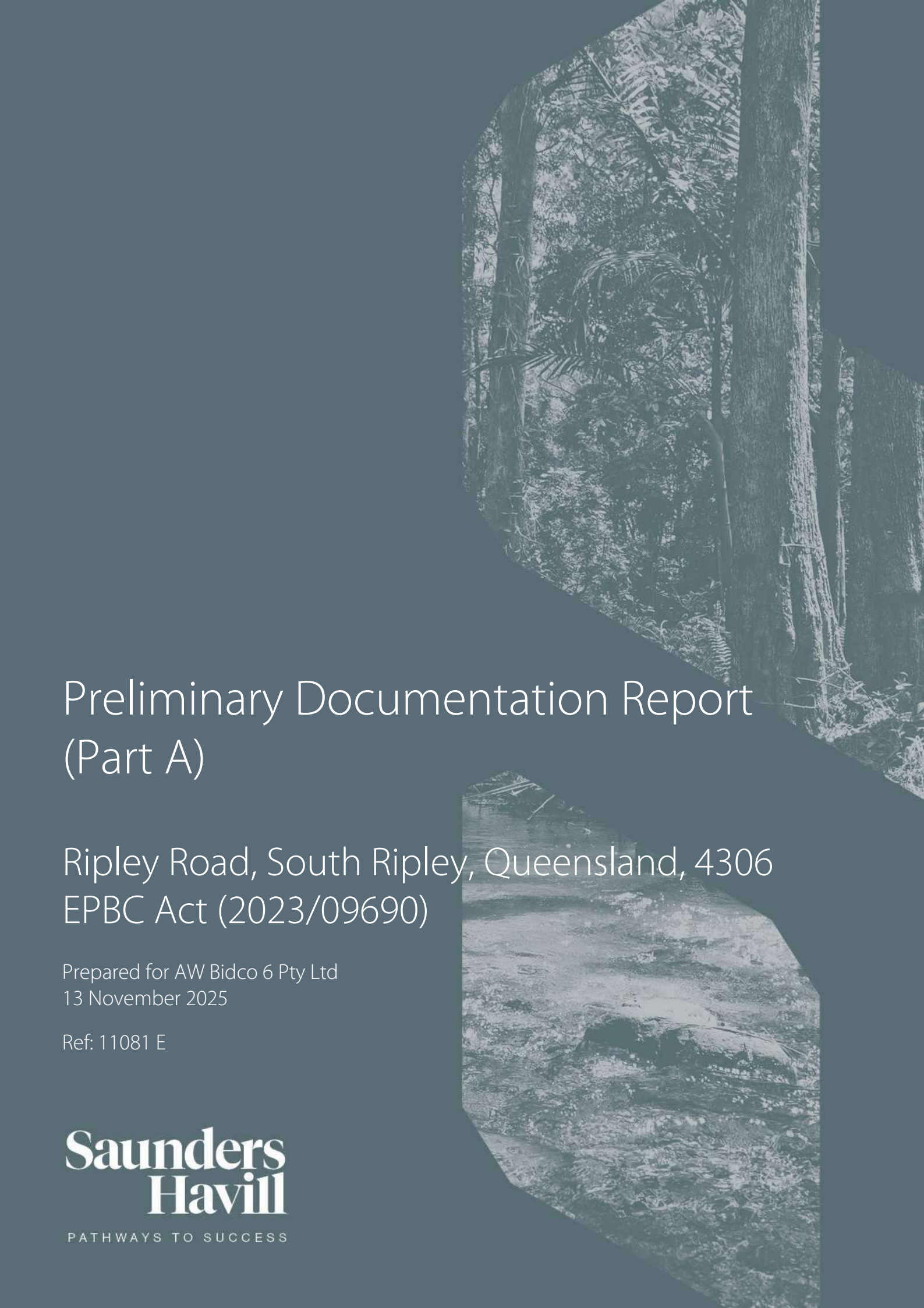




Preliminary Documentation Report (Part A)

Ripley Road, South Ripley, Queensland, 4306
EPBC Act (2023/09690)

Prepared for AW Bidco 6 Pty Ltd
13 November 2025

Ref: 11081 E

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Document Control

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Prepared by

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Executive Summary

This Preliminary Documentation has been prepared on behalf of the proponent, AW Bidco 6 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' assessment by 'preliminary documentation' determination for the residential master-planned community at Ripley Road, South Ripley made on 21 June 2024 (EPBC Reference: 2023/09690).

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.

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, suitable foraging habitat for the Grey-headed Flying-fox, and potential habitat for the Greater Glider, Swift Parrot and Regent Honeyeater and the quantification of impacts on the habitat of these species;
- 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.

Koala (*Phascolarctos cinereus*)

The Koala is listed as a 'endangered' species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). A significant proportion of Queensland's native vegetation, especially in South East Queensland, is identified as 'critical habitat' for Koala due to the prevalence of recognised Koala food tree species across most landscapes. The Ripley Road Residential Development referral area predominantly maintains cleared open paddocks with some scattered Koala trees in the north-west, hence the DCCEEW determination. The proposed action will result in the removal and functional loss of 'critical habitat' for Koala.



Impacts

The Ripley Road Residential Development referral area covers a total land area of 77.8 hectares (ha), of which 5.4 ha is considered to support vegetation defined by DCCEEW as 'critical habitat' for the Koala. The proposed action will result in the clearing and functional loss of 5.4 ha of critical habitat for the Koala.

Environmental Offsets

Environmental offsets for the clearing and functional loss of critical habitat for the Koala 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 and equities **125.39%** of the impact.

Management Plans & Mitigation Measures

Numerous management and mitigation measures and controls will be adopted as part of mandatory requirements conditioned by Economic Development Queensland (EDQ) due to the referral area location within the Ripley Valley Priority Development Area (RVPDA) and best practice management adopted by AW Bidco 6 Pty Ltd. This document includes a number of preliminary management measures relating specifically to Koala. The management measures remain preliminary to provide the DCCEEW with some certainty that potential 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.



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Attachments

Attachment A1 – EPBC Act Controlled Action Decision Notice

Attachment A2 – PD additional information request

Attachment A3 – Updated PMST Report

Attachment A4 – Impact Site MHQA and SAT Raw Data

Attachment A5 – Little Kipper Offset Management Plan (including Offset site MHQA raw data)



Acronyms and Abbreviations

Legislation, Policies and Guidelines

EOP	EPBC Act Environmental Offset Policy (Cth)
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
VMA	<i>Vegetation Management Act 1999</i> (Qld)

Government Departments & Authorities

DCCEEW	Department of Climate Change, Energy, the Environment and Water (Cth – current)
DERM	Department of Environment and Resource Management (Qld)
DETSI	Department of Environment, Tourism, Science and Innovation
EDQ	Economic Development Queensland (as part of DSDILGP)
ICC	Ipswich City Council

General Terms

AKF	Australian Koala Foundation
AU	Assessment Unit
EDL	Ecologically Dominant Layer
ESD	Ecologically Sustainable Development
GIS	Geographic Information System
ha	hectare(s)
km	kilometre(s)
LGA	Local Government Area
MHQA	Modified Habitat Quality Assessment
MNES	Matters of National Environmental Significance
m	metre(s)
OMP	Offset Management Plan
PD	Preliminary Documentation
PMAV	Property Map of Assessable Vegetation
PMST	Protected Matters Search Tool
RE	Regional Ecosystem
RVPDA	Ripley Valley Priority Development Area
SAT	Spot Assessment Technique
SBMP	Site Based Management Plan
SEQ	South-east Queensland
SEQERF	South East Queensland Restoration Framework
SHG	Saunders Havill Group
SIG	Significant Impact Guidelines
SSR	Species Stocking Rate
TEC	Threatened Ecological Community
WONS	Weeds of National Significance
WPMP	Wildlife Protection and Management Plan
VCFMP	Vegetation Clearing and Fauna Management Plan



Reference Documents

Code of Practice

Wildlife and Threatened Species Operations Branch, Department of Environment and Science, Code of Practice – Care of Sick, Injured or Orphaned Protected Animals in Queensland, Nature Conservation Act 1992, August 2020.

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 Offsets Guide

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

Significant Impact 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 Group (SHG) act on behalf of AW Bidco 6 Pty Ltd in the coordination and production of the response to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Controlled Action Determination assessment on Preliminary Documentation (PD) for a residential master-planned community at Ripley Road, South Ripley (the proposed action, EPBC Reference: 2023/09690). The proposed action is located on land at 944-1024 Ripley Road, South Ripley, (described as Lot 241 on SL10253 and Lot 242 on SL10253) Queensland.

On 22 January 2024 a referral under the EPBC Act was made to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) and is referred to herein as 'the Department'. On 21 June 2024 the Department deemed the proposed action a Controlled Action requiring assessment via the PD process.

The Controlled Action decision, provided at **Attachment A1**, was based on the determination of potential impacts on the following Matters of National Environmental Significance (MNES) and was made in accordance with section 75 of the EPBC Act:

- Listed threatened species and communities (sections 18 & 18A), specifically:
 - Koala (*Phascolarctos cinereus*) (combined populations of Queensland, New South Wales and the Australian Capital Territory)) – endangered

It is acknowledged that the referral information, which included an assessment of the proposed action against the applicable EPBC Act guidelines and policies, including the Significant Impact Guidelines 1.1 (SIG), assessed the proposed action as unlikely to have a significant residual impact on any MNES with recommendation for 'not a controlled action.'

With the June 2024 controlled action determination, the Department did not identify any additional potential impacts to any other MNES species as part of the PD request for information on 10 July 2024.

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 Ripley Road Residential Development.

1.2. Document Structure

Preliminary Documentation refers to this document (Part A). A copy of the PD additional information request is included as **Attachment A2** and each item correlates to a section or chapter of this PD. It includes relevant figures, plans and supporting material required to support full assessment of the action by the Department. These have been referenced with the 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.

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, in full, prepared by technical consultants in preparation for this PD. Relevant sections from each of these documents have been brought forward and incorporated into the PD for ease of reference



and readability. It is noted that changes to the referral material are not possible, and the PD supersedes the information in the referral.

1.3. Reference Table

This section provides a reference table (refer **Table A1**) demonstrating where in the documentation the information requirements are addressed. The information request is included as **Attachment A2**. 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
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
	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 fencing types (including diagrams) and proposed locations (shown on maps). iii. Other related actions, including but not limited to, material storage, laydown areas and waste disposal, fine particle, dust control management and erosion and sediment control management. iv. Actions related to waste/spills/contaminants/pollutants management including standards and minimum thresholds required for removal/disposal.	2.2
	c) Include detailed mapping that is supported by descriptions consistent with the outcomes of the desktop and field assessments and are consistently described in the attachments. Maps and descriptions that clearly identify 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. Ensure that total areas of all project components are consistent with map figures and described throughout the report to the nearest decimal point.	See Plans
	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.	2.3
	e) A demonstration of the process of avoidance and mitigation measures applicable to impacts to MNES and associated habitats. This includes an explanation of the proposed project site selection process during a site feasibility study, including the assessment of available cleared land/already modified land. Please provide figures and/or a summary where applicable.	2.4
<i>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.</i>		



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.	2.5
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.	2.6
2.4	a) Relationship to other referrals or future projects that may be facilitated by the proposed action and that may indirectly cause increased pressure on MNES (include maps and spatial files). b) Provide a discussion on the relationship of the proposed action with any future related actions and the likely location and scale of the future actions, along with any potential impacts on matters protected under the EPBC Act.	2.7
3	Description of the environment and Matters of National Environmental Significance	3
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. <i>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.</i>	3.2
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.	3.3



	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.	3.2.5
	<i>Likelihood or 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 Species Profile and Threats (SPRAT) Database) and/or species experts.</i>	
3.4	For the listed threatened species listed in section 4 of this request for information, provide 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 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.	3.4
	e) Results of all surveys undertaken. i. Include raw data sheets from all ecological assessments completed for the proposed action as appendices. This includes flora and fauna species lists (refer Section 1.4 of this request for information). ii. Ensure BioCondition/transect/quaternary and/or secondary habitat assessment data includes corresponding photos of assessment areas.	3.5
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.	3.6



The PD descriptions of the habitat on the proposed project site should be consistent across all sections of the document and attachments. Discussions and conclusions in the document should accurately reflect the results of the site-specific assessments and be consistent across all descriptions in all attachments.

Note: Habitat assessments must be informed by desktop and field surveys in accordance with relevant statutory documents (e.g., approved Conservation Advices, Recovery Plans, draft referral guidelines and Listing Advices, and SPRAT Database), including contemporary advice, published research and other relevant sources.

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.

4	Impact Assessment	4
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).	4.3
4.2	To inform point 4.1, 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.	4.6



- 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)

4.3	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.	See Plan A1
4.4	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.	-
4.5	Koala (<i>Phascolarctos cinereus</i>) (combined populations of Queensland, New South Wales, and the Australian Capital Territory) – Endangered Based on information in the referral and subsequent request for information response submitted to the department on 4 June 2024, 2 ha of critical Koala habitat has been mapped at the site. The department considers that the boundary of the mapped critical habitat does not accurately reflect the information provided in the documentation. For the Koala, please: a) Undertake a revised habitat suitability assessment, considering breeding, foraging and dispersal habitat in the disturbance footprint and broader proposed project site. i. This information may involve a re-examination of the mapped critical habitat. Provide written details and maps on Lot 241 on SL10253 to reconsider the extent of critical habitat for Koala based on information contained in the statutory documentation.	4.1



	b) Complete a revised habitat suitability assessment of the proposed impact site, considering specific habitat requirements of the species in accordance with relevant listing advice, conservation advice, recovery plans, Significant Impact Guidelines 1.1 and publicly available information.	
	c) Provide mapping or revised mapping showing the extent of suitable habitat for Koala in relation to the impact footprint.	See plans A1
	d) 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 and contemporary advice).	3.4.3
	e) Total area proposed to be retained/avoided (including the total extent in hectares of habitat present to be avoided).	4.3
	f) Provide a habitat connectivity analysis for Koala, detailing: i. The existing conditions within and the landscape context of the proposed action site, prior to any works being undertaken. ii. The proposed habitat connectivity during defined stages of the proposed action, such as pre-construction, habitat and land clearance, construction, operation and rehabilitation. iii. A figure, with aerial imagery and line work, showing habitat connectivity for each matter for the proposed project site and surrounding landscape.	4.2
	g) Clearly describe the direct and indirect impact areas: include a clear description of the total extent (in ha) and quality of habitat to be impacted.	4.4
	h) Provide results of all surveys, including recent updated surveys that have been completed in accordance with relevant statutory documents (e.g., approved Conservation Advices, Recovery Plans, draft referral guidelines and Listing Advices, and SPRAT Database), including published research and other relevant sources.	3.5
5	Avoidance and Mitigation Measures	5
5.1	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.	5
5.2	Provide written details and maps concerning all proposed avoidance measures in Lot 241 on SL10253 to reduce the likely impacts to Koala habitat within the proposed project site.	5.1



- a) This information may involve a re-examination of proposed project site design and/or a redesign process applicable to minimising likely impacts to the Koala based on the statutory documentation and Koala habitat within the proposed project site.
- b) The department notes that information has been sought regarding potential project redesign from the project urban designer, town planner and engineering and infrastructure consultants. In the PD all potential avoidance measures considered must be explicitly explained. The email response received on 13 June 2024 indicates that this exercise is being undertaken. Please ensure adequate details including figures and plans from the investigations to support the conclusions regarding avoidance of impacts are contained in the PD.

5.3	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 project site, including:	5
	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 o avoid impacts on habitat on site, or avoidance of any activity that may indirectly impact on essential lifecycle processes for species.	5.1
	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, 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:	5.2



	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.	6
	j) information on the timing, frequency, and duration of the measures to be implemented.	5.2
	k) an actual or estimated cost of the mitigation measures.	
5.4	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.	5.3
5.5	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 i) proposed monitoring and evaluation program.	
5.6	a) 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. <i>For example, the National Recovery Plan for the Grey-Headed Flying Fox states an objective to: '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.'</i>	
	b) 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



- 5.7 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).

6	Proposed offset	
	a) Offset Proposal	6.1
	b) Offset Management Plan	
7	Habitat Quality Assessment	
	a) Details on the Modified Habitat Quality Assessment (MHQA) method utilised	4.4
8	Economic and Social Matters	7
8.1	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.	7.1
8.2	Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place.	
8.3	Provide details of any public stakeholder consultation activities, including the outcomes of those consultations.	7.1.3
8.1	Provide details of any consultation with Indigenous stakeholders.	7.1.4
9	Ecologically Sustainable Development	8
9.1	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.	8.1
	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

10	Environmental record of the person proposing to take the action	8.2
10.1	the person proposing to take the action;	
10.2	for an action for which a person has applied for a permit, the person making the application;	
10.3	if the person is a body corporate—the history of its executive officers in relation to environmental matters; and	
10.4	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.	



1.4. Site Description and Details

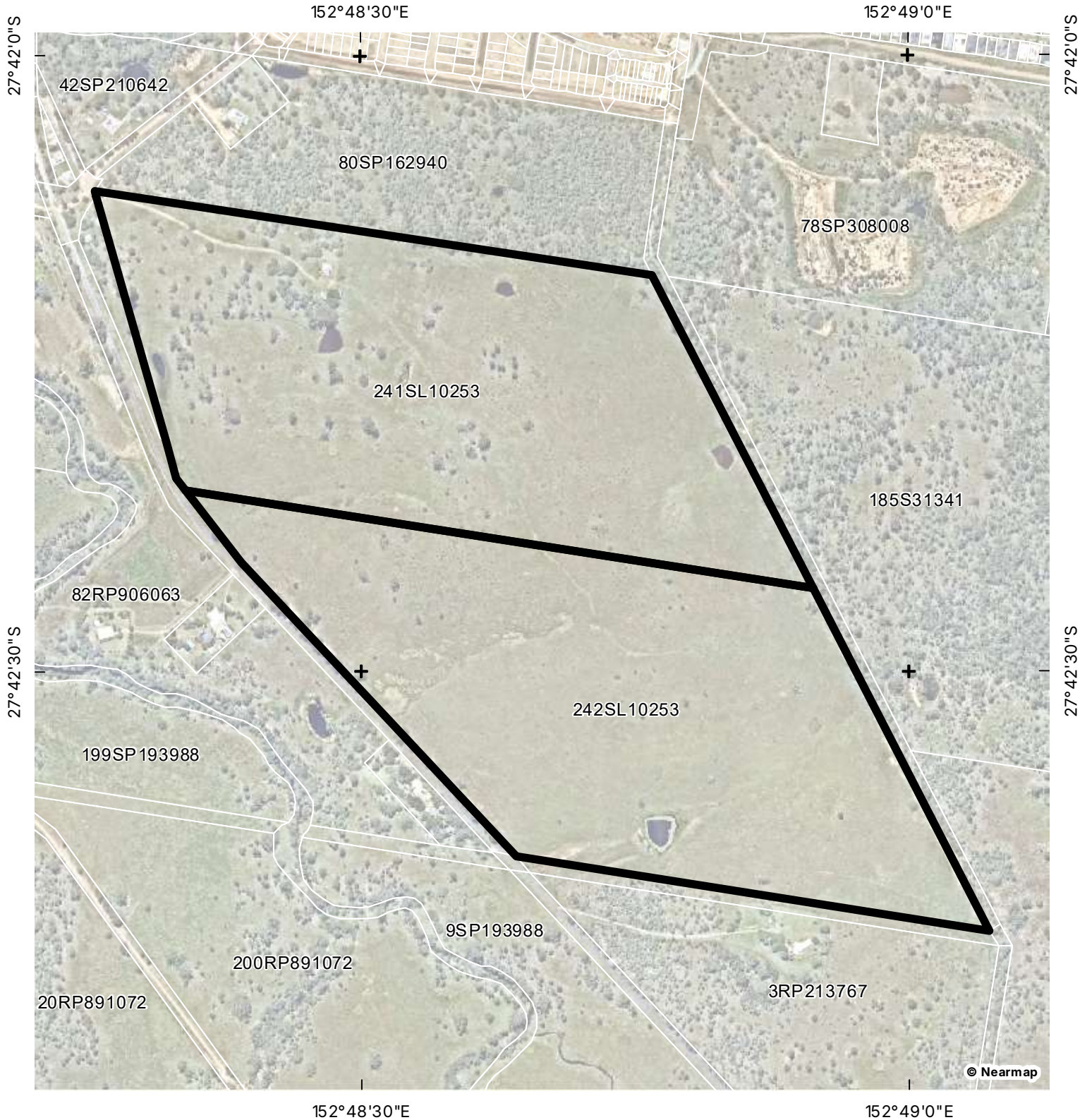
The proponent seeks to develop a residential master-planned community on land located at 944-1024 Ripley Road, South Ripley, described as Lot 241 on SL10253 and Lot 242 on SL10253 ('referral area'). The land holding is centrally located within the Queensland Government's Ripley Valley Priority Development Area (RVPDA) and is surrounded by residential-zoned land and development projects. 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. The referral area is shown in **Figure A1** and **Figure A2** and key property details are presented in **Table A2**. The plan of development is provided as **Plan A1**.

The referral area totals 77.8 ha and is zoned as 'urban living' under the RVPDA Development Scheme and a combination of 'Secondary Urban Centre East Neighbourhoods' and 'Neighbourhoods' by the Structure Plan (refer **Plan A2**).

Table A2: Referral area details

Address	944 - 1024 Ripley Road, South Ripley, Queensland, 4306
Real property description	Lot 241 on SL10253 Lot 242 on SL10253
Proposed Action Area	77.8 ha
Shaping SEQ Regional Plan¹	Urban Footprint
Vegetation Management Act 1999 (VMA) (Qld) mapped features	- Property Map of Assessable Vegetation (2006/010563) - Category X (non-remnant)
Water Act 2000 (Qld) mapped features	Drainage Features
Matters of State Environmental Significance mapped features	Matters of State Environmental Significance regulated vegetation (defined watercourse)
Koala Habitat mapped features (under the Planning Regulation 2017 (Qld))	- Not a Koala Priority Area - No Koala Habitat Area
Priority Development Area	Ripley Valley Priority Development Area
Local government area (LGA)	Ipswich City Council (ICC)
Planning scheme / local plan	Ipswich Planning Scheme 2006 RVPDA Development Scheme
Zone	Future Urban (under the Ipswich Planning Scheme 2006) Urban Living (under the Ripley Valley PDA Development Scheme)
Existing Land Use	Maintained rural property
Proposed Land Use	Residential master planned community





LEGEND

- Qld DCDB
- Referral Area

FIGURE A1

SITE AERIAL

PROJECT
RIPLEY ROAD, SOUTH RIPLEY
COORDINATE SYSTEM
GDA 2020 MGA Z56
SCALE (A4)
1:8,000

0 50 100 150 200 m



CLIENT



**Saunders
Havill**

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LAYER SOURCE

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FILE REFERENCE

11081 E Figure A1 PD Site Aerial A

DATE 29/10/2025

152°40'0"E

152°50'0"E

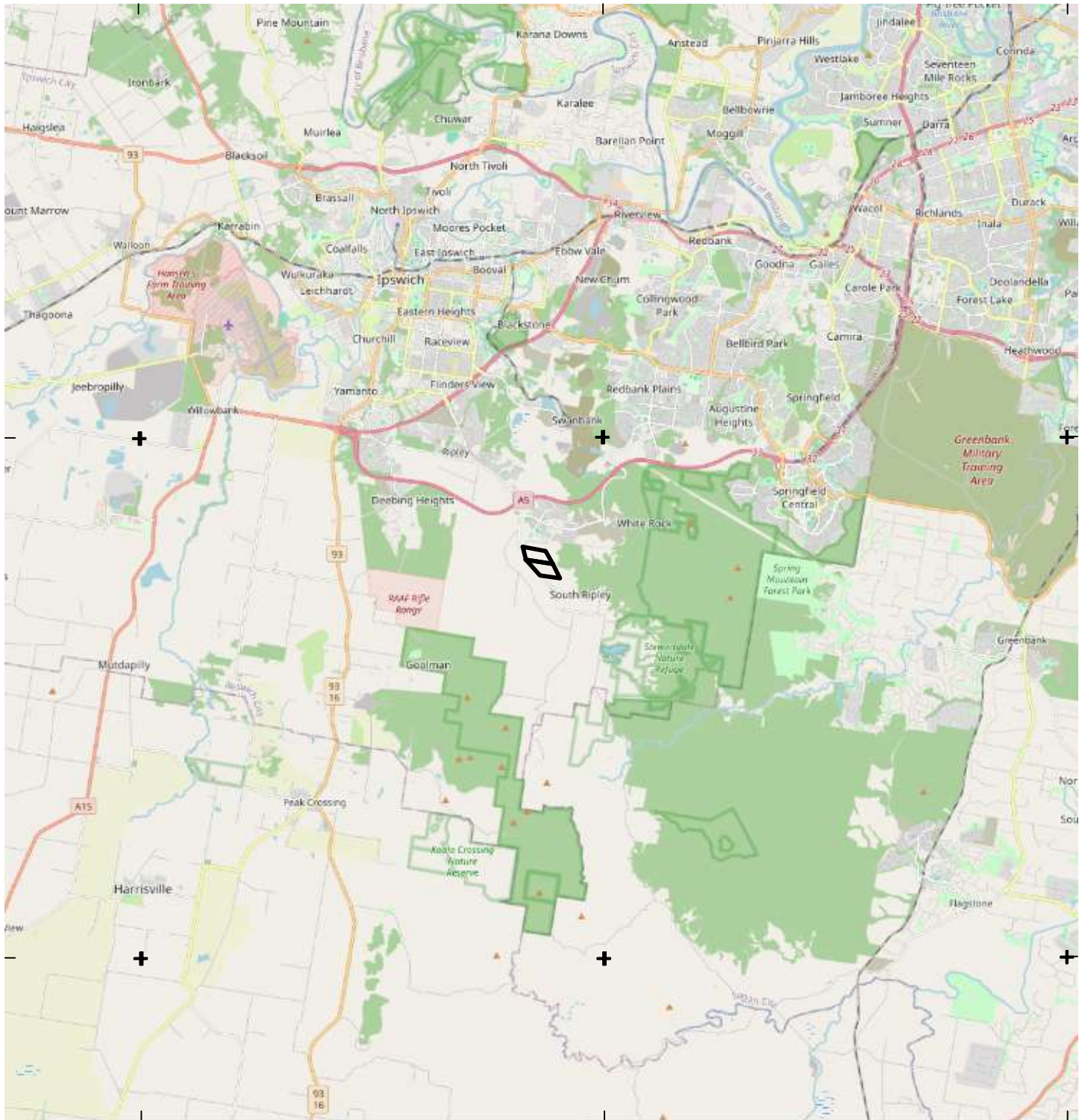
153°0'0"E

27°40'0"S

27°40'0"S

27°50'0"S

27°50'0"S



152°40'0"E

152°50'0"E

153°0'0"E

LEGEND Referral Area**FIGURE A2****SITE CONTEXT**

PROJECT
RIPLEY ROAD, SOUTH RIPLEY
COORDINATE SYSTEM
GDA 2020 MGA Z56
SCALE (A4)
1:200,000

0 1 2 3 4 5 km



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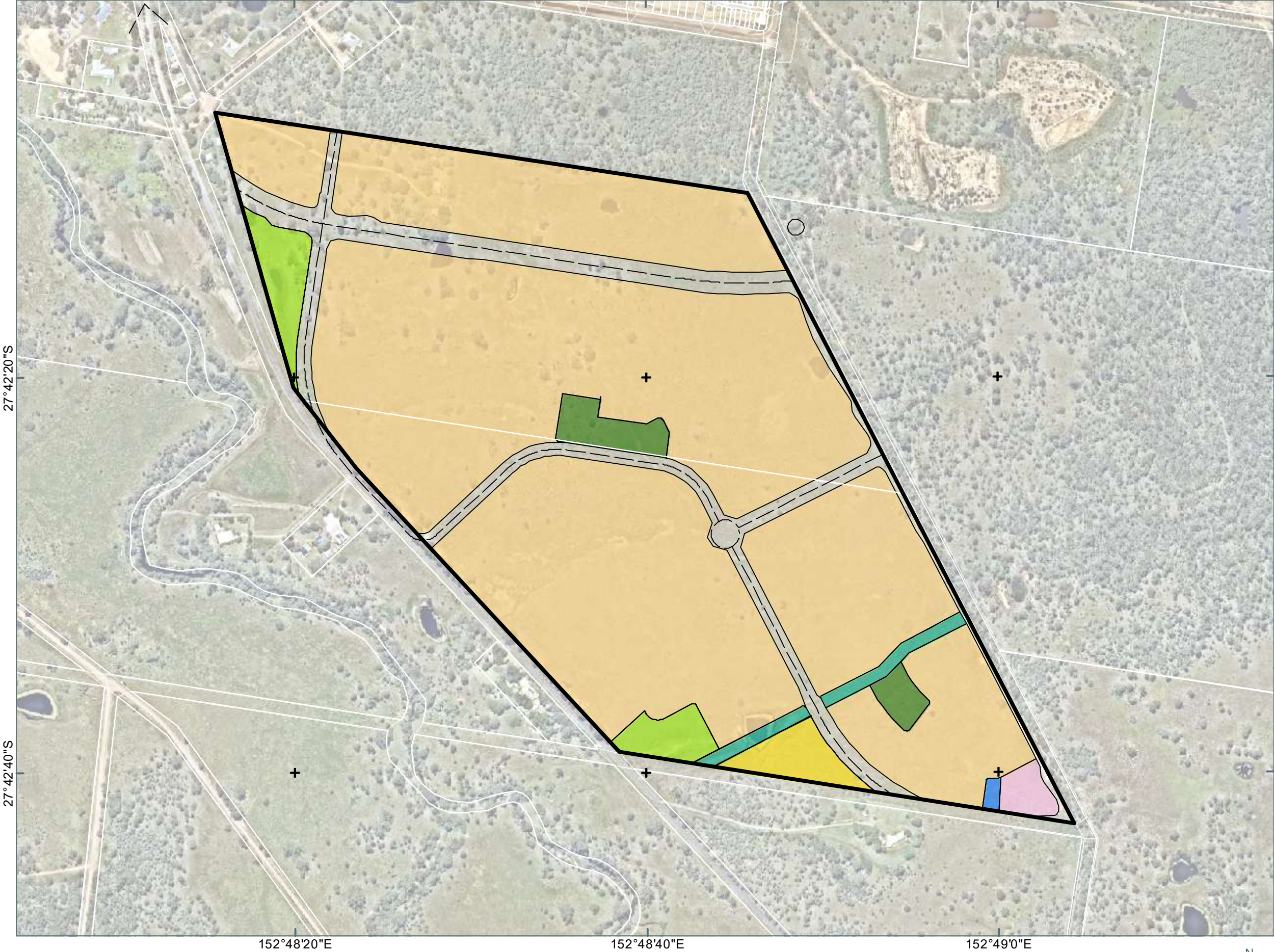
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FILE REFERENCE

11081 E Figure A2 PD Site Context A

DATE 29/10/2025

A1. DEVELOPMENT



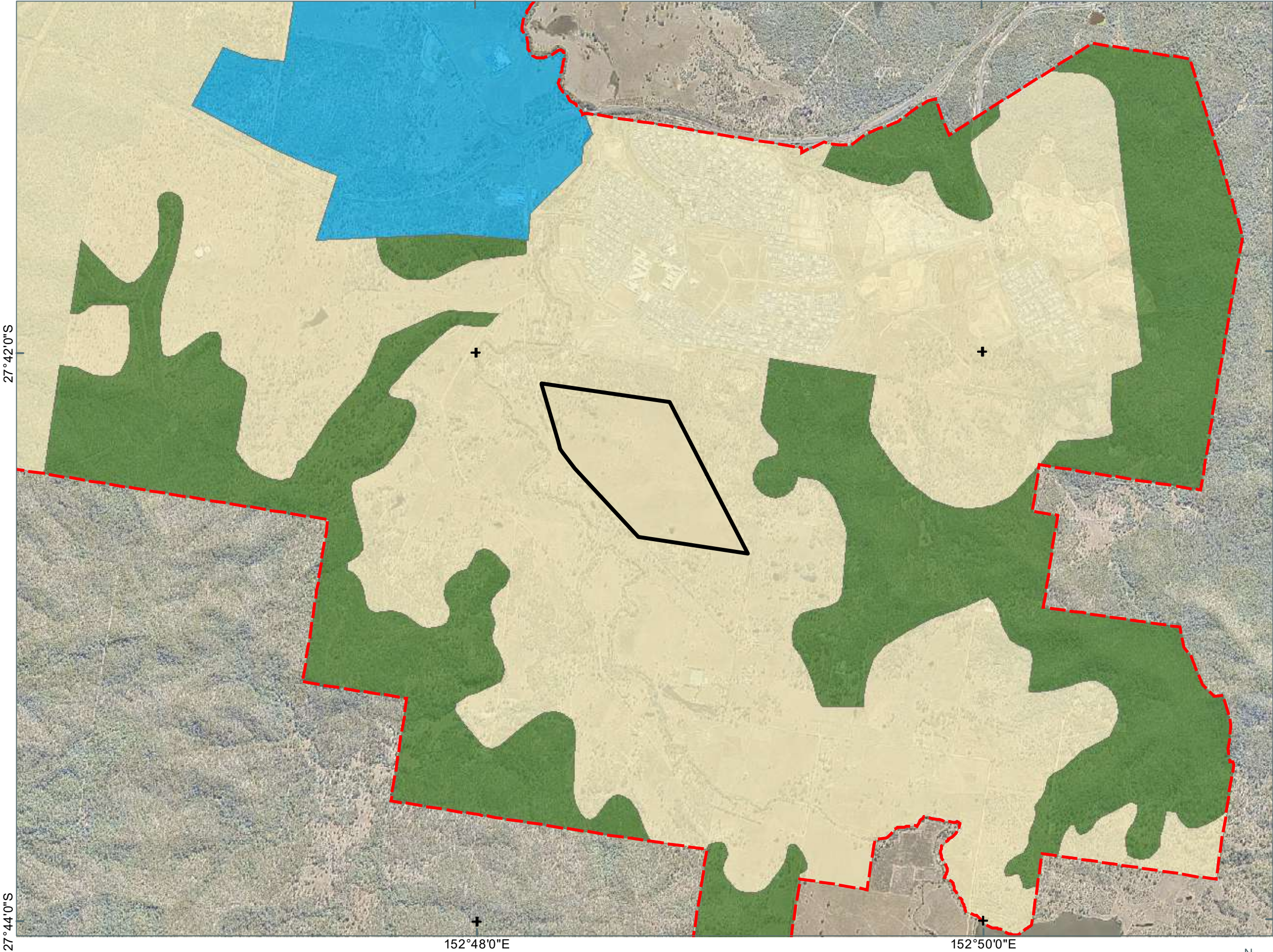
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- LEGEND**
- Qld DCDB
 - Referral Area [77.8 ha]
 - Proposed Layout**
 - Ambulance Centre
 - Bundamba Creek Buffer Zone
 - Detention Basin - Onsite
 - Education P-12
 - Local Park
 - Neighbourhood Suburban
 - Retail
 - Layout Details



A2. RIPLEY VALLEY PDA



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LEGEND

Referral Area

Ripley Valley PDA Boundary

PDA Zoning

Urban Core

Urban Living

Environmental Protection



2. Description of the Action

Items 2.1 (a) to (d) 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.”***

- a) ***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 fencing types (including diagrams) and proposed locations (shown on maps).***
 - iii. ***Other related actions, including but not limited to, material storage, laydown areas and waste disposal, fine particle, dust control management and erosion and sediment control management.***
 - iv. ***Actions related to waste/spills/contaminants/pollutants management including standards and minimum thresholds required for removal/disposal.***
- b) ***Include detailed mapping that is supported by descriptions consistent with the outcomes of the desktop and field assessments and are consistently described in the attachments. Maps and descriptions that clearly identify 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. Ensure that total areas of all project components are consistent with map figures and described throughout the report to the nearest decimal point.***
- c) ***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.***
- 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. Components of the Proposed Action

The action is for a residential master-planned community project which will provide approximately 1300 dwellings for future residents in South Ripley.

The proposed action will involve the following uses and activities:

- Mixed-use residential living
- Local parks
- Education facilities
- Retail
- Emergency services
- Stormwater infrastructure including bio-retention basins.
- Internal access roads
- Landscape architecture including feature planting, footpaths, lighting and seating areas;



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);
- Demolition of existing farm infrastructure (dwelling and sheds).
- 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 roads as per the (refer **Plan A1**);
- Construction of dwellings; and
- Landscape works including the installation of street trees, footpaths, seating areas and path/streetlights.

2.2. Timeframes and Staging

Start Date: 02/2026

End Date: 02/2034

The project intends to commence clearing and civil works in mid-2025. Given the lack of vegetation and varying topography of the referral area resulting in necessary earthworks to balance the cut and fill across the site, clearing is to be undertaken in one stage. The staging sequence and timing for construction of the project is yet to be finalised however construction will occur over approximately 40 stages.

2.3. Site Access

At present, the referral area is accessed via the corner of Bayliss Road to the north-west. Primary access to the referral area during and following construction will be from existing Ripley Road, which runs along the entire western boundary of the referral area.

2.4. Proposed Fencing

Prior to clearing

Prior to vegetation clearing, tree protection fencing is to be installed along the perimeter of the proposed works extent to ensure that impacts to adjoining vegetation are avoided and to clearly define vegetation that is approved to be cleared. 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 A5**).

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 A5**). Further details on mitigation measures during the clearing, construction and operational phases of the development including temporary fencing types and dimensions are provided in **Sections 5**.



During operation

Vegetation retention is not proposed as part of the project, therefore the requirements for specific exclusion fencing upon completion and during operation is not warranted and the risk of fauna entering the development area is low. Nevertheless, various fencing options will be incorporated into the development design including for any dog off-leash areas and between residential lots and other facilities.

Refer to **Section 5.3.4** for details on potential fencing examples

2.5. Site Selection

The proposed action is the construction of a residential master-planned community in accordance with the RVPDA Development Scheme 2011 as implemented by Economic Development Queensland (EDQ).

The referral area is situated centrally with the 'urban living' zoning within the broader south-west growth corridor of South-east Queensland (refer **Plan A2**). RVPDA has been identified under the South-East Queensland Regional Plan (Shaping SEQ) 2023 as a major growth area because of its strategic positioning and ability to absorb a vast proportion of the regional area's population. Several developments are either complete or under construction in the local area.

The referral area represents an optimal location for development as its location is fully zoned as 'urban living' under the RVPDA development scheme, with all adjoining land zoned the same. Furthermore, in considering the future context of the site, no environmental protection zoning is present on or adjacent to the site, indicating the area is not strategically located to cater for corridor functionality at present or in the future (refer **Plan A2**). The planning intent of the area is reflected in the proposed layouts of the many surrounding development applications with EDQ / Ipswich City Council (ICC) and under the EPBC Act (refer **Plan A3** and **Plan A4**).

Additionally, the referral area consists of predominantly cleared paddocks that have remained as such for several decades as a result of rural land uses. The project involves the removal of 5.4 ha of critical Koala habitat, comprised of scattered, ancillary Koala habitat trees (refer **Section 3** for details on MNES values).

Given the location of the referral area within the centre of the RVPDA and specifically the associated 'urban living' zoning, in combination with the minimal habitat potential and features on and adjoining the area, the referral area is a suitable location for much-needed residential development. As most other surrounding lots are already under application or approvals for development, or contain greater environmental values, alternative locations have been deemed unsuitable.

