Treatment and Removal (ii)*

Queensland Herbarium Invasive Naturalised Plants In South East Queensland								
Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
80	Asteraceae	Gymnocoronis spilanthoides (Senegal tea)	3	4	5	Ha/F	Place plant material in a sealed plastic bag, leave in sunlight to rot then burn or dispose of at a council-approved land fill tip	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
81	Cactaceae	Harrisia martinii (harrisia cactus)	2	4	4	S/O	The use of the biological mealy-bug agent is recommended	
82	Zingiberaceae	Hedychium coronarium (wild ginger)	2	2	4	H/O	Small Plants: Hand pull and dispose	
83	Zingiberaceae	Hedychium gardnerianum (ginger lily)	1	3	4	H/O	Small Plants: Hand pull and dispose	
84	Malpighiaceae	Hiptage benghalensis (hiptage)	3	5	4	S,V/O	Hand pull small infestations.	
85	Acanthaceae	Hygrophila costata (Glush weed)	3	7	5	Ha/F	Hand pull smal infestations. Can be controlled by planting competitive native species.	
86	Poaceae	Hymenachne amplexicaulis cv. Olive (hymenachne)	1	1	4	Ha/A	A combined approach of different control methods including mechanical, chemical and biological with land management practices is most effective	
87	Acanthaceae	Hypoestes phyllostachya (polka-dot plant	3	5	4	H/O	Hand pull or crown and dispose	
88	Balsaminaceae	Impatiens walleriana (balsam)	2	6	4	H/O	N/A	
89	Convolvulaceae	Ipomoea cairica (mile-a-minute)	7	56	4	V/O	Vines & Runners: hand pull, roll up and hand up to dry.	
90	Convolvulaceae	Ipomoea indica (blue morning glory)	5	24	4	V/O	Vines and Runners: hand pull, roll up and hang to dry.	
91	Bignoniaceae	Jacaranda mimosifolia (jacaranda)	4	12	3	T/O	Seedlings: Hand pull	
92	Euphorbiaceae	Jatropha gossypiifolia (cotton-leaf physic nut, bellyache bush)	1	1	4	S/O	Hand pull	
93	Juncaceae	Juncus articulatus (jointed rush)	1	2	4	Ha/FO	Hand pull.	
94	Acanthaceae	Justicia betonica (squirreltail)	2	4	4	S/O	Hand pull smal infestations. Can be controlled by planting competitive native species.	
95	Sapindaceae	Koelreuteria elegans (Chinese rain tree)	1	1	3.6	T/O	Seedlings: Hand pull	
96	Verbenaceae	Lantana camara var. camara (lantana)	10	455	5	S/O	Seedlings: Hand pull	
97	Verbenaceae	Lantana montevidensis (creeping lantana)	8	62	5	S/O	Fire and/or mechanical control	
98	Mimosaceae	Leucaena leucocephala (leucaena)	6	14	4	ST/A	Small plants: Hand pull or mechanical removal	
99	Oleaceae	Ligustrum lucidum (tree privet)	5	9	5	T/O	Seedlings: Hand pull	
100	Oleaceae	Ligustrum sinense (Chinese privet)	4	11	5	T/O	Seedlings: Hand pull	
101	Liliaceae	Lilium formosanum (Taiwan lily)	5	10	4	H/O	Hand pull or crown and dispose	
102	Caprifoliaceae	Lonicera japonica (Japanese honeysuckle)	3	6	4	V/O	Vines and Runners: hand pull, roll up and hang to dry.	
103	Solanaceae	Lycium ferocissimum (African boxthorn)	1	5	4.4	S/O	N/A	
104	Bignoniaceae	Macfadyena unguis-cati (cat's claw creeper)	5	36	5	V/O	Tubers: crown or dig up, bag and remove.	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
105	Fabaceae	Macroptilium atropurpureum (siratro)	8	39	4	V/A	N/A	
106	Fabaceae	Macrotyloma axillare (perennial horse gram)	4	12	3	V,H/A	N/A	
107	Poaceae	Melinis minutiflora (molasses grass)	5	17	5	H/A	Grazing or mowing	
108	Poaceae	Melinis repens (red Natal grass)	10	134	4	H/A	Grazing or mowing	
109	Mimosaceae	Mimosa pudica (common sensitive plant)	4	12	4	S/A	N/A	
110	Moraceae	Morus alba (white mulberry)	3	10	3	T/O	N/A	
111	Rutaceae	Murraya paniculata cv. Exotica (murraya)	6	26	4	S/O	Seedlings: Hand pull	
112	Haloragaceae	Myriophyllum aquaticum (parrot's feather)	3	15	4	Ha/F	N/A	
113	Brassicaceae	Nasturtium officinale (Qld use Rorippa nasturtium-aquaticum) (watercress)	7	19	4	Ha/FU	Manually grub and destroy.	
114	Fabaceae	Neonotonia wightii (glycine)	5	16	5	H/A	N/A	
115	Nymphaeaceae	Nymphaea caerulea subsp. zanzibarensis (blue lotus)	4	17	4	Ha/OF	Hand pull small infestations.	
116	Nymphaeaceae	Nymphaea mexicana (yellow waterlily)	2	4	4	Ha/OF	Hand pull small infestations.	
117	Ochnaceae	Ochna serrulata (ochna)	7	33	5	S/O	N/A	
118	Onagraceae	Oenothera drummondii subsp. drummondii (beach evening primrose)	3	17	4	H/O	Hand pull	
119	Oleaceae	Olea europaea (olive)	2	6	4	T/A	Seedlings: Hand pull	
120	Cactaceae	Opuntia aurantiaca (tiger pear)	1	2	4	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
121	Cactaceae	Opuntia imbricata (rope pear)	1	1	4	H/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
122	Cactaceae	Opuntia monacantha (drooping tree pear, syn. O. vulgaris)	2	3	4	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
123	Cactaceae	Opuntia stricta (common prickly pear)	7	67	4	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
124	Cactaceae	Opuntia tomentosa (velvet tree pear)	8	46	4	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
125	Poaceae	Panicum maximum (green panic and guinea grass)	8	78	5	H/A	Hand or mechanical removal of small infestations	
126	Asteraceae	Parthenium hysterophorus (parthenium weed)	6	14	4	H/U	Hand pulling of small areas is not recommended	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
127	Poaceae	Paspalum conjugatum (paspalum grass)	7	38	4	H/A	Cut below crown.	
128	Poaceae	Paspalum dilatatum (paspalum grass)	10	30	4	H/A	Hand pull or dig up	
129	Poaceae	Paspalum mandiocanum (broad leaf paspalum)	3	6	4	H/A	N/A	
130	Poaceae	Paspalum notatum (bahia grass)	4	10	4	H/A	Hand pull or dig up	
131	Passifloraceae	Passiflora edulis (passion fruit)	6	12	3	V/AO	Hand Pull	
132	Passifloraceae	Passiflora foetida (stinking passion flower)	7	50	4	V/O	Hand Pull	
133	Passifloraceae	Passiflora suberosa (cork passionflower)	8	166	4	V/O	N/A	
134	Passifloraceae	Passiflora subpeltata (white passion flower)	10	60	4	V/O	Stems: Hand pull	
135	Scrophulariaceae	Paulownia tomentosa (paulownia)	3	5	4	T/AO	Seedlings: Hand pull	
136	Poaceae	Pennisetum alopecuroides (swamp foxtail)	7	29	4	H/O	Hand Pull	
137	Poaceae	Pennisetum clandestinum (kikuyu grass)	4	12	4	H/A	Hand Pull	
138	Poaceae	Pennisetum purpureum (elephant grass)	2	9	4	H/O	Grazing or mechanical removal	
139	Poaceae	Pennisetum setaceum (fountain grass)	3	11	3	H/O	Hand Pull	
140	Verbenaceae	Phyla canescens (lippia, Condamine couch)	3	4	4	Ha/O	A combined approach of different control methods including chemical and mechanical with land management practices is most effective	
141	Poaceae	Phyllostachys aurea (fishpole bamboo)	1	2	4	S/O	N/A	
142	Phytolaccaceae	Phytolacca octandra (inkweed)	10	50	3	H/O	Hand pull or crown	
143	Pinaceae	Pinus elliottii (slash pine)	4	22	4	T/A	Seedlings: Hand pull; Saplings and Trees: cut close to ground or ring-bark	
144	Araceae	Pistia stratiotes (water lettuce)	3	8	4	Ha/OF	Mechanical removal of small infestations	
145	Mimosaceae	Prosopis pallida (algaroba)	2	2	4	ST/O	When using mechanical control methods, it is important to remove the bud zone of the root system (about 30 cm below the ground surface). If this is not removed, re-shooting can occur.	
146	Rosaceae	Prunus munsoniana (wild goose plum)	7	31	4	ST/A	Seedlings: Hand pull	
147	Myrtaceae	Psidium guajava and P. guineense (yellow guava and West Indes guava)	4	7	4	ST/AO	N/A	
148	Fabaceae	Pueraria lobata (kudzu)	3	4	4	V,S/O	Slash; Diminish by shading site	
149	Bignoniaceae	Pyrostegia venusta (flame vine)	1	1	4	V/O	N/A	
150	Rosaceae	Rhaphiolepis indica (Indian hawthorn)	3	10	4	ST/O	Seedlings: Hand pull	