2.6. Intended Land Use

Item 2.2 of the PD request asks to, ***"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."***

The proposed action intended land use is consistent with a residential master-planned community, comprising a mixture of residential uses, internal road network, stormwater detention areas, retail, emergency services, and local parks. The proposed development is not intending to retain any areas



within the referral area as conservation or environmental open space. The lack of vegetation within the referral area and location/strategic zoning of the referral area under RVPDA development scheme means that the retention of environmental areas is not suitable for current or future ecological functionality (refer **Section 4** for further details).

2.7. Associated Local or State Planning Scheme

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.”***

The project is located in RVPDA and is therefore subject to the RVPDA development scheme which is to be assessed by ICC (the representative of EDQ). The referral area has undergone several detailed ecological assessments as part of the EPBC referral and subsequent ‘controlled action’ decision. At present the project has one Reconfigure a Lot application (REF: 3701/2024/PDA) with Ipswich City Council. Further applications will be required over the balance of the project area.

As part of any future Reconfiguration of a Lot and operational works applications with ICC, standalone management plans will be required including Significant Biodiversity Assessment Reports (SBAR), detailing the existing ecological values. A Vegetation Clearing and Fauna Management Plan (VCFMP) will be provided where vegetation clearing is required. An operational works phase VCFMP will provide guidance of clearing procedures, sequence and direction, as well as the location of temporary and permanent tree protection fencing and exclusion fences. Additionally, the VCFMP would include the locations of proposed material stockpiles, extent of earthworks and proposed services.

2.8. Relationship to Other Projects

Item 2.4 of the PD Request asks for,

- a) Relationship to other referrals or future projects that may be facilitated by the proposed action and that may indirectly cause increased pressure on MNES (include map and spatial files).***
- b) Provide a discussion on the relationship of the proposed action with any future related actions and the likely location and scale of the future actions, along with any potential impacts on matters protected under the EPBC.”***

Given the location of the referral area centrally within the ‘urban living’ zone of the RVPDA it adjoins a number of sites that are intended for development (refer **Plan A3**). The referral area is not specifically involved or connected to any other development proposals; however, the relevance of these projects has guided the design phase of this action.

The publicly available proposed development plans for these surrounding projects confirm that all vegetation adjoining the referral area is intended for removal. The northern vegetated lot, which currently provides the only connectivity to the potential Koala habitat on site, has recently been referred under the EPBC act as a ‘controlled action’ (2025/10117). This project is also listed on the Ipswich development portal (<https://developmenti.ipswch.qld.gov.au>) as application 7193/2017/PDA and has

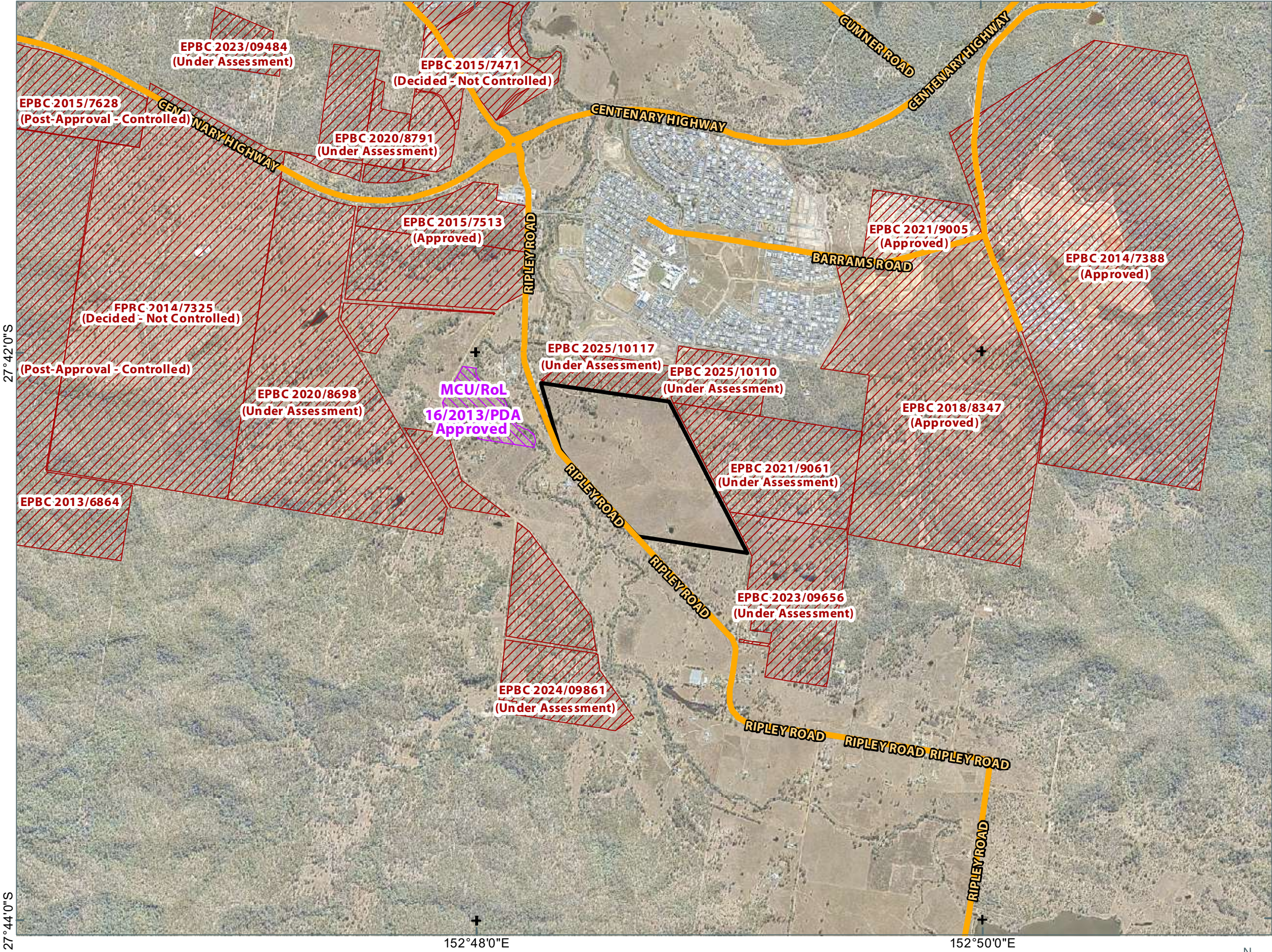


been approved for subdivision into 430 lots, with an internal road and predominantly residential lots adjoining the northern referral area boundary. As such, this development will make the scattered ancillary Koala habitat trees in the north-western corner of the referral area close to redundant as potential habitat, by removing the primary connection. A similar level of vegetation removal is planned for the approved developments adjoining the north-east, east, and south-east of the referral area (EPBC 2025/10110, EPBC 2021/9061, and EPBC 2023/09656 respectively). Residential lots, drainage and recreation areas are proposed along the boundary of the referral area. Therefore, the surrounding developments are not proposing any future vegetation connectivity to the referral area (refer **Plan A4**).

As mentioned, the referral area is located in the RVPDA, within the north-south corridor zoned for 'urban living' (refer **Plan A2**). It is unavoidable that to reduce the strain of housing demand, portions of identified growth areas must be cleared of vegetation for higher density residential lots. The RVPDA Development Scheme has zoned areas further west and east of the referral area as 'environmental protection' where conservation and rehabilitation is most effective, connecting directly to massive tracts of remnant vegetation within the Flinders-Goolman and White Rock Conservation Estates. This is reflected within the available EPBC 2021/9061 development plan, which will retain a large area of vegetation in the east which links up with retained areas of approved developments further east in line with the RVPDA zoning (refer **Plan A4**).



A3. EPBC REFERRALS AND DETERMINATIONS



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LEGEND

- Referral Area
- Major Roads
- EPBC Referral Areas
- Ipswich City Council Development Applications



A4. NEIGHBOURING PROPOSED LAYOUTS



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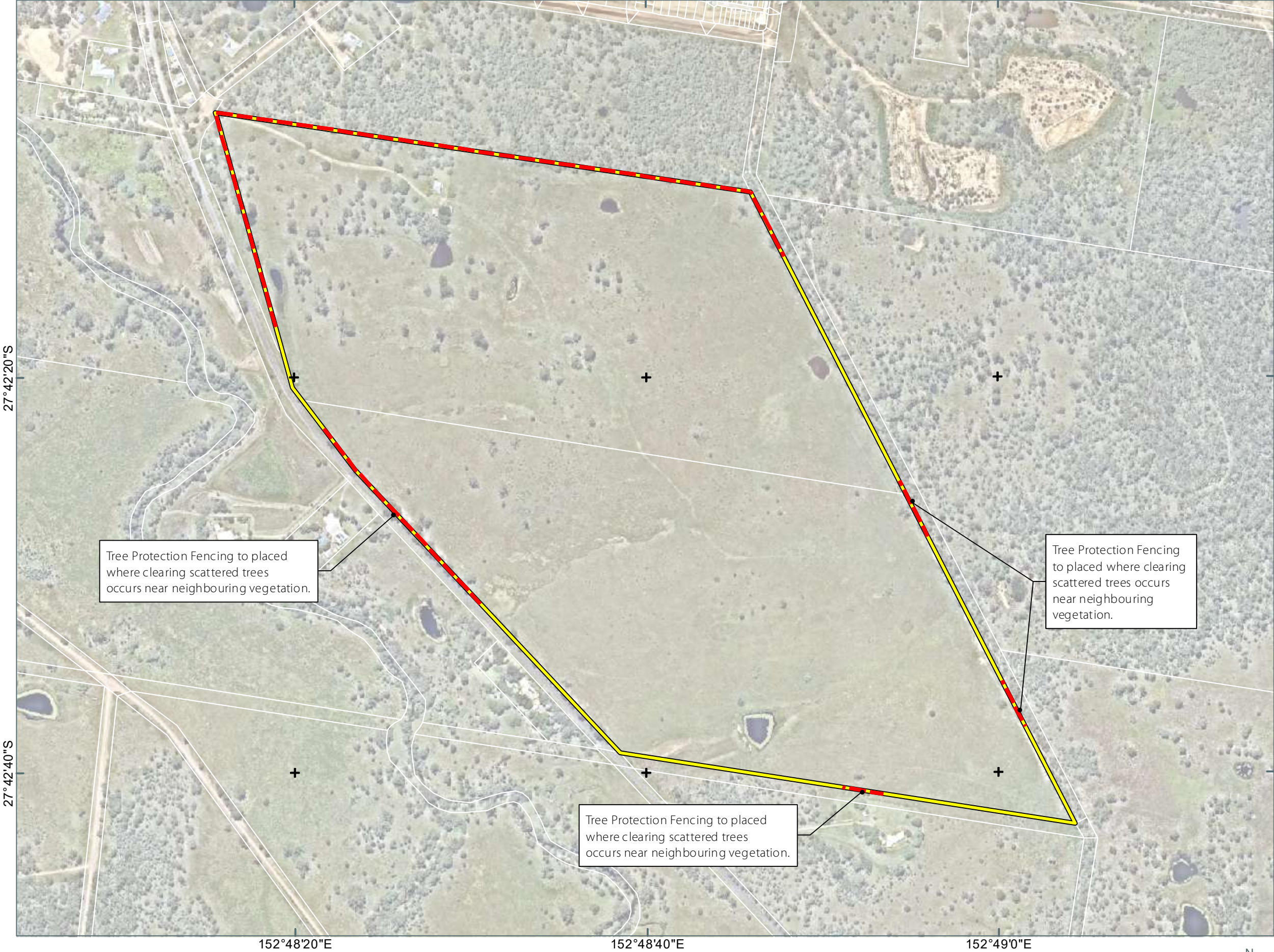
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LEGEND

- Qld DCDB
- Referral Area



A5. PROPOSED TEMPORARY FENCING



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LEGEND

- Qld DCDB
- Referral Area
- Tree Protection Fencing installed prior to clearing will be checked by the environmental coordinator
- Temporary Koala Exclusion Fencing to be installed post vegetation clearing and prior to construction. Ultimate location dependent on construction staging



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 this section address include, but are not limited to, the following subheadings.

3.1. Description of the Environment

Item 3.1 of the PD Request asks for, ***“A description of the environment more broadly including previous and current land use within and surrounding the proposed project site.”***

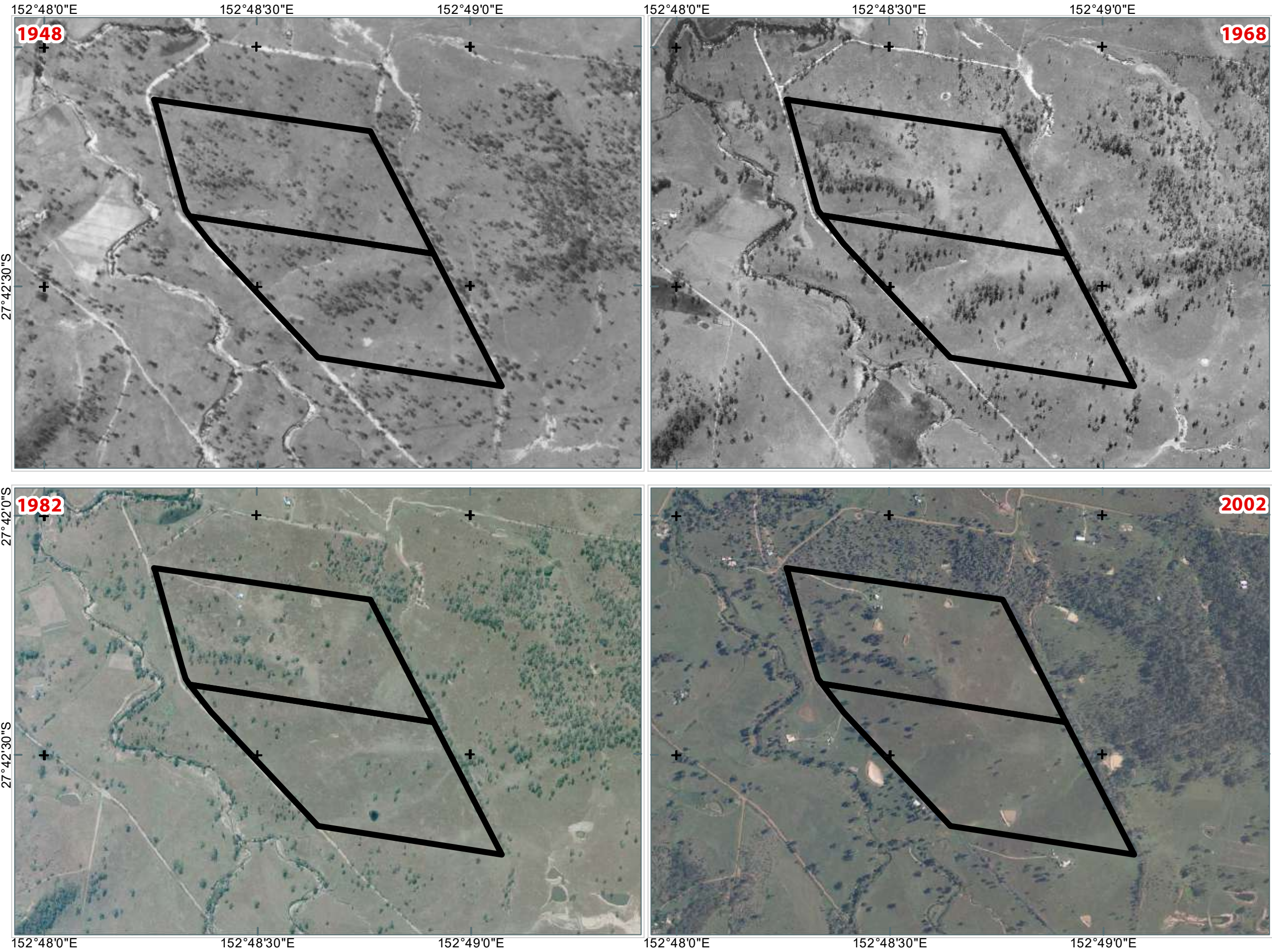
The referral area is surrounded by land that has been extensively modified for pastoral and agricultural practices (refer **Plan A6**). Connectivity within the broader area is limited by cleared paddocks, large-scale developments, and highly trafficked roads. The west of the referral area is bound by Ripley Road with very few trees present, vegetation for almost a kilometre is limited to thin linear strips along Bundamba Creek and isolated paddock trees. To the north, east, and south exist rural residential properties dominated by Category X (non-remnant) vegetation. There is some Category C (high-value regrowth) and Category B (remnant) vegetation directly east in Lot 185 on S31341 and a small amount of Category C to the north (Lot 80 on SP162940), located directly south of Providence Central (refer **Figure A3**). The Category C and B vegetation mapped adjoining the north and east of the referral area is intended for removal, with development applications and approvals present over both neighbouring lots (refer **Plan A3**).

The referral area itself has been largely unvegetated since 1948, with periodic maintenance to ensure maximal agriculture productivity. Cattle agistment of the land was ongoing during site surveys. The north-western portion of the referral area contains farm infrastructure (sheds, fences, tracks and a residential dwelling) and exotic planted species, with sporadic and isolated native trees.

The entire referral area is mapped as Category X (non-remnant) vegetation under the Queensland Government's *Vegetation Management Act 1999* (VMA) as a result of on-going maintenance and an approved Property Map of Assessable Vegetation (PMAV 2006/010563). The property is an average of 800 m wide west to east (wider in the northern portions), and 1.2 kilometres (km) north to south. Beyond a small, scattered patch of trees in the north-west, the referral area is almost completely cleared of canopy trees. The land rises centrally to a cleared ridge, which prevents vegetation to the east of the referral area being visible from Ripley Road. There are several small, constructed dams across the referral area to facilitate cattle grazing uses.



A6. HISTORICAL AERIAL IMAGERY



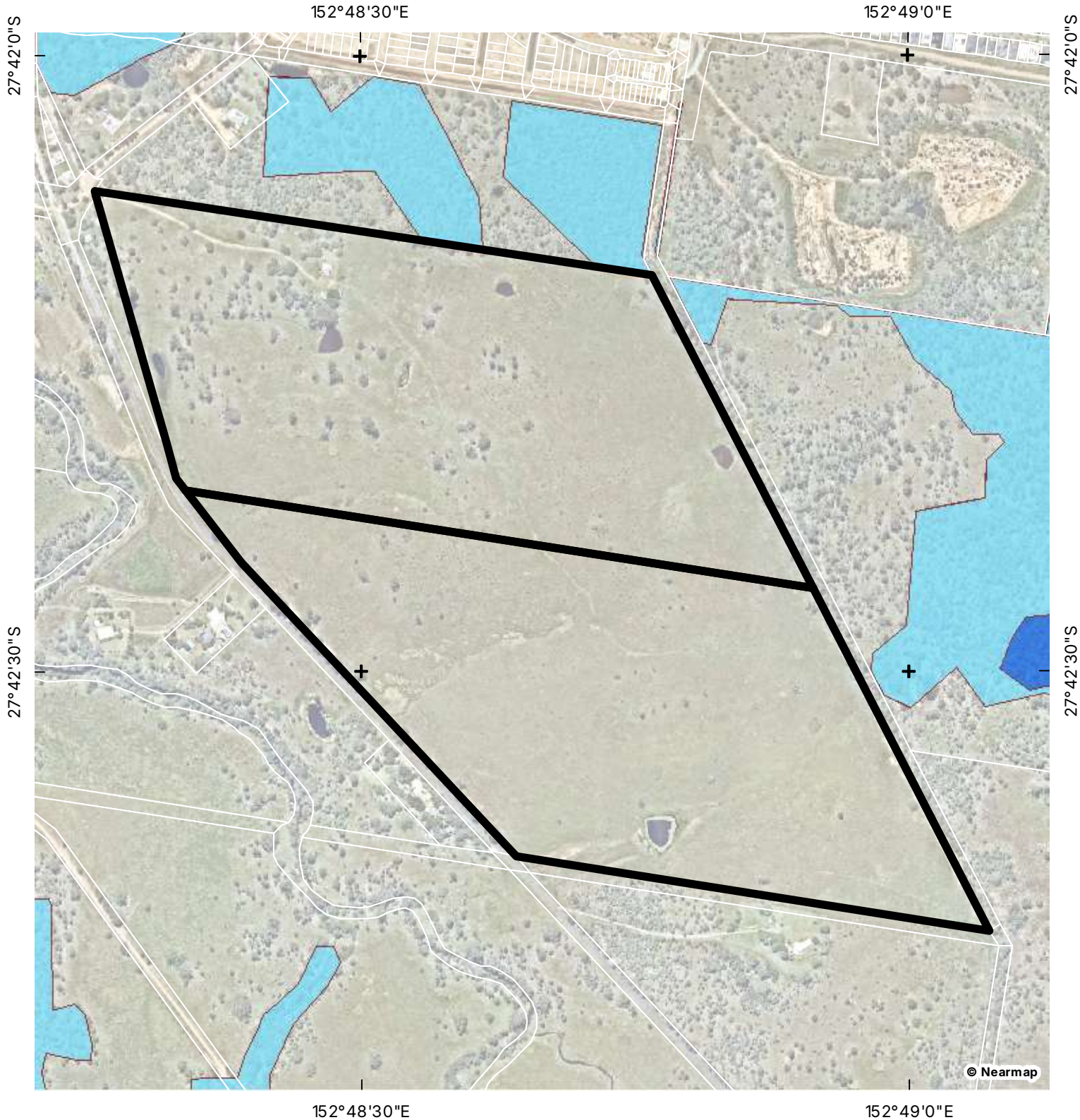
Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features may need verification if the development application is approved and development proceeds, and may change 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
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LEGEND

Referral Area





LEGEND

Qld DCDB

Referral Area

Regulated Vegetation

Category A area -
Vegetation Offset/
Compliance notices/VDecs

Category B area -
Remnant vegetation

Category C area -

High value regrowth
vegetation

Category R area -

Reef regrowth
watercourse vegetation

Category X area -

Vegetation not regulated
under the VMA

Water

Area not categorised

FIGURE A3

REGULATED VEGETATION MANAGEMENT MAP

PROJECT
RIPLEY ROAD, SOUTH RIPLEY
COORDINATE SYSTEM
GDA 2020 MGA Z56
SCALE (A4)
1:8,000

0 50 100 150 200 m



CLIENT



Stockland

**Saunders
Havill**

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LAYER SOURCE

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FILE REFERENCE

11081 E Figure A3 PD RVM A

DATE 29/10/2025

3.2. Matters of National Environmental Significance

Item 3.2 of the PD Request asks for, ***“A description of any potential MNES (including but not limited to those listed in this request for information) that occur in the project area and adjacent areas.”***

The MNES listed under Item 4 of the PD Request recognised as potentially occurring in the project and adjacent areas are:

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

Notably, *Calyptorhynchus lathami lathami* (South-eastern Glossy Black Cockatoo) was highlighted as a potential MNES relevant to the referral area through an information request from DCCEEW at the referral stage of the project. Following further site-specific assessments and a detailed information request response, *Calyptorhynchus lathami lathami* (South-eastern Glossy Black Cockatoo) is not considered a potential impact for the project (refer **Part B – Attachment D** for information request response). The dominance of cleared paddocks and lack of trees suggests the referral area is highly unlikely to be utilised by threatened fauna species.

The referral area is highly modified and has been historically and contemporarily maintained as cleared paddock for agricultural pursuits, and as such contains limited MNES values including quality and availability of habitat for threatened flora and fauna. The land is dominated by pasture grasses and lacks both broad and specific habitat features, with some scattered trees present only in the north-west. Tree species diversity is low, comprised almost exclusively of *Corymbia citriodora* (Spotted Gum) with *Eucalyptus crebra* (Narrow-leaved Ironbark). As such, the project is not considered to have any potential to impact any other MNES species.

The following section reviews the likelihood of occurrence assessment completed as part of the original referral material in combination with a recent Protected Matters Search Tool (PMST) and Wildnet search (refer **Part B – Attachment A**).

At the time of the referral, the EPBC Act PMST identified the following as having potential to occur within 5 km of the referral area:

- One (1) Wetland of International Significance;
- Seven (7) listed Threatened Ecological Communities (TEC);
- Nineteen (19) listed threatened flora species;
- Thirty-one (31) listed threatened fauna species; and
- Thirteen (13) migratory species.

A likelihood of occurrence and risk of impact on the identified matters was undertaken, discussed separately in the following sub-sections. It was considered unnecessary to create a new version of the likelihood of occurrence assessment as the most recent and accurate information on the relevant MNES was not conducive to any notable changes.

Marine species were not investigated as part of this assessment given the lack of suitable aquatic and/or marine habitat available within the referral area and distance from areas under tidal influence.

The PD Request notes that a recent PMST report must be generated and used during the assessment before finalising the draft PD to identify any additional species (listed at the time of the controlled project site) that may be affected by the proposal. As such, a new PMST report was obtained and reviewed



(refer **Attachment A3**). No new species have been identified with potential to occur on or within 5 km of the site.

3.2.1 Moreton Bay RAMSAR site

Desktop Review

The PMST listed one (1) Wetland of International Significance within 5 km of the referral area, being the Moreton Bay Ramsar site (refer to **Part B – Attachment A**). Moreton Bay is located approximately 30-40 km east of the referral area. The proposed action is not considered to have any direct or indirect effect on this MNES with the implementation of standard mitigation measures.

The referral area contains drainage features which travel west downstream and across Ripley Road to merge with Bundamba Creek. Bundamba Creek meanders north through high density residential, industrial, and rural land to merge with the Bremer River, onto the Brisbane River and ultimately Moreton Bay at the Port of Brisbane. This is a distance of at least 100 km.

The referral area is significantly far from the nearest point of the Moreton Bay RAMSAR Wetland. Furthermore, the proposed development will implement the necessary stormwater management plans during the construction and operation phases of the project.

3.2.2 Threatened Ecological Communities

Desktop Review

The PMST listed seven (7) TECs protected under the EPBC Act as having potential to occur within 5 km of the referral area (refer **Attachment A3**). The listed TECs are:

- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and Southeast Queensland Ecological Community
- Grey Box-Grey Gum Wet Forest of Subtropical Eastern Australia
- Lowland Rainforest of Subtropical Australia
- Poplar Box Grassy Woodland on Alluvial Plains
- Subtropical Eucalypt Floodplain Forest and Woodland of The New South Wales North Coast And Southeast Queensland Bioregions
- Swamp Tea-Tree (*Melaleuca Irbyana*) Forest of South-East Queensland
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

A desktop likelihood of occurrence assessment concluded that these communities are unlikely to occur within the referral area since the entire referral area is mapped with Category X (non-remnant) vegetation and therefore not expected to have vegetation reflective of any regional ecosystems associated with the TECs (refer **Part B – Attachment A**).

Field Survey Summary

Field surveys did not identify the listed TECs, or any other TEC, within the referral area during field surveys (refer **Section 3.4**). The likelihood of occurrence assessment for each of the TECs remained 'unlikely' following field surveys, as shown in **Table A3** below.



Table A3: Threatened Ecological Community likelihood assessment summary

Name	Status	Description of Community	Likelihood of Occurrence (desktop)	Likelihood of Occurrence (post-field survey)
Coastal Swamp Oak (<i>Casuarina glauca</i>) forest of New South Wales and South East Queensland ecological community	Endangered	The ecological community is typically found where groundwater is saline or brackish, however, can occur in areas where groundwater is relatively fresh. The canopy layer is dominated by <i>Casuarina glauca</i> (swamp oak, swamp she-oak). This community is commonly associated with Regional Ecosystem (RE) 12.1.1 and RE 12.3.20	Unlikely	Unlikely Field surveys confirmed that regional ecosystem 12.1.1 and 12.3.20 do not occur on site.
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	The Grey box-grey gum wet forest at maturity typically has a tall to very tall open canopy dominated by its characteristic Eucalyptus species with or without hoop pine (<i>Araucaria cunninghamii</i>). It can have a simple to structurally complex understorey which typically includes flora with drier vine-forest (rainforest) affiliations, with vines often prominent. The canopy of this TEC always contains <i>Eucalyptus moluccana</i> (grey box) and/or a grey gum species (<i>E. propinqua</i> (small-fruited grow gum) and/or less commonly <i>E. punctata</i> (grey gum)). Other canopy species often present include <i>E. siderophloia</i> (grey ironbark) and/or <i>Araucaria cunninghamii</i> (hoop pine).	Unlikely	Unlikely Field surveys confirmed that regional ecosystem 12.9-10.3 and 12.8.14a do not occur on site.
Lowland rainforest of Subtropical Australia	Critically Endangered	Typically, there is a relatively low abundance of species from the genera <i>Eucalyptus</i> , <i>Melaleuca</i> and <i>Casuarina</i> . Buttresses are common as is an abundance and diversity of vines. This community is usually associated RE12.3.1, RE12.5.13, RE12.8.3, RE12.8.4, RE12.8.13, RE12.11.1, RE12.11.10, RE12.12.1, and RE12.12.16.	Unlikely	Unlikely Field surveys confirmed that regional ecosystem 12.3.1, 12.5.13, 12.8.3, 12.8.4, 12.8.13, 12.11.1, 12.11.10, 12.12.1, and 12.12.1 do not occur on site.
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	The Poplar Box Grassy Woodland on Alluvial Plains ecological community is typically a grassy woodland with a canopy dominated by Eucalyptus populnea and understorey mostly of grasses and other herbs. The ecological community mostly occurs in gently undulating to flat landscapes and occasionally on gentle slopes on a wide range of soil types of alluvial and	Unlikely	Unlikely Field surveys confirmed that regional ecosystem 11.3.2, 11.3.17, 11.3.7, 11.4.12 and 12.3.10 do not occur on site.



depositional origin. In Queensland, this TEC corresponds with 11.3.2, 11.3.17, 11.3.7, 11.4.12 and 12.3.10.

Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	This ecological community is found on alluvial landforms, including floodplains, the riparian zones of parent rivers and other order tributaries, alluvial flats, floodplain/alluvial terraces and periodically flooded depressions. The structure of this TEC varies from tall open forest to woodland. The canopy is dominated by eucalypts and/or other myrtaceous trees, (specifically from Angophora, Corymbia, Lophostemon and Syncarpia genera). A mid-layer or sub-canopy of small trees may be present – with scattered to dense shrubs. For example, Melaleuca, Leptospermum and related genera may form dense thickets beneath the main canopy, or in gaps between canopy trees. Typical examples of tree species include Corymbia intermedia (Pink Bloodwood), Eucalyptus bancroftii (Bancroft's Red Gum), E. moluccana (Grey Box), E. grandis (Flooded Gum), E. siderophloia (Grey Ironbark), and E. tereticornis (Forest Red Gum). In Queensland Syncarpia glomulifera (Turpentine) may also dominate, or co-dominate. Regional Ecosystems generally associated with this TEC where key diagnostic characteristics are met include RE 12.3.2, 12.3.2a, 12.3.3, 12.3.3a, 12.3.3b, 12.3.3d, 12.3.4a, 12.3.7, 12.3.7c, 12.3.7d, 12.3.10, 12.3.11, 12.3.11a, 12.3.11b, 12.3.12, 12.3.14a, 12.3.15, 12.3.19.	Unlikely	Unlikely Field surveys confirmed that no regional ecosystems associated with land-zone 3 are present on site.
Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland	Critically Endangered	Low open forest dominated by dense thickets of Swamp Teatree, usually growing to about 8-12 m high. In south-east Queensland, Swamp Tea-tree occurs in monotypic stands uniquely linked to Tea Tree Clay soils which drain slowly after heavy rains, becoming waterlogged and forming temporary ponds. This ecological community comprises Queensland	Unlikely	Unlikely Field surveys confirmed that regional ecosystem 12.9-10.11 and 12.3.3c do not occur on site.



regional ecosystems 12.9-10.11 (Land Zone 9-10) and 12.3.3c (Land Zone 3) which are listed as endangered under the VMA.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Box – Gum Grassy Woodlands and Derived Grasslands are characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box, Yellow Box or Blakely's Red Gum trees. In Queensland the ecological community is a primary component of the following Regional Ecosystems: 11.8.2a, 11.8.8, 11.9.9a, 13.3.1, 13.11.8, 13.12.8 and 13.12.9. It can also be a smaller component of the following regional ecosystems: 11.3.23, 12.8.16 (only at the far western edge of the bioregion), 13.3.4, 13.11.3 and 13.11.4. These regional ecosystems range in conservation status from 'not of concern at present' to 'endangered'.	Unlikely	Unlikely Field surveys confirmed that regional ecosystems 11.8.2a, 11.8.8, 11.9.9a, 13.3.1, 13.11.8, 13.12.8 and 13.12.9, 11.3.23, 12.8.16, 13.3.4, 13.11.3 and 13.11.4 do not occur on site.



3.2.3 Threatened flora species

Desktop Review

At the time the controlled action decision was made, the PMST listed nineteen (19) flora species protected under the EPBC Act with the potential to occur within 5 km of the referral area (refer **Part B – Attachment A**). The likelihood of occurrence assessment determined two (2) species had a moderate likelihood of occurrence, being *Notelaea ipsviciensis* (Cooneana Olive) and *Plectranthus habrophyllus* (Shaggy-leaved *Plectranthus*) (refer **Part B – Attachment A**). Through a review of historical aerial imagery and mapped values from local, state and Commonwealth databases, all other threatened flora species were a 'low' or 'unlikely' occurrence. An updated PMST and Wildnet search did not identify any additional records or species (refer **Attachment A3**).

Field Survey Summary

Field surveys did not record any threatened flora species within the referral area. Following field investigations, the likelihood of occurrence assessment for both PMST-identified threatened flora species that were considered a 'moderate' potential occurrence were revised to 'low' and no risk of a significant residual impact occurring as a result of the proposed action. A summary of the likelihood of occurrence for these species is provided in **Table A4**.



Table A4: Threatened flora species assessment summary

Species Name	Status	Description	Likelihood of Occurrence (desktop)	Likelihood of Occurrence (post-field surveys)
<i>Notelaea ipsviciensis</i> (Cooneana Olive)	Critically Endangered	The Cooneana Olive survives as an understorey plant in degraded, eucalypt dominated dry sclerophyll vegetation communities. Soils in the area are of low fertility, depauperate and sandstone-based. This species prefers open woodland communities with open canopies. The known population is adjacent to subdivided, modified and developed land.	Moderate	Unlikely Potential habitat within the referral area is minimal, with the referral area highly modified and predominantly comprised of cleared open paddocks. Field surveys did not identify the species on referral area.
<i>Plectranthus habrophyllus</i> (Shaggy-leaved Plectranthus)	Endangered	Shaggy-leaved Plectranthus have been recorded growing on chert or sandstone outcrops, in open woodlands often in shaded situations near vine forest. Seven populations are known including: Oxley Creek, Greenbank; Opposum Creek, Springfield; Woogaroo Creek, Goodna; three populations within White Rock Conservation Park, incorporating Six Mile Creek and near Ormeau (south of Beenleigh).	Moderate	Unlikely Although minimal rocky areas were observed in the northwest of the referral area, no <i>Plectranthus</i> species were observed.



3.2.4 Threatened and migratory fauna species

Desktop Review

At the time the controlled action decision was made, the PMST listed forty-four (44) fauna species protected under the EPBC Act with the potential to occur within 5 km of the project area (refer **Attachment A3, Appendix A**). The likelihood of occurrence assessment determined seven (7) threatened fauna species protected under the EPBC Act to have a moderate or higher potential to occur within the referral area (refer to **Attachment A3, Appendix C**). One (1) migratory species was also assessed as having a 'moderate' potential to occur within the referral area. All other threatened and/or migratory fauna species were assessed as 'unlikely' to occur. An updated PMST and Wildnet search did not identify any additional species or records.

Field Survey Summary

Following field surveys, the likelihood of occurrence table was revised to include ground-truthed information and all threatened species except the Koala were assigned a 'low' likelihood of occurrence (refer **Table A5**).

Despite targeted field surveys, evidence of Koala in the form of scats or direct observations was not recorded. The referral area is highly modified and almost completely cleared, with a small area of native trees in the north-west containing eucalypt species from the *Eucalyptus* and *Corymbia* genus. While evidence within the referral area is not present, it is noted that Koalas are known to occur within the wider landscape and so there is a 'moderate' likelihood of occurrence.



Table A5: Threatened and migratory fauna species assessment summary

Scientific Name	Status	Description	Likelihood of Occurrence (desktop)	Likelihood of Occurrence (post-field survey)
Birds				
<i>Anthochaera phrygia</i> (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. They are a generalist forager, which mainly feed on nectar from a wide range of eucalypts and mistletoes.	Moderate	Unlikely The referral area contains scattered <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark) and <i>Corymbia citriodora</i> (Spotted Gum). Mistletoe was extremely limited and scattered on site. However, the referral area contains relatively low value vegetation for the species and lacks significantly large numbers of mature trees, high canopy cover, and abundance of mistletoe. <i>Philemon corniculatus</i> (Noisy Friarbird) was also noted within the referral area, which reduces the potential for Regent Honeyeater as they are an aggressor species known to outcompete Regent Honeyeater. It is unlikely the species would utilise the vegetation within the referral area especially given the abundance of suitable habitat within White Rock Conservation Area to the east. The species was not observed within the referral area.
<i>Grantiella picta</i> (Painted Honeyeater)	Vulnerable	The species inhabits mistletoes in eucalypt forests/woodlands, riparian woodlands of black box and river red gum, box-ironbark-yellow gum woodlands, acacia-dominated woodlands, paperbarks, casuarinas, callitris, and trees on farmland or gardens. The species prefers woodlands which contain a higher number of mature trees, as these host more mistletoes. It is more common in wider blocks of remnant woodland than in narrower strips.	Moderate	Unlikely The referral area contains scattered <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark) and <i>Corymbia citriodora</i> (Spotted Gum) in the north-west portion of the site. Mistletoe was extremely limited and scattered. The referral area contains relatively low value vegetation for the species and lacks significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. It is unlikely the species would utilise the vegetation within the referral area especially given the abundance of suitable habitat within White Rock Conservation Area to the east. The species was not observed within the referral area.



<i>Hirundapus caudacutus</i> (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 recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps.	Moderate	Unlikely The majority of the referral area consists of cleared open paddocks where the species is less likely to occur. The species was not observed on site.
<i>Lathamus discolor</i> (Swift Parrot)	Critically Endangered	The Swift Parrot breeds 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.	Moderate	Unlikely Given the general lack of vegetation on site, the abundance of foraging habitat within White Rock Conservation Area and lack of sightings surrounding the site, it's considered unlikely that this species would utilise the site.
<i>Stagonopleura guttata</i> (Diamond Firetail)	Vulnerable	Diamond firetails occur in eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees. They prefer areas with relatively low tree density, few large logs, and little litter cover but high grass cover	Moderate	Unlikely The majority of sightings are further inland around Toowoomba/Warwick. The species was not observed during field surveys and is considered as having a low likelihood of occurrence.
Mammals				
<i>Phascolarctos cinereus</i> (Koala)	Endangered	The Koala is found in a range of habitats, from coastal islands and tall eucalypt forests to low woodlands inland.	Moderate	Moderate-Low Extensive field surveys targeting Koalas were conducted, and no direct or indirect evidence was observed. Further, the referral area lacks Koala habitat trees except for the north-west portion of the lot. Mature vegetation present within the referral area is lacking and connectivity value is limited. This species may utilise the referral area in a transient capacity.
<i>Pteropus poliocephalus</i> (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 vegetation communities	Moderate	Low <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark) and <i>Corymbia citriodora</i> (Spotted Gum) are present across the north-western extent of the site. These species are considered important winter flowering species as



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 and related genera.

identified within the National Recovery Plan for the Grey-headed Flying-fox. However, the referral area is predominantly cleared and only contains scattered and isolated native trees. The nearest species record is associated with an active roost at Yamanto (479) approximately 8.5 km north-west of the site. No roosts were observed on or adjacent to the site.



3.2.5 Likelihood of occurrence conclusion

The referral area is mapped entirely as Category X (non-remnant) vegetation and is zoned as 'urban living' under the RVPDA, suggesting environmental values within the referral area are minimal. Field surveys confirmed this, determining that a large majority of the referral area is cleared of any habitat features, comprised of exotic and native paddock grasses and occasional isolated native trees. Tree species area also limited, with *Corymbia citriodora* (Spotted Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark) comprising the majority of trees on site. Vegetation is marginally denser in the north-western corner of the site, where a small number of Koala habitat trees is clustered adjacent to the residential dwelling, likely retained despite the extensive clearing for privacy, aesthetic, and shade functionality. As such, the referral area contains limited potential Koala habitat in the north-western corner, and no habitat features for any other potential MNES. Updated PMST and Wildnet reports, and more recent field surveys made no notable change to the likelihood of occurrence assessment.

Following assessment during the referral, subsequent referral information request, and PD information request only Koala is considered likely to be impact by the project. The project is not considered to have a significant impact on any other MNES species.



3.3. Koala (*Phascolarctos cinereus*)

Item 3.3 of the PD Request asks, '**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 the proposed project 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 proposed project site, or within an area of impacts outside the proposed project site.**

Only *Phascolarctos cinereus* (Koala) is considered to have a moderate or higher likelihood of occurrence within the referral area. Further information on this species is provided below.

3.3.1 Ecology and occurrence

Item 3.3 (a) of the PD Request asks for, "**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.

3.3.2 Extent of habitat

Item 3.3 (b) asks for ***“Quantification of the extent of habitat (including maps identifying known or potential habitat) on the proposed project site and, where feasible, in the broader landscape.”***

Koala habitat is present within the local landscape, being vegetation communities containing Koala habitat trees and records of the species (refer **Plan A7**). Much of the local area has been historically cleared and continually maintained leading to a dominance of regrowth vegetation and paddocks.

The referral area itself is predominantly cleared as a result of historical and contemporary rural land management practices and is dominated by open paddocks. The potential for Koala to occur within the referral area is limited by the availability of Koala habitat trees and vast areas of cleared open paddock. Nevertheless, the presence of Koala habitat trees within the referral area does indicate potential for the species to occur, however no evidence of Koala was found despite extensive targeted and opportunistic field surveys. The lack of trees within the referral area couple with several field survey days means that the area of potential habitat has been extensively surveyed for signs of usage.

The extent of Koala habitat within the referral area was assessed using vegetation and Koala utilisation surveys, the methods and results of which are described in **Section 3.4** and **3.5** respectively. As part of the referral material, several detailed assessments were completed to delineate vegetation communities and critical Koala habitat. The referral area was stratified into two vegetation communities and waterbodies (refer **Plan A8**).

1. Isolated and scattered ancillary Koala habitat trees (5.4 ha) – Critical Koala Habitat (AU1)
2. Scattered trees and paddocks (71.5 ha) – Not Koala Habitat
3. Dams and waterbodies (0.9 ha) – Not Koala habitat

Although scattered paddock trees are often considered Koala habitat as they can be used as a temporary shelter and food refuge between suitable habitat, the significant isolation of the paddock trees within the referral area and available alternative movement routes means the ‘scattered trees and paddocks’ is not considered Koala habitat. The referral area ranges from 700 to 900 m wide, and 900 to 1,200 m long. The north, south, and eastern adjoining lots are more densely vegetated than the referral area, as inferred by the partial Category C (high-value regrowth) and B (remnant) vegetation mapping present north and east. To the west of the site, across Ripley Road, is Bundamba Creek, which is bound by strips of linear vegetation. Compared to its direct surrounds, the referral area is notably barren.

The northwestern portion of the referral area contains a small patch of more densely gathered trees, dominated by *Corymbia citriodora* (Spotted Gum) with *Eucalyptus crebra* (Narrow-leaved Ironbark). Given the extreme sparsity of trees through the balance of the site, this 5.4 ha area contains the majority



of native trees on site. A delineation was drawn between this assessment unit and the 'scattered trees and paddocks' based on the density of available habitat trees and potential connectivity to the north and north-west. This Koala habitat area was revised and increased from the original referral assessment (2 ha) to include the areas of grass and scattered trees that provide marginal connectivity to the north and north-west (refer **Section 4** for details). As a result, the area of Koala habitat identified within the referral area now includes almost all NJKHTs within the referral area and defined as Assessment Unit (AU) 1.

3.3.3 Quality and importance of habitat

Item 3.3 (c) asks for ***"Quality and importance of known or potential habitat for the species or communities."***

The referral area is comprised of vast cleared paddocks and scattered Koala habitat trees, and therefore is considered to offer low value foraging or dispersal habitat. Nevertheless, the presence of Koala habitat trees in the north-west of the referral area provides potential habitat for the species.

Potential habitat in the broader locality is present with White Rock Conservation Park to the east which contains recognised Koala habitat regional ecosystems. The limited potential Koala habitat within the referral area is separated from this area by further highly modified rural properties consisting of a mixture of regrowth and remnant values. Additionally, many of the surrounding land parcels have current EPBC applications and/or are zoned as future development areas. As such, the few Koala trees within the referral area are likely to become surrounded by broad-scale residential developments and roads (refer **Plan A4**).

3.3.4 Populations and records

Item 3.3 (d) asks for ***"Information detailing known populations or recorded within at least five kilometres of the development footprint and (if known) the size of these populations."***

There are several records of Koala on Atlas of Living Australia (ALA) within a 10 km search radius of the referral area. Most records are located more than 5 km from the referral area and concentrated within the northern portion of the search circumference (refer **Plan A7**). A review of Koala hospital data (DES 2022) showed a similar trend, with the closest records over a kilometre from the referral area and the majority located to the north, along roads and within residential areas (refer **Plan A9**). The most common incident type reported was sick or wasted Koalas, suggesting that the local population may be vulnerable or exposed to disease. It is noted that the clustering of records within the comparatively built-up northern landscape rather than the large expanse of suitable habitat east and west of the referral area might be a product of observer bias and not an accurate reflection of Koala occurrence, but there is evidence of greater declines in Koala populations in bushland (DERM, 2009). Regardless, Koalas are known to occupy the area surrounding the referral area, and to exist ubiquitously across the Ipswich LGA, though at a lower density than within the Koala Coast.

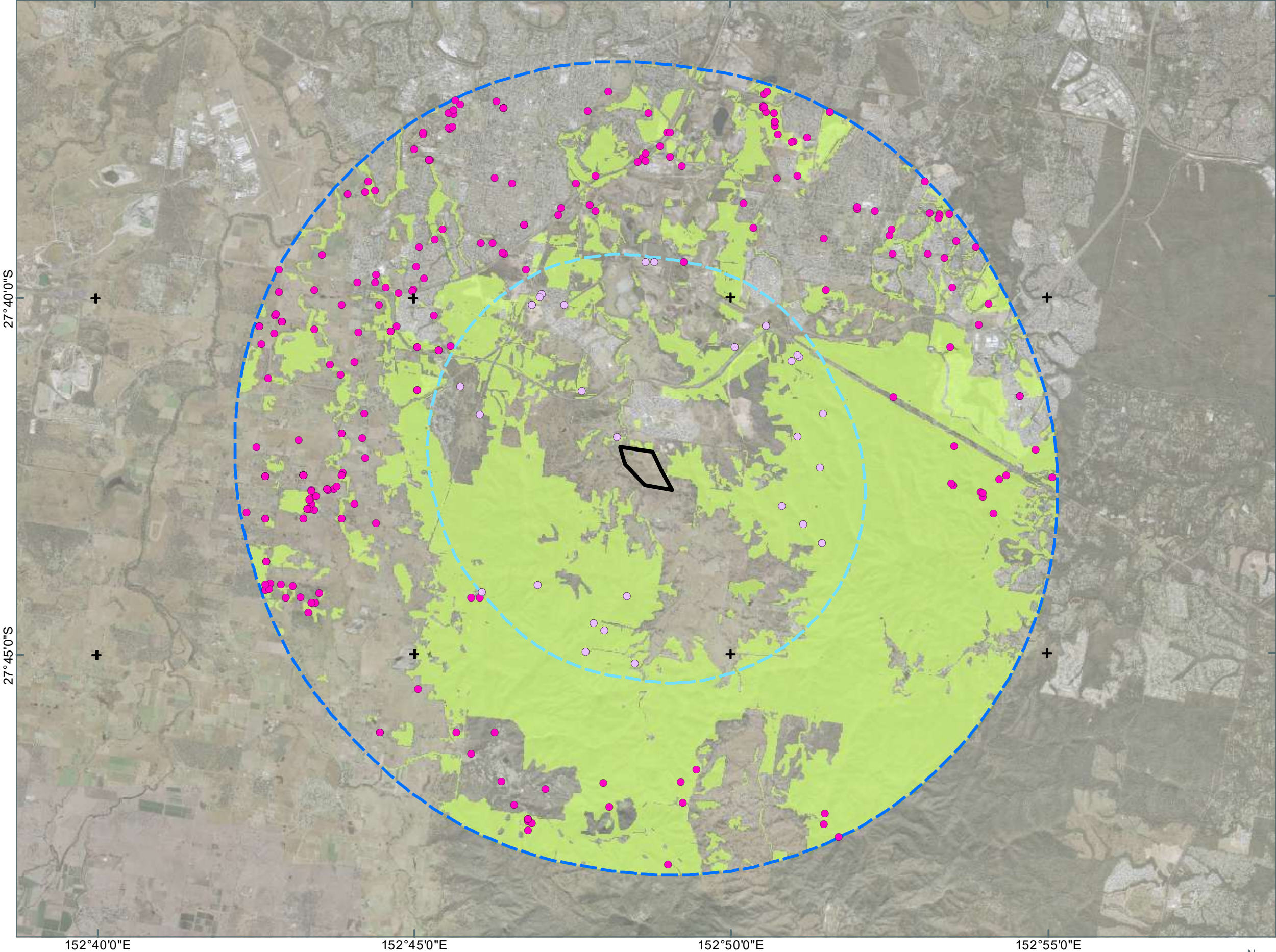
There are no records of Koala within the referral area since 1980. There are few records within 3 km of the referral area, with the majority of these records dated (> 20 years old). The closest Koala records to the referral area are located approximately 280 m, 500 m, and 1.07 km from the referral area and are from 2007, 1983, and 1987 respectively. Therefore, although Koala populations are known to exist within the locality of the referral area, records proximal to the referral area are old and few, suggesting the frequency of Koala entering the referral area is likely to be low, particularly given the lack of habitat and vast open areas within the referral area.



This conclusion is corroborated by the state of vegetation within the referral and surrounding areas. Aerial imagery clearly shows a north-south corridor of cleared rural land surrounding Bundamba Creek, approximately 2 km across and inclusive of the referral area. The only consistent vegetation cover within this corridor is the linear strip along Bundamba Creek. This cleared land is flanked to the east and west by large tracts of known, available Koala habitat within the White Rock-Spring Mountain and Flinders-Goolman Conservation Estates. As such, this cleared agricultural land is likely to act only as dispersal habitat for Koala, used infrequently by transient individuals rather than as part of a dedicated home range for foraging or reproduction, and therefore reducing the chance of observing this already cryptic species.



A7. KOALA HABITAT AND RECORDS



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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.

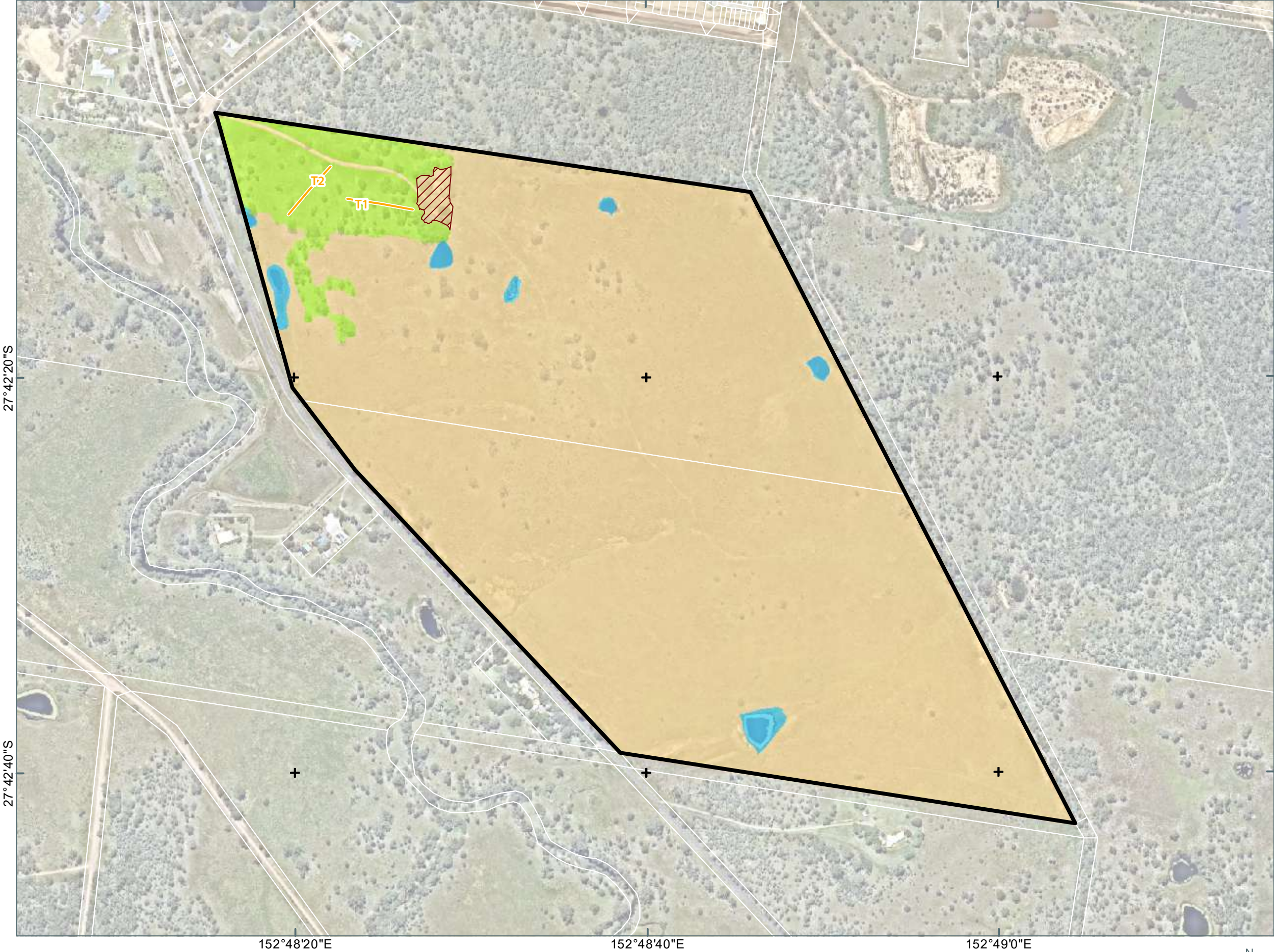
Layer Sources
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- LEGEND**
- Referral Area
 - 5km Referral Area Buffer
 - 10km Referral Area Buffer
 - Koala Records within 10km of referral area recorded within the last 20 years [ALA, 2025] - 275
 - Koala Records within 5km of referral area recorded within the last 20 years [ALA, 2025] - 30
 - Potential and Known Koala Habitat within 10km of site - 47.35%



A8. VEGETATION COMMUNITIES



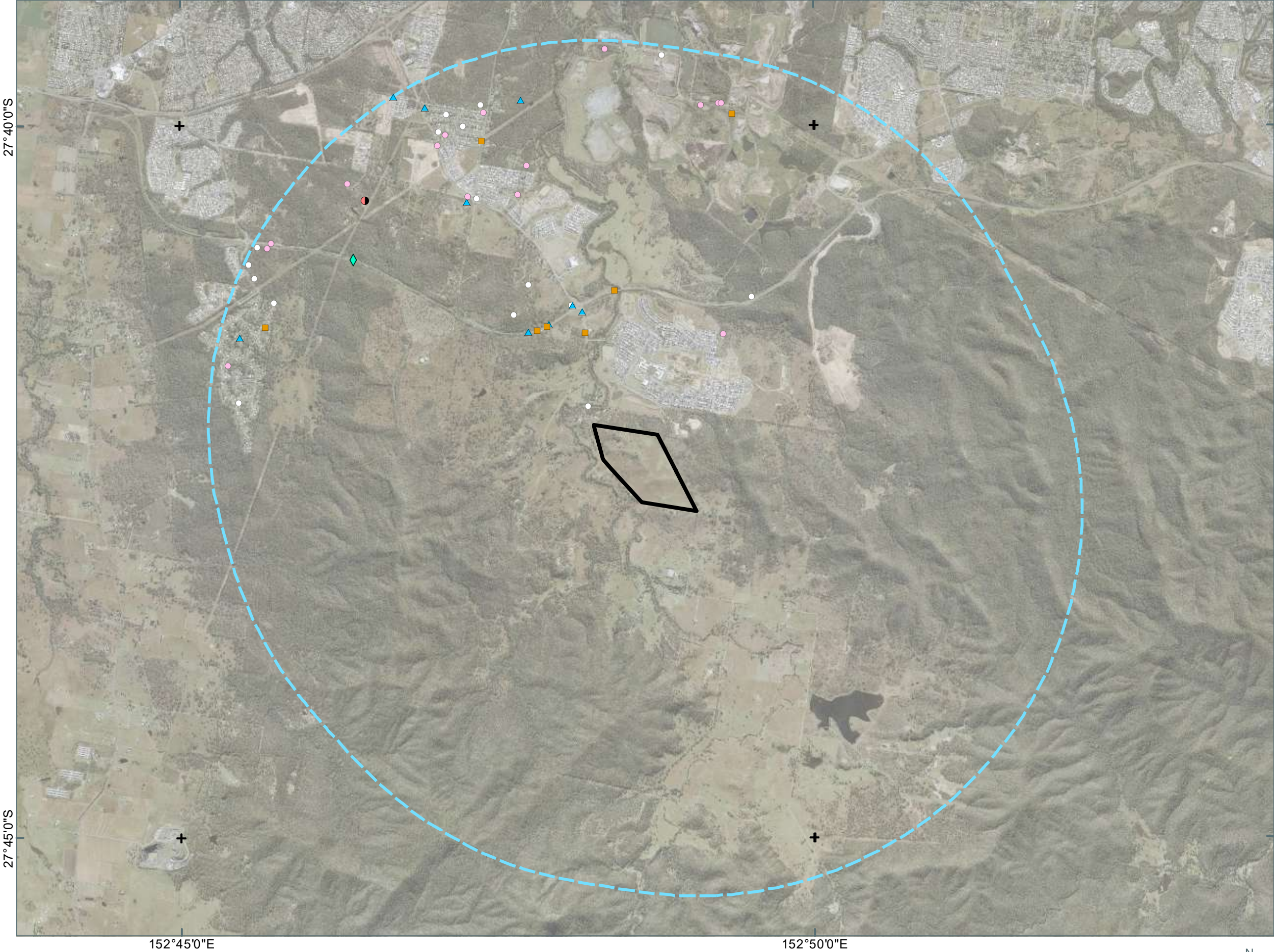
Notes:
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- LEGEND**
- Qld DCDB
 - Referral Area [77.8 ha]
 - MHQA Transect
 - Dwelling and Planted Trees
- Vegetation Communities [77.8 ha]**
- AU1 – Isolated and scattered ancillary koala habitat trees – Koala habitat [5.4 ha]
 - Scattered trees and paddocks – Not koala habitat [71.5 ha]
 - Dams and waterbodies [0.9 ha]



A9. KOALA HOSPITAL DATA



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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.

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LEGEND

Referral Area

5km Referral Area Buffer

Qld Koala hospital records (all)

- Deceased [7]
- Injured [9]
- Sick and/or wasted [16]
- Orphaned [1]
- Vehicle hit [1]
- Other incident type [16]



3.4. Survey Effort Methodology

Item 3.4 (a) to (c) of the PD Request asks, ***“For the listed threatened species listed in section 4 of this request for information, provide up to date baseline and survey data at the impact site and if relevant, the proposed offset site, including:***

- a) Information on the survey methodology or technique used***
- b) When surveys were conducted and survey effort***
- c) Map/s of survey points or transects and how the survey points or transects were selected.***

Several detailed surveys have been completed across the referral area as part of the original referral material and subsequent PD information request (refer **Part B – Attachment A and Attachment D**). Surveys have also been completed on the proposed offset site to establish baseline results utilising the same methodology where applicable (refer **Section 6** and **Attachment A5** for details). The details of the dates, survey effort, timing, methodologies utilised are present in the following sections.

3.4.1 Field personnel and scientific permits

Ecological field surveys were conducted within the referral area to confirm presence of potential MNES. Fauna surveys were conducted under the following permits held by Saunders Havill Group:

- Scientific Purposes Permit **WA0022007** granted under Section 12(f) of Nature Conservation (Administration) Regulation 2017
- Department of Agriculture and Fisheries Ethics clearance **CA 2020/02/1355**
- Scientific User Registration **SUR000451**

Field surveys were completed by suitably qualified field ecologists at SHG, refer **Table A6**.

3.4.2 Field survey methods, timing and effort

Field survey techniques were implemented during the field survey period which occurred over several days between 2022 and 2025.

Two days of preliminary site surveys were conducted in June and July 2022 comprising of observational surveys focusing on the site context, incidental surveys, broad vegetation and habitat features. Following this, two further field survey days were conducted in August 2022 to inform the initial referral application, which included GPS tree plotting, ground-truthing observation surveys, active and targeted searches, and SATs.

In March and April 2024 additional targeted searches were carried out in response to a referral information request. These surveys involved habitat occurrence analysis, observational surveys, and detailed hollow assessments with relevance for *Calyptorhynchus lathami lathami* (South-eastern Glossy Black-cockatoo), which is no longer considered a potential impact given the lack of habitat values on or near site.

Further surveys were conducted in June, July, and August 2024 to support a revised habitat suitability assessment following the PD Request (refer **Attachment A2**). These surveys included MHQA transects to quantify the quality of Koala habitat, in addition to several further targeted searches for Koala occurrence including the deployment of a camera trap for fifteen (15) days and the repetition of SAT surveys to confirm whether any recent usage had occurred. The referral area was considered unlikely



to contains resources to support nocturnal species, however for completeness an additional nocturnal survey was completed in June 2025.

Approximately 91 person hours were spent across the referral area, inclusive of 4 SATs, two scat meanders (where tree density was not high enough to be able to complete a SAT survey), and assessment of every tree within the referral area for direct or indirect evidence of Koala usage. As the referral area contains very few trees there is a high level of confidence that every tree has been inspected several times for signs of Koala usage.

A summary of field survey techniques applied targeting Koala, the survey guidelines used, total combined survey effort, and field survey personnel and qualifications for each method are provided in **Table A6**.

A detailed breakdown of field survey dates, weather, and methods applied on each day are provided in **Table A7**.



Table A6: Summary of targeted field survey techniques, survey effort and field personnel

Scientific Name	Common Name	Survey guidelines	Techniques implemented and survey effort	Field personnel qualifications
<i>Phascolarctos cinereus</i>	Koala	<i>Survey guidelines for Australia's threatened mammals</i> Phillips and Callaghan (2011)	- Four (4) Spot Assessment Technique surveys - Two (2) scat meanders - Assessment of foraging and breeding values (habitat suitability) - Motion fauna camera	Senior Ecologist 5 years of relevant experience - Bachelor of Environmental Management (Natural Systems and Wildlife) Ecologist 13 years of relevant experience - Bachelor of Science (Ecology and Conservation Biology)
<i>Calyptrorhynchus lathamii lathamii</i>	South-eastern Glossy Black-cockatoo	<i>Targeted species survey guidelines – Glossy Black-cockatoo (Qld)</i> <i>Conservation Advice for Calyptrorhynchus lathamii lathamii (South-eastern Glossy Black Cockatoo)</i>	- Observational surveys (diurnal) - Assessment of foraging and breeding habitat including detailed assessment of hollows	Ecologist 2 years of relevant experience - Bachelor of Science (Marine Science and Zoology) Ecologist 2 years of relevant experience - Bachelor of Science (Ecology and Zoology) Ecologist 2 years of relevant experience - Bachelor of Science (Zoology)



Table A7: Field survey dates and methods summary

Survey date	Temperature data	Rainfall data	Methods applied
22 June 2022	4.3°C min – 23.4°C max	0 mm	Preliminary site visit, observational surveys, context analysis.
26 July 2022	5.9°C min – 24.8°C max	0 mm	Preliminary site visit, observational surveys, context analysis, ground-truth vegetation communities, targeted searches.
1 August 2022	8.8°C min – 20.4°C max	0 mm	Vegetation assessments, GPS tree plotting, observational surveys.
2 August 2022	8.9°C min – 23.6°C max	0 mm	Vegetation assessments, observational surveys, SAT surveys, Koala scat meanders.
11 March 2024	19.3°C min – 28.0°C max	0.2 mm	Observational surveys, detailed hollow assessments.
17 April 2024	13.7°C min – 27.9°C max	0 mm	Observational surveys, vegetation density transects.
27 June 2024	11.2°C min – 25.6°C max	0 mm	Camera trap deployment
11 July 2024	9.3°C min – 22.9°C max	0.2 mm	Camera trap collection
30 August 2024	8.2°C min – 34.4°C max	0 mm	Observational surveys, SAT surveys, MHQA transects.
04 June 2025	9.4°C min – 22.2°C max	0 mm	Nocturnal survey (spotlighting)

NB: Data for the referral area sourced from Bureau of Meteorology (BoM) – Station 040793 Lyons Alert for rainfall and 140009 Greenbank (Defence) for temperature.



Relevant field survey methodologies applied during the survey period are described in the following subsections.

Observational Survey (diurnal)

The referral area was walked 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 *Nature Conservation Act 1992* (Qld).

Observational surveys included identification of ecological features and values such as broad vegetation communities, fauna habitats, and ecological corridors. Identification and description of the fauna habitats present within the area included any habitat trees. Specific attention was paid to threatened flora and fauna species. Threatened flora and fauna species are those defined as a species that is listed as Critically Endangered, Endangered, Vulnerable or Conservation Dependent under the EPBC Act.

There are limitations to direct observational surveys for Koala that may miss individuals (Dique et al. 2003; Dique et al. 2004; Corcoran et al. 2019; Witt et al. 2020). However, this risk of missed detections can be reduced through repeated surveys over multiple day which was utilised at this site. Furthermore, the area of vegetation is small with only a few trees present. The risk of missed detections on this site is considered very low.

Spot Assessment Technique (SAT) Survey

Surveys to understand Koala presence were undertaken across the referral area in accordance with the methodology developed by the Australian Koala Foundation (AKF) (Phillips & Callaghan, 2011).

Although the SAT survey methodology is considered an accurate technique when estimating SEQ Koala activity levels, there are a number of limitations. The abundance and density of Koalas cannot be directly determined through this method. However, fixed amount of sampling gives fixed proportion of population, and the value of index usually increases with population density. Additionally, stable populations have higher rate of faecal pellet deposition (Lunney et al. 1998), leading to bias occupational rate where multiple SAT sites can be occupied by only the one animal (Phillips and Hopkins 2008).

The SAT method was implemented within the vegetation in the north-western portion of the referral area. This methodology is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage. The SAT method involves identifying a non-juvenile tree of any species within the referral area that is either observed to have a Koala or scats, or is known to be a Koala food tree or otherwise important for Koalas, and recording any evidence of Koala usage of that tree including physical presence, identifiable scratches or scats. The nearest non-juvenile tree is then identified and the same data recorded. The next closest non-juvenile tree to the first tree is then assessed and so on until 30 trees have been surveyed.

The number of trees showing evidence of Koala activity is expressed as a percentage of the total number of trees sampled to indicate the frequency of Koala usage. Assessment of each tree involves a systematic search for Koala scats beneath the tree within a 1 m radius of the trunk. After approximately two minutes of searching for scats, the base of the trunk is observed for scratches and the crown for Koala (Phillips & Callaghan, 2011).



Scat Meander

Where there are not enough trees available to conduct a SAT survey, a scat meander can instead be conducted within vegetated areas to understand Koala presence. The designated area is slowly walked and inspected for any evidence of Koala, including systematic assessment of any available trees for Koala scats.

Motion Detection Camera

One (1) motion detection camera trap was deployed within the referral area to target threatened species and cryptic fauna for the duration of 15 nights from 27 June to 11 July 2024. The camera was fixed to a tree approximately 70 cm from the ground and 100-150 cm in front of a bait station containing a peanut butter and oat mixture. Following the deployment, the camera images were analysed with all species identified subsequently added to the referral area fauna list. While there are limitations in the use of camera traps for detecting Koala presence given the species is arboreal, the utilisation of a camera trap at this site is supplementary to direct targeted surveys completed across the site.

GPS Tree Plot

A tree plot survey was completed across the referral area using a handheld GPS device (Trimble) to record locations (accuracy ± 1 m), and the following parameters of each tree specimen were recorded:

- tree species, via a combination of observations of the gum nuts, buds, leaves, bark and growth form;
- diameter of the trunk of the tree measured using the standard method of Diameter at Breast Height (DBH);
- height of the tree measured using a laser rangefinder with three-point measurement capability (inclinometer);
- canopy spread;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).

Nocturnal survey (spotlighting)

This non-intrusive survey 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).

A combination of high-powered spotlights and head torches were used to sample for nocturnal mammals, birds, reptiles and frogs across the proposed action area. This targets nocturnal species and uses the distinctive eye-shine of nocturnal species for detection. The likelihood of nocturnal arboreal fauna being present within the referral area is unlikely given the lack of trees present. Nevertheless, a nocturnal assessment was completed on the 4 June 2025 for survey completeness.

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. Vegetation/habitat quality was derived from the Modified Habitat Quality Assessment tool to determine the quantum and quality of the habitat suitable



for Koala within the referral area. Two (2) MHQA transects were completed across the referral area to provide the necessary information. Refer to **Section 4.4** for methodology detail.

3.4.3 Survey adequacy

Item 3.4 (d) of the PD Request asks for, ***"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."***

The lack of vegetation within the referral area and lack of specific habitat features significantly limits the likelihood of occurrence for any MNES (with the exception of Koala) as detailed in the original referral material (refer **Part B – Attachment A**). As part of the original referral, the department requested further assessment on the potential for South-eastern Glossy Black-cockatoo to occur as detailed in **Part B – Attachment D**. The assessment being that the referral area does not contain the necessary foraging and/or breeding habitat to support the species (refer **Table A8** for specific survey effort).

This PD provides all literature reviewed and cited within a reference list (refer **Section 10**). 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 Mammals (2017)*
- *Queensland Guide to determining terrestrial habitat quality: A toolkit for assessing land-based offsets under the Queensland Environmental Offsets Policy (version 1.2) (2017)*
- *Biocondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland (version 2.2) (2015)*
- *Phillips, S. and Callaghan, J. (2011). The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus. Australian Zoologist, 35(3), pp.774–780.*

Timing and seasonality

Surveys were completed across a variety of seasons and weather, with all trees within the referral area observed at each iteration due to the low number. It is noted that an increase in Koala birth rates in Queensland often coincides with periods of peak rainfall, when food availability increases (Ellis *et al.* 2010). A review of the Lyons Alert weather station (No. 040793) rainfall statistics, the closest reliable source (approximately 5.1 km north-west of the referral area), indicate the annual mean average rainfall is 961.1 mm. Rainfall in 2022 was 1688 mm, well above average, and 2024 is also on track to be above average, totalling 842 mm with three months of data still unaccounted. As discussed, surveys were undertaken in June, July, and August of 2022, and March, April, June, July, and August 2024 as well as June 2025, equating to approximately 91 person hours. As such, surveys have been undertaken and repeated in both Autumn and Winter during years of above average rainfall, when births and therefore breeding can occur opportunistically (Ellis *et al.* 2010).

Overall, across the survey period a combination of survey methodologies were utilised to detect evidence of Koala and assess potential habitat quantity and quality within the referral area. These methodologies included opportunistic diurnal searches, activity SAT searches and scat meanders, deployment of motion sensing camera, and habitat assessment including GPS tree plotting and MHQA



transects. These surveys were conducted over a range of dates from June 2022 to June 2025, and the SAT surveys and habitat assessment were repeated from 2022 to 2024 for timeliness and verify consistency of the results. It is anticipated that 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 potential occurrence and use of the referral area by this species given the limited values on site.

Table A8: South-eastern Glossy Black-cockatoo Survey Guidelines compared to SHG Survey Effort

Survey method	Days	Duration
- Observational surveys (diurnal)	7	Over 91 person hours
- Assessment of foraging and breeding habitat		
Targeted species survey guidelines (QLD)		
- Observation surveys (diurnal)	1	5 hours (minimum)
- Search for foraging and nesting signs	4	20 hours (minimum)
Conservation Advice for <i>Calyptorhynchus lathami lathami</i> (South-eastern Glossy Black Cockatoo)		
Details criteria for hollows considered suitable for the species.	Refer Part B – Attachment D for detail hollows assessment concluding only one hollow as meeting all the required criteria	



3.5. Survey Results

Item 3.4 (e) asks for, *“Results of all surveys undertaken.*

- i) *Include raw data sheets from all ecological assessments completed for the proposed action as appendices. This includes flora and fauna species lists.*
- ii) *Ensure BioCondition/transect/quaternary and/or secondary habitat assessment data includes corresponding photos of assessment areas.”*

Field survey effort is shown on **Plan A10**. Survey effort is extensive, comprising two (2) Ecologists within the referral area for ten (10) days with fifteen (15) nights of camera trap operation and one (1) night of nocturnal surveys. While on site, Ecologists completed four (4) SAT surveys, two (2) scat meanders, two (2) MHQA transects, individual tree recording, detailed hollow assessment, nocturnal targeted surveys and ongoing observational surveys and opportunistic searches for Koala. The relatively small area of vegetation within the referral area was extensively surveyed utilising multiple survey methods from 2022 to 2025. No direct or indirect evidence of Koala within the referral area has been found. No other threatened species were identified on or proximal to the site, and fauna species observed comprised only common, mobile species adapted to modified environments.

Field surveys confirmed the Category X (non-remnant) vegetation mapping, with the entire referral area cleared paddocks with occasional, scattered native trees. Where trees are present, these are almost exclusively *Corymbia citriodora* (Spotted Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark). These species generally reflect pre-clear mapping of RE 12.9-10.7.

Almost all trees within the referral are limited to the north-western corner near the residential dwelling, interspersed between cattle yards, fencing, sheds, stables, and the driveway. Given the balance of the referral area contains very few trees and is dominated by a mixture of exotic and native pasture grasses, the north-western portion contains the only feasible habitat within the referral area. Since most trees within this north-western patch are non-juvenile Koala habitat trees and retain some connectivity to the vegetation present in the northern adjoining lot, this area is considered potential Koala dispersal habitat, ancillary to the northern adjoining vegetation. It is noted that with no evidence of Koala on site, limited records nearby, few trees available, and alternate habitat north, east, and along Bundamba Creek, this potential habitat is likely used very infrequently by transient individuals and does not contribute significant to the functionality of a population in the locality.

Survey results completed during the original referral material (**Part B – Attachment A**). Raw data, including transect data sheets, are provided as **Attachment A4**. Detailed results of targeted Koala surveys are discussed in the below subsection, and results of the Modified Habitat Quality Transects are provided in **Section 4.4**.

3.5.1 SAT surveys and scat meanders

As noted previously, on-ground surveys can be used to not only establish presence or absence but also the level of usage by the species, if present (Mossaz 2010; Rhodes *et al.* 2015; Lunney *et al.* 1998).

Surveys for Koala utilisation of the referral area were conducted within the north-western portion of the referral area to determine presence and level of usage. Two (2) Koala SAT surveys were undertaken in August 2022 and repeated two years later, in August 2024. Where there were insufficient trees to



conduct a SAT survey, a scat meander was conducted. Two scat meanders were completed in August 2022 (refer **Plan A10**). No scats were found during either meander or SAT surveys.

Table A9 presents the Koala usage scores for the SAT survey completed (refer **Attachment A4** for full results). No evidence of Koala was detected, and therefore Koala Activity Level across the referral area is 'low' in accordance with the Koala Activity Level Classification by Phillips and Callaghan (2011).

Table A9: Summary of SAT results

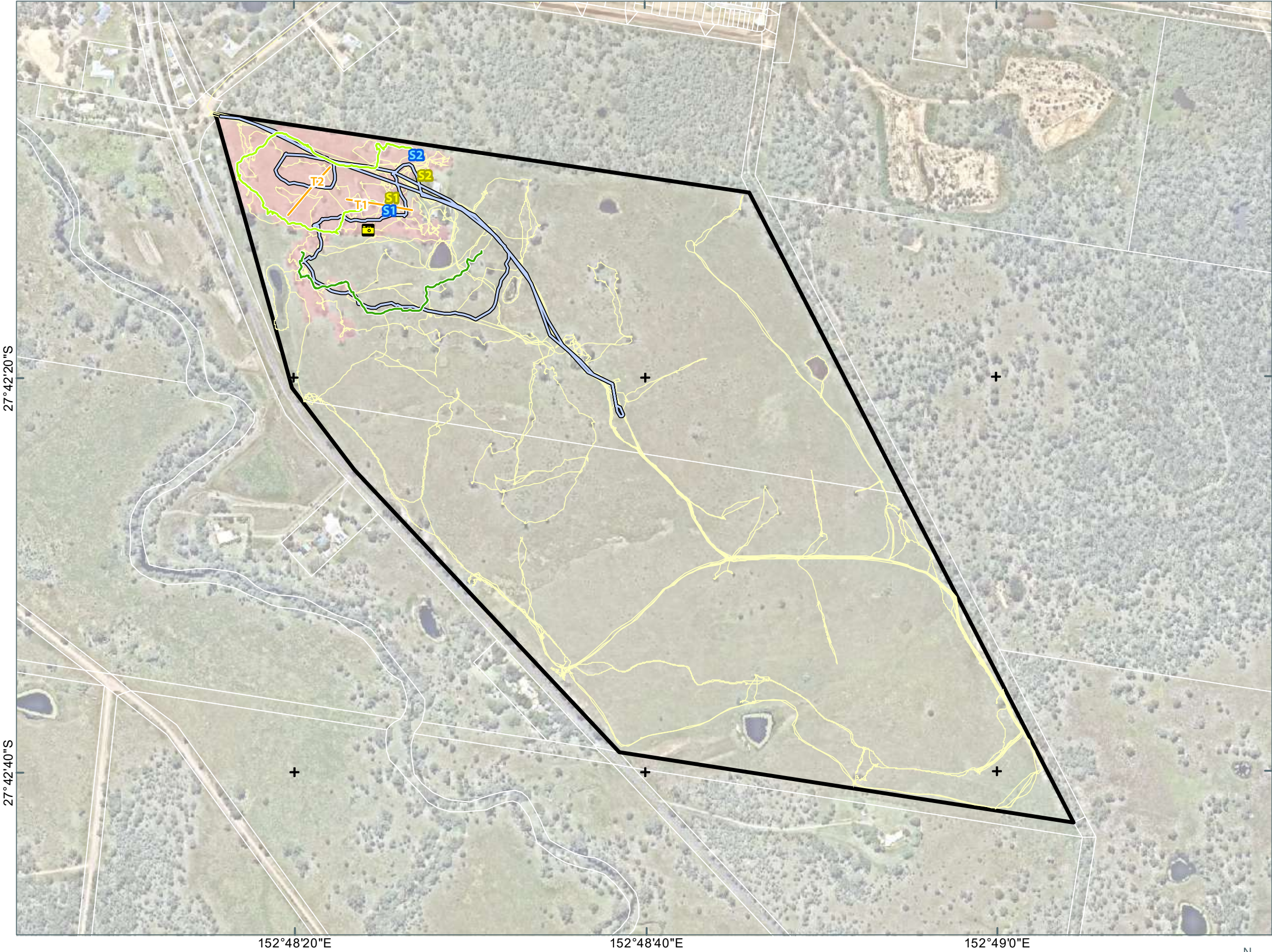
SAT Number	Year	Evidence of Koala Use (%)	Koala Activity Level (east coast low)
1	2022	0 (No use)	Low ($\leq 3.33\%$)
2	2022	0 (No use)	Low ($\leq 3.33\%$)
3	2024	0 (No use)	Low ($\leq 3.33\%$)
4	2024	0 (No use)	Low ($\leq 3.33\%$)
2 x Scat meanders	2022	No evidence	

The Australian Koala Foundation activity level classification table (following Philips and Callaghan 2011) provides an estimate of Koala utilisation based on defined Activity Categories. The East Coast (low) Activity Category is appropriate for the referral area, as it is not considered to be suitable or have high suitability for Koala. The evidence suggests that the referral area is not readily utilised by Koalas. This corroborates the existing conclusion that the minimal vegetation within the referral area is only likely to fulfill a dispersal role for Koala on occasion, particularly considering the context within other cleared, rural areas and the large tracts of alternative habitat east.