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References:

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AMENDMENTS

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
A	6/01/2026	CLIENT DRAFT	LS	SM
B	13/04/2026	AMENDMENTS	LS	LB

CLIENT
HB QLD PTY LTD

PROJECT
BAYLISS ROAD
SOUTH RIPLEY

DRAWING TITLE
DETAILED
REHABILITATION PLAN

DRAWING NO.
12186 E A02 DRP B

BAYLISS ROAD, SOUTH RIPLEY

Detailed Rehabilitation Plan - APPENDIX A *Weed Treatment and Removal (iii)*

Queensland Herbarium Invasive Naturalised Plants In South East Queensland								
Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
150	Rosaceae	Rhaphiolepis indica (Indian hawthorn)	3	10	4	ST/O	Seedlings: Hand pull	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance
151	Euphorbiaceae	Ricinus communis (castor oil plant)	7	20	4	S/O	Seedlings: Hand pull	
152	Phytolaccaceae	Rivina humilis (baby pepper)	8	61	4	H/O	Hand pull and hang to dry.	
153	Rosaceae	Rubus bellobatus (kittatinny blackberry)	5	22	4	S/O	Slashing hinders growth, giving some control if plants are slashed before they seed	
154	Rosaceae	Rubus discolor (R. fruticosus complex, a blakberry)	4	10	4	S/OA	Slashing hinders growth, giving some control if plants are slashed before they seed	
155	Rosaceae	Rubus ellipticus (yellowberry)	4	26	4	S/O	Slashing hinders growth, giving some control if plants are slashed before they seed	
156	Acanthaceae	Ruellia malacosperma (ruellia)	5	16	4	H/O	N/A	
157	Ruppiaceae	Ruppia maritima (sea tassel)	2	8	4	Ha/F	Hand pull or dig up	
158	Alismataceae	Sagittaria graminea var. platyphylla (sagittaria arrowhead)	3	7	4	Ha/FO	Physical removal of small infestations.	
159	Lamiaceae	Salvia coccinea (red salvia)	9	46	4	H/O	remove small areas by hand or machine	
160	Salviniaceae	Salvinia molesta (salvinia)	8	57	5	Ha/F	Mechanical removal of small infestations; Salvinia weevil (Biological control)	
161	Caprifoliaceae	Sambucus canadensis (American elder)	3	7	3	ST/O	Vines and Runners: hand pull, roll up and hang to dry.	
162	Dracaenaceae	Sansevieria trifasciata (sansevieria)	2	7	3	H/O	Hand pull or dig up	
163	Anacardiaceae	Schinus terebinthifolius (broad-leaf pepper tree)	6	49	5	T/O	Seedlings: Hand pull	
164	Asteraceae	Senecio madagascariensis (fire weed)	6	28	4	H/U	Vines: Hand pull and remove; Runners: Roll up and hang to dry.	
165	Asteraceae	Senecio tamoides (Canary creeper)	3	8	4	V/O	Vines: Hand pull and remove; Runners: Roll up and hang to dry.	
166	Caesalpiniaceae	Senna pendula var. glabrata (Easter cassia)	7	33	4	ST/O	Seedlings: Hand pull	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance
167	Caesalpiniaceae	Senna septemtrionalis (arsenic bush, was S. floribunda)	6	25	4	S/O	Seedlings: Hand pull	
168	Poaceae	Setaria palmifolia (palm leaf setaria)	5	13	3	H/O	Hand pull or dig up	
169	Poaceae	Setaria sphacelata (South African pigeon grass)	9	41	4	H/A	Hand pull or dig up	