As such, in combination with opportunistic direct and indirect searches for Koalas which were also undertaken during other survey works, extensive field survey effort failed to detect any evidence of this species.



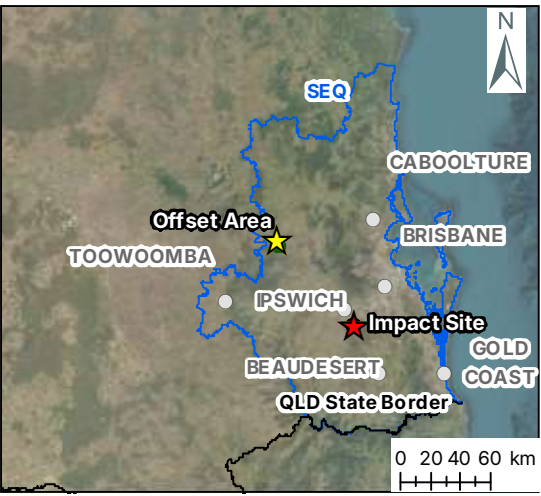
A10. FIELD SURVEY EFFORT



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- LEGEND**
- Qld DCDB
 - Referral Area
 - Field Survey Effort**
 - Observational surveys
 - Spotlighting
 - MHQA transects
 - Scat meander 1
 - Scat meander 2
 - SAT survey locations (2022)
 - SAT survey locations (2024)
 - Camera Trap
 - Koala habitat area [5.4 ha]



3.6. Potential MNES Habitat

Item 3.5 of the PD Request asks, "**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 project site for each species potentially present or impacted by the action.**"

Desktop review and field surveys confirmed that Koala habitat within the referral area is confined to a small area of isolated, scattered NJKHTs near the residential dwelling in the north-west (refer **Plan A8**). This area includes almost all trees within the referral area with the balance of the referral area cleared paddocks dominated by mixed exotic and native grasses (refer **Photo Plate 1**).

Vegetation in the north-west of the referral area consists of predominantly *Corymbia citriodora* (Spotted Gum) and *Eucalyptus crebra* (Narrow-leaved Ironbark (refer **Photo Plate 2**). Planted ornamental species surround the dwelling and associated sheds (refer **Photo Plate 3**). The original referral material considered a 2-ha area in the north-west as providing Koala habitat based on the distance between trees with larger areas excluded owing to the reduced likelihood the species would disperse. This has since been revised to include the entire north-western corner, and a narrow line of native trees that extends south along a steep slope (total 5.4 ha) (refer **Plan A11** and **Section 4.1** for further details).

The scattered native trees in the north-western portion of the referral area provide a small area of potential dispersal habitat for the Koala. The lack of evidence and lack of habitat indicates the area does not provide foraging or breeding habitat however the area provides potential dispersal habitat. Field surveys supported this conclusion, as extensive targeted and opportunistic searches for Koala found no direct or indirect evidence of utilisation of the referral area. The lack of evidence implies very low usage of the referral area, a reasonable conclusion given the area has connectivity only to vegetation in the north and is predominantly open paddock within a matrix of fences, driveway, sheds, and residential buildings. The south and east of this area adjoin only large, cleared paddocks spreading across the rest of the referral area, and the western side adjoins a small residential lot and Ripley Road within minimal vegetation remaining. Connectivity is therefore limited, and only set to reduce further once the many surrounding ICC and EPBC development applications and road upgrades commence (refer **Plan A3** and **Plan A4**).

In conclusion, potential habitat within the referral area is limited to a small clustering of Koala trees in what is otherwise vast areas of cleared paddock intended for development by the RVPDA. This north-western patch of trees connects only to vegetation in the northern adjoining lot, to which it provides ancillary Koala dispersal habitat. As Koala movement is much more likely through the comparatively dense vegetation in the adjoining lots that surround the north and east of the referral area and extensive field surveys found no evidence of Koala, this potential habitat is not considered important for dispersal in the locality. Long-term functionality of this collection of scattered, ancillary Koala trees is also greatly limited. Most of the surrounding land is approved or under application for development. The publicly available proposed designs for the adjoining developments to the north and east reflect clearing up to the boundaries of the referral area (refer **Plan A4**).

The trees in the north-west of the referral area comprise basic potential dispersal Koala habitat, and will be largely redundant for Koala when the surrounding vegetation is removed.





Photo Plate 1: Majority of the referral area is determined as 'scattered trees and paddocks.'



Photo Plate 2: Vegetation in the north-western portion of the referral area defined as 'isolated and scattered ancillary Koala habitat trees.' This area is considered critical Koala habitat.



Photo Plate 3: Farm infrastructure and planted species in the northwest of the referral area.

South-Eastern Glossy-black Cockatoo

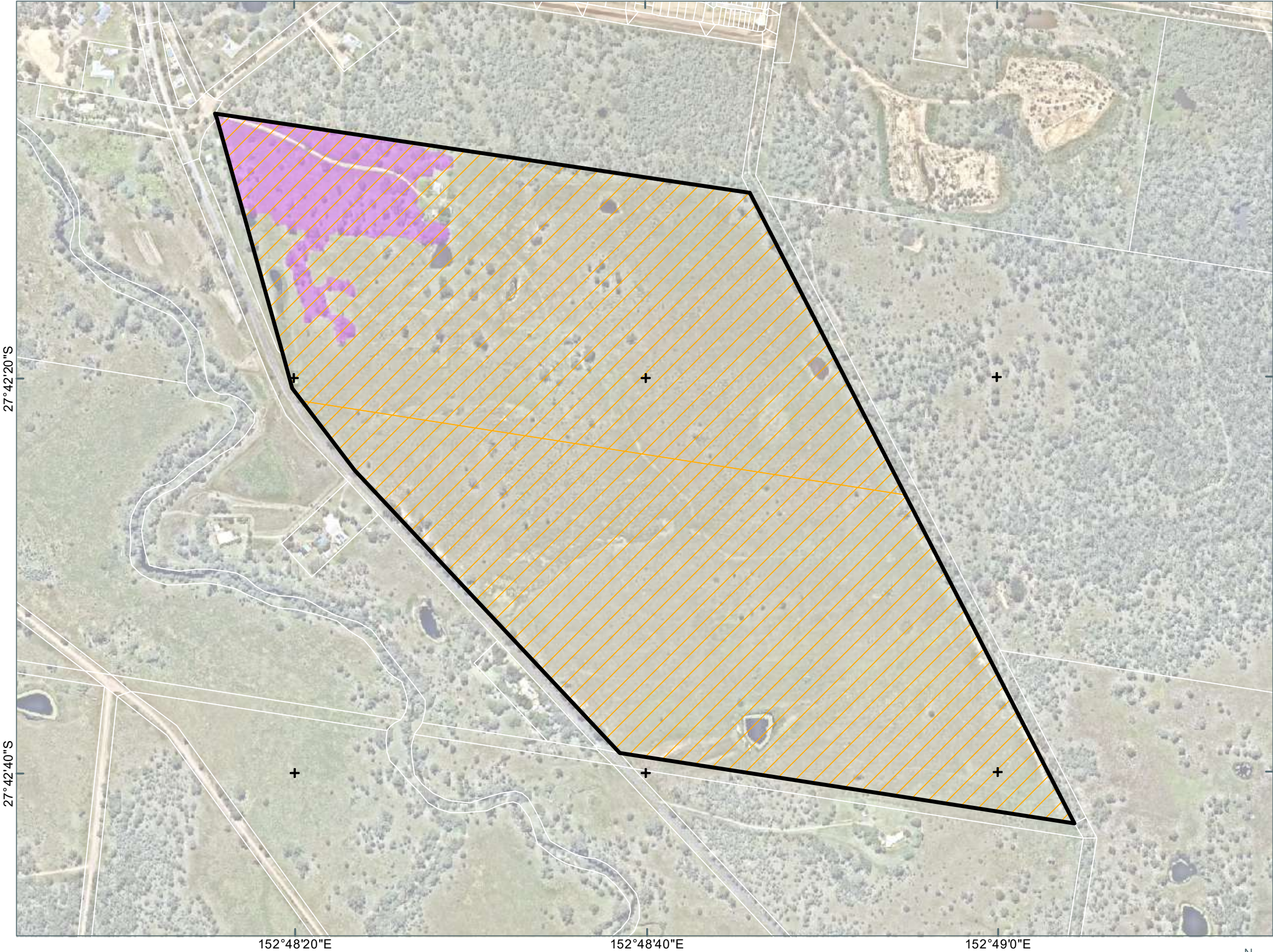
In March and April 2024 additional targeted searches were carried out in response to a referral information request. These surveys involved habitat occurrence analysis, observational surveys, and detailed hollow assessments with relevance for *Calyptorhynchus lathami lathami* (South-eastern Glossy Black-cockatoo) the outcomes of this survey are detailed on **Part B – Attachment D** and summarised below.

The referral area is a highly modified rural property that stands out in the landscape as being almost completely devoid of noteworthy vegetation, with the shrub layer generally non-existent due to on-going grazing uses. As noted, South-eastern Glossy Black Cockatoo requires dense stands of *Allocasuarina* and/or *Casuarina* species as foraging habitat and these are not present within the referral area, not even as scattered individual specimens. Therefore, there is no suitable foraging habitat within the referral area for this species.

The general lack of vegetation within the referral area and dominance of open paddocks results in extremely limited potential breeding habitat as identified by only 15 hollow-bearing trees being recorded across the referral area. Additional field surveys occurred on the 11 March 2024 whereby all 15 hollow-bearing trees were revisited with a particular focus on recording the specific requirements stated in the conservation advice for the species. Of note, only a single hollow was found to meet all listed hollow criteria which is located immediately adjacent to Ripley Road, which is scheduled to be upgraded in the future and therefore considered relatively compromised from a habitat availability and longevity perspective

A significant impact assessment was completed following this detailed assessment which concluded it is highly unlikely the project will have a significant impact on the species (refer **Part B – Attachment D** for full response)

A11. KOALA HABITAT IMPACT



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- LEGEND**
- Qld DCDB
 - Referral Area [77.8 ha]
 - Impact Area [77.8 ha]
 - Koala habitat impact area [5.4 ha]



4. Assessment of Impacts – Koala

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 that are likely to be present at, and in the vicinity of, the project site, including those listed on page 7 of the PD request including:

- Koala (*Phascolarctos cinereus*) combined populations of Qld, NSW and the ACT, listed as Endangered

The following sections provide details of the extent and quality of Koala habitat to be impacted through the proposed development. The project is not considered likely to have a significant impact on any other MNES given the low likelihood of occurrence and lack of habitat value.

4.1. Revised Habitat Assessment

Item 4.5 of the PD asks for a ***“revised habitat suitability assessment of the proposed impact site”***

Information submitted as part of the original referral material and subsequent further information requests identified 2-ha of vegetation in the north-west extent of the referral area as critical Koala habitat. Justification for this assessment was based on the lack of Koala habitat trees within the referral area and significant distances between trees not considered to promote frequent dispersal opportunity (refer **Part B – Attachment A and Attachment D**). Following correspondence with the department the extent of critical Koala habitat has been re-assessed and is detailed in the following section.

Koala habitat as per the relevant conservation advice is broadly defined as an area containing Koala habitat trees. Specifically, DCCEEW define Koala habitat as *‘an area of habitat with all the necessary resources for the persistence of a population or fall within individual Koala’s home ranges and allow for interaction with adjacent individuals. A habitat patch can be isolated or connected to other habitat patches and may include rail/road-side vegetation or areas of vegetation interspersed throughout urban or highly fragmented landscapes’* (DCCEEW 2022a).

The referral area consists almost entirely of cleared paddock with some scattered, relatively isolated potential Koala food trees in the north-west of the lot (refer **Plan A7**). This portion of the referral area retains some connectivity in a north and north-west direction. The southern extent of the referral area is completely cleared, and vegetation is extremely limited along this section of Ripley Road with only isolated individual specimens present (refer **Photo plate 4**).

The extent of critical Koala habitat within the referral area has been revised from the original 2 ha area and expanded to an area of 5.4 ha of ‘isolated and scattered ancillary Koala habitat trees’ (AU1). This revised area, shown on **Plan A11**, now contains the vast majority of trees within the referral area, inclusive of large areas of ground between trees given the species ability to disperse. This area includes *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Corymbia citriodora*, (Spotted Gum) and retains some connectivity to existing vegetation to the north and north-west. Access tracks, dwellings and exotic



planted species are not considered Koala habitat as they do not facilitate dispersal opportunity and are regularly utilised for rural residential uses.



Photo plate 4: Area defined as Koala habitat (top) and cleared paddocks across the balance of the site not considered habitat (bottom)

4.2. Connectivity

Item 4.5 (f) of the PD Request asks, ***“Provide a habitat connectivity analysis for Koala, detailing:***

- i) The existing conditions within and the landscape context of the proposed action site, prior to any works being undertaken.***
- ii) The proposed habitat connectivity during defined stages of the proposed action, such as pre-construction, habitat and land clearance, construction, operation, and rehabilitation***
- iii) A figure, with aerial imagery and line work, showing habitat connectivity for each matter for the proposed project site and surrounding landscape.”***

The referral area is isolated within a corridor of cleared rural land approximately 2 km across that roughly follows Bundamba Creek and between the large tracts of available Koala habitat east-west being White Rock-Spring Mountain and Flinders-Goolman Conservation Estates. These conservation estates also comprise the majority of two regional biodiversity corridors, which connect to a state biodiversity corridor south of the referral area (refer **Plan A12**). In contrast, the referral area and surrounding lots are dominated by paddock grass and Category X (non-remnant) vegetation. Potential Koala habitat within the referral area is limited to a patch of isolated trees in the north-western corner. The balance of the referral area consists of cleared open paddock. Given the minimal potential habitat and location of the referral area within a large, cleared area flanked by alternative suitable Koala habitat, the referral area is considered to provide only dispersal habitat for Koala. Koala utilisation of the referral area would be most likely in the north-west where Koala habitat trees within the referral area currently adjoin vegetation in the neighbouring lot. Dispersal from the west, east or south is considered highly unlikely given the lack of existing vegetation, Ripley Road, the neighbouring property to the south, and vast areas of tree less paddocks within the referral area that are hundreds of meters wide.

Regardless of the proposed action there are multiple issues with potential Koala movement through the site, including Ripley Road, the lack of even isolated paddock trees through most of the site, and the presence of livestock and domestic dogs. Vehicle strike is a significant threat to Koala, noted as the third highest cause of death in the Ipswich City Council LGA by Tkaczynski and Rhundle-Thiele (2023).

Ripley Road bounds the referral area to the west and has received catalyst funding from the Queensland Government for a large upgrade to create a necessary transport link for the RVPDA. As such, Ripley Road poses a threat to transiting Koala health and safety that is set to increase.

Scattered paddock trees can provide important habitat for Koala in rural landscapes, facilitating connectivity by providing shade, shelter, and reprieve (Barth et al., 2019). That the referral area lacks canopy trees entirely outside the north-western corner patch greatly reduces its potential connectivity value, especially compared to the adjoining lots north and south which have higher tree coverage.

Finally, the referral area is maintained as cleared paddock for use as cattle agistment and adjoins other rural properties likely to contain both livestock and dogs. Dogs are a well-known threat to Koala and often free roam through rural properties, and livestock attacks, though infrequent, have a 75% mortality rate and are thought to be under-reported due to the remote location of incidents, possible misdiagnosis, and reluctance of landowners to report fatalities (Jiang et al., 2021). Therefore, regardless of the proposed action, connectivity within the referral area is unsupported and unsafe, limited by a lack of resources and degraded by threats to Koala health and safety. Greater, safer habitat and connectivity alternatives exist to both the east and west of the referral area within the conservation estates, and more locally to the north and east of the referral area where more consistent tree coverage is present, though



still scattered. The presence of these alternative routes further lessens the connectivity value of the referral area.

Importantly, Koala habitat connectivity must also be analysed within the context of long-term functionality. The referral area is centrally located within the RVPDA and is completely zoned as 'urban living' under the RVPDA Development Scheme (refer **Plan A2**). As such, it is not strategically located to provide any biodiversity corridor functionality at present or in the future. **Plan A3** shows the significant extent to which the referral area will be isolated from the available Koala habitat east and west by future developments, as per the intent of the PDA to increase housing supply in SEQ. As demonstrated by **Plan A4**, the properties west, north, and east of the referral area are overwhelmingly intended for upcoming development, with development up to the boundary of the referral area likely making any attempts at connectivity retention within the large agricultural area redundant. Fauna connectivity value at present is significantly limited, and only expected to decrease further with the anticipated construction and completion of the surrounding developments in line with the RVPDA.

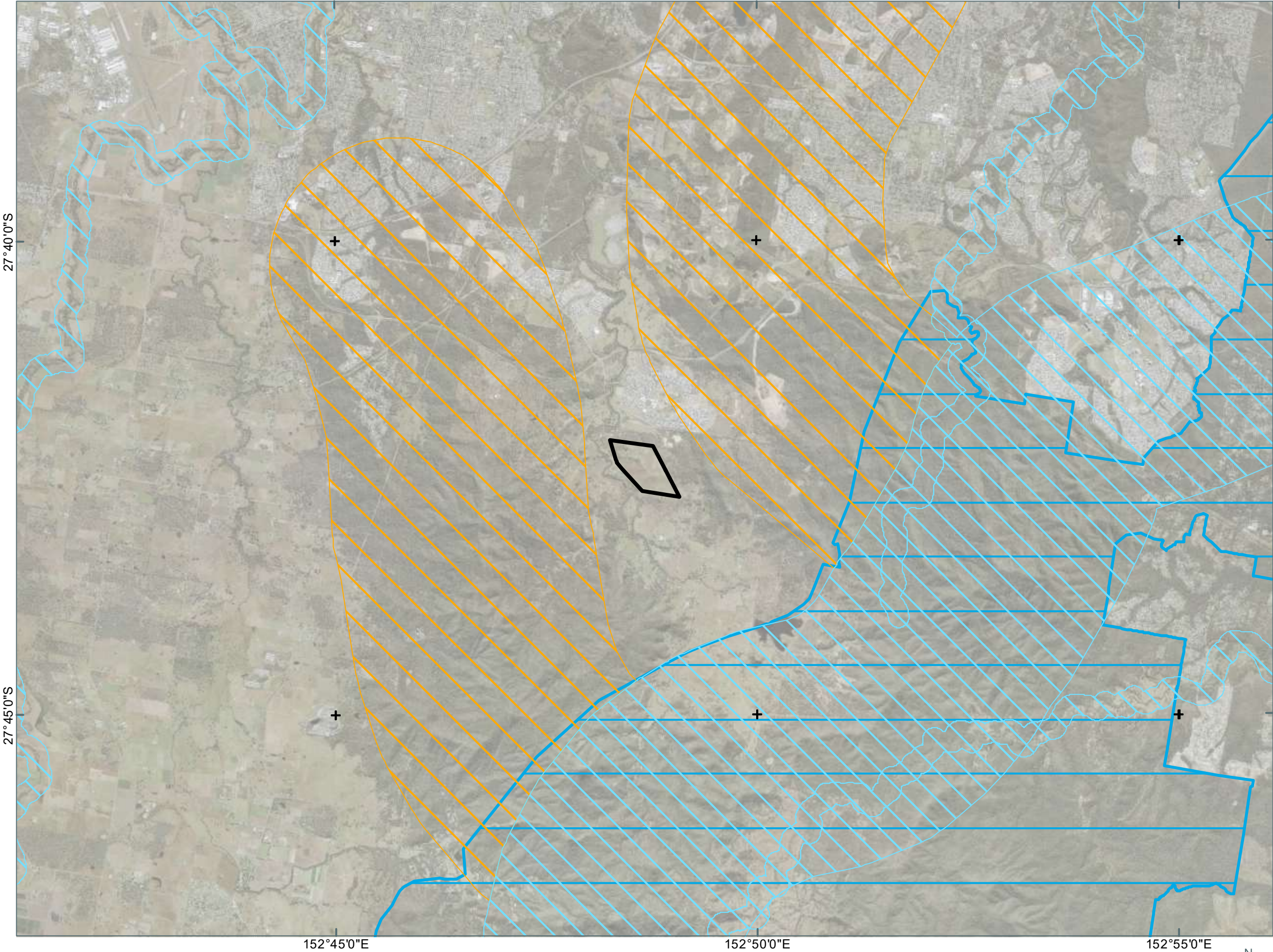
The clearing of vegetation within the referral area for the proposed action would not greatly impact habitat connectivity, given dispersal habitat (and tree coverage at all) is limited to a small patch of trees in the northwest corner, which borders denser vegetation within the adjoining northern lot. Vegetation within the referral area, where present, is considered ancillary Koala habitat with the vast majority of the referral area offering no connectivity potential given hundreds of meters of paddocks. As such, the removal of this vegetation and the paddock grass across the referral area would have a negligible effect on habitat connectivity.

During the construction phase of the development, the presence of large machinery, humans, and potential changes to the land profile would reduce the likelihood of Koala from traversing through the referral area. Given the likelihood of Koala utilising the referral at present is low, the construction of this development is not considered to further reduce connectivity value as this is largely absent at present.

The zoning of the referral area and immediate surrounds has driven the development layout which is not proposing to retain any vegetation within the referral area or promote connectivity. The expected delivery of several active developments resulting in zero vegetation retention along the boundaries of the referral area means that the retention of vegetation within the referral area is futile. Once construction is complete, it is anticipated that connectivity value within the broader locality will be unaffected with only a small area of ancillary koala habitat removed in the north-west of the site. Since residential developments come with an inherent increase in threats to Koala from vehicle strike and predator attack, mitigation measurements will be implemented to reduce threats to Koala (refer **Section 5**).



A12. ECOLOGICAL CORRIDORS



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- LEGEND**
- Referral Area
 - Regional biodiversity corridor (SEQ Regional Plan 2017)
 - Regionally significant corridor (Biodiversity Planning Assessments)
 - State significant corridor (Biodiversity Planning Assessments)



4.3. Maps and Plans of Impact Area

Item 4.1 of the PD Request asks, *"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 Koala); and*
- c) Total areas proposed to be retained/avoided (including the total extent of Koala habitat present, to be avoided).*

Direct Impact

The vegetation communities represented within the referral area are identified on **Plan A8** have been based on on-ground values and contextual relevance. As such, the majority of the referral area has been defined as scattered trees and paddocks and does not provide habitat for any MNES species refer *MNES Ecological Technical Assessment* (provided as **Part B – Attachment A**)

The disturbance footprint covers the entire 77.8 ha referral area with no areas proposed for retention including the direct impact to 5.4 ha of critical Koala habitat (**Plan A11**).

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 (refer **Plan A3** and **Plan A3**). 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 4.6**), 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.



4.4. Quality of Habitat Impacted

Item 4.5 (g) of the PD Request asks for the “*quality of habitat to be impacted*”.

4.4.1 Assessment methodology

The referral area consists of two vegetation communities with one (1) assessment unit identified as provided habitat critical to the survival of the Koala (refer **Plan A8**). The proposal results in the clearing and functional loss of 5.4 ha of vegetation that is identified as AU1

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 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 (MHQA) Tool. These instances are identified within the methodology.

Modified Habitat Quality Assessment

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 methodology recognises the following three (3) key indicators:

- site condition – a general condition assessment of vegetation compared to a benchmark;
- site context – an analysis of the site in relation to the surrounding environment; and
- species habitat index – the ability of the site to support a species.

The MHQA for the Koala used here combines the three (3) key indicators from the Queensland State Government guide into two (2) (site condition and site context) with each being weighted 30% of the final score. The balance of the weighting, 40%, has been attributed to the third indicator (species stocking rate), that is independent of the Queensland State Government habitat quality assessment. The species stocking rate has been added to the MHQA to better incorporate MNES, and specifically the endangered *Phascolarctos cinereus* (Koala) and has been ascribed a higher weighting of 40% by the Department. The following subsections detail the methodology utilised to assess the site condition, site context and species stocking rate under the Koala MHQA.

Two (2) MHQA transects were completed in AU1 described as critical Koala habitat on 30 August 2024:

- AU1 – Transects 1 and 2

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 onsite 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 fifteen (15) condition characteristics being:

- recruitment of woody perennial species in the Ecologically Dominant Layer (EDL);
- native plant species richness – trees;
- native plant species richness – shrubs;
- native plant species richness – grasses;
- native plant species richness – forbs;
- tree canopy height;
- sub-canopy cover;
- tree canopy cover;
- native grass cover;
- organic litter;
- large trees;
- coarse woody debris;
- non-native plant cover;
- quality and availability of food and foraging habitat; and
- quality and availability of shelters.

Assessment of the above condition characteristics do not differ from the traditional habitat quality assessment. Scoring tables for the site condition attributes follows the scoring tables within the BioCondition manual (see above). 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 shelters have been added to the site condition indicator.

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 MHQA, site context is measured using the following seven characteristics:

- size of patch (refer **Plan A13**);
- connectedness (refer **Plan A13**);
- context (refer **Plan A13**);
- State mapped ecological corridors (refer **Plan A12**);
- role of site location to species overall population in the state;



- threats to the species; and
- species mobility capacity.

Unlike the traditional habitat quality assessment methodology where site connectedness is assessed against the surrounding remnant vegetation only, the MHQA site connectedness is assessed against the surrounding MNES habitat, in this instance, Koala habitat. Whilst 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 ESRR'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 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.

Assessment methodology for site context assessment for Koala is outlined below:

1. Patch size – 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.
2. Connectedness – Connectivity relates to the capacity that the species have to disperse through the landscape. The attribute is calculated using Geographic Information Systems (GIS) by measuring the length of Koala habitat that is along the boundary of the site.
3. Context – The context score is calculated by GIS to quantify the amount of vegetation immediately surrounding the assessment site. The attribute is measure of the percentage of Koala habitat within a 1 km buffer of the site.
4. State mapped 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. The ecological corridors have been mapped by the Queensland State Government under the 'CORR_TYPE' attribute table. The mapping can also be viewed on Queensland Globe in the 'Statewide Biodiversity Corridors' layer.



5. 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.
6. Threats to species – Threats to Koala are predominantly, habitat loss, car strike, dog attack and disease. The highest threat level is given to a site if it is isolated from other Koala habitat, or if major roads without exclusion measures, or residential encroachment is within 1500 m of the site boundary.
7. Species mobility capacity – This attribute is a measure of the presence and severity of factors that would contribute to a reduction in mobility of Koala and is scored on the presence of roads or large cleared areas bordering the site.

In developing the MHQA, three (3) species habitat index characteristics were nominated — role of site location to overall species population in the state, threats to the species, and species mobility capacity.

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 assessment unit 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 assessment unit – evidence of Koala in the form of scats or direct observation.
- Species usage (habitat type and evidenced usage) – in the form of direct observations or scats, noting the presence of scats is considered indication that breeding is occurring as per the position of the Department.
- Approximate density of the species– 'non-habitat' or 'low', 'medium' or 'high' activity as determined by Koala Spot Assessment Technique (SAT) surveys.
- Role/importance of species population– considers whether the site is a key source population for breeding, dispersal, is necessary for maintaining genetic diversity, or near the limit of the species' range.

Baseline Koala activity levels were determined through utilisation of the SAT surveys (Phillips *et al.* 2011). The SAT method is an industry recognised technique for identifying presence/absence of Koala at a site and is specified as an appropriate survey method in the *EPBC Act Conservation Advice for Phascolarctos cinereus (Koala)*. Results from the SAT surveys are compared against current available published scientific literature to identify an estimated Koala carrying capacity (stocking rate) to be determined. The SAT methodology is explained in further detail in **Section 3.4**.

Table A10 outlines the attributes utilised to assess species stocking rate.



Table A10: Species Stocking Rate scoring

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

***SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15**

Key source population for breeding	/10
Key source population for dispersal	/5
Necessary for maintaining genetic diversity	/15
Near the limit of the species range	/15

Scoring Weight Justification

For this project, Site Condition and Site Context were given a weighted score out of three (3), while Species Stocking Rate given a weighted score out of four (4).

Species Stocking Rate was assigned the highest weighting as it is considered the greatest determinant of site suitability for the Koala by the Department. Species Stocking Rate is an important component when assessing the overall habitat quality of a site as it is an indication of species usage.

Site Condition and Context were assigned equal weighting (scored 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 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.



A13. KOALA CONTEXT ASSESSMENT

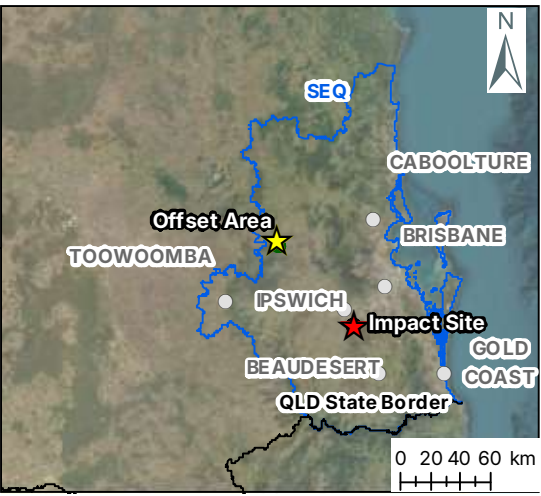


Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features may need verification if the development application is approved and development proceeds, and may change 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
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Updated data available at
<http://qdsportal.information.qld.gov.au/catalogue/>
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LEGEND

- Referral Area [77.8 ha]
- 1km Referral Area Buffer
- Percentage of referral area boundary length supporting a connection off and on site to Koala critical habitat [14%]
- Size of Koala critical habitat patch [> 500 ha]
- Percentage of Koala critical habitat within 1km of referral area [48%]
- Vegetation Communities [77.8 ha]**
 - AU1 – Isolated and scattered ancillary koala habitat trees – Koala habitat [5.4 ha]
 - Scattered trees and paddocks – Not koala habitat [71.5 ha]
 - Dams and waterbodies [0.9 ha]



4.4.2 Discussion

The habitat quality scores for each assessment unit, combining Site Condition, Site Context and Species Stocking Rate are reported in **Table A10** and **Table A11**.

Site Condition

A single assessment unit (AU1) was defined within the referral area as providing Koala habitat which scored **1.62** out of **3** for site condition. The scoring for AU1 is reflective of the highly modified nature of the referral area. Key criteria such as shrub, grasses and forbs species richness, shrub cover, canopy cover, large trees and woody debris all scored well below the remnant benchmark contributing to the low site condition score.

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. The two Koala habitat index attributes are based on the balance site condition attributes where their score is utilised as follows: <27/80 (<33% of benchmark) scores 1, between 27/80 (33% of benchmark) and 54/80 (66% of benchmark) scores 5 and above 54/80 (>66% of benchmark) scores 10. Utilising this scoring metric, AU1 scored a **5 out of 10** for both quality and availability of food and foraging habitat, and quality and availability of shelter.

The action is considered to only impact poor quality Koala habitat and not the species as a whole. While the referral area is currently considered to maintain connection to the north of the site, it is important to note that the several properties with EPBC Act development applications associated with the RVPDA are present adjacent to the referral area (refer **Plan A3**).

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 it 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. This achieved a score of **10 out of 10** (>500 ha Koala Habitat as per the *Queensland BioCondition Assessment* methodology) (refer **Plan A13**).

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 referral area boundary length supporting a Koala critical habitat connection off and on site was calculated at 14%, and consequently this attribute scored a **2 out of 5** as per the *Queensland BioCondition Assessment* methodology (refer **Plan A13**).

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. To reflect the departments definition of critical Koala



habitat, vegetation included is irrespective of vegetation status (remnant, regrowth and non-remnant). Queensland vegetation mapping is utilised to identify communities likely to contain Koala habitat trees which are then included. Residential developments, roads, cleared paddocks, dwellings, farm infrastructure, and highly isolated individual paddocks trees were not included as these are not considered as critical Koala habitat. Retained critical Koala habitat within a 1 km buffer of the site was calculated at 48%, and therefore the context attribute achieved a score of **4 out of 5** as per the *Queensland BioCondition Assessment* methodology (refer **Plan A13**).

State Mapped Ecological Corridors

GIS was utilised to identify the site's role in any State mapped ecological corridors on or adjacent to the site (refer **Plan A12**). A score of **0 out of 6** was given to the State Mapped Ecological Corridors component of Site Context (30%). The site is not within or immediately adjacent to any state or regional corridors.

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 the 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 site has been surveyed several times including targeted searches (SATs and scat meanders) which were repeated over multiple years. No direct or indirect evidence of Koala has been observed on site therefore Koala usage is defined as 'Low.' Evidence of breeding Koalas in the form of direct observation of mother and joey or in the form of pap which is the specialised faecal matter excreted by the mother around the time of pouch emergence was not detected on site. This attribute was assigned a score of **4 out of 5**.

Threats to the species

The 'threats to the species' attribute quantifies 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. This attribute was scored a **7 out of 15**. Notably, the proximity of roads including Ripley Road and Bayliss Road that is more heavily utilised following construction of the development to the north. Additionally, residential uses ascribes a high threat score of 1 under the State guidelines.

Review of Koala hospital data (DETSI 2024) indicates that there are numerous sick, dead and injured Koalas within a 5 km radius of the referral area. As shown on **Plan A9**, the majority of Koala hospital records are located to the north/north-west. The risk of threats to Koalas such as vehicle strike and dog attack is considered moderate to high.

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



vegetation condition of AU1 demonstrated lower canopy cover and species richness than would be expected from this community which reduces the species mobility of the area.

Nevertheless, the species mobility capacity for the Koala within AU1 was assigned a score of **10 out of 10**.

Species Stocking Rate

The final component of the MHQA technique is species stocking rate. Species stocking rates are estimates of the Koala carrying capacity of the site at the time of undertaking the survey. This attribute utilised species usage and habitat type. Koala have been recorded adjacent to the site which scores a 5 out of 10.

Koala habitat trees are present with AU1 however there has been no evidence of usage recorded within the referral area across multiple years and multiple targeted surveys. Therefore, there is no evidence of foraging or breeding within the referral area. However, utilising the cautionary principle and the presence of Koala habitat trees, AU1 has been considered as breeding habitat with an overall species stocking rate score of **20 out of 70**.

The complete calculations for species stocking rate for Koala are found in **Table A11**.

Summary

The habitat quality scores for AU1, combining Site Condition, Site Context and Species Stocking Rate, are summarised in **Table A11** and in full in **Table A12**. 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 habitat quality score of **4.75 out of 10 (rounded to a 5)** which is considered a low-moderate habitat quality score.

Table A11: MHQA Final scores Summary – Koala

MHQA Final Weighting	AU1
Site Condition (/3)	1.62
Site Context (/3)	1.98
Species Stocking Rate (/4)	1.14
Assessment Unit Area (Impact) (ha)	5.4
Total Score	4.75

Full raw data for the MHQA are provided as **Attachment A4**.



Table A12: Assessment Unit 1 – MHQA results (Koala)

Assessment Unit - Regional Ecosystem	AU 1 - Koala habitat 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	100	5
Native plant species richness - trees	3	3	3	3	100.00	5
Native plant species richness - shrubs	5	2	1	1.5	30.00	2.5
Native plant species richness - grasses	8	3	3	3	37.50	2.5
Native plant species richness - forbs	26	1	4	2.5	9.62	0
Tree canopy height (Canopy)*	21	13	13	13	61.90	3
Tree canopy height (Sub-canopy)*	10	7	6	6.5	65.00	3
*Average tree canopy height						3
Tree canopy cover (Canopy)**	40	47.4	10.4	28.9	72.25	5
Tree canopy cover (Sub-canopy)**	8	10.9	3	6.95	86.88	5
**Average tree canopy cover						5
Shrub canopy cover	3	0.8	0.4	0.6	20.00	3
Native grass cover*	61	78	77	77.5	127.05	5
Organic litter*	20	13	4	8.5	42.50	3
Large trees (euc plus non-euc) (per ha)	18	0	2	1	5.56	5
Coarse woody debris (per ha)	272	0	13	6.5	2.39	0
Non-native plant cover	0	10	10	10	10.00	5
Quality and availability of food and foraging habitat	NA				-	5
Quality and availability of shelter	NA				-	5
Site Condition Score (/100)						54
Overall Site Condition Score - out of 3						1.62
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					2
Context	5					4
Ecological Corridors	6					0
Role of site location to species overall population in the state	5					4
Threats to the species	15					7
Species mobility capacity	10					10
Site Context Score (/56)						37
Overall Site Context Score - out of 3						1.98
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						4.75



Table A13: Assessment Unit 1 – Koala Species Stocking Rate results

Species Stocking Rate attributes	
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 the species population on site*	0/30
Total Species Stocking Rate Score	20/70
Species Stocking Rate Score – out of 4	1.14

*Species Stocking Rate supplementary table attributes	
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



4.5. Policy Guidelines, Relevant Studies, Surveys or Consultations

Item 4.4 of the PD Request asks for, ***“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.”***

Additional technical surveys have been completed within the referral area between the referral and the PD by SHG and detailed in Section 3.3. No consultations with species experts/field specialists have been sourced between the referral and PD.

Since the initial referral, a baited camera trap was placed within the referral area and additional surveys were completed to re-assess the extent of Koala habitat and complete contemporary surveys for occurrence included nocturnal surveys. These surveys increased the time spent on the referral area by another 12 person hours, totalling 91 person hours of survey work to directly inform this assessment.

As part of the original referral material, a significant impact assessment for Koala was completed as well as an assessment against the National Recovery Plan for the Koala.

Refer **Part B – Attachment A and Attachment D** for the Significant Impact Assessment and National Recovery Plan assessment for the Koala.



4.6. Impact Analysis

Item 4.6 of the PD Requests asks to, ***“Provide an assessment of the direct, indirect, consequential and cumulative impacts that may occur during construction and post- construction phases, including:***

- d. The nature and extent of impacts (including direct, indirect* and facilitated impacts**), including timing and whether the impact is temporary or permanent. This must include the quality of the habitat impacted, a quantification of the total individuals/populations and habitat area in hectares and analysis of the indirect impacts such as fragmentation of the habitat in the proposed action area and surrounding areas. Consideration must be given to species habitat 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).***
- e. A local and regional scale analysis of likely impacts, with reference to the project’s potential contribution to cumulative impacts in the context of development patterns in the locality and region.***
- f. A risk assessment of potential impacts from the action that are likely to be unpredictable, severe, or irreversible.***
- g. An assessment of the likely duration of impacts to MNES as a result of the proposed action.***
- h. An assessment of whether impacts are likely to be repeated, for example as part of maintenance.***
- i. Discussion of the risk of potential impacts as a result of 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.***

The direct, indirect and facilitated impacts have been summarised in

Table A14. Section 4.3 and 4.4 above described the direct impacts in detail. A detailed description of potential indirect and cumulative impacts and an analysis of their potential impacts to Koala are included in **Table A15.** Notably, no impacts have been considered as part of the pre-construction phase with impacts having been covered under the construction phase of the project.



Table A14: Direct, indirect and facilitated impacts summary

Construction Phase	Operational Phase (ongoing disturbance)
• Vegetation clearing • Habitat removal • Intensification of effects of fragmentation effects (<i>i.e.</i>, edge effect, habitat degradation, barrier effects) • Weed dispersal and establishment • Vehicle movements • Earthworks • Light emissions during construction • Noise and vibration • Waste disposal • Hazardous and dangerous goods • Increased human presence	• Weed incursion • Vehicle strike • Increased predation by domestic animals • Noise and light pollution • Increased human presence



Table A15: Impact analysis

Impact	Koala
Direct Impact	
Removal / fragmentation / physical disturbance of vegetation and habitat	The referral area includes 5.4 ha of habitat critical to the survival of this species which will be entirely impacted as part of the development. It is considered that the proposed impact area (5.4 ha) is considered to have a low risk of having a significant impact on the Koala. The planning intent of the referral area and surrounding properties is for 'urban living' as reflected in Plan A2. The referral area does not contribute to any future corridors with all vegetation on and adjacent to the referral area redundant following the expected developments. Further, the Significant Impact Assessment determined that although the clearing will result in the removal of Koala food trees, historical disturbance and surrounding environment have reduced the value of potential Koala habitat within the referral area and a significant impact to the species is unlikely.
Indirect	
Introduction to and /or proliferation of weeds and pathogens, in habitat for threatened species.	This proposed development is not considered likely to increase the prevalence of weeds within the referral area given the highly modified and degraded nature of the vast majority of the referral area at present. The referral area currently already contains exotic species such as <i>Lantana camara</i> (Lantana) and <i>Senecio madagascariensis</i> (Fireweed) and variety of exotic pasture grasses. It is unlikely that the development would increase weed presence from current levels. Furthermore, the surrounding land parcels have been subjected to extensive modification through rural pursuits and more recent urban developments. All areas immediately adjacent to the referral area are earmarked for development through the 'urban living' zoning. No areas of retained habitat or corridors are proposed (refer Plan A2). As such, the proposed development is not considered likely to introduce pathogens that would negatively impact any Koalas that would utilise the area
Disturbance from increased noise, artificial light, dust, 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 project area which will be present for the duration of the project (8 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. 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 available in the study area, and the lack of Koala usage recorded, this is likely to be a temporary and negligible to minor impact. 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. However, the impact of this to any Koalas in the surrounding area is considered to be minor. 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. <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 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).

Dust and Sediment Generation

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
- 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.

Waste, Hazardous and Dangerous Goods

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.

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.

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. The probability of fauna strike is reduced due to the fact that most fauna will generally avoid urban areas, and the proposed development is not intending to retain any areas as corridor connectivity. Notwithstanding, 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

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.

The broader RVPDA is rapidly transitioning from rural to urban land uses with several developments in the region either complete or nearing completion. Furthermore, infrastructure upgrades such as Ripley Road have received catalyst funding from the Queensland Government illustrating the ongoing development in the region. While the project will increase the number of vehicles in the local area, this is inline with the planning intent of the area as ‘urban living.’ Areas of RVPDA zoned as ‘environmental protection’ will form large contiguous areas of habitat away from the urban core of the region, thus reducing the likelihood of vehicle strike.



Increased mortality or injury from increased domestic dog presence as part of the development	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 within the developed area of the referral area will increase compared to baseline conditions, potentially increasing the likelihood of mortality or injury of Koalas that happen to utilise the residential area. The probability of Koalas utilising the residential area is reduced due to the fact that most fauna will generally avoid urban areas. Notwithstanding, 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 increased risk of entanglement in wire fencing or other infrastructure within, and adjacent to, the site.	During construction, the development area will install temporary fauna exclusion fencing to prevent Koala from entering the construction site. There are no designated corridors of environmental areas as part of the development, therefore the risk of Koala’s entering the referral area is considered low.
Reduction in habitat connectivity to surrounding habitats, and any potential edge effects or disturbance to surrounding habitats, including any adjacent conservation areas.	Connectivity The referral area at present offers very little connectivity value due to a lack of Koala habitat trees, at most the referral area provides ancillary habitat to the species. As a result, no areas of vegetation rotational are proposed Edge Effects and Disturbance A review of historical aerial imagery and on-ground surveys identify the referral area as being highly modified and has remained largely cleared since 1948. Periodic slashing and cattle grazing has occurred consistently over the entire referral area. The referral area contains non-remnant vegetation and is dominated by pasture 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 on site. Additionally, weeds are prevalent within the local area including Lantana camara (Lantana) and pasture grasses. All sides of the of the referral area have been subject to historical modification through rural land-uses with the majority of adjacent land parcels under assessment for urban development. The project is not likely to indirectly impact adjacent habitat through weed and pathogen introduction beyond what is currently present within the area.
Changes to hydrology and water quality within, and around, the site, including increased siltation.	All work will be undertaken in accordance with appropriate management plans (e.g., erosion and sediment control plans) to ensure the hydrological changes across the referral area do not impact on surrounding vegetation. It is not considered that this potential indirect impact to hydrology or water quality will have any impact on any Koalas that happen to be utilising the referral area or local area.
Cumulative impacts	The project is considered to have a minimal impact to Koala as a result of cumulative impacts given the local area is seeing rapid development already occurring which includes completed and near completed developments and road upgrades. Additionally, development within RVPDA has been focused within ‘urban living’ zoning with large contiguous areas of environmental protection located further from roads and developments which promote koala movement opportunities through areas with minimal threats.



5. Avoidance and Mitigation

Item 5 of the PD asks for a ***“demonstration that you have applied the mitigation hierarchy and exhausted all options to avoid and mitigate”***

The project has been assessed extensively against the mitigation hierarchy. The following sections provide details on why the clearing of vegetation within the referral area is unavoidable and the various mitigation measures that are proposed to minimise the risk of impact on MNES.

5.1. Avoidance

5.1.1 Strategic planning

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 project is zoned 100% as ‘urban living’ under the RVPDA development scheme with all land immediately adjacent to the project also zoned as ‘urban living’ which reflects the planning intent of the region (refer **Plan A2**). The neighbouring property to the east has an active EPBC application which includes a layout that reflects the zoning, being development up to boundary of the referral area and retained areas in the east, matching retained areas at the approved development ‘Providence East’ (EPBC 2018/8347). These retention areas are designed to provide landscape level connectivity and to maximise corridor functionality by connecting to White Rock Conservation Park further east. The property to the south of the referral area is reflective of rural land-uses, being a mixture of cleared paddocks and regrowth values. This property is also zoned completely as ‘urban living.’ The referral area is bound by Ripley Road to the west, a major arterial road in the region that is due to be upgraded following catalyst funding from the Queensland Government. Bayliss Road is present to the north-west which is expected to be upgraded following development of land further north. Limited vegetation is present along Ripley Road with the exception of scattered individual trees. Beyond Ripley Road, further west, lies rural properties which area again zoned as ‘urban living’ and hold current EPBC applications/approvals (refer **Plan A3**). Approved projects have layouts that align with the urban living and environmental management zoning of the RVPDA development scheme.

To the north of the referral area is a small rural property that includes regrowth vegetation which provides some local level connectivity to the referral area. This lot, however, is located immediately south of Providence Central, a mostly completed development that is a major town centre of the area. This property is also zoned completely as ‘urban living’ and has been recently referred (2025/10117) under the EPBC act as a ‘controlled action’ for a residential development across the entire lot. Similarly, north-east of the referral area is active EPBC application with full development across the site (2025/10110), refer **Plan A3** and **Plan A4**.

A review of the strategic zoning and active applications of the area suggests that the referral area and immediate surrounds are not intended to provide landscape level connectivity. Corridors and environmental retention areas have been located to increase functionality by connecting to large areas of high-value vegetation (remnant, waterways and biodiversity corridors) which are not present on site. Retaining vegetation in the north-west of the referral area where marginal connection is present to the north, would offer minimal connectivity value at present and be redundant in the long-term given the expected development of surrounding properties and retention areas that do not connect to the site.



The intention of RVPDA urban development scheme is that this project will be solely utilised for development. It is therefore not realistic from an ecological perspective to retain vegetation within the referral area and doing so ignores EDQ/ ICC zoning and approved layouts surrounding the project.

5.1.2 Vegetation values

As has been well documented throughout this PD, the project retains significantly limited ecological value as a result of almost exclusively cleared paddocks with scattered trees. The historical and on-going rural land uses practices has resulted in only a small area of isolated trees in the north-west of the site. This area, while containing Koala habitat trees, lacks high ecological values that would be reflective of remnant vegetation such as large mature trees, diversity of trees, intact canopy, and diversity of strata (grasses, shrubs). There has been no evidence of Koala observed (either direct or indirect) following several targeted surveys over multiple years. The vegetation within the referral area provides low value habitat for the Koala as a result of hundreds of meters of cleared open expanses that do not contain Koala habitat trees.

To retain vegetation in the north-west to a point where it provides functional habitat value would mean the re-creation of habitat in far excess of the vegetation currently on site.

5.2. Potential project redesign

In addition to an assessment of avoidance from an ecological and strategic planning perspective, a high-level review of a potential project redesign was considered at the time of the controlled action decision to avoid clearing Koala habitat in the north-west.

While a redesign of the project was initially explored by the project team (proponent, town planner, engineer, etc), it was promptly dismissed due to the complexity and impracticality of overcoming major engineering and planning constraints as detailed below.

5.2.1 Engineering and planning limitations

The referral area contains varied topography that rises to a central high point from approximately 50m to 100m Australian Height Datum (AHD). Specifically, the part of the referral area that contains Koala habitat sits on high ground. Retention of this area would result in extensive earthworks to achieve surrounding roads to a grade specified by Local and State Governments. Subsequently, housing lots adjacent to this area would require beyond acceptable retaining walls resulting in the retained area being elevated above the surrounding ground level resulting in physical barriers caused by retaining wall. Furthermore, trunk infrastructure such as sewerage and drainage is not achievable through a re-design as precise specifications are required which would not be possible while also retained vegetation on-site.

From an engineering and planning perspective it is not possible to redesign the project layout to retain vegetation in the north-west of the referral area while still achieving the planning intent of the region and accepted building standards.



5.3. Description of Mitigation Measures

Item 5.3 of the PD asks, ***“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 project site, 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 avoided and or minimised through the construction and operational phases.



5.3.1 Site Based Management Plan (Environment)

To avoid and mitigate the direct and indirect impact from the proposed action on the Koala, 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 include:

- Potential risks to these 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 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 DES 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.

5.3.2 Description of pre-clearance and clearance procedures

Item 45.3(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

Before clearing the creation of an Environmental Pre-clearance Checklist and Environmental Pre-clearance Package will be issued to ensure all approval requirements are met prior to vegetation clearing. Environmental Pre-clearance Checklists are designed to easily show compliance for approval requirements, including EPBC approval requirements, in a format where they can be '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 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, Science, and Innovation (DESI) registered Fauna Spotter Catcher must be appointed to ensure fauna management, specifically Koala, 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. 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 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 will 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 where relevant;



- 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 of the WPMP the Fauna Spotter Catcher will 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 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 will form part of the Wildlife Management Report to be issued under licence requirements to the State Government. The Wildlife Management Report must consist of the following 3 sections:

- a) *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 must also include recommendations and outline the type, frequency and timeframes for monitoring.
- b) *Wildlife Capture and Disposal Plan* – will contain the following details for each captured animal:
 - i. Species.
 - ii. Identification name or number.
 - iii. Sex (M, F or unknown).
 - iv. Approximate Age or Age Class (neonate, juvenile, sub-adult, adult).
 - v. Time and date of capture.
 - vi. Method of capture.



- vii. Exact point of capture (GPS coordinates).
 - viii. State of health.
 - ix. Incidents associated with capture likely to affect health.
 - x. Veterinary intervention or treatments.
 - xi. Time held in captivity.
 - xii. Disposal method (euthanasia, translocation, re-release).
 - xiii. Date and time of disposal.
 - xiv. Detailed of disposal (GPS points of release).
 - xv. For released animals, location relative to point of capture.
- c) Animal Injury and Euthanasia Report – similar details for the Wildlife Capture and Disposal Plan will be included in this report.

Vegetation Clearing and Fauna Management Plan

A Vegetation Clearing and Fauna Management Plan (VCFMP) will be provided where vegetation clearing is 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.



5.3.3 Road signage

The proposed development is not intending to retain any areas within the referral area as ecological corridors or environmental open space. However, the project will adopt the *Draft Technical Note Wildlife Signage Guidelines* development by the Department of Transport and Main Roads (DTMR). The posted vehicle speed limit will be subject to ICC approval; however, it will not exceed 50 km/h. Additionally, Koala awareness signage types will be installed to promote fauna-sensitive driving behaviour and reduce the potential for vehicle strike. The location and number of signs are subject to ICC approval, however examples of potential signage are provided as **Insert 1**.



Insert 1: Examples of potential road signs utilised within the development area. Ultimate location and signage to be approved by ICC

5.3.4 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 A5** 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 A5** and **Insert3**). Exclusion fencing should be between 1.2m and 1.8m 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).

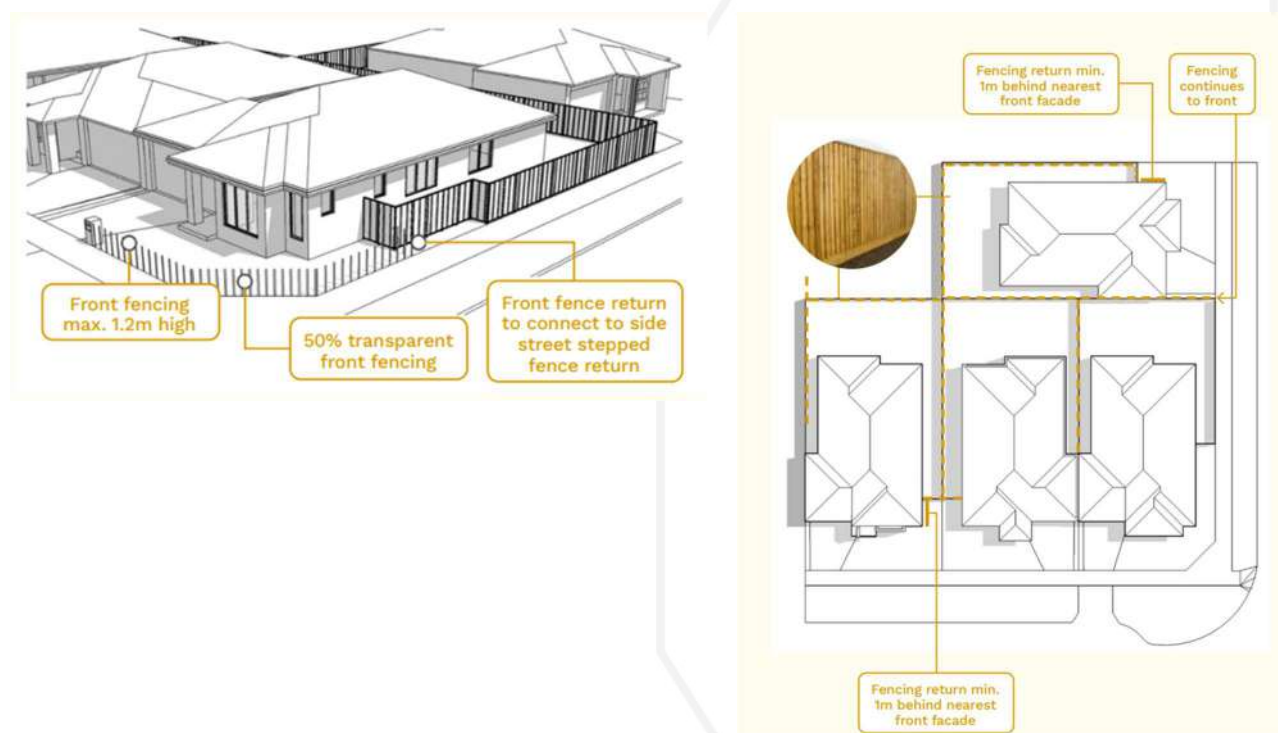
Figure 5.3.3(c) – Plant-hire fencing with panel at top to inhibit climbing by koala



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

Fencing types during operation

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. Small local parks will form part of the project design however these areas will not promote Koala movement into the area. Fencing types for residential lots will be consistent with the requirements of the RVPDA development scheme as detailed in Schedule 3 for 'urban living' zoning. Examples fencing types are provided as Insert 4. Given all surrounding land parcels are also mapped as 'urban living' no retained vegetated areas abutting the development. Therefore, the likelihood of Koala entering the development area are low.



Insert 4: Examples of internal fencing utilised as part of the development extracted from Providence design guidelines in accordance with the RVPDA development scheme

5.3.5 Landscaping

A non-eucalypt tree landscape mix to be used in estate landscaping. 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. The goal of this approach is to minimise the attraction for Koalas entering the development area.

5.3.6 Education and awareness

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

The distribution of "Lifestyle Guidelines" has the purpose of instilling stewardship amongst residents, encouraging them to actively protect native wildlife and making them aware of the types of fauna that could disperse onto roads and how to appropriately manage domestic pets. Topics included within the 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.

5.3.7 Construction Environmental Management Plan (CEMP)

A site-specific CEMP will be prepared prior to the commencement of works by the engaged civil contractor. The CEMP will describe how construction activities will be managed to avoid or mitigate environmental impacts, and how those environmental management requirements will be implemented. The CEMP is required to address matters including air quality and dust, noise, contamination and pollution, waste and water quality management, including erosion and sediment control.

5.3.8 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.

5.3.9 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.

5.3.10 Estimated cost of mitigation measures

An estimated cost of the mitigation measures is approximately \$80,000



5.4. Mitigation Measure Effectiveness

Item 5.5 of the PD Request asks, ***"For each measure proposed, indicate the:***

- a) impact to be avoided and/or mitigated***
- b) responsible party***
- c) environmental outcomes to be achieved***
- d) milestones / performance / completion criteria***
- e) an evidence-based likelihood of success/risk assessment***
- f) proposed monitoring and evaluation program.***
- g) Contingency measures"***

An assessment for each of the measures proposed is provided in **Table A16** below.



Table A16: Construction impacts

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment (refer Section 5.5)	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
Loss of 5.4 hectares of critical habitat for the Koala.	The vast majority of the referral area consists of cleared paddocks not considered habitat for the Koala. A small (5.4 ha) are in the north-west where Koala habitat trees are present, is recognised as Koala habitat. This area provides minimal dispersal opportunity and likely only provides an ancillary benefit to the species. Impacts to this area are considered unavoidable and the retention of this vegetation would not be suitable in the broader landscape which is all zoned as 'urban living.'	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 5.4 hectares of vegetation identified as habitat critical to the survival of the Koala.	<u>Selection of a site with almost no ecological value</u>	EDQ (QLD Government)- defined the 'urban living' zone and RVPDA establishment.	The field survey applied has accurately mapped the habitat within the referral area. The majority of the referral area does not contain suitable habitat for the species. Clearing of habitat impacts the species as a whole as little as possible	The development area is cleared and developed. Works complete	Prior to commencement of vegetation clearing a Vegetation Clearing and Fauna Management Plan (VCFMP) will be prepared that delineates the extent of clearing to ensure compliance with referral area boundary	Report any inconsistencies between the extent of works and referral area boundary to proponent and civil engineer.	Loss of critical habitat for the Koala. Habitat will be offset resulting in no residual impact
			<u>Clearing within referral area boundary</u>	Proponent – selected site based on zoning and minimal ecological value.					
				Environmental Consultant – Map values and complete ecological assessments				Correct limits	
				Site contractor – flag clearing limits			Environmental pre-start to check clearing limits and fencing	Report non-compliance	
Risk of injury or mortality to Koalas from vegetation clearing and construction	All clearing will be undertaken in accordance with the stage specific Site Based Management Plan (SBMP). This will include: - 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,	The use of a Fauna Spotter Catcher throughout clearing is an effective tool to: - Identify they types of species on site prior to clearing; and - 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	<u>Fauna Spotter</u>	Proponent – engage fauna spotter	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 impact area a 50m buffer and vegetated corridor is provided for dispersal to safe habitat	The use of a Fauna Spotter is mandated No residual impact
				Fauna spotter – pre-clear inspection, Wildlife and Habitat Impact Mitigation Plan (WHIMP) and Wildlife Protection and Management Plan (WPMP), supervision of vegetation clearing and post clearing reporting					
				Environmental Coordinator – review pre and post clearing reports					
			<u>Sequential Clearing</u>	Site Contractor – undertake clearing in accordance with VCFMP	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
				Fauna spotter – guides clearing direction to promote dispersal					



Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment (refer Section 5.5)	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
	- Temporary fauna exclusion fencing will then be erected to prevent fauna dispersing into construction areas. - 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.	areas, again minimising the risk of injury of death. 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.	<u>Temporary fauna friendly fencing</u>	Site contractor – flag extent of clearing with fauna friendly fencing	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
			<u>Temporary fauna exclusion fencing</u>	Proponent – engage fencing contractor	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
			<u>Restricted construction hours</u>	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
			<u>Dog prohibitions</u>	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
			<u>Low vehicle speeds</u>	Site contractor – applies speed limits during construction	Speed limits to reduce 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
			<u>Site inductions</u>	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, during construction	The area of suitable habitat within the referral area is confined to the north-west extent. Vegetation clearing has the risk of fragmenting habitat areas during the construction phase. To avoid this impact, vegetation will be	Habitat isolation and fragmentation is a primary concern due to its impacts on fauna. The direction of clearing of vegetation in accordance with the SBMP (informed by WHIMPs) will	<u>Sequential clearing</u>	Site Contractor – undertake clearing in accordance with VCFMP	Sequential clearing reduces risk of fragmented habitat	Clearing completed as per sequential clearing	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 impact area a 50m buffer and vegetated corridor is provided	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 (refer Section 5.5)	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
	undertaken sequentially to allow fauna to disperse from construction areas.	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 that are connected to the wider landscape.	<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	On-site pre-start meeting with responsible parties.	for dispersal to safe habitat	Temporary fauna fencing is mandated and guided by the SBMP. No residual impact
	Clearing procedures that avoid the fragmentation of vegetation will be adopted within the SBMPs and informed by the Fauna Spotter Cather WHIMPs.						Supervision of all vegetation clearing works.		
	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.		<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	Post clearing report – also reviewed by Environmental Coordinator.		Stockpiling is mandated and guided by the SBMP and VCFMP. No residual impact
	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 100m 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.						As above	Fauna friendly fencing is rectified in considered to be unsuitable during pre-start	
Disturbance to Koalas 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>Construction Environmental Management Plan (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
		Limiting hours of construction and clearing to daylight hours, allows a 12 hour period for safe dispersal.	<u>CEMP</u>	Proponent – confirm acceptance of the CEMP and distribute to Site	The risk of contamination and exacerbating weeds and pathogens is minimised	Always during construction Contamination and weed and pathogen incursions do not occur	Site Superintendent required to undertake regular inspections and site audits to	Undertake investigation into exceedance of thresholds and	As above



Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment (refer Section 5.5)	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.	With appropriate monitoring, pre, during and post construction by the Fauna Spotter Catcher, no residual impacts area expected to occur.		Superintendent and Contractors.			ensure the thresholds are not exceeded and/or performance criteria area achieved.	implement corrective actions as recommended in the CEMP.	
	<u>Contamination, weeds and pathogens</u> Construction activities increase the risk of weeds, pathogens and contamination into the site.			Engineering Consultant – prepare CEMP detailing the procedures and performance criteria for each of the potential indirect impacts listed.					
	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.								
	<u>Vehicle disturbance</u> 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.								
	<u>Contractor management</u> 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.		<u>Reduced vehicle speeds during construction</u>	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
			<u>Site induction and on-site daily toolbox talks</u>	Site Contractor – prepare induction course and initiate daily toolbox talks prior to commencement of works.	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
				Construction personnel – complete site induction course, sign into site and attend daily toolbox talks.					
				Proponent – ensure all procedures ad protocols are followed on-site.					
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.	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 caused by hardstand areas and ensures natural drainage lines	<u>Hydraulic and Stormwater Management Plan</u>	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
	All work will be undertaken in accordance with appropriate management plans to ensure the								



Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible party	Risk Assessment (refer Section 5.5)	Milestone and timeline	Monitoring Actions	Corrective actions	Environmental outcomes
	hydrological changes across the site do not impact on surrounding vegetation.	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 A17: Operational impacts

Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible Party	Risk Assessment (refer Section 5.5)	Milestone and timeline	Monitoring actions	Corrective actions	Environmental Outcomes
Risk of injury of death to Koalas, from vehicle strike	A number of measures will be imposed to avoid and mitigate the risk of Koalas 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. - Erection of awareness signage in parks and on roads to raise awareness of the species' presence in the area. - 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 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.	<u>Low vehicle speeds</u>	Proponent – include these elements in the detailed design of the estate.	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. In addition, awareness signage and traffic calming devices will ensure motorists are aware that wildlife have potential to occur in the area, albeit unlikely, and to be aware of potentially dispersing Koalas and encouraging them to maintain a low vehicle speed.	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
		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.	<u>Signage</u>	Ipswich City Council (ICC) – approve detailed design and signage locations					
		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.	<u>Urban landscaping avoids Koala habitat</u>	Proponent – engage landscape architects for street scaping and parks					
		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.	<u>Lifestyle guidelines</u>	Proponent – prepare and distribute guidelines					
Risk of injury or death from dog attack	Dogs will be controlled on a lead. Fenced "off-leash" areas / dog facilities will be constructed within local parks in the estate. 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 in the area. 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.	<u>Dog restrictions (on-leash and off leash areas)</u>	Proponent – include these elements in 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
				Proponent – prepare and distribute guidelines					
				ICC – approve detailed design					



Impact	Avoidance and Mitigation Measures	Evaluation of the Effectiveness of Measures	Mitigation measure	Responsible Party	Risk Assessment (refer Section 5.5)	Milestone and timeline	Monitoring actions	Corrective actions	Environmental Outcomes
		The Lifestyle Guidelines will make residents aware of the risk dogs pose to Koalas and other native fauna and will clearly identify "off leash" parks in the area. The guidelines, along with awareness signage throughout the estate, 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.	<u>Lifestyle guidelines</u>						
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. Standard residential fencing types will be utilised in the development area as detailed in Section 5.3.4. The risk of Koalas becoming trapped is considered highly unlikely given no vegetation retention is proposed, and landscaping utilises non-koala habitat trees. Permanent Koala exclusion fencing is not warranted an the risk of residential fencing causing farm to Koala is unlikely.	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 not encourage Koala into the area. Lifestyle guides will assist in provide local residents with knowledge and awareness on local wildlife.	<u>Lifestyle guidelines</u> <u>Development design</u>	Proponent – prepare and distribute guidelines Proponent – engage landscape architects for street scaping and parks	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



5.5. Detailed risk assessment

Table A18: Risk framework

		Consequence				
Likelihood		Minor	Moderate	High	Major	Critical
	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

Table A19: Risk Assessment – Construction mitigation measures

Impact (Construction)	Mitigation status	Likelihood	Consequence	Risk Rating
Loss of critical habitat for the Koala.	Pre-mitigation	Highly Likely	Moderate	High
	Post-mitigation	Highly Likely	Moderate	High
Risk of injury or mortality to Koalas from vegetation clearing and construction	Pre-mitigation	Highly Likely	Moderate	High
	Post-mitigation	Highly Likely	Moderate	High
Fragmentation of habitat for Koalas, during construction	Pre-mitigation	Possible	High	Medium
	Post-mitigation	Unlikely	Moderate	Low
Disturbance to Koalas during construction	Pre-mitigation	Possible	High	Medium
	Post-mitigation	Unlikely	Moderate	Low
Hydrological changes	Pre-mitigation	Possible	High	Medium

	Post-mitigation	Unlikely	Moderate	Low

Table A20: Risk Assessment – Operation mitigation measures

Impact (Operation)	Mitigation status	Likelihood	Consequence	Risk Rating
Risk of injury of death to Koalas, from vehicle strike	Pre-mitigation	Possible	Major	High
	Post-mitigation	Unlikely	Minor	Low
Risk of injury or death from dog attack	Pre-mitigation	Possible	High	Medium
	Post-mitigation	Unlikely	Moderate	Low
Risk of injury or death from increased human presence and fences	Pre-mitigation	Possible	High	Medium
	Post-mitigation	Unlikely	Moderate	Low

5.6. Environmental outcomes of proposed mitigation measures

While the project is not proposing to avoid any habitat within the referral area, several mitigation measures are proposed as detailed in **Section 5.3** to address potential impacts associated with increased vehicle strike, increased dog abundance, increased human presence and potential construction related impacts. The effectiveness of these mitigation measures and corrective actions/completion markers have been provided in **Table A16** and **Table A17**. Several mitigation measures that are required though the construction phase of the project will be maintained by the civil contractors through pre-start meetings, toolbox talks and staff inductions. The on-going implementation of mitigation measures such as temporary exclusion fencing will be the responsibility of the civil contractors. Internal environmental management protocols including monitoring of fence lines, exclusion of dogs will be required. No residual impacts are expected where mitigation measures are being implemented. Where residual impact does occur (i.e habitat loss) this will be full compensated for via an external offset delivered in accordance with the EPBC Offset Policy (refer **Section 6**).

5.7. Scientific basis for mitigation measures

Scientific and published literature formed the basis of identifying potential threats and assessing suitable proposed mitigation. The following documents have been utilised:

- *Fauna Sensitive Transport Infrastructure Delivery Manual* (DTMR 2024).
- *Draft Technical Note Wildlife Signage Guidelines* (DTMR)
- *National Recovery Plan – Phascolarctos cinereus* (DAWE 2022)



- *Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory (DAWE 2022)*
- *Koala hospital data (DETSI 2024)*



6. Proposed Offsets

Item 6 of the PD Request asks that ***"where residual significant impacts to listed threatened species ... a compensatory environmental offset in accordance with the EOP is required"***, and that the ***"offsets must be specific to the species... 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"***. It requests that an **Offset Proposal** and **Offset Management Plan (OMP)** be included.

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. It is considered that the proposed action is likely to have a significant, unavoidable residual impact on Koala.

6.1. Offset Proposal

Significant unavoidable residual impacts on the identified MNES, being Koala, are proposed to be wholly acquitted over the third-party offset site.

The Little Kipper Creek Road Offset area is located at Little Kipper Creek Road, Biarra, within the Somerset Regional Council LGA, approximately 11 km west of the Queensland town of Esk. It is located within a broader offset property owned by third-party offset provider Koala Farmland Fund (KFF) (refer



Plan A14). The location of the offset area in relation to the referral area is shown on **Plan A15**, located along a common network of State and Regional corridors.

Key site details are provided in **Table A21** below.

Table A21: Little Kipper Creek Offset Area summary

Address	Little Kipper Creek Road, Biarra, Queensland, 4313
Lot / Plan	Part of Lot 271 on CA311037
Area	20 ha
Tenure	Freehold
Local Government Area	Somerset Regional Council

The proposed offset area will acquit **125.39 %** of the quantum impacts for Koala.

6.1.1 Offset Management Plan (OMP)

An Offset Management Plan (OMP) has been provided for the proposed offset area. The OMP and associated attachments are provided at **Attachment A5**.

The offset area has the capacity to meet the offset requirements for Koala as it contains potential Koala habitat area degraded by clearing, weeds, and pests. Isolated Koala habitat trees are present along an ephemeral watercourse in the west of the site dominated by *Lantana camara* (Lantana) and scattered across the open paddock that comprises the balance of the offset site. Connectivity and potential future connectivity on site is high given its location within a matrix of other offset sites that are being actively rehabilitated and adjoining a regional biodiversity corridor that includes Deongwar State Forest. As such, the existing native vegetation on this site provides some potential habitat features while maximising possible benefit to Koala as a result of rehabilitation efforts.

In addition, the offset site adjoins a regional biodiversity corridor and is within the same sub-bioregion as the impact site (Moreton Basin) ensures the land will continue to provide habitat and fauna connectivity within the greater landscape. Upon EPBC Approval, the offset area will be legally secured by a Voluntary Declaration under the *Queensland Vegetation Management Act 1999* and covenant under the *Land Act 1994* or *Land Titles Act 1994* which will protect the land in perpetuity.

The objective of the OMP is to summarise existing habitat quality for the Koala (*Phascolarctos cinereus*) within the offset area and provide management actions designed to achieve the targets stipulated. The environmental outcomes to be achieved through the implementation of the OMP will be informed by the requirements conditioned by the approval.

The OMP identifies outcomes and focused management actions pursuant to the EPBC Act for the provision of Koala (*Phascolarctos cinereus*) habitat offset. The management objectives for the offset area, in alignment with the Environmental Offsets Policy (EOP) will:

- Deliver an overall conservation outcome that improves the viability of habitat for the Koala.



- Provide a direct offset that is in proportion to the level of statutory protection that applies to habitat for the Koala.
- Be of a size and scale proportionate to the residual impacts on habitat for the Koala.
- 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 area.

An assessment of the offset site suitability is provided in the detailed OMP.

The achievement of environmental outcomes within the offset area will be measured using methodologies, monitoring and maintenance detailed in **Attachment A5** and the subsections below. The management actions detailed in the OMP aim to achieve the offset targets to be conditioned in the EPBC Act approval that endeavour to protect, restore and reconnect areas of Koala habitat.



A14. PROPOSED OFFSET AREA

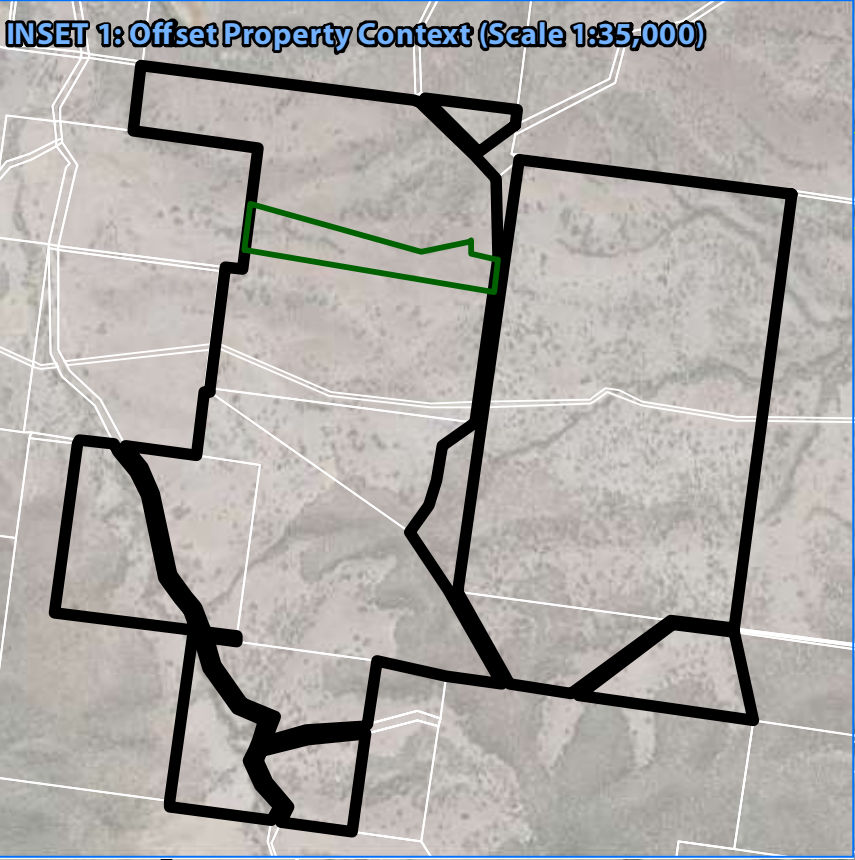


Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features may need verification if the development application is approved and development proceeds, and may change 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.