170	Malvaceae	Sida rhombifolia (Paddy`s lucerne)	9	69	4	S/U	Hand pull or dig out.	
171	Asteraceae	Sigesbeckia orientalis (Indian weed)	10	148	4	H/U	Hand pull or cultivation.	
172	Solanaceae	Solanum erianthum (a tobacco bush)	7	19	3	S/O	Hand pull	
173	Solanaceae	Solanum hispidum (giant devil's fig)	5	23	4	S/O	Hand pull	
174	Solanaceae	Solanum mauritianum (wild tobacco tree)	8	30	4	S/O	Seedlings: Hand pull	
175	Solanaceae	Solanum seaforthianum (Brazilian nightshade)	8	78	4	V/O	Hand pull	
176	Solanaceae	Solanum torvum (devil's fig)	6	39	4	S/O	Seedlings: Hand pull	
177	Asteraceae	Solidago canadensis var. scabra (Canadian goldenrod)	7	15	4	H/O	Hand pull and hang to dry.	
178	Bignoniaceae	Spathodea campanulata (African tulip tree)	1	1	3	T/O	N/A	
179	Asteraceae	Sphagneticola trilobata (Singapore daisy)	6	34	5	H/O	Hand pull	
180	Poaceae	Sporobolus africanus (Parramatta grass)	8	48	5	H/U	Hand or mechanical removal of small infestations	
181	Poaceae	Sporobolus fertilis (giant Parramatta grass)	9	27	5	H/U	Hand or mechanical removal of small infestations	
182	Poaceae	Sporobolus pyramidalis and S. natalensis (giant rat's tail grasses)	8	72	5	H/U?	Hand or mechanical removal of small infestations	
183	Poaceae	Stenotaphrum secundatum (buffalo grass)	3	23	3	H/AO	Hand or mechanical removal of small infestations	
184	Fabaceae	Stylosanthes scabra (shrubby stylo)	4	4	4.3	H/A	N/A	
185	Arecaceae	Syagrus romanzoffiana (queen palm)	4	10	4	T/O	Seedlings: Hand pull or crown; Trees: cut below growing point	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance
186	Asteraceae	Tagetes minuta (stinking roger)	8	32	3	H/U	Hand pull and hang to dry.	
187	Bignoniaceae	Tecoma capensis (Cape honeysuckle)	3	8	4	ST/O	N/A	
188	Bignoniaceae	Tecoma stans (yellow bells)	4	16	4	ST/O	N/A	
189	Poaceae	Themeda quadrivalvis (grader grass)	8	25	4	H/A	Hand pull or dig out small infestations.	
190	Acanthaceae	Thunbergia alata (black eyed susan)	5	22	4	H/O	N/A	
191	Acanthaceae	Thunbergia grandiflora (thunbergia, blue thunbergia)	2	3	5	V/O	N/A	
192	Acanthaceae	Thunbergia laurifolia (laurel clock vine)	1	1	4	V/O	N/A	
193	Fabaceae	Tipuana tipu (tipuana)	2	5	3	T/O	Seedlings: Hand pull	
194	Asteraceae	Tithonia diversifolia (Mexican sunflower)	5	11	4	H/O	N/A	
195	Commelinaceae	Tradescantia fluminensis (Qld use T. albiflora) (wandering jew)	5	9	4	H/O	N/A	
196	Commelinaceae	Tradescantia zebrina (zebrina)	3	12	4	H/O	N/A	
197	Tiliaceae	Triumfetta rhomboidea (Chinese burr)	7	44	4	H/U	Hand pull	
198	Asteraceae	Verbesina encelioides (crownbeard)	7	34	4	H/U	Vines: Hand pull and remove; Runners: Roll up and hang to dry.	
199	Iridaceae	Watsonia meriana var. bulbillifera (bulbil watsonia)	2	3	3	H/O	Dig up, bag and remove	
200	Asteraceae	Zinnia peruviana (wild zinnia)	6	33	3	H/O	Seedlings: Hand pull	

Explanatory notes.