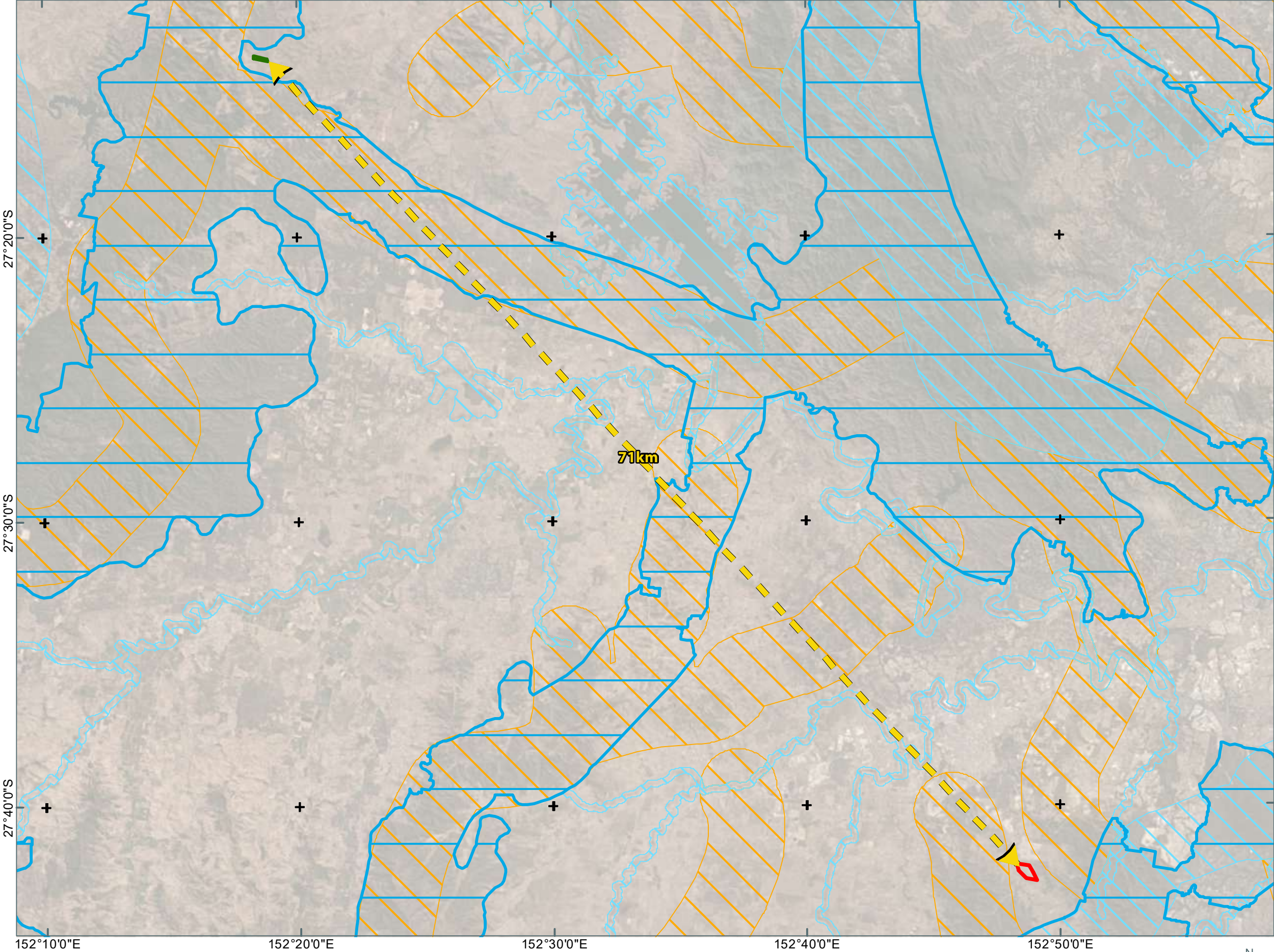
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- LEGEND**
- Qld DCDB
 - ▬ Offset Site Property
 - ▭ Adjoining Offset Site
 - ▭ Offset Area (EPBC 2023/09690) - 20 ha



A15. OFFSET AREA – CONTEXT AND REGIONAL CORRIDORS



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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.

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Updated data available at
<http://qds.spatialinformation.qld.gov.au/catalogue/>

- LEGEND**
- Referral Area
 - Offset Area (EPBC 2023/09690) - 20 ha
 - Regional biodiversity corridor (SEQ Regional Plan 2017)
 - Regionally significant corridor (Biodiversity Planning Assessments)
 - State significant corridor (Biodiversity Planning Assessments)



6.2. Offset Area Values

The proposed offset area has been delineated into two (2) assessment units (AU) based on the mapped pre-clear Regional Ecosystems (RE).

These AUs are shown on **Plan A16** and summarised in **Table A22** and **Attachment A5**.

Table A22: Offset area Assessment Unit summary

Assessment Unit	Regional Ecosystem	Area (ha)	Queensland Herbarium RE Description
AU1	Non-remnant, pre-clear RE 12.3.3	2.7	RE12.3.3 <i>Eucalyptus tereticornis</i> woodland. <i>Eucalyptus crebra</i> and <i>E. moluccana</i> are sometimes present and may be relatively abundant in places, especially on edges of plains and higher-level alluvium. Other species that may be present as scattered individuals or clumps include <i>Angophora subvelutina</i> or <i>A. floribunda</i>, <i>Corymbia clarksoniana</i>, <i>C. intermedia</i>, <i>C. tessellaris</i>, <i>Lophostemon suaveolens</i> and <i>E. melanophloia</i>. Occurs on Quaternary alluvial plains, terraces and fans where rainfall is usually less than 1000mm/y. Not a Wetland. (BVG1M: 16c).
AU2	Non-remnant, pre-clear RE 12.9-10.2	17.3	RE12.9-10.2 <i>Corymbia citriodora</i> subsp. <i>variegata</i> open forest or woodland usually with <i>Eucalyptus crebra</i>. Other species such as <i>Eucalyptus tereticornis</i>, <i>E. moluccana</i>, <i>E. acmenoides</i> and <i>E. siderophloia</i> may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of <i>Lophostemon confertus</i> (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. Not a Wetland. (BVG1M: 10b).

Assessment Unit 1

This assessment unit is comprised of the vegetation surrounding the ephemeral watercourse that enters from the western boundary and runs east-west through part of the site (approximately 2.6 ha). Landscape features associated with the ephemeral watercourse, is the main delineation between this AU and AU2 across the balance of the site. This area is heavily infested by *Lantana camara* (Lantana). Native trees are present being predominantly *Angophora subvelutina* (Broad-leaved Apple), with *Eucalyptus tereticornis* (Forest Red Gum), *Corymbia tessellaris* (Moreton Bay Ash), and *Lophostemon suaveolens* also present. Ground cover is a mixture of native and non-native grasses and forbs, including *Heteropogon contortus* (Black Speargrass), *Cymbopogon refractus* (Barbed Wire Grass), *Melinis repens* (Red Natal Grass), *Sporobolus pyramidalis* (Giant Rat's Tail Grass), *Chrysocephalum apiculatum* (Yellow Buttons), *Wahlenbergia stricta* (Queensland Bluebell), *Gomphocarpus physocarpus* (Balloon Cotton Bush) and *Verbena bonariensis* (Purple-top Verbena). The pre-clear RE mapping is composite RE12.3.3/12.3.7 but Vegetation in this area more closely aligns with RE12.3.3



Given small overall area and linear shape of this AU, a single habitat quality transect (Transect 1) was completed within AU1.

Assessment Unit 2

Assessment Unit 2 comprises the balance of the site (12.8 ha) and is open paddock with low-moderate density of *Lantana camara* (Lantana) and scattered individual eucalypt trees. This area is mapped as pre-clear RE12.9-10.2, but similar to AU1 is dominated by *Angophora subvelutina* (Broad-leaved Apple) with *Eucalyptus tereticornis* (Forest Red Gum) also present. Canopy cover is sparse through this area, with native tree regeneration occurring only in a few scattered areas. Otherwise, shrub layer is restricted to *Lantana camara* (Lantana). Ground layer species composition is similar to that within the AU1 vegetation, dominated by non-native grasses *Melinis repens* (Red Natal Grass) and *Sporobolus pyramidalis* (Giant Rat's Tail Grass) with some native grasses and forbs including *Heteropogon contortus* (Black Speargrass), *Cymbopogon refractus* (Barbed Wire Grass), *Eragostis brownii* (Brown's Lovegrass), *Lobelia purpurascens* (White Root), and *Chrysocephalum apiculatum* (Yellow Buttons).

Revegetation and assisted natural regeneration techniques in accordance with the South East Queensland Restoration Framework (SEQRF) are required alongside weed and pest management to restore the majority of the proposed offset site to functional, quality Koala habitat for the local populations.

Habitat quality Transects 2 and 3 were completed within AU2.





Photo plate 5: Offset area assessment unit vegetation values. AU1 – non-remnant pre-clear RE12.3.3 (top) and AU2 – non-remnant pre-clear RE12.9-10.2 (bottom).



6.2.1 Field survey timing

Targeted MNES flora and fauna surveys were undertaken across the proposed offset area to describe the baseline ecological value. Field surveys were undertaken in November 2024. Specific details are provided in **Table A23**. Refer to **Plan A16** for the location of field surveys. The specific methods applied are described in the subsections following.

Table A23: Offset area field survey methods summary

Date	Temperature data	Rainfall data	Methods
12.11.2024	20.8°C min – 31.4°C max	0 mm	Install cameras, MHQA transects, SAT surveys
26.11.2024	14.6°C min – 30.7°C max	0 mm	Weed mapping, weed coverage transects, camera collection

NB: Temperature data sourced from Bureau of Meteorology (BoM) – Station 040082 University of Queensland Gatton.

Modified Habitat Quality Assessment Tool

The required number of MHQA transects were applied per assessment unit. To determine the quantum and quality of the habitat suitable for MNES within the offset area, vegetation/habitat quality was derived from the MHQA tool relevant to each species. 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 referral area. The MHQA methodology was utilised to assess the offset area condition, site context and species stocking rate.

Spot Assessment Technique surveys

Surveys to understand Koala presence were undertaken across the referral area in accordance with the methodology developed by the Australian Koala Foundation (AKF) (Phillips & Callaghan 2011) and specified in the Koala Referral Guidelines.

The SAT method was implemented twice within the AU1 vegetation in the western portion of the proposed offset area. This methodology is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage. The SAT method involves identifying a non-juvenile tree of any species within the referral area that is either observed to have a Koala or scats, or is known to be a Koala food tree or otherwise important for Koalas, and recording any evidence of Koala usage of that tree including physical presence, identifiable scratches or scats. The nearest non-juvenile tree is then identified and the same data recorded. The next closest non-juvenile tree to the first tree is then assessed and so on until 30 trees have been surveyed. The number of trees showing evidence of Koala activity is expressed as a percentage of the total number of trees sampled to indicate the frequency of Koala usage. Assessment of each tree involves a systematic search for Koala scats beneath the tree within a 1 m radius of the trunk. After approximately two minutes of searching for scats, the base of the trunk is observed for scratches and the crown for Koala (Phillips & Callaghan 2011).

Motion-triggered camera trapping

Preliminary 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 a camera with an infrared trigger. This survey technique identifies fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts. Cameras were placed in the vicinity of an assumed animal trail within densely vegetated areas more likely to support fauna.

Cameras were attached 30-100 cm from the ground on a tree or post and directed towards landscape features. Two (2) camera traps were installed across the offset area baited with chicken necks on 12 November 2024 and collected on 26 November 2024, for a period of 15 nights.

6.2.2 Koala offset score

The MHQA data and scores for each assessment unit, combining Site Condition, Site Context and Species Stocking Rate are provided at in the following tables:

- **AU1 –Table A24 and Table A25**
- **AU2 –Table A26 and**
- **Table A27**

Plan A16 shows the field survey effort and assessment units across the offset, and **Plan A17** the context assessment utilised for calculating Site Context. Results are discussed in the subsequent sections.



Table A24: Offset Area Assessment Unit 1 – Koala MHQA score

Assessment Unit - Regional Ecosystem	AU 1 - RE12.3.3				
	RE12.3.3 Benchmark	Transect 1	Average of Transect(s)	% Benchmark	Score
SITE CONDITION					
Recruitment of woody perennial species in EDL	100	100	100	100	5
Native plant species richness - trees	5	4	4	80.00	2.5
Native plant species richness - shrubs	5	1	1	20.00	0
Native plant species richness - grasses	9	6	6	66.67	2.5
Native plant species richness - forbs	25	7	7	28.00	2.5
Tree canopy height (Canopy)*	25	20	20	80.00	5
Tree canopy height (Sub-canopy)*	9	10	10	111.11	5
*Average tree canopy height					5
Tree canopy cover (Canopy)**	40	11	11	27.50	2
Tree canopy cover (Sub-canopy)**	8	14.7	14.7	183.75	5
**Average tree canopy cover					3.5
Shrub canopy cover	4	0	0	0.00	0
Native grass cover*	52	19	19	36.54	1
Organic litter*	20	17	17	85.00	5
Large trees (euc plus non-euc) (per ha)	14	10	10	71.43	10
Coarse woody debris (per ha)	588	297	297	50.51	5
Non-native plant cover	0	40	40	40.00	3
Quality and availability of food and foraging habitat	NA			-	5
Quality and availability of shelter	NA			-	5
Site Condition Score (/100)					55
Overall Site Condition Score - out of 3					1.65
SITE CONTEXT					
Size of patch	10				10
Connectedness	5				2
Context	5				4
Ecological Corridors	6				0
Role of site location to species overall population in the state	5				4
Threats to the species	15				7
Species mobility capacity	10				10
Site Context Score (/56)					37
Overall Site Context Score - out of 3					1.98
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					4.78



Table A25: Offset Area Assessment Unit 1 – Koala Species Stocking Rate results

Species Stocking Rate attributes	
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 the species population on site*	0/30
Total Species Stocking Rate Score	20/70
Species Stocking Rate Score – out of 4	1.14

*Species Stocking Rate supplementary table attributes	
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



Table A26: Offset Area Assessment Unit 2 – Koala MHQA score

Assessment Unit - Regional Ecosystem	AU 2 - 12.9-10.2					
	RE12.9-10.2 Benchmark	Transect 2	Transect 3	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	100	100	100	5
Native plant species richness - trees	6	1	2	1.5	25.00	2.5
Native plant species richness - shrubs	7	0	1	0.5	7.14	0
Native plant species richness - grasses	7	3	5	4	57.14	2.5
Native plant species richness - forbs	13	6	8	7	53.85	2.5
Tree canopy height (Canopy)*	21	9	9	9	42.86	3
Tree canopy height (Sub-canopy)*	12	4	4	4	33.33	3
				*Average tree canopy height		3
Tree canopy cover (Canopy)**	64	0	16.2	8.1	12.66	2
Tree canopy cover (Sub-canopy)**	20	0	8.2	4.1	20.50	2
				**Average tree canopy cover		2
Shrub canopy cover	6	0	1.5	0.75	12.50	3
Native grass cover*	21	11	23	17	80.95	3
Organic litter*	48	0	19	9.5	19.79	3
Large trees (euc plus non-euc) (per ha)	38	0	0	0	0.00	0
Coarse woody debris (per ha)	506	0	0	0	0.00	0
Non-native plant cover	0	60	30	45	45.00	3
Quality and availability of food and foraging habitat	NA				-	5
Quality and availability of shelter	NA				-	5
					Site Condition Score (/100)	39.5
					Overall Site Condition Score - out of 3	1.19
SITE CONTEXT						
Size of patch	10	10	10	10		10
Connectedness	5	0	0	0		2
Context	5	4	4	4		4
Ecological Corridors	6	0	0	0		0
Role of site location to species overall population in the state	5	5	5	5		4
Threats to the species	15	7	7	7		7
Species mobility capacity	10	7	7	7		10
					Site Context Score (/56)	37
					Overall Site Context Score - out of 3	1.98
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						3.74



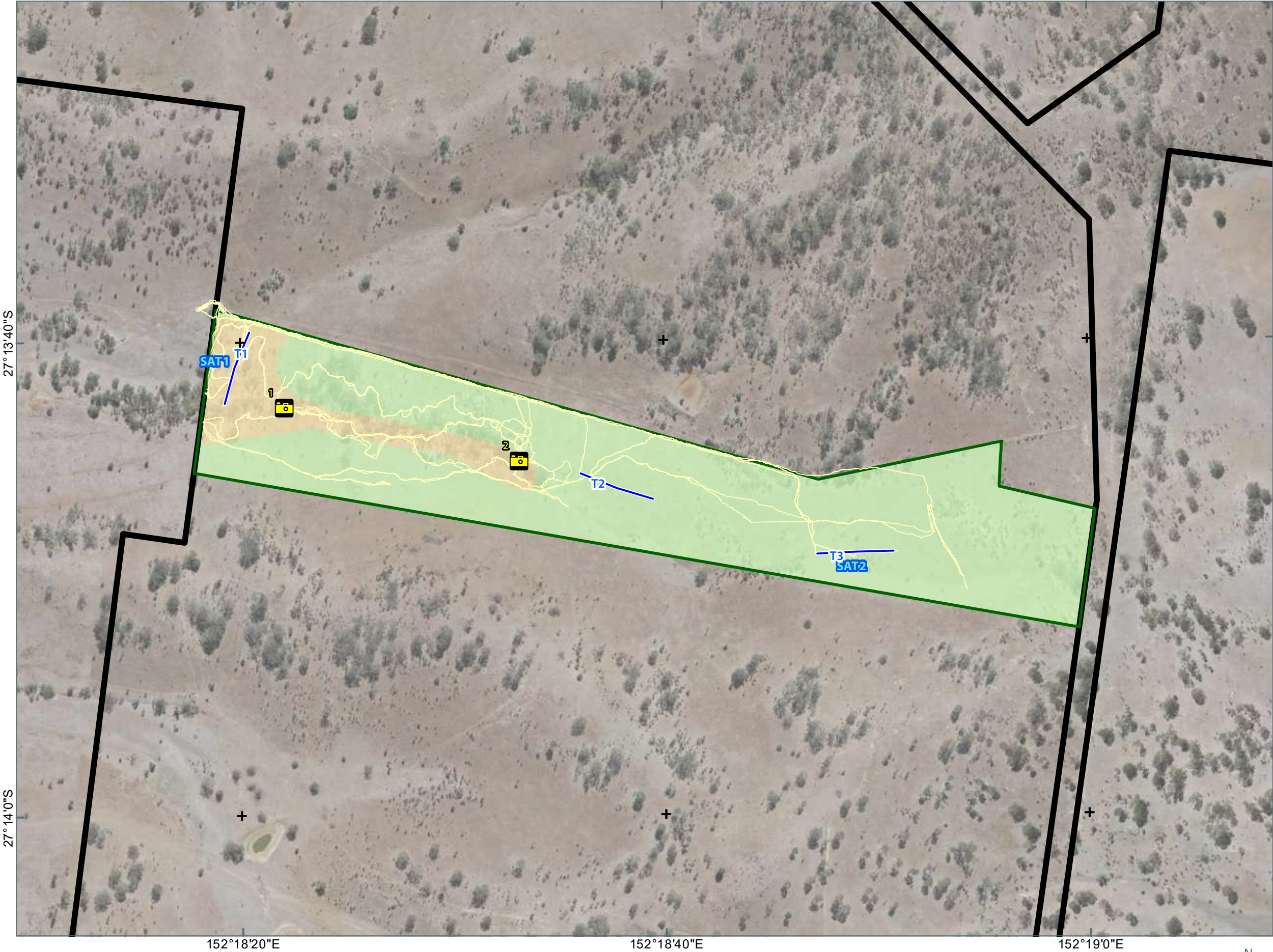
Table A27: Offset Area Assessment Unit 2 – Koala Species Stocking Rate results

Species Stocking Rate attributes	
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 the species population on site*	0/30
Total Species Stocking Rate Score	15/70
Species Stocking Rate Score (/4)	0.57

*Species Stocking Rate supplementary table attributes	
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



A16.OFFSET AREA – FIELD SURVEYS AND ASSESSMENT UNITS



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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.

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Updated data available at
<http://qds.spatialinformation.qld.gov.au/catalogue/>

- LEGEND**
- Qld DCDB
 - Offset Site Property
 - Offset Area (EPBC 2023/09690) - 20 ha
- Assessment Units**
- Assessment Unit 1:
Non-remnant vegetation (RE 12.3.3) [2.7 ha]
- Assessment Unit 2:
Non-remnant vegetation (RE 12.9-10.2) [17.3 ha]
- Field Survey Effort**
- Observational surveys
 - SAT Survey Locations
 - Camera Trap Locations
 - MHQA Transects



A17. OFFSET AREA – KOALA CONTEXT ASSESSMENT



Notes:
 The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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.

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 Updated data available at
<http://qds.spatialinformation.qld.gov.au/catalogue/>

- LEGEND**
- Qld DCDB
 - Offset Area (EPBC 2023/09690) - 20 ha
 - 1km Offset Area Buffer
 - Percentage of offset area boundary length supporting a connection off and on site to Koala critical habitat - 14%
 - Size of Koala critical habitat patch > 500 ha
 - Percentage of Koala critical habitat within 1km of offset area (58.5%)



Site Condition (30%)

The scores for Site Condition attribute 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.

Quality and availability of food and foraging habitat

Scoring of Quality and availability of food and foraging habitat is based on the balance site condition attributes where their score is utilised as follows: <27/80 (<33% of benchmark) scores 1, between 27/80 (33% of benchmark) and 54/80 (66% of benchmark) scores 5 and above 54/80 (>66% of benchmark) scores 10. These attributes scored a **5 out of 10** for both AU1 and AU2.

Quality and availability of shelter

Scoring of Quality and availability of shelter **are based on** the balance site condition attributes where their score is utilised as follows: <27/80 (<33% of benchmark) scores 1, between 27/80 (33% of benchmark) and 54/80 (66% of benchmark) scores 5 and above 54/80 (>66% of benchmark) scores 10. These attributes scored a **5 out of 10** for both AU1 and AU2.

Site Context (30%)

Site context scores discussed below are applied to each Assessment Unit. Refer to **Plan A17** for the context assessment.

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 it 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 offset area to be part of a patch size of >1000 ha. This component was assigned a score of **10 out of 10**.

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 offset area boundary length supporting a Koala critical habitat connection off and on site was calculated at **14%**, and consequently this attribute scored a **2 out of 5** as per the Queensland BioCondition Assessment methodology.

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. Each assessment unit achieved the same scores for Site context. Retained critical Koala habitat within a 1 km buffer of the site was calculated at **54.5%**, and therefore the context attribute achieved a score of **4 out of 5** as per the methodology.

Ecological Corridors



GIS was utilised to identify the site's role in any ecological corridors on or adjacent to the site. This attribute was scored **0 out of 6**, as the site is located outside an ecological corridor. However, it is noted that the corridor is located within 900 metres of the offset area and form part of the future network.

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 the 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 offset area scored a **4 out of 5**.

Threats to the species

Threats to Koala are present across the broader Little Kipper Creek Offset Property including dog and fox attack, degradation of habitat through uncontrolled weed infestations (namely *Lantana camara* (Lantana)), uncontrolled wildfire, and the presence of barbed wire. Additional to this is the indirect threat of revegetation destruction by non-native feral herbivores.

The presence of moderate to severe Lantana infestations threatens Koala habitat by reducing the potential for natural regeneration of habitat. Wild dogs were recorded during camera trapping (Relative Abundance Index 7.1) and are known to occur across the broader Little Kipper Creek Offset Property. Additionally, the Queensland WildNet database identifies 3 confirmed records of *Canis* sp. and/or *Canis familiaris*, 4 records of European foxes and 3 records of feral cats within 20 km of the offset area, located within connected vegetation. Wild dogs are known to travel up to 20 km seeking prey with home ranges of individuals likely to overlap with the offset area.

Given the presence of multiple threats across the offset area, a score of **7 out of 15** or 'moderate' was considered appropriate.

An adaptive management approach is proposed to manage threats from dogs and other vertebrate pest species for the life of the offset (20 years). All threats must be reduced in order for successful recovery (Rhodes et al., 2011)

Species mobility capacity

Species mobility capacity is considered consistent across all AUs. While restrictions were present in the form of cleared paddocks and dense *Lantana camara* (Lantana) a score of **10 out of 10** was assigned.

Species Stocking Rate (40%)

The final component of the MHQA technique is species stocking rate. Species stocking rates are estimates of the Koala carrying capacity of the assessment unit at the time of undertaking the survey. Species stocking rate characteristics reflect presence of Koala activity detected on site (if no scats no density and dispersal habitat), foraging and breeding as per conservation advice as evidenced by the presence scats, approximate density from SAT results and role of the site from the supplementary table. The East Coast (med-high) population category was applied for the offset area.

Evidence of Koala was not recorded within the offset area during field surveys, though Koala presence in the area is known from surveys conducted across the adjoining offset sites in the broader Little Kipper Creek Offset Property. Two (2) SATs labelled were completed at MHQA transects 1 and 3 returned a 'low' usage under the East Coast (med-high) activity category. SAT surveys were not completed for



MHQA 2 due to a lack of trees. A summary of the SAT survey results completed at each MHQA transect are provided in **Table A28**.

Table A28: SAT survey results

SAT ID (MHQA transect)	Number of scats	Evidence of Koala activity (%)	Koala use (East Coast med-high)
SAT 1	0	0	Low
SAT 2	0	0	Low

A species stocking rate score of **20 out of 70** was attributed to AU1 and **10 out of 70** for AU2 based on the SSR calculation tables. Further details on the assessment are provided below:

- A Koala was observed adjacent to the offset area as part of surveys for adjoining offset areas, therefore 'presence detected on or adjacent to site' was assigned a score of **5 out of 10** for all assessment units.
- Due to the general lack of habitat values and absence of evidence of Koalas, species usage of the site was scored as **5 out of 15** for AU2 as habitat type and evidenced usage reflects potential use as dispersal habitat. AU1 was scored as **15 out of 15** as greater tree density reflected potential breeding habitat.
- 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 offset area matrix (Little Kipper Creek Offset Property), Koala likely utilise the more heavily treed and connected habitat areas to the north, south, and west. It is anticipated that the capacity of the offset area to support Koala will improve with weed management and active regeneration.
- The offset area is not considered a key source population under 'role/importance of species population on site' therefore was scored a **0 out of 15**.

Uplift summary

Proposed uplift in Koala MHQA scores with justifications and management actions, monitoring protocols and Key Performance Indicators (KPIs) and adaptive management strategies are provided in **Attachment A5 (OMP)**.

The summary of score uplift is presented in



Table A29, below. Offset acquittal is taken from the offset calculator outputs presented in **Attachment A5, Appendix A**. The proposed offset will acquit **125.39%** of the quantum impact on Koala.



Table A29: Offset Area Koala MHQA uplift summary

Assessment Unit	Area (ha)	Habitat Quality Score		Offset Acquittal
		Baseline (rounded score)	Future (rounded score)	
AU1	2.7	4.78 (5)	7.19 (7)	11.82%
AU2	17.3	3.74 (4)	6.87 (7)	113.57%
Totals	20.0			125.39%



7. Economic and Social Matters

7.1. Social and Economic Benefits

Item 8.1 of the PD Requests asks to, ***“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.”***

RVPDA is intended to be developed as a series of distinctive neighbourhoods and smaller villages within the many and varied valley precincts, surrounded both close and afar by hills and views of the iconic Flinders Peak. RVPDA is located in South East Queensland’s western growth corridor, which is one of the largest employment and industry growth areas in Australia. Furthermore, the RVPDA is strategically located to benefit from access to existing and planned major employment generators – Ipswich CBD, Springfield, Swanbank Enterprise Park, Citiswitch and the RAAF Base and Aerospace and Defence Support Centre. The RVPDA has and will continue to experience an unprecedented level of large scale infrastructure and investment projects as shown below:

Local Infrastructure Completed, Underway or Committed:

- \$1.5 billion Ripley Town Centre
- \$4 billion duplication of Ipswich Motorway
- \$366 million Centenary Highway Extension
- \$837 million commuter rail extension to Springfield with proposed future extension to the Ripley Valley
- \$6 billion in additional transport projects

The proposed development results in the creation of approximately 1310 new residential allotments. 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 8 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 master planned community. 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.

Due to the scale of the master planned community, the economic impact on the local community 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 A30**.

Table A30: High level economic analysis

Subdivision Construction			
Estimated Cost	Construction	\$142,000,000	Incl. Civil, Electrical/Telecommunications & Landscaping



Total Economic Output	\$412,000,000	Calculated as \$1m input = \$2.9m output
Total Jobs Supported	1,278	Calculated as \$1m input = 9 Jobs Supported
Housing Construction		
Number of Lots	1310	
Average House Build Cost	\$462,000	Assumed Average South Ripley building cost
Total Construction Cost	\$605,000,000	Number of Lots x Average Build Cost
Total Economic Output	\$1,754,000,000	Based on \$1m input = \$2.9m output
Total Jobs Supported	3630	Based on \$1m input = 6 Jobs Supported
Overall Development		
Total Economic Output	\$2,166,000,000	Subdivision + Housing Economic Output

7.1.1 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

7.1.2 Economic benefits and employment opportunities

Item 8.2 of the PD Requests asks to, ***“Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place”***.

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 cattle grazing 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.

7.1.3 Stakeholder consultation

Item 8.3 of the PD Request asks to, ***“Provide details of any public stakeholder consultation activities, including the outcomes of those consultations”***.

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.

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 will be subject to local development approvals with the State including Ipswich City council and EDQ. The details of these applications will be made available on the ICC *developmenti* (<https://developmenti.ipswich.qld.gov.au/>) online for the public. Depending on the nature of the development application (impact of code assessable), the public may be able to provide comment on the application.

7.1.4 Indigenous stakeholder consultation

Item 8.4 of the PD Request asks to, ***“Provide details of any consultation with Indigenous stakeholders”***.

Stockland has a Cultural Heritage Management Plan in place with the Yuggera Ugarapul People (YUP). The YUP have surveyed the referral area, to date, there are no known indigenous heritage values present within the referral area.

The proponent is to notify the YUP and the department if any indigenous heritage values are found or are suspected to be within the referral area during the project delivery.



8. ESD and Environmental Record

8.1. Ecologically Sustainable Development

This section responds to Item 9 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 A31** assesses the capacity for this project to meet the principles of ESD, as defined in section 3A of the EPBC Act.



Table A31: ESD principles

ESD Guiding Principles
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/state planning has identified the area as suitable for residential development The project will benefit individuals and the community as a whole by providing additional housing in an area earmarked for urban development to support ongoing population growth. Residential uses are dominant within the surrounding landscape, with the referral area lacking vegetation values. A variety of housing types and densities 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. Local parks will be provided to the public within the project area which will including various landscaping works.
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: • The spatial scale; • The magnitude of possible impacts; • The perceived value of the threatened environment; • The complexity and connectivity of possible impacts; • The manageability of possible impacts; • The level of public concern and the rationality or scientific basis for the concern; and • Reversibility of possible impacts. Impacts to the Koala and associated habitat have been identified as the primary environmental concern on a level of National Environmental Significance. The site’s utilisation by Koalas and its ability to provide critical habitat for the Koala has been discussed in detail throughout this report. The referral area has been recognised to support low level Koala activity in a dispersal capacity and an area of 5.4 hectares has been identified as containing habitat critical to the survival of the Koala. A number of possible impacts have been identified 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 area and immediately adjoining areas. Impacts can be summarised as those arising from the loss of habitat, barriers to movement, 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. The identified impacts are considered mostly to be manageable through the designation of dog off-leash areas, imposition of low vehicle speeds, and through the education of new residents about local wildlife management. 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 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 does not contain any areas considered as high ecological value both in terms of on site value or providing connectivity potential as a result of historic and on-going rural pursuits. It is therefore not practicable to retain areas on site. The project site displays an optimal candidate for a residential development as a result of its strategic positions and complete lack of ecological value.
d. The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. The majority of the referral area was observed to be highly modified cleared paddocks, where previous and on-going land uses have resulted in very few remaining trees. As a result, natural ecosystems are largely absent with the exception of a small area of scattered native trees in the north-west of the site. Development is proposed over the entire referral area which is considered appropriate given the complete lack of vegetation value. Only highly modified rural areas are proposed to be impacted as part of this development
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.



8.2. Environmental Record

Item 10 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.”***

AW Bidco 6 Pty Ltd as a subsidiary of Stockland has an excellent record of environmental management and sustainability at State, national and international levels. AW Bidco 6 Pty Ltd does not have any past or present proceedings under Commonwealth, State or territory law for the protection of the environment or the conservation and sustainable use of natural resources.

Stockland also has a long history of providing projects with a satisfactory record of responsible environmental management. Stockland Corporation Limited does not have any past or present proceedings under Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.



9. Conclusion

SHG act on behalf of AW Bidco 6 Pty Ltd in the coordination and production of the response to the EPBC Act Controlled Action Determination assessment on Preliminary Documentation for Residential Development (EPBC Ref: 2023/09690). This PD details the proposed action particulars with reference to the following controlling provisions:

- Listed threatened species and communities (sections 18 & 18A)

The entire referral area has been historically cleared and maintained for at least 50 years resulting in very few native trees remaining. No MNES were identified during the 91 person hours of field work undertaken across the referral area. Vegetated portions of the referral area account for 5.4 ha which is considered to provide potential Koala habitat. As such, the referral area is considered to provide limited values to MNES. The referral area is optimally located for development, being zoned completely as 'urban living' with no environmental areas adjoining the site.

The entire 77.8 ha referral area is proposed to be impacted which is considered a suitable outcome given the lack of vegetation value within the referral area and strategic positioning of the referral area within Ripley Valley Priority Development Area.

A land-based offset is proposed to offset significant residual impacts for the Koala including direct impacts to dispersal habitat within the referral area.



10. Information Sources

Reference

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- Cork, S. and Braithwaite, L. (1996). Resource availability, eucalypt chemical defences, and habitat quality for leaf-eating marsupials, *Koalas: research for management*, World Koala Research, Brisbane, Queensland.
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- Department of Infrastructure, Local Government and Planning (DILGP) (2017). ShapingSEQ – South East Queensland Regional Plan 2017, The State of Queensland, Brisbane.
- Department of Transport and Main Roads (DTMR) (2024) '*Fauna Sensitive Transport Infrastructure Delivery manual*'
- Dique, D.S., Thompson, J., Preece, H.J., Penfold, G.C., de Villiers, D.L. and Leslie, R.S. (2003) 'Koala mortality on roads in south-east Queensland: the koala speed-zone trial', *Wildlife Research*, 30(4), pp. 419–426
- Dique, DS, Preece, HJ, Thompson, J and de Villiers DL (2004). Determining the distribution and abundance of a regional Koala population in south-east Queensland for conservation management. *Wildlife Research* 31: 109–117.



Reference

Ellis W, Bercovitch F, FitzGibbon S, Melzer A, De Villiers D & Dique D (2010). Koala birth seasonality and sex ratios across multiple sites in Queensland, Australia. *Journal of Mammalogy* 91,177-182.

Jiang, A., Tribe, A., Phillips, C.J.C. and Murray P.J., (2021). Do Livestock Injure and Kill Koalas? Insights from Wildlife Hospital and Rescue Group Admissions and an Online Survey of Livestock-Koala Conflicts. *Animals* 2021, 11, 2684.

Lunney, D., Phillips, S., Callaghan, J. and Coburn, D. (1998). A new approach to determining the distribution of Koalas and conserving their habitat: a case study from Port Stephens Shire on the central coast of New South Wales. *Pacific Conservation Biology* 4: 186-96.

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10.1. Uncertainties and Reliabilities

Reliability	Uncertainties
Commonwealth or State legislation, policies, plans and/or guidelines for EPBC Act assessment and/or State and Local assessment	Nil
Government database based on peer reviewed research.	Nil
Public Database	Record validity
Reports, studies, documents and methodologies published or used by Commonwealth and State government to inform on matters of national and state environmental significance and/or widely used by environmental professionals, such as journal articles.	Nil
Reports and studies developed to inform compliance with Commonwealth, Queensland and local government approval processes. These studies have been undertaken by professional consultants who are qualified ecologists with practical experience in surveying and monitoring the local environment. Methods followed during field surveys were in accordance with relevant guidelines published by State and Commonwealth departments. References that have been cited in preparation of this referral and supporting documentation (include databases and documents) have been produced and maintained by State and Commonwealth departments, and as such are considered highly reliable.	Field surveys are based on conditions encountered and information reviewed at the date of preparation of the report. The opinions, conclusions and recommendations in the field survey reports are based on information obtained from specific sample points. Site conditions elsewhere may differ from conditions at the specific sample points. Investigations undertaken in respect of these reports are constrained by the site conditions, such as access restrictions and vegetation. Thus, not all relevant site features and conditions may have been identified. Site conditions may change after the date of preparation of these reports.



11. Attachments

Attachment A1

Controlled action decision EPBC 2023/09690

Attachment A2

PD information request

Attachment A3

Updated PMST Report

Attachment A4

Impact Area Raw MHQA Data

Impact Area Raw SAT Data

Attachment A5

Little Kipper Offset Management Plan



Attachment A1

Controlled action decision EPBC
2023/09690





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

**AW Bidco 6 Pty Ltd – Urban Development Project, 944-1024 Ripley Road, South Ripley,
QLD (EPBC 2023-09690)**

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	AW Bidco 6 Pty Ltd ACN: 637312675
proposed Action	To develop a residential community, including housing, and associated infrastructure and internal roads, in South Ripley, Queensland (see EPBC Act referral 2023/09690).

Referral decision: controlled action

status of proposed Action	The proposed action is a controlled action. The proposed action 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 proposed action 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	21 June 2024

Attachment A2

PD information request





Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC 2023/09690

Mr David Franklin
Project Director
AW BIDCO 6 Pty Ltd
PO Box 10160
Adelaide street, Brisbane, Qld 4000

Further information required for preliminary documentation for 2023-09690 AW Bidco 6 Pty Ltd – Urban Development Project (proposed Action), 944-1024 Ripley Road, South Ripley, Queensland

Dear Mr Franklin,

I am writing to you about your proposal to develop a residential community, including housing, and associated infrastructure and internal roads, in South Ripley, Queensland.

On 21st June 2024, a delegate of the Minister for the Environment and Water decided that the proposed action is a controlled action and that it will be assessed by preliminary documentation. Further information was required to assess the relevant impacts of the proposed action.

I now request, under s95A(2) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), further information as outlined in the attached.

Details on the assessment process for the project and the responsibilities of the proponent are set out in the [EPBC Act – Environment Assessment process](#) fact sheet. Further information on the [referral and assessment process](#) can be found on the department's website.

If you have any questions about the assessment process or the further information required, please contact the project manager Memento Hudson, by email to memento.hudson@dcceew.gov.au and quote the EPBC reference number shown at the beginning of this letter.

Yours sincerely

A handwritten signature in black ink, appearing to read 'H. Bartrim'.

Hamish Bartrim
Director (Acting)
Queensland South Assessments Section

10 July 2024

ATTACHMENT A

REQUEST FOR ADDITIONAL INFORMATION REQUIRED FOR

ASSESSMENT BY PRELIMINARY DOCUMENTATION

AW Bidco 6 Pty Ltd - Urban Development Project (EPBC 2023/09690)

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 (PD) for the proposal must include:

- specified information included in the original referral.
- additional information you provide in response to this request.
- any other information specified in this request or provided during the referral or assessment process (including information associated with any request for information issued 6 February 2024 and 10 June 2024).

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 PD must address the matters set out below.

1. General content, format, and style

The PD 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. Where relevant information was provided in the referral, please incorporate, or cross-reference to this information as necessary in the preliminary documentation.
1.2	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. Contain sufficient information to enable interested stakeholders to understand the environmental consequences of the proposed development on matters of national environmental significance (MNES).

1.3	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/ies 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. <i>* 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.</i>
1.4	a) Be able to read as a stand-alone document and must include summaries of all relevant information that is 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/attachments. b) Include raw data sheets from all ecological assessments completed for the proposed action as appendices. This includes flora and fauna species lists and associated images taken from sampling sites. c) Ensure BioCondition/transect/quaternary and/or secondary habitat assessment data includes corresponding photos of assessment areas.

2. Description of the Action

The PD must include:	
2.1	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. i) All infrastructure to be constructed and construction methods. ii) All temporary and permanent fencing used, including a description of fencing types (including diagrams) and proposed locations (shown on maps). iii) Other related actions, including but not limited to, material storage, laydown areas and waste disposal, fine particle, dust control management and erosion and sediment control management. iv) Actions related to waste/spills/contaminants/pollutants management including standards and minimum thresholds required for removal/disposal. c) Include detailed mapping that is supported by descriptions consistent with the outcomes of the desktop and field assessments, and are consistently described in the attachments. Maps and descriptions that clearly identify 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. Ensure that total areas of all project components are consistent with map figures and described throughout the report to the nearest decimal point. 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. e) A demonstration of the process of avoidance and mitigation measures applicable to impacts to MNES and associated habitats. This includes an explanation of the proposed project site selection process during a site feasibility study, including the assessment of available cleared land/already modified land. Please provide figures and/or a summary where applicable. <i>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.</i>
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.