Sub-region (Sr): Number of the ten sub-regions of the Southeast Queensland bioregion (Young and Dillewaard 1999) within which species recorded (Queensland Herbarium data).
Rec no. (R): Total number of records for species within study area, Queensland Herbarium CORVEG and HERBRECS data.
Scores (S): Based on panel data of invasiveness, 5 (highest) to 3 (moderate). ? indicate doubtful scores.

Life forms (LFS): T-tree (woody plant >5m), ST-small tree (2-5m), S-shrub (woody <2m), H-herb (grasses & forbes), Ha-aquatic herbs.
Source: A-agriculture, O-ornamental and landscaping, F-fish aquarium, U-unintentional introduction and/or contaminant.

Abbreviations: Control Methods

CS&P = cut scrape and paint

S&P = scrape and paint

C&P = cut and paint

F/I = frill or inject stem

Abbreviations: Herbicides

G = Glyphosate, eg. Roundup Biactive, Weedmaster Duo

MM = Metsulfuron methyl, eg, Brushoff

F = Fluroxypyr, eg. Starane

Abbreviations: Herbicide Dilution Rates for High Concentration Applications

GU = Glyphosate undiluted

G1 = 1 part water to 1 part glyhphosate

G1.5 = 1.5 parts water to 1 part glyphosate

G4 = 4 parts water to 1 part glyphosate

Abbreviations: Herbicide Spray Concentrations

G100 = 100mL glyphosate per 10L of water + surfuctant, eg 20mL LI 700 per 10L
G200 = 200mL glyphosate per 10L of water + surfuctant, eg 50mL LI 700 per 10L

G100 + MM = 100mL glyphosate + 1.5g metsulfuron methyl per 10L of water + wetting agent, eg. 2mL Agral per 10L water
G200 + MM = 200mL glyphosate + 1.5g metsulfuron methyl per 10L of water + wetting agent, eg. 2mL Agral per 10L water

MM = 1.5g metsulfuron methyl per 10L water + wetting agent, eg. 2mL Agral per 10L water

F100 = 100mL fluroxypyr per 10L water

F150 = 150mL fluroxypyr per 10L water

Other Abbreviations

= Locally non-indigenous native species

Ref. 1. Big Scrub Rainforest Landcare Group (2008), 'Common Weeds of Subtropical Rainforests of Eastern Australia: A practical manual on their identification and control'

Ref. 2. Department of Primary Industries and Fisheries (QLD), 'Weeds and pest animals and ants'.

Ref. 3. Holland et al. (1996), 'Suburban Weeds', DPI QLD.

Ref 4. Port Stephens Council (NSW), 'Weed Busters'.
Ref 5. Depertment of Primary Industries (NSW), 'Noxious and Environmental Weed Handbook, 3rd Edition'.
Ref 6. Department of Environment and Conservation, 'Florabase', (DEC- WA)

Ref 7. Vitelli, J.S. and Madigan, B.A. and Van Haaren, P.E. and Setter, S. and Logan, P. (2009) Control of the invasive liana, Hiptage benghalensis. Weed Biology and Management, 9 (1). pp. 54-62.

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References:

South East Queensland Ecological Restoration Framework (2012)

AMENDMENTS

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
A	6/01/2026	CLIENT DRAFT	LS	SM
B	13/04/2026	AMENDMENTS	LS	LB

CLIENT
HB QLD PTY LTD

PROJECT
BAYLISS ROAD
SOUTH RIPLEY

DRAWING TITLE
DETAILED
REHABILITATION PLAN

DRAWING NO.
12186 E A03 DRP B