2.3	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.
2.4	a) Relationship to other referrals or future projects that may be facilitated by the proposed action and that may indirectly cause increased pressure on MNES (include maps and spatial files). b) Provide a discussion on the relationship of the proposed action with any future related actions and the likely location and scale of the future actions, along with any potential impacts on matters protected under the EPBC Act.

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

Description of the environment The PD must provide a description of the environment affected by and surrounding the proposed project site, 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 project site.
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. <i>Please ensure that a recent Protected Matters Search Tool report is generated and used during the assessment before finalising the draft PD to identify any additional species (listed at the time of the controlled project site) that may be affected by the proposal.</i>
3.3	For listed threatened species identified in section 4 of this RFI, 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 the proposed project 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 proposed project site, or within an area of impacts outside the proposed project site.

	Include a likelihood of occurrence assessment for all other listed threatened species and ecological communities that are identified in a recent PMST report, and provide further assessment as directed above for other species are likely to occur within and adjacent to the project area. <i>Likelihood or occurrence and habitat assessments must be informed by <u>up-to-date desktop and field surveys</u> and informed by relevant statutory documents (e.g., approved Conservation Advice, Recovery Plans, draft referral guidelines and Listing Advice, and SPRAT Database) and/or species experts.</i>
3.4	For the listed threatened species listed in section 4 of this RFI, provide up to date baseline and survey data at the impact site(s), and if relevant, the proposed offset site(s) site, including: - Information on the survey methodology or technique used (e.g., thermal detection, camera trapping, tree hollow search, SAT surveys etc) - 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) - Map/s of survey points or transects and how the survey points or transects were selected. - 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. - Results of all surveys undertaken. - Include raw data sheets from all ecological assessments completed for the proposed action as appendices. This includes flora and fauna species lists (refer Section 1.4 of this RFI). - Ensure BioCondition/transect/quaternary and/or secondary habitat assessment data includes corresponding photos of assessment areas. Survey requirements <u>Survey timing</u> 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. <u>Survey methodologies</u> For information on survey methodologies approved by the Australian Government, please refer to https://www.dcceew.gov.au/environment/epbc/advice/surveys-and-data

	<u>Precautionary principle</u> 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.
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 project site for each species or ecological community potentially present or impacted by the action. The PD descriptions of the habitat on the proposed project site should be consistent across all sections of the document and attachments. Discussions and conclusions in the document should accurately reflect the results of the site-specific assessments and be consistent across all descriptions in all attachments. <i>Note: Habitat assessments must be informed by desktop and field surveys in accordance with relevant statutory documents (e.g., approved Conservation Advices, Recovery Plans, draft referral guidelines and Listing Advices, and SPRAT Database), including contemporary advice, published research and other relevant sources.</i> 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.

4. Impact assessment

Based on the information provided in the referral, additional information provided in support of the referral, RFI response received 4th June 2024, information provided in the SPRAT database, and online observation records, the department considers the following matters protected by the EPBC Act: Listed threatened species and communities (section 18 and section 18A).

Based on the information available in the referral and RFI response received 4th June 2024, 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 QLD, NSW, and the ACT)) – endangered.
 - The proposed action involves the clearing of at least 2 ha of critical habitat (as described in the referral and supporting documents) and dispersal habitat and therefore the proposed action is likely to directly impact the Koala through the clearing of breeding, foraging, and dispersal habitat.
 - The proposed action is likely to result in the functional loss of critical habitat and/or increase fragmentation of Koala habitat by disrupting dispersal.

- Direct and indirect impacts, and facilitated impacts, such as but not limited to habitat clearance, reduction/loss of connectivity, noise, dust, vibration, and light.

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 PD.

The PD 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 Koala); and c) total areas proposed to be retained/avoided (including the total extent of Koala habitat present, to be avoided).
4.2	To inform point 4.1 above, 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). <i>*Note: 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.</i> <i>**Note: Facilitated impacts may include (but are not limited to) the risk of injury or mortality to MNES as a result of the vehicle strike as a result of facilitated development such as the transmission line to connect to the electricity grid.</i>
4.3	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.
4.4	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.
4.5	Koala (<i>Phascolarctos cinereus</i>) (combined populations of Queensland, New South Wales, and the Australian Capital Territory) – Endangered Based on information in the referral and subsequent RFI response submitted to the department on 4 June 2024, 2 ha of critical Koala habitat has been mapped at the site. The department considers that the boundary of the mapped critical habitat does not accurately reflect the information provided in the documentation. For the Koala, please: a) Undertake a revised habitat suitability assessment, considering breeding, foraging and dispersal habitat in the disturbance footprint and broader proposed project site. i) This information may involve a re-examination of the mapped critical habitat. Provide written details and maps on Lot 241 on SL10253 to re-consider the extent of critical habitat for Koala based on information contained in the statutory documentation. b) Complete a revised habitat suitability assessment of the proposed impact site, considering specific habitat requirements of the species in accordance with relevant listing advice, conservation advice, recovery plans, Significant Impact Guidelines 1.1 and publicly available information.

	c) Provide mapping or revised mapping showing the extent of suitable habitat for Koala in relation to the impact footprint. d) 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 and contemporary advice). e) Total area proposed to be retained/avoided (including the total extent in hectares of habitat present to be avoided). f) Provide a habitat connectivity analysis for Koala, detailing: i) The existing conditions within and the landscape context of the proposed action site, prior to any works being undertaken. ii) The proposed habitat connectivity during defined stages of the proposed action, such as pre-construction, habitat and land clearance, construction, operation and rehabilitation. iii) A figure, with aerial imagery and line work, showing habitat connectivity for each matter for the proposed project site and surrounding landscape. g) Clearly describe the direct and indirect impact areas: include a clear description of the total extent (in ha) and quality of habitat to be impacted. h) Provide results of all surveys, including recent updated surveys that have been completed in accordance with relevant statutory documents (e.g., approved Conservation Advices, Recovery Plans, draft referral guidelines and Listing Advices, and SPRAT Database), including published research and other relevant sources.

5. Avoidance, mitigation, and management measures

The information available in the referral indicates that there is an 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 PD must provide information on proposed avoidance, safeguards and mitigation measures to deal with the relevant impacts of the proposed action on MNES.

5.1	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.
5.2	Provide written details and maps concerning all proposed avoidance measures in Lot 241 on SL10253 to reduce the likely impacts to Koala habitat within the proposed project site. a) This information may involve a re-examination of proposed project site design and/or a redesign process applicable to minimising likely impacts to the Koala based on the statutory documentation and Koala habitat within the proposed project site. b) The department notes that information has been sought regarding potential project redesign from the project urban designer, town planner and engineering and infrastructure consultants. In the PD all potential avoidance measures considered must be explicitly explained. The email response received on 13 June 2024 indicates that this exercise is being undertaken. Please ensure adequate details including figures and plans from the investigations to support the conclusions regarding avoidance of impacts are contained in the PD.
5.3	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 project site, 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) 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.
5.4	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.
5.5	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; and f) proposed monitoring and evaluation program.
5.6	a) 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.

	<i>For example, the National Recovery Plan for the Grey-Headed Flying Fox states an objective to:</i> <i>'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.'</i> b) 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.
5.7	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)

6. Proposed offsets

6.1 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.

6.2 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.

6.3 If an offset is required, prior to publication, the PD must include an:

- a) **Offset Proposal** – The Offset Proposal must provide detail about the proposed offset site or sites including baseline survey information, 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.
- b) **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, ecological community, or place (protected matter) that is being offset. If there is more than one offset site, then a separate OMP must be prepared for each site.

6.4 For further details regarding offset requirements and the requirements of an Offset Proposal and OMP, see [Attachment B](#).

7. Habitat quality assessment

7.1 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.

7.2 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).

7.3 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).

7.4 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.

7.5 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](#).

7.6 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:

- a) 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.
- b) 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.

7.7 If you intend to propose an alternative methodology for assessing and scoring habitat quality for any or all of the prescribed matters likely to experience significant residual impacts as a result of the proposed action, the alternative methodology must:

- a) 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 documents, and
- b) be substantiated with appropriate field surveys in accordance with the relevant survey guidelines or using a scientifically robust and repeatable methodology.

7.8 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.

8. Economic and social matters

If not previously provided in the referral documentation, the PD must:	
8.1	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.
8.2	Identify if economic benefits and employment opportunities are in addition to what would have been expected if the action were not to take place.
8.3	Provide details of any public stakeholder consultation activities, including the outcomes of those consultations.
8.4	Provide details of any consultation with Indigenous stakeholders. Indigenous engagement 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 proposed 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.

9. Ecologically sustainable development

If not previously provided in the referral, the PD must:	
9.1	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.

10. 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:	
10.1	the person proposing to take the action;
10.2	for an action for which a person has applied for a permit, the person making the application;
10.3	if the person is a body corporate—the history of its executive officers in relation to environmental matters; and
10.4	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.

11. Ecological data provision

11.1 The PD 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).

11.2 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](#). Sensitive ecological data must be identified and treated in accordance with the [Policy on accessing and sharing biodiversity data \(Feb 2024\)](#), and subsequent revision.

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 (%). j) Details and execution timing of the mechanism to legally secure the environmental offset/s (under Queensland legislation or equivalent) to provide enduring protection for the potential offset area/s against development incompatible with conservation.
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 protective mechanism proposed to be applied at any offset site/s to provide enduring protection to the site for at least the duration of the impact, including a draft of the protective mechanism and its terms.

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	Mechanisms for protection, for at least the full duration of the impact, under a conservation covenant or otherwise accepted method, noting that protection mechanisms for permanent impacts should continue in perpetuity.
2.7	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; and <i>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.'</i> 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. <i>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.'</i>
2.8	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; and 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. Management activities must be targeted towards the needs of the protected matter that is offset, and must align with the recovery objectives for the species as identified in relevant National Recovery Plans or Conservation Advices.
2.9	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.
2.10	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.
2.11	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; and

	g) monitoring the effectiveness of corrective actions and implementing appropriate responses in the event corrective actions are not effective.
2.12	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.
2.13	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: e) an assessment of effectiveness and constraints to use; f) capacity to detect change in environmental condition due to management interventions; g) capacity to demonstrate attainment of performance targets and/or completion criteria; and h) the statistical power of the strategy/method. i) commits to engage appropriately qualified experts to design and conduct monitoring and survey activities, and analyse monitoring results; j) accounts for seasonal/climatic variability; and k) details the location, nature and number of monitoring sites, including benchmark/reference sites to evaluate management performance.

2.14	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; and d) including a schedule and triggers for reporting types (e.g. annual compliance, incident, non-compliance, contingency).

Attachment A3

Updated PMST Report





Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 18-Dec-2024

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	7
Listed Threatened Species:	52
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	42
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Moreton bay	30 - 40km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities	[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In feature area
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	Community likely to occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area	In feature area
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area
Swamp Tea-tree (Melaleuca irbyana) Forest of South-east Queensland	Critically Endangered	Community likely to occur within area	In buffer area only
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species	[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythrorhynchus radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
INSECT			
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area	In buffer area only
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Coleus habrophyllus listed as Plectranthus habrophyllus [91378]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area	In feature area
Cupaniopsis tomentella Boonah Tuckeroo [3322]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fontainea venosa [24040]	Vulnerable	Species or species habitat may occur within area	In feature area
Leuzea australis listed as Rhaponticum australe Austral Cornflower, Native Thistle [9363]	Vulnerable	Species or species habitat may occur within area	In feature area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Notelaea lloydii Lloyd's Olive [15002]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Notelaea x ipsviciensis listed as Notelaea ipsviciensis Cooneana Olive [93460]	Critically Endangered	Species or species habitat may occur within area	In feature area
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Planchonella eerwah Shiny-leaved Condoo, Black Plum, Wild Apple [17340]	Endangered	Species or species habitat likely to occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area	In feature area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area

REPTILE			
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands		[Resource Information]
The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.		
Commonwealth Land Name	State	Buffer Status
Defence		

Commonwealth Land Name	State	Buffer Status
Defence - AMBERLEY - AP90 SMALL ARMS RANGE (PURGA) [31817]	QLD	In buffer area only

Listed Marine Species

[Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Symposiachrus trivirgatus as Monarcha trivirgatus			
Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Mount Perry	Conservation Park	QLD	In buffer area only
Stewartdale	Nature Refuge	QLD	In buffer area only
White Rock	Conservation Park	QLD	In buffer area only

EPBC Act Referrals					[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
AW Bidco 6 Pty Ltd - Urban Development Project	2023/09690		Referral Decision	In feature area	
Barrams Road Residential Development	2021/9005		Post-Approval	In buffer area only	
Bryants Road Residential Development	2023/09484		Assessment	In buffer area only	
Ripley Residential Development Project	2024/09865		Assessment	In buffer area only	
Ripley Valley PDA Providence East and South	2018/8347		Post-Approval	In buffer area only	
Ripley View Residential Subdivision	2020/8615		Post-Approval	In buffer area only	
South Ripley Residential Development	2023/09656		Assessment	In feature area	
Watsons Road, South Ripley - Residential Development	2024/09861		Assessment	In feature area	

Controlled action				
AV JENNINGS PTY LTD - Coleman Road, South Ripley - Residential	2021/9061	Controlled Action	Assessment Approach	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
<u>Development</u>				
<u>Casino Ipswich Pipeline</u>	2007/3877	Controlled Action	Completed	In feature area
<u>CROCODILE 03 Military Training Exercise</u>	2002/888	Controlled Action	Post-Approval	In buffer area only
<u>Cumner Road mixed use subdivision, Whiterock,Ripley Valley,Qld</u>	2014/7388	Controlled Action	Post-Approval	In buffer area only
<u>ECCO Ripley Residential Development, Ipswich, QLD</u>	2015/7513	Controlled Action	Post-Approval	In buffer area only
<u>Grampian Drive Deebing Heights Residential Development, Qld</u>	2015/7628	Controlled Action	Post-Approval	In buffer area only
<u>Hayfield School Site</u>	2021/9070	Controlled Action	Assessment Approach	In buffer area only
<u>Paradise Waters Residential Estate, Gampian Drive, Deebing Heights</u>	2013/6864	Controlled Action	Post-Approval	In buffer area only
<u>Providence West Residential Development</u>	2020/8698	Controlled Action	Further Information Request	In feature area
<u>Residential Development, Ripley</u>	2020/8791	Controlled Action	Assessment Approach	In buffer area only
<u>Ripley Road Residential Development</u>	2019/8539	Controlled Action	Post-Approval	In buffer area only
<u>Ripley Road residential development, Ripley Valley, Qld</u>	2017/8095	Controlled Action	Post-Approval	In buffer area only
<u>Southern Regional Water Pipeline</u>	2006/2593	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
<u>Blackstone Power Station</u>	2012/6252	Not Controlled Action	Completed	In buffer area only
<u>Daleys Road Residential Development</u>	2010/5638	Not Controlled Action	Completed	In buffer area only
<u>Fernbrooke Ridge residential estate development - Balance Land, Redbank Plains, Qld</u>	2013/6818	Not Controlled Action	Completed	In buffer area only
<u>Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</u>	2015/7522	Not Controlled Action	Completed	In feature area
<u>Inland Rail Gowrie to Kagaru Geotechnical Project, QLD</u>	2018/8263	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Master planned residential community, Ripley Valley, QLD	2014/7325	Not Controlled Action	Completed	In buffer area only
Northern Link Parallel Road Tunnels Project	2007/3824	Not Controlled Action	Completed	In buffer area only
REMONDIS Waste to Energy Facility	2020/8806	Not Controlled Action	Completed	In buffer area only
Removal of Grey-headed Flying-fox Habitat	2005/2137	Not Controlled Action	Completed	In buffer area only
Residential/Commercial development Binnies Road, Ripley, Qld	2016/7669	Not Controlled Action	Completed	In buffer area only
Residential Subdivision on Montereau Road, Ripley	2012/6644	Not Controlled Action	Completed	In buffer area only
Ripley Town Centre,Ipswich, QLD	2015/7471	Not Controlled Action	Completed	In buffer area only
South West Transport Corridor	2006/2547	Not Controlled Action	Completed	In feature area
Swanbank Gas Fired Combined Cycle Plant	2008/4087	Not Controlled Action	Completed	In buffer area only
Swanbank Waste Management Facility Stage 1B extension Area, Qld	2015/7581	Not Controlled Action	Completed	In buffer area only
To develop the Paradise Heights residential subdivision, QLD	2014/7310	Not Controlled Action	Completed	In buffer area only
Underground Bus and Train Project, Brisbane	2013/7106	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
168 Lot Residential and Commercial Development at Deebing Heights	2009/4818	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Construction & Operation 275/330kV Transmission Line	2006/2820	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Cross River Rail	2010/5427	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Paper Mill	2003/915	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				

Bioregional Assessments			[<u>Resource Information</u>]
SubRegion	BioRegion	Website	Buffer Status
Clarence-Moreton	Clarence-Moreton	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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Attachment A4

Impact Area Raw MHQA Data

Impact Area Raw SAT Data



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T1	Job Number / Property	11081 - Edwards

Part B - Site Data

Recorders	LB and JG	Date	30.08.2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
AU1 - Koala habitat		12.9-10.7	

Site description and Location (including details of discrete polygons within the assessment unit)

Highly modified cattle property, Corymbia citrodora dom with sparse shrub layer and mixture of pasture grasses

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	3	EDL / Dom / R		
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark	
Scientific Name	<i>Corymbia citrodora</i>	Common Name	Spotted Gum	Dom/ R
Scientific Name	<i>Corymbia tessellaris</i>	Common Name	Moreton Bay Ash	

Shrub species richness:				
Total number of species	2			
Scientific Name	<i>Corymbia citrodora</i>	Common Name	Spotted Gum	
Scientific Name	<i>Acacia concurrens</i>	Common Name	Black Wattle	

Grass species richness:				
Total number of species	3			
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo grass	
Scientific Name	<i>Cynodon dactylon</i>	Common Name	Green Couch	
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Spear Grass	

Forbs and others (non grass ground) species richness:				
Total number of species	1			
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons	

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	10.00%			
Scientific Name	<i>Senecio madagascariensis</i>	Common Name	Fireweed	
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana	
Scientific Name	<i>Conyza sumatrensis</i>	Common Name	Tall Fleabane	
Scientific Name	<i>Ageratum houstonianum</i>	Common Name	Blue Billy Goat	
Scientific Name	<i>Lantana montevidensis</i>	Common Name	Creeping Lantana	
Scientific Name	<i>Glandularia aristigera</i>	Common Name	Mayne's Curse	

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Coarse Woody Debris (Meters per hectare)			
1	0.00	19	
2		20	
3		21	
4		22	
5		23	
6		24	
7		25	
8		26	
9		27	
10		28	
11		29	
12		30	
13		31	
14		32	
15		33	
16		34	
17		35	
18		36	

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	60%	90%	70%	80%	90%	78%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	5%	0%	1%
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	0%	0%	0%	0%	0%	
Non native forbs and shrubs	22%	0%	0%	15%	5%	8%
Litter	18%	10%	30%	0%	5%	13%
Rock	0%	0%	0%	0%	0%	
Bare Ground	0%	0%	0%	0%	0%	
Cryptogam	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:	0
Non- Eucalypt Large tree DBH benchmark used:	0	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:	13	Sub-canopy:	7	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	100

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	47.4%	Sub-canopy:	10.90%	Emergent:	
Shrub canopy cover %	0.80%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	28.1	28.1	T2	8.1	19.0	10.9
T1	57.7	65.9	8.2	T2			0.0
T1	79.2	82.1	2.9	T2			0.0
T1	91.8	100.0	8.2	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	92.2	93.0	0.8	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 J: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	<i>C.citrodora</i>	Spotted Gum	200	N
2	<i>C.citrodora</i>	Spotted Gum	210	N
3	<i>C.citrodora</i>	Spotted Gum	190	N
4	<i>C.citrodora</i>	Spotted Gum	230	N
5	<i>C.citrodora</i>	Spotted Gum	180	N
6	<i>C.citrodora</i>	Spotted Gum	170	N
7	<i>C.citrodora</i>	Spotted Gum	160	N
8	<i>C.citrodora</i>	Spotted Gum	200	N
9	<i>C.citrodora</i>	Spotted Gum	210	N
10	<i>C.citrodora</i>	Spotted Gum	150	N
11	<i>C.citrodora</i>	Spotted Gum	200	N
12	<i>C.citrodora</i>	Spotted Gum	150	N
13	<i>C.citrodora</i>	Spotted Gum	280	N
14	<i>C.citrodora</i>	Spotted Gum	300	N
15	<i>C.citrodora</i>	Spotted Gum	220	N
16	<i>C.tessellaris</i>	Moreton Bay Ash	160	N
17	<i>C.citrodora</i>	Spotted Gum	220	N
18	<i>C.citrodora</i>	Spotted Gum	170	N
19	<i>C.citrodora</i>	Spotted Gum	180	N
20	<i>C.citrodora</i>	Spotted Gum	210	N
21	<i>C.citrodora</i>	Spotted Gum	320	N
22	<i>C.citrodora</i>	Spotted Gum	200	N
23	<i>C.citrodora</i>	Spotted Gum	200	N
24	<i>C.citrodora</i>	Spotted Gum	210	N
25	<i>C.citrodora</i>	Spotted Gum	190	N
26	<i>C.citrodora</i>	Spotted Gum	230	N
27	<i>C.citrodora</i>	Spotted Gum	140	N
28	<i>C.citrodora</i>	Spotted Gum	120	N
29	<i>C.citrodora</i>	Spotted Gum	130	N
30	<i>E.crebra</i>	Narrow-leaved Ironbark	150	N
Total				0

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T2	Job Number / Property	11081 - Edwards

Part B - Site Data

Recorders	LB and JG	Date	30.08.2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
AU2		12.9-10.7	

Site description and Location (including details of discrete polygons within the assessment unit)
Highly modified cattle property, fewer trees, scattered C.citrodora

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	3			EDL / Dom / R
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark	
Scientific Name	<i>Corymbia citriodora</i>	Common Name	Spotted Gum	Dom/ R
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	

Shrub species richness:			
Total number of species	1		
Scientific Name	<i>Corymbia citriodora</i>	Common Name	Spotted Gum

Grass species richness:			
Total number of species	3		
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo Grass
Scientific Name	<i>Cynodon dactylon</i>	Common Name	Green Couch
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Spear Grass

Forbs and others (non grass ground) species richness:			
Total number of species	4		
Scientific Name	<i>Hypericum gramineum</i>	Common Name	St John's Wort
Scientific Name	<i>Lomandra longifolia</i>	Common Name	Many Flowered Matrush
Scientific Name	<i>Lobelia purpurascens</i>	Common Name	White Root
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	10.00%		
Scientific Name	<i>Chamaenerion angustifolium</i>	Common Name	Fireweed
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Conyza sumatrensis</i>	Common Name	Tall Fleabane
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purple-top Verbena
Scientific Name	<i>Lantana montevidensis</i>	Common Name	Creeping Lantana
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Giant Rat's Tail Grass

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Coarse Woody Debris (Meters per hectare)	13.00		
1	1.30	11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	

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	93%	90%	98%	15%	90%	77%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	2%	0%	0%	2%	1%
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	0%	0%	0%	0%	0%	
Non native forbs and shrubs	3%	3%	2%	5%	5%	4%
Litter	4%	5%	0%	10%	3%	4%
Rock	0%	0%	0%	70%	0%	14%
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 :	390	Number of large eucalypt trees:	C.citro 650
Non- Eucalypt Large tree DBH benchmark used:	0	Number of large non eucalypt trees:	0
Total number of large trees recorded:	1		
Total Number Large Trees per ha:	2		

Median Tree Canopy Height Measurements	Canopy:	13	Sub-canopy:	6	Emergent:	NA

Percentage of ecologically dominant layer species regenerating:	100					

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	10.4%	Sub-canopy:	3.00%	Emergent:	

Shrub canopy cover %	0.40%						

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	3.0	7.0	4.0	T2	97.0	100.0	3.0
T1	55.2	61.6	6.4	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	8.8	9.2	0.4	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 J: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	Not enough trees			
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				0

Attach Landscape Photos Here

North



South





East



West



Spot Assessment Technique (SAT) Survey				
Date: 02.08.2022		SAT ID: 1		
Tree No.	Scientific Name	Common Name	DBH	Scat present?
1	<i>Corymbia citriodora</i>	Spotted Gum	260	N
2	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	190	N
3	<i>Corymbia citriodora</i>	Spotted Gum	250	N
4	<i>Corymbia citriodora</i>	Spotted Gum	290	N
5	<i>Corymbia citriodora</i>	Spotted Gum	210	N
6	<i>Corymbia citriodora</i>	Spotted Gum	230	N
7	<i>Corymbia citriodora</i>	Spotted Gum	200	N
8	<i>Corymbia citriodora</i>	Spotted Gum	200	N
9	<i>Corymbia citriodora</i>	Spotted Gum	180	N
10	<i>Corymbia citriodora</i>	Spotted Gum	210	N
11	<i>Corymbia citriodora</i>	Spotted Gum	220	N
12	<i>Corymbia citriodora</i>	Spotted Gum	210	N
13	<i>Corymbia tessellaris</i>	Moreton Bay Ash	200	N
14	<i>Corymbia citriodora</i>	Spotted Gum	300	N
15	<i>Corymbia citriodora</i>	Spotted Gum	200	N
16	<i>Corymbia citriodora</i>	Spotted Gum	340	N
17	<i>Corymbia citriodora</i>	Spotted Gum	270	N
18	<i>Corymbia citriodora</i>	Spotted Gum	260	N
19	<i>Corymbia citriodora</i>	Spotted Gum	310	N
20	<i>Corymbia citriodora</i>	Spotted Gum	200	N
21	<i>Corymbia citriodora</i>	Spotted Gum	210	N
22	<i>Corymbia citriodora</i>	Spotted Gum	170	N
23	<i>Corymbia tessellaris</i>	Moreton Bay Ash	300	N
24	<i>Corymbia citriodora</i>	Spotted Gum	280	N
25	<i>Corymbia citriodora</i>	Spotted Gum	170	N
26	<i>Corymbia citriodora</i>	Spotted Gum	210	N
27	<i>Corymbia citriodora</i>	Spotted Gum	240	N
28	<i>Corymbia citriodora</i>	Spotted Gum	190	N
29	<i>Corymbia citriodora</i>	Spotted Gum	310	N
30	<i>Corymbia citriodora</i>	Spotted Gum	260	N
Total scats (/30)				0
Percentage				0
East Coast (med-high) Activity Category				Low



Spot Assessment Technique (SAT) Survey				
Date: 02.08.2022		SAT ID: 2		
Tree No.	Scientific Name	Common Name	DBH	Scat present?
1	<i>Eucalyptus moluccana</i>	Gum-topped Box	460	N
2	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
3	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
4	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
5	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	100	N
6	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
7	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	140	N
8	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	160	N
9	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	200	N
10	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
11	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
12	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
13	<i>Petalostigma pubescens</i>	Quinine Bush	350	N
14	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	220	N
15	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	200	N
16	<i>Corymbia citriodora</i>	Spotted Gum	250	N
17	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	310	N
18	<i>Eucalyptus moluccana</i>	Gum-topped Box	520	N
19	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	240	N
20	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	230	N
21	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	140	N
22	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
23	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	270	N
24	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
25	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	190	N
26	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	280	N
27	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	150	N
28	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	170	N
29	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
30	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	170	N
Total scats (/30)				0
Percentage				0
East Coast (med-high) Activity Category				Low



Spot Assessment Technique (SAT) Survey				
Date: 30.08.2024		SAT ID: 1		
Tree No.	Scientific Name	Common Name	DBH	Scat present?
1	<i>Corymbia citrodora</i>	Spotted Gum	200	N
2	<i>Corymbia citrodora</i>	Spotted Gum	210	N
3	<i>Corymbia citrodora</i>	Spotted Gum	190	N
4	<i>Corymbia citrodora</i>	Spotted Gum	230	N
5	<i>Corymbia citrodora</i>	Spotted Gum	180	N
6	<i>Corymbia citrodora</i>	Spotted Gum	170	N
7	<i>Corymbia citrodora</i>	Spotted Gum	160	N
8	<i>Corymbia citrodora</i>	Spotted Gum	200	N
9	<i>Corymbia citrodora</i>	Spotted Gum	210	N
10	<i>Corymbia citrodora</i>	Spotted Gum	150	N
11	<i>Corymbia citrodora</i>	Spotted Gum	200	N
12	<i>Corymbia citrodora</i>	Spotted Gum	150	N
13	<i>Corymbia citrodora</i>	Spotted Gum	280	N
14	<i>Corymbia citrodora</i>	Spotted Gum	300	N
15	<i>Corymbia citrodora</i>	Spotted Gum	220	N
16	<i>Corymbia tessellaris</i>	Moreton Bay Ash	160	N
17	<i>Corymbia citrodora</i>	Spotted Gum	220	N
18	<i>Corymbia citrodora</i>	Spotted Gum	170	N
19	<i>Corymbia citrodora</i>	Spotted Gum	180	N
20	<i>Corymbia citrodora</i>	Spotted Gum	210	N
21	<i>Corymbia citrodora</i>	Spotted Gum	320	N
22	<i>Corymbia citrodora</i>	Spotted Gum	200	N
23	<i>Corymbia citrodora</i>	Spotted Gum	200	N
24	<i>Corymbia citrodora</i>	Spotted Gum	210	N
25	<i>Corymbia citrodora</i>	Spotted Gum	190	N
26	<i>Corymbia citrodora</i>	Spotted Gum	230	N
27	<i>Corymbia citrodora</i>	Spotted Gum	140	N
28	<i>Corymbia citrodora</i>	Spotted Gum	120	N
29	<i>Corymbia citrodora</i>	Spotted Gum	130	N
30	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	150	N
Total scats (/30)				0
Percentage				0
East Coast (med-high) Activity Category				Low



Spot Assessment Technique (SAT) Survey				
Date: 30.08.2024		SAT ID: 2		
Tree No.	Scientific Name	Common Name	DBH	Scat present?
1	<i>Eucalyptus moluccana</i>	Gum-topped Box	420	N
2	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
3	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
4	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
5	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	100	N
6	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
7	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	140	N
8	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	160	N
9	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	200	N
10	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
11	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
12	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
13	<i>Petalostigma pubescens</i>	Quinine Bush	350	N
14	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	220	N
15	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	200	N
16	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	310	N
17	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	240	N
18	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	230	N
19	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	140	N
20	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	210	N
21	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	270	N
22	<i>Corymbia citrodora</i>	Spotted Gum	250	N
23	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	280	N
24	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	150	N
25	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
26	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	170	N
27	<i>Eucalyptus moluccana</i>	Gum-topped Box	520	N
28	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	180	N
29	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	220	N
30	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	200	N
Total scats (/30)				0
Percentage				0
East Coast (med-high) Activity Category				Low



Attachment A5

Little Kipper Offset Management Plan





Offset Management Plan (EPBC 2023/09690)

Ripley Road, South Ripley, Queensland
(Little Kipper Creek Road Offset Area)

Prepared for KFF1 Pty Ltd ATF KFF1 Sub Trust as the offset
provider for AW Bidco 6 Pty Ltd

13 November 2025

**Saunders
Havill**

PATHWAYS TO SUCCESS

Document Information

Offset Management Plan (EPBC 2023/90690) prepared for KFF1 Pty Ltd ATF KFF1 Sub Trust as the offset provider for AW Bidco 6 Pty Ltd, dated 13 November 2025.

Issue

Issue	Date	Prepared By	Checked By
Draft	18.12.2024	TM	LB
Issue A	03.02.2025	TF	LB
Issue B	11.07.2025	TF	LB
Issue C	13.11.2025	LS	LB



Executive Summary

AW Bidco 6 Pty Ltd, the proponent, has engaged KFF1 Pty Ltd ATF KFF1 Sub Trust as offset provider to deliver a Koala habitat environmental offset as compensation for significant impacts to Matters of National Environmental Significance (MNES) as part of the master planned residential community development at Ripley Road, South Ripley, Queensland. An offset prepared in accordance with the Commonwealth Government's Department of Climate Change, Energy, the Environment and Water (DCCEEW) *EPBC Act 1999 – Environmental Offset Policy – October 2012* (EPBC Offset Policy) is a requirement of the Preliminary Documentation Request for EPBC Application 2023/90690.

The purpose of this OMP is to provide the objectives, key commitments including milestones and measurables (performance targets) and completion criteria to compensate for significant residual impacts on *Phascolarctos cinerus* (Koala).

Habitat quality of the impact area and offset area were quantified utilising the Modified Habitat Quality Assessment (MHQA) method for Koala in addition to preliminary motion-triggered camera monitoring and SAT surveys. Baseline habitat quality metrics and scores for the offset area were established which formed the basis for proposed increases to be achieved as part of the offset delivery. These are summarised in **Table ES1** below.

Table ES1: Offset area Koala habitat quality baseline and future scores – summary

AU	Area	Koala Habitat Quality Score	
		Baseline	Future
1	2.7	5	7
2	17.3	4	7

Six management actions are proposed to deliver the offset and proposed environmental outcomes over a 20-year period which includes proposed actions, completion criteria and monitoring actions. The management actions are:

1. Legally secure offset area
2. Non-Native Vertebrate Pest Management
3. Management of Weeds of National Significance
4. Develop and implement Bushfire Management Plan
5. Habitat Creation and Regeneration
6. Fencing and signage

Interim milestone targets have been created for proposed environmental outcomes for the Koala to provide an indication of the relative success of management measures. A monitoring and reporting schedule has been prepared to assist in achieving these outcomes. Additionally, an adaptive management framework and corrective action triggers are proposed whereby it is demonstrated that management measures are not effective in achieving results.

Overall, the proposed offset is considered suitable for the proposed residual impacts on MNES based on an offset suitability analysis, proposed management framework and scale of offset area. The proposed offset area achieves **125.39%** of the required offset for Koala.



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Acronyms

ACR	Annual Compliance Report
ATF	As Trustee For
AU	Assessment Unit
BMP	Bushfire Management Plan
DAWE	Department of Agriculture, Water and Environment (Commonwealth, former)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEHP	Department of Heritage and Protection (Qld, former)
EDL	Ecologically Dominant Layer
EOP	EPBC Act Environmental Offset Policy (2012)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
GPS	Global Positioning System
ha	hectare
KFF	Koala Farmland Fund
km	kilometres
LGA	Local Government Area
m	metre
MHQA	Modified Habitat Quality Assessment
mm	millimetres
MNES	Matters of National Environmental Significance
OAG	Offset Assessment Guide
OAAR	Offset Area Annual Report
OMP	Offset Management Plan
OMU	Operational Management Unit
QI	Quantum Impact
RAI	Relative Abundance Index
RE	Regional Ecosystem
RVPDA	Ripley Valley Priority Development Area
SAT	Spot Assessment Technique
SEQ	South East Queensland
SEQERF	Southeast Queensland Ecological Restoration Framework
SRC	Somerset Regional Council
SSR	Species Stocking Rate
VDEC	Voluntary Declaration
VMA	<i>Vegetation Management Act 1999</i>
WONS	Weeds of National Significance



Definitions

Impact area – The area where clearing will occur. This is located at Lot 241 on SL10253.

Milestone Report – A report prepared by a suitably qualified person before the end of Years 3, 5, 8, 10, 13, 15, 17, 19 and 20 of the offset assessing against the interim milestone achievements and completion criteria.

Offset area – The 20 ha area within the offset property where the specific offset will be implemented and consists of two assessment units.

Offset property – Means 'South Kipper', Kipper Creek Road, Biarra Qld 4313, formally described as Lot 127 on CA31414, Lot 271 on CA311037, Lot 273 on CA311588, Lot 272 on CA311095, Lot 11 on CA31764 and Lot 10 on CA31764, being an area of approximately 728 ha.

Year 1 of the offset: the 12 month period following legal securement of the offset area

Years 2 to 20 of the offset – The 12-month period following each anniversary of the legal securement of the 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	Murray Saunders
Position	Director
Organisation	Saunders Havill Group Pty Ltd
Date	13 November 2025

Offset Provider Consent

The Offset Provider agrees to the offset being undertaken over the land identified in Section 6 of this Offset Management Plan, and in the manner outlined in Section 9.

Signed	
Full name	Rob Martyn
Position	Offset Provider
Organisation	KFF1 Pty Ltd ATF KFF 1 Sub Trust
Date	13 November 2025



1. Introduction

Saunders Havill Group (SHG) have prepared an Offset Management Plan (OMP) on behalf of the proponent to be implemented by the offset provider in accordance with the Preliminary Documentation Request provided for EPBC Application 2023/90690. This OMP is to be used by KFF1 Pty Ltd ATF KFF 1 Sub Trust as the offset provider for AW Bidco 6 Pty Ltd (the Proponent). The proposed action is for impacts to Koala habitat to facilitate a master-planned residential community at Ripley Road, South Ripley, Queensland. The Ripley Road master-planned community was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and subsequently declared a “Controlled Action” on the 10 July 2024 by the Department of Climate Change, Energy, the Environment and Water (DCCEEW), requiring assessment by “Preliminary Documentation” pursuant to section 18 and 18A (listed threatened species and communities) (EPBC 2023/90690).

The Offset Area will deliver the overall ‘*conservation gain*’ for Koala as part of a single site offset solution located as part of Lot 271 on CA311037 at Little Kipper Creek Road, Biarra, Queensland. The offset site forms part of the Little Kipper Creek Offset Property, which contains a range of approved Federal offsets for the Koala and other species managed by the Offset Provider. The proposed offset site will combine with these surrounding approved and commenced offsets in the Little Kipper Creek Offset Area to consolidate a larger conservation outcome. The referral area is a total of 77.8 hectares (ha) inclusive of 5.4 ha of Matters of National Environmental Significance (MNES) habitat for the Koala. The OMP includes the dedication and rehabilitation of a total of 20 ha of land located at Little Kipper Creek Road, Biarra (herein referred to as the ‘offset area’). The offset area as proposed will acquit the required impacts and provide additional benefit for the species. Details of the additional offset area are provided in **Section 6**.

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 *Phascolarctos cinereus* (Koala). The plan must include (but is not limited to):

- i. the ecological outcomes of the offset site (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.

1.2. Report Structure

This OMP contains the following sections:

- Section 2: Roles and Responsibilities
- Section 3: Environmental Outcomes
- Section 4: Monitoring and Reporting Schedule
- Section 5: Overview of Impact area
- Section 6: Overview of Offset Area
- Section 7: Offset Area Suitability
- Section 8: Baseline Surveys
- Section 9: Management Framework
- Section 10: Adaptive Management
- Section 11: References
- Section 12: Appendices



- Appendix A – Offset Assessment Guide Calculator Results and Justification
- Appendix B – Impact area – MHQA data
- Appendix C – Offset Area – raw weed mapping transect data
- Appendix D – Offset area – Koala MHQA baseline data
- Appendix E – Offset area – baseline MHQA raw data
- Appendix F – Offset area – baseline SAT raw data
- Appendix G – Detailed Rehabilitation Plan
- Appendix H - Risk Assessment



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 covenant the following people and entities retain key responsibilities for the implementation of this OMP.

A list of key contacts for the project and responsibilities are provided in **Table 1**.

Table 1: Key personnel and responsibilities

Role	Nominated Person	Company / Entity	Contact details
Proponent/Approval Holder	David Franklin	AW Bidco 6 Pty Ltd	david.franklin@stockland.com.au
Offset Provider	Rob Martyn	KFF1 Pty Ltd	rob.martyn@koalafarmlandfund.com.au
Administering Authority	N/A	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

Action		Description	Responsibility & Cost Assignment
Preparation of documents	Offset Management Plan (OMP)	Drafted for the offset site, specific to the Proponent's project	Proponent
	Review OMP before finalisation	Any plan to be implemented onsite must be reviewed and approved by KFF	KFF (offset provider)
	Draft & Execute Offset Agreement	Draft Offset Agreement supplied by KFF and negotiated by both parties	Each party at their own cost
Management Plan Actions	Legally binding mechanism	Secure legally binding mechanism over offset area (VDEC and/or amendment order under EOPA)	KFF (offset provider)
	Preparation of other management plans as required by OMP	Weed management plan, pest management plan and bushfire management plan	KFF (offset provider)
	Review Management Plans before finalisation	Any plan to be implemented onsite must be reviewed and approved by KFF	KFF (offset provider)
	Undertake general on-ground management activities in accordance with the various Management Plans	Includes fencing, access tracks, signage, fire management, weed control, pest control and revegetation	KFF (offset provider)
	Installation, management and monitoring of habitat specific features	Some management plans include additional actions to those listed above. For example, DCCEEW may require the installation of greater glider nest boxes, koala poles or coarse woody debris	KFF (offset provider)
Audits/Monitoring and Reporting	Undertake annual or periodic ecological monitoring activities in	Includes baseline and annual/periodic surveys such as (but not limited to): targeted species surveys, weeds, pests	KFF (offset provider)



	accordance with the various Management Plans and produce associated mapping and reporting	and habitat quality assessments. Also includes mapping and reporting associated with ecological monitoring activities	
	Provide Annual Offset Report (or on-ground management actions)	Provide an annual report outlining management activities undertaken in the reporting year including fencing, fire management, weed control, pest control and revegetation activities	KFF (offset provider)
	Offset Management Plan audits	Every 5 years	Proponent
	Annual Compliance Report (EPBC Approval conditions)	Prepare annual report outlining compliance with EPBC approval conditions (i.e., not just limited to offset conditions)	Proponent



3. Environmental Outcomes

This OMP identifies outcomes focused management actions pursuant the EPBC Act for the provision of Koala (*Phascolarctos cinereus*) habitat offset. The management objectives for the offset area, in alignment with the Environmental Offsets Policy (EOP) will:

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

3.1. Koala

A summary of the baseline and improvement scoring for each assessment unit within the offset area is outlined in **Table 2**. Detailed environmental outcomes showing the specific attributes which will be improved by the offset actions including interim milestones are provided at **Table 6** and **Table 7**.

Table 2: Koala baseline MHQA and offset improvement scores

MHQA Final Scores	AU1 – Baseline	AU1 – Uplift	AU2 – Baseline	AU2 – Uplift
Site condition (/3)	1.65	2.78	1.19	2.46
Site context (/3)	1.98	2.41	1.98	2.41
Species stocking rate (/4)	1.14	2.00	0.57	2.00
AU score	4.78	7.19	3.74	6.87
Rounded	5	7	4	7
Assessment Unit Area (ha)	2.7		17.3	

3.2. Offset Assessment Guide – Calculator

Table 4 outlines a summary of the MNES offset compensation associated with the 5.4 ha of impacts, being **125.39 %** for Koala. The 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 offset assessment guide calculator inputs is included below:



Table 3: Offset Assessment Guide Parameters – Koala

Parameter	Rationale
Impact (Area)	5.4 ha for Koala
Quantum of Impact (Quality)	A score of 5 for Koala
Quantum Impact (Area)	2.7 ha
Risk Related Time Horizon	The proposed offset area will be legally secured in perpetuity; hence, the maximum score of 20 years.
Time Until Ecological Benefit	Measures prescribed in this Offset Area 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	20 ha
Start Quality	Refer Table 4
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 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 unlikely to improve, and some attributes may deteriorate where regrowth is subject to periodic clearing for cattle grazing and/or maintenance/fire regimes that are not compatible with ecosystem improvement are employed. Refer Table 4 .
Future Quality with Offset	Refer Table 4
Confidence in Result (Future Quality)	Confidence in the success of the offset is typical of non-remnant vegetation ($\geq 75\%$). Given the detail and intensity of the management actions outlined within this OMP, with the inclusion of a detailed Rehabilitation Plan, this confidence is considered appropriate. The confidence is supported by the offset area selection, design of management actions, and clear monitoring and reporting procedures. The offset area contains well-maintained access tracks that will facilitate access to high priority weed treatment areas and planting areas. This offset area is the last remaining polygon within a much larger offset property with several approved offset areas. Therefore, a level of increased confidence would come with the aggregation of offset approvals within the one offset property which is undertaking



Parameter	Rationale
	identical management actions and outcomes across all offset approvals with identical baseline conditions.

Refer to **Appendix A** for the detailed EPBC offset calculator sheets and attribute justifications.

Table 4: Summary of Koala offset compensation

Impact Site			Offset Area						
Impact Area	Impact Score	Quantum Impact (QI) Area	Habitat Quality Gain		Offset Area (ha)		% of Impact Offset		Total % of Impact Offset
			AU1	AU2	AU1	AU2	AU1	AU2	
5.4 ha	5/10	2.7 QI ha	5/10 to 7/10	4/10 to 7/10	2.7	17.3	11.82 %	113.57 %	125.39 %

3.2.1 Completion criteria

The management framework designed to achieve the proposed environmental outcomes summarised above are detailed in **Section 9** of this OMP.

A summary of the management actions and their completion criteria required to achieve the environmental outcomes are provided in **Table 5**. The management actions will result in a net gain of the overall habitat quality for Koala 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 Koala habitat. For the purpose of the plan:

- 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
- 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 8**. A schedule of monitoring and reporting is provided in **Section 4**.



Table 5: Completion criteria and performance targets

Management Action	OMP Section	Performance Targets	Completion criteria
Management Action 1 – Legally Secure Offset Area	9.3	Not applicable	- The offset area is legally secured for conservation via a covenant under either Chapter 6 Part 4 Division 8A of the <i>Land Act 1994 (Qld)</i> or Part 6 Division 4A of the <i>Land Titles Act 1994 (Qld)</i>. A Voluntary Declaration (VDEC) administered under the <i>Vegetation Management Act 1999 (Qld)</i> will be utilised in the interim prior to any impacts commencing. - The Department is notified of the legal securement within 5 business days of commencing the implementation of the OMP <i>i.e.</i>, the date from which the offset area is legally secured. - The offset area is not used for other purposes – site access is restricted.
Management Action 2 – Non-native Vertebrate Pest Management	9.4	- 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 <u>Year 1 of the offset</u>. - A suitably qualified pest management contractor will be engaged to manage pests within the offset area for the life of the offset.	- Reduced risk of injury or death of Koala from non-native predator attacks within the offset area. - Non-native vertebrate pests and evidence of pests are suppressed within the offset area.
Management Action 3 – Management of Weeds of National Significance (WONS)	0	Establish photo monitoring locations in <u>Year 1 of the offset</u> prior to treatment of WONS commencing.	The management actions must reduce the extent of, or maintain, WONS weed cover below 5% of the offset area by the end of Year 10 and be maintained for the life of the offset (20 years).



Management Action	OMP Section	Performance Targets	Completion criteria
		- All WONS will receive initial treatment within <u>Year 1 of the offset</u> to allow for planting works to commence. - Follow-up treatment of WONS will occur <u>annually</u> or as needed, determined by the suitably qualified regeneration contractor.	
Management Action 4 – Bushfire Management Plan	9.6	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 offset area. - 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.
Management Action 5 – Habitat Creation and Regeneration	9.7	Offset area planting completed by the end of <u>Year 2 of the offset</u>.	- Rehabilitated areas are established, regenerated and mapped as remnant vegetation under Queensland's <i>Vegetation Management Act 1999</i> (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 (see Table 6 and Table 7).
Management Action 6 – Fencing and Signage	9.8	- Fencing and signage is installed and retrofitted by the end of <u>Year 1 of the offset</u> and maintained for the life of the offset (20 years). - Prevention and management of livestock from the entering the offset area utilising fauna friendly livestock exclusion fencing	- Mortalities or injury to Koala 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.



Table 6: Koala environmental outcomes – 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 Ecologically Dominant Layer (EDL) species will be maintained at 100% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	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 years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	It is anticipated that recruitment of woody perennial species will be maintained at 100%. Remedial actions are not anticipated.
Native plant species richness – Trees	2.5	5	5	5	5	5 years	All of the expected tree species will be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Tree species richness is currently at 80% of the benchmark, with 4 of the 5 species required by the benchmark. Recruitment of tree species will meet 100% by 5 years. If the sub-canopy layer species richness has not improved to greater than 95% at 10 years then remedial actions will be implemented to achieve 95% in 15 years. These include remedial plantings of advanced stock.
Native plant species richness - Shrubs	0	2.5	2.5	2.5	5	20 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Shrub species richness is currently at 20% of the benchmark. If the shrub species richness has not improved to greater 25% at year 5 or greater than 75% at 15 years then remedial actions will be implemented to achieve 90% in 20 years. 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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Grass species richness is currently at 66.67% of the benchmark. If the grass species richness has not improved to greater than 80% at 15 years then remedial actions will be implemented to achieve 90% in 20 years. These include remedial plantings.
Native plant species richness - Forbs	2.5	2.5	2.5	2.5	2.5	20 years	Native forb species richness to be between 25% and 90% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Forb species richness is currently at 28% of the benchmark. Forb species richness will be between 25% and 90% in 15 years. If not, then remedial actions will be implemented to achieve between 25% and 90% in 20 years. These include remedial plantings.
Tree canopy height	5	5	5	5	5	Immediate	The median tree canopy height will be maintained at 100% of the benchmark as a result of 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Median tree canopy height is currently at 80% (EDL) and 111.11% (sub-canopy) of the benchmark (average 95%). It is anticipated that median tree canopy height will be maintained. Remedial actions are not anticipated.



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	3.5	3.5	3.5	3.5	5	15 years	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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Tree canopy cover is currently at 27.5% (EDL) and 183.75% (sub-canopy) of the benchmark. Sub-canopy cover will be maintained at between 50 and 200% of the benchmark. If EDL canopy cover has not reached >40% at 15 years then remedial actions will be implemented to achieve between 50% and 200% in 20 years. These include remedial plantings of advanced stock.
Shrub canopy cover	0	0	3	3	5	20 years	Shrub 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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Shrub canopy cover is currently at 0% of the benchmark. If the shrub canopy cover has not improved to greater than 25% at 10 years then remedial actions will be implemented to achieve between 50% and 200% in 20 years. These include remedial plantings.
Native perennial grass cover	1	3	3	3	5	20 years	Native grass cover to achieve at least 90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Native perennial grass cover is currently at 36.54% of the benchmark. If the native perennial grass cover has not improved to greater 50% by year 5 or greater than 70% in 15 years 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 will be maintained between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Organic litter is currently at 85% of the benchmark. Organic litter will be maintained at between 50% and 200%. Remedial actions are not anticipated
Large trees	10	10	10	10	10	Immediate	The number of large trees will be maintained above 50% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	It is anticipated that the number of large trees will be maintained above 50% of the benchmark. Remedial actions are not anticipated.
Coarse woody debris	5	5	5	5	5	Immediate	Course woody debris will be maintained at greater than 50% and less than 200% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Coarse woody debris is currently 50.51% and it will be maintained at between 50% and 200% of the benchmark. No remedial actions are anticipated.
Weed cover	3	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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Weed cover is currently at 40% of the benchmark. If improvement is not below 20% by Year 5 and 5% by the end of Year 10 then remedial actions to reduce weed cover below these interim benchmarks will be applied. These include refining weed control methods.



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
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, 3, 4, 5, 6 & 7 outlined in Table 5 .	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 years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Quality and availability of food and foraging habitat is currently poor. All site condition remedial actions also apply to this criterium achieving a high rating.
Quality and availability of shelter	5	5	5	10	10	20 Years	Quality and availability of shelter will be improved to high by specific management actions 1, 3, 4, 5, 6 & 7 outlined in Table 5 .	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 years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Quality and availability of shelter is currently poor. All site condition remedial actions also apply to this criterium achieving a high rating.
Site Condition Score	55	64	77	87	92.5				
Overall Site Condition Score out of 3	1.65	1.92	2.31	2.61	2.78				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	0	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	0	0	0	0	0	NA	NA	NA	NA
Role of site location to species overall population in the state	4	4	4	4	4	NA	NA	NA	NA
Threats to the species	7	15	15	15	15	5 Years	Threats to species including barbed wire fencing, non-native predators and WONS will be reduced to low levels by specific management actions 2, 3 & 6 outlined in Table 5 .	Baseline attributes are established. This criterium is reliant upon the suppression and control of pest species and WONS. Pest monitoring will be evaluated as per the pest management program.	The control of pest species will provide an immediate and large reduction in threats. If monitoring as per the pest management program indicates pest species are not reduced then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	10	10	10	10	10	10 Years	Species mobility capacity will be maintained with specific management actions 1 to 6 outlined in Table 5 .	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 years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Species mobility is currently scored as 'unrestricted' however the presence of weeds (specifically, Lantana) and pests to provide some restriction to movement. All site condition remedial actions, as well as threat reductions apply to this criterium achieving continuing to achieve a high rating
Site Context Score	37	45	45	45	45				
Overall Site Context Score (out of 3)	1.98	2.41	2.41	2.41	2.41				
Presence	5	5	5	5	10	15 Years	It is anticipated that under the management actions 1 through 6 outlined in Table 5 Koala will recognise and utilise the site as habitat.	Koala Spot Assessment Technique (SAT) surveys will be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	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 offset area, it is anticipated that the presence of Koala on site will be detected by the end of Year 20.



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	The offset area is largely cleared however some Koala habitat trees are present. Using the cautionary principle, the usage has been assigned max value. Nevertheless, it is anticipated that under management actions 1 to 6 outlined in Table 5 Koala usage of the site as a measure of habitat type and evidence of usage will continue. It is considered that with the reinstatement of key habitat values, the entire offset area will be considered breeding habitat by Year 20 as per the conservation advice.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	The site is considered breeding habitat using the cautionary principle despite larger areas of cleared paddock. The entire offset area will remain as breeding habitat by year 20.
Approximate Density	0	0	0	0	10	20 Years	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in Table 5 at least low level Koala activity (non-zero scats recorded using the East Coast med-high population category) will be recorded.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	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	0	0	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	NA - Not anticipated to change
Species Stocking Rate (SSR) Score out of 70	20	15	15	15	35				
SSR Score out of 4	1.14	1.14	1.14	1.14	2.00				
Total Habitat Quality Scores	4.78	5.47	5.86	6.16	7.19				



Table 7: Koala environmental outcomes – 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	5	5	5	5	5	Immediate	Recruitment of EDL species will be maintained at >75% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	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 years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	It is anticipated that recruitment of woody perennial species will be maintained at >75% of the benchmark. Remedial actions are not anticipated.
Native plant species richness – Trees	2.5	5	5	5	5	5 years	All of the expected tree species will be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Tree species richness is currently at 25% of the benchmark. If the tree species richness has not improved to greater than 90% at 5 years then remedial actions will be implemented to achieve 90% in 20 years. These include remedial plantings.
Native plant species richness - Shrubs	0	0	2.5	2.5	5	20 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Shrub species richness is currently at 7.14% of the benchmark. If the shrub species richness has not improved to greater than 75% at 15 years then remedial actions will be implemented to achieve 90% in 20 years. These include remedial plantings.
Native plant species richness - Grasses	2.5	2.5	2.55	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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Grass species richness is currently at 57.14% of the benchmark. If the shrub species richness has not improved to greater than 75% at 15 years then remedial actions to will be implemented to achieve 90% in 20 years. These include remedial plantings.
Native plant species richness - Forbs	2.5	2.5	2.5	2.5	5	20 years	All of the expected forb species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Forb species richness is currently at 53.85% 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	3	3	3	3	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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Median tree canopy height is currently 42.86% (EDL) and 33.33% (sub-canopy), average 38%. It is anticipated that the tree canopy height will increase to greater than 70% of the benchmark by the end of Year 20.
Tree canopy cover	2	2	2	5	5	15 years	Tree canopy cover between 50% and 200% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Tree canopy cover is currently 12.66% (EDL) and 20.5% (sub-canopy), average 16.58%. It is anticipated that the tree canopy cover will increase to between 50% and 200% of the benchmark by the end of Year 15. If the tree canopy cover has not improved to greater than 35% at 10 years then remedial actions will be implemented to achieve between

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
									50% and 200% in 20 years. These include remedial plantings.
Shrub canopy cover	3	3	3	3	5	20 years	Shrub 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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Shrub canopy cover is currently at 12.5% of the benchmark. If monitoring indicates that shrub canopy cover is not transitioning to between 50 and 200% by Year 15 then remedial actions will be applied. These include remedial plantings.
Native perennial grass cover	3	3	5	5	5	10 years	Native perennial grass cover greater than 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Native grass cover is currently at 80.95% of the benchmark. If monitoring indicates that native grass cover is not transitioning to >90% by Year 5 then remedial actions will be applied. These include remedial plantings.
Organic litter	3	3	3	3	5	20 years	Organic litter between 50% and 200% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Organic litter is currently at 19.79% of the benchmark. If monitoring indicates that organic litter is not at >40% by Year 15 then remedial actions will be applied. These include remedial plantings.
Large trees	0	0	0	0	0	Immediate	The number of large trees will not increase in the 20-year timeframe.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	It is anticipated that the number of large trees will not increase to between 0% and 50% of the benchmark. Remedial actions not warranted
Coarse woody debris	0	2	2	2	5	20 years	Coarse 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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Coarse woody debris is currently 0% of the benchmark due to current and historical land uses. If monitoring by Year 5 and Year 15 indicates that coarse woody debris is not transitioning to between 50 and 200% 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	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 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Weed cover is currently 45% 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	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, 3, 4, 5, 6 & 7 outlined in Table 5 .	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 years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Quality and availability of food and foraging habitat is currently poor. All site condition remedial actions also apply to this criterion achieving a high rating.



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
Quality and availability of shelter	5	5	5	10	10	20 years	Quality and availability of shelter will be improved to high by specific management actions 1, 3, 4, 5, 6 & 7 outlined in Table 5 .	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 years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Quality and availability of shelter is currently poor. All site condition remedial actions also apply to this criterion achieving a high rating.
Site Condition Score	39.5	43.5	50.5	63.5	82				
Overall Site Condition Score out of 3	1.19	1.31	1.52	1.91	2.46				
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	0	0	0	0	0	NA	NA	NA	NA
Role of site location to species overall population in the state	4	4	4	4	4	NA	NA	NA	NA
Threats to the species	7	15	15	15	15	5 Years	Threats to species will be reduced to low levels by specific management actions 2, 3 & 6 outlined in Table 5 .	Baseline attributes are established. This criterion is reliant upon the suppression and control of pest species and WONS. Pest monitoring will be evaluated as per the pest management program.	The control of pest species will provide an immediate and large reduction in threats. If monitoring as per the pest management program indicates pest species are not reduced, then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	10	10	10	10	10	Immediate	Species mobility capacity will be maintained with specific management actions 1 to 6 outlined in Table 5 .	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 years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	Species mobility is currently scored as 'unrestricted' however the presence of weeds (specifically, Lantana) and pests to provide some restriction to movement. All site condition remedial actions, as well as threat reductions apply to this criterion achieving continuing to achieve a high rating
Site Context Score	37	45	45	45	45				
Overall Site Context Score (out of 3)	1.98	2.41	2.41	2.41	2.41				
Presence	5	5	5	5	10	20 years	It is anticipated that under the management actions 1 through 6 outlined in Table 5 Koala will recognise and utilise the site as habitat.	Koala SAT surveys will be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	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 offset area, it is anticipated that the presence of Koala on site will be detected by the end of Year 20.
Usage	5	5	5	5	15	Immediate	It is anticipated that under management actions 1 to 6 outlined in Table 5 Koala usage of AU2 as a measure of habitat type and evidence of usage will increase. It is considered that with the reinstatement of key habitat values, the entire offset area will be considered breeding habitat by Year 20 as per the conservation advice.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	AU2 on-site is considered dispersal habitat only due to a lack of usage and lack of trees. If usage levels are not transitioning toward breeding habitat 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.
Approximate Density	0	0	0	0	10	20 years	It is anticipated that under the management actions specified in	Baseline SAT attributes are established. Koala SAT surveys will	Baseline SAT surveys did not detect any presence of Koala on



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
							management actions 1 to 6 outlined in Table 5 at least low level Koala activity (non-zero scats recorded using the East Coast med-high population category) will be recorded.	be completed by suitably qualified professionals at years 3, 5, 8, 10, 13, 15, 17, 19 and 20.	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	0	0	Immediate	NA - Not anticipated to change	NA - Not anticipated to change	NA - Not anticipated to change
SSR Score out of 70	10	10	10	10	35				
SSR Score out of 4	0.57	0.57	0.57	0.57	2.00				
Total Habitat Quality Scores	3.74	4.29	4.50	4.89	6.87				



4. Monitoring and Reporting Schedule

The timing and frequency of monitoring and reporting actions, corrective actions and responsibilities for the offset area are provided in **Table 8**. The monitoring schedule is considered appropriate to allow the Proponent, Offset Provider and appointed suitably qualified person to assess the quality of the offset area and success of management actions. In addition, if any non-compliances or ineffectiveness of management action are identified, adaptive management strategies can be implemented to ensure the offset area will increase in quality for the Koala.

Table 8: Timeline for monitoring and reporting actions

Management Action	Monitoring action(s)	Reporting Action and Timing	Responsible person(s) for activity/reporting
1. Legally secure offset area	The offset area will be legally secured for conservation via 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) prior to the impacts occurring. Securement will occur via VDEC administered under the <i>Vegetation Management Act 1999</i> (Qld) in the interim.	The Department will be notified that the offset area 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. Pest management	Monitoring will occur before the end of years 3, 5, 8, 10, 13, 15, 17, 19 and 20 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 offset area and pest management implementation will be extracted from the Offset Area Annual Report (OAAR) and will be 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 3, 5, 8, 10, 13, 15, 17, 19 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.



Management Action	Monitoring action(s)	Reporting Action and Timing	Responsible person(s) for activity/reporting
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.	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.	Offset Provider and suitably qualified weed management contractor as appointed by the Offset Provider.
	Weed cover surveys and mapping, and Modified Habitat Quality Assessment (MHQA) surveys will be conducted before the end of years 3, 5, 8, 10, 13, 15, 17, 19 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. The 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.	Milestone Reports will be prepared three (3) months after the completion of milestone surveys at years 3, 5, 8, 10, 13, 15, 17, 19 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.	An OAAR will be completed within one (1) month of the end of the each offset year with input from the suitably qualified bush regeneration contractor to document: • Planting/seedling events, • Watering schedule, • Implemented corrective actions,	Offset Provider and suitably qualified bush regeneration contractor as appointed by the Offset Provider.



Management Action	Monitoring action(s)	Reporting Action and Timing	Responsible person(s) for activity/reporting
	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 3, 5, 8, 10, 13, 15, 17, 19 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.	• 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 3, 5, 8, 10, 13, 15, 17, 19 and 20 of the offset and will be included in the ACR.	Suitably qualified person as appointed by the Proponent.
6. Fencing and signage	Status of fencing and signage and any issues requiring rectification will be identified through regular 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



5. Overview of Impact Area

5.1. Project and Site

Contextually, the proposed action at 944 – 1024 Ripley Road, South Ripley (described as Lot 241 and 242 on SL10253) is located 11.2 kilometres (km) south of Ipswich town centre, and just 400 m south of the newly developed Providence Central (refer **Figure 1** and **Figure 2**). The impact site is mapped centrally within the Queensland Government’s Ripley Valley Priority Development Area (RVPDA). The entire impact site and surrounds is zoned as ‘Urban Living’ under the RVPDA Development Scheme, and as a combination of ‘Secondary Urban Centre East Neighbourhoods’ and ‘Neighbourhoods’ on the Structure Plan. 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 South East Queensland region. **Table 9** provides details on the impact area.

As with the impact site itself, the surrounding properties are currently used for rural-residential purposes, with a shift towards urban development as reflected in several active development applications. The entire 77.8 ha impact site is required to be cleared to facilitate the development of the master-planned community, inclusive of 5.4 ha of unavoidable impact to Matters of National Environmental Significance (MNES), specifically potential Koala habitat. The small area of potential Koala habitat on site is reflective of the highly disturbed condition of the site, which is predominantly open paddock dominated by grass species.

Table 9: Details of impact area

Address	944 – 1024 Ripley Road, South Ripley
Impact area	77.8 ha
MNES impact area	5.4 ha (refer to Plan 1)



152°40'0"E

152°50'0"E

153°0'0"E

27°40'0"S

27°40'0"S

27°50'0"S

27°50'0"S

152°40'0"E

152°50'0"E

153°0'0"E

LEGEND
 Referral Area (EPBC 2023/09690)
FIGURE 1

IMPACT SITE CONTEXT

PROJECT
RIPLEY ROAD, SOUTH RIPLEY
COORDINATE SYSTEM
GDA 2020 MGA Z56
SCALE (A4)
1:200,000

0 1 2 3 4 5 km



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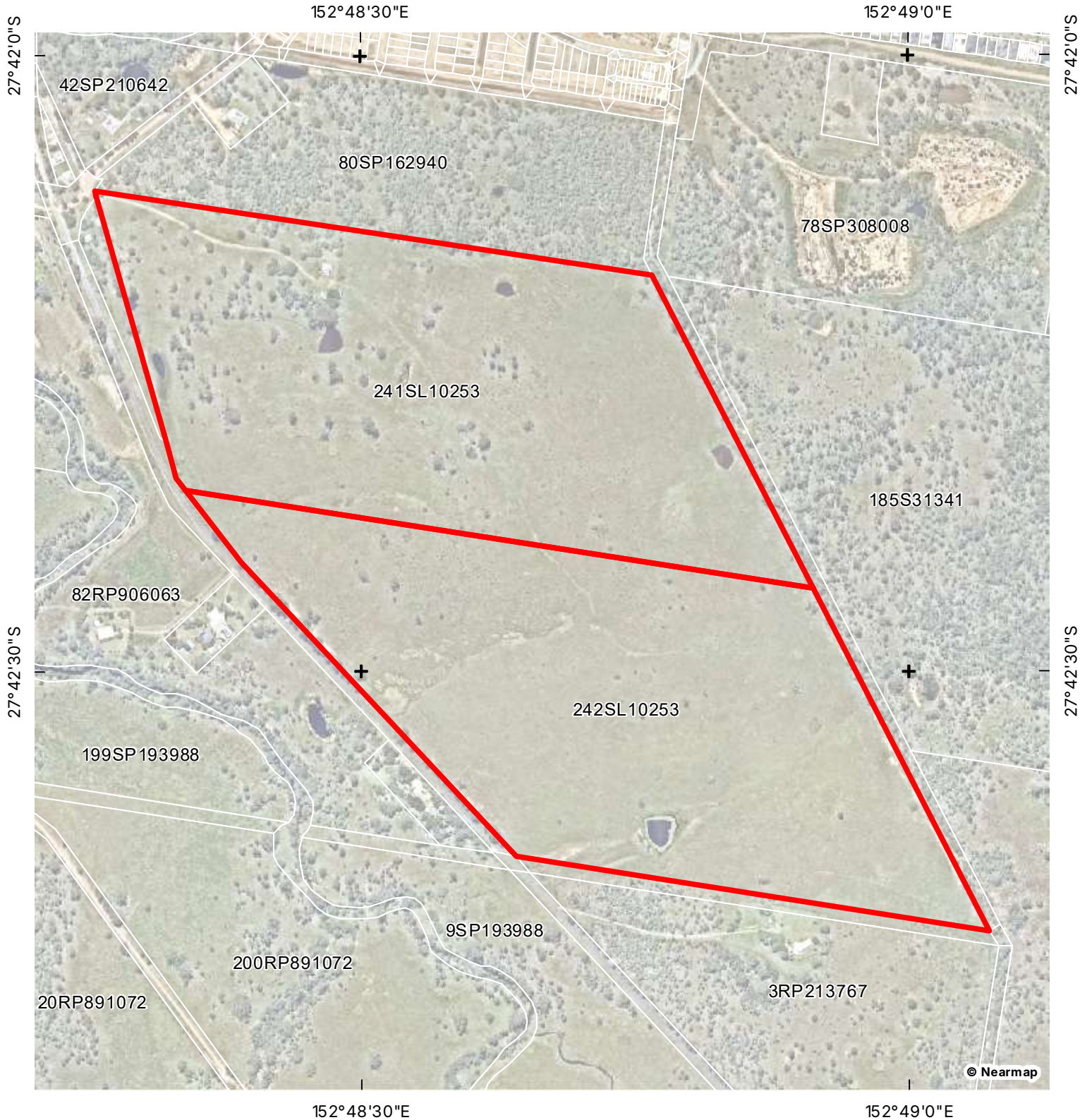
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11081 E Figure 1 Site Context C

DATE 30/10/2025



LEGEND

- Qld DCDB
- Referral Area (EPBC 2023/09690)

FIGURE 2

IMPACT SITE AERIAL

PROJECT
RIPLEY ROAD, SOUTH RIPLEY
COORDINATE SYSTEM
GDA 2020 MGA Z56
SCALE (A4)
1:8,000

0 50 100 150 200 m



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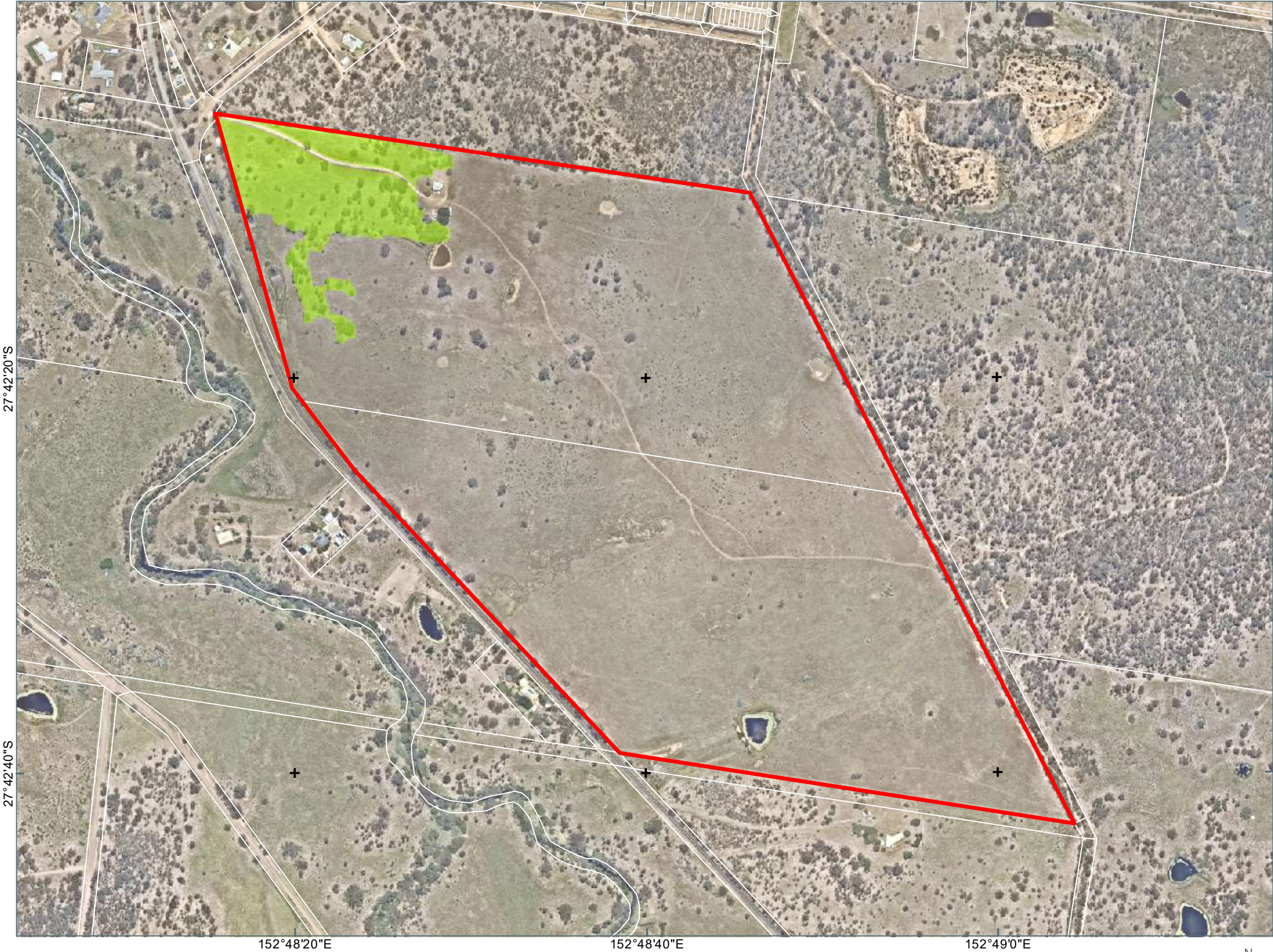
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DATE 30/10/2025

1. RIPLEY ROAD, SOUTH RIPLEY PROJECT AREA



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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
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- LEGEND**
- Qld DCDB
 - Referral Area (EPBC 2023/09690) [77.8 ha]
 - Koala Habitat Area [5.4 ha]



5.2. Summary of Matters Requiring Offset

The impact area involves directly impacting 5.4 ha of critical Koala habitat.

The OMP proposes land-based offsets for the Koala, an MNES species that will be subject to significant residual impacts due to the Project. Habitat for Koala is summarised below.

5.2.1 Vegetation communities impacted

The habitat quality and quantum of the 5.4 ha area has been assessed.

The impact area contains 5.4 ha of scattered Eucalypt and Corymbia trees mapped, like the balance of the site, as Category X (non-remnant) vegetation under the *Queensland Vegetation Management Act 1999* (VMA). The mapped pre-clear vegetation community located within the MNES impact area is described in **Table 10**.

Table 10: Mapped pre-clear regional ecosystem present within MNES impact area

Pre-clear vegetation type	VMA status	Description
RE12.9-10.7	Of concern	<i>Eucalyptus crebra</i> +/- <i>E. tereticornis</i> , <i>Corymbia tessellaris</i> , <i>Angophora</i> spp. and <i>E. melanophloia</i> woodland on sedimentary rocks

5.3. Habitat Quality Scoring Methods

5.3.1 Koala – Modified Habitat Quality Assessment methodology

The quantum and quality of habitat for the Koala within the impact area was 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 (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 Modified Habitat Quality Assessment (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 species stocking rate 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 area is suitable to establish a desired capacity to support the prescribed environmental matters being offset. The on-site condition is a key element of the MHQA method 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 fifteen (15) condition characteristics being:

- recruitment of woody perennial species in the Ecologically Dominant Layer (EDL);
- native plant species richness – trees;
- native plant species richness – shrubs;
- native plant species richness – grasses;
- native plant species richness – forbs;
- tree canopy height;
- Sub-canopy cover;
- tree canopy cover;
- native grass cover;
- organic litter;
- large trees;
- coarse woody debris;
- non-native plant cover;
- quality and availability of food and foraging habitat; and
- quality and availability of shelters.

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

Site condition within the impact area was assessed by delineating the impact area into assessment units (AU) as required by the Queensland environmental offsets framework. The impact area was delineated into one (1) assessment unit based on on-ground vegetation assessments, summarised in **Table 11**. Site condition was measured through the completion of habitat quality transects. Assessment at multiple locations per AU is necessary to measure vegetation condition at representative locations across the spatial extent of the AU, except where the small size of an AU does not allow for multiple transects. Site condition was assessed at a total of two (2) transect locations within the impact area, completed by suitably qualified ecologists on 17 April 2024. The locations of MHQA transects within the impact area are provided on **Plan 2**.

Table 11: Summary of assessment units and MHQA transects – impact area

Assessment unit	Pre-clear vegetation community	Impact Area (ha)	MHQA transect
AU1	RE12.9-10.7	5.4	Transects 1 and 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 MHQA, site context is measured using the following seven (7) characteristics:

- size of patch;



- connectedness;
- context;
- ecological corridors;
- role of site location to species overall population in the state;
- threats to the species; and
- species mobility capacity.

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

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 can determine vegetation areas through the near infrared composite band of the Landsat 8 imagery available online. The tool can 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 Southeast 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.

Assessment methodology for site context assessment for Koala is outlined below:

1. Patch size – 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.
2. Connectedness – Connectivity relates to the capacity of the species to disperse through the landscape. The attribute is calculated using GIS by measuring the length of Koala habitat that adjoins the boundary of the site.
3. Context – The context score is calculated by GIS to quantify the amount of vegetation immediately surrounding the assessment site. The attribute is a measure of the percentage of Koala habitat within a 1 km buffer of the site.
4. Ecological corridors – This attribute is as per the methods of the *Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy* (Version 1.2 April 2017) 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. The ecological corridors have been mapped by the Queensland State Government under the 'CORR_TYPE' attribute table. The mapping can also be viewed on Queensland Globe in the 'Statewide Biodiversity Corridors' layer. Results of this methodology are shown in
5. 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 effect that damage to or removal of the site would have to the likelihood of the species' overall population survival.



6. Threats to species – Threats to Koala are predominantly habitat loss, car strike, dog attack, and disease. The highest threat level is given to a site if it is isolated from other Koala habitat, or if major roads without exclusion measures or residential encroachment are within 1500 m of the site boundary.
7. Species mobility capacity – This attribute is a measure of the presence and severity of factors that would contribute to a reduction in mobility of Koala and is scored on the presence of roads or large cleared areas bordering the site.

Results of methodologies 1 – 3 are shown on the Koala Context Assessment presented as **Plan 3**. The results of method 4 (Ecological Corridors) are shown on **Plan 4**.

In developing the MHQA, three (3) species habitat index characteristics were nominated — role of site location to overall species population in the state, threats to the species, and species mobility capacity. Scoring attributes extracted from the Habitat Quality Guideline are provided in **Extract 1**.

Table 3 - Site Context scoring sheet guide

1 Size of Patch*	Score	0	2	5	7	10
	Description	<5ha	5–25ha	26–100ha	101–200ha	>200ha
2 Connectedness*	Score	0	2	4	5	
	Description	0–10%	>10%–<50%	50–75%	>75% or >500ha	
3 Context*	Score	0	2	4	5	
	Description	<10% remnant	>10–30% remnant	>30–75% remnant	>75% remnant	
4 Distance to permanent watering point †	Score	0	2	5	10	20
	Description	0–500m	>500m–1km	>1–3km	>3–5km	>5km
5 Ecological corridors	Score	0	4	6		
	Description	Not within	Sharing a common boundary	Within (whole or part)		

*measured for fragmented bioregions only

†measured for intact bioregions only



Table 4 - Species habitat index scoring guide

1 Threats to species	Score	1		7	15
	Description	High threat level (i.e. likely to result in death, irreversible damage)		Moderate threat level	Low threat level (i.e. likely to survive)
2 Quality and availability of food and foraging habitat	Score	1		5	10
	Description	Poor		Moderate	High
3 Quality and availability of shelter	Score	1		5	10
	Description	Poor		Moderate	High
4 Species mobility capacity	Score	1	4	7	10
	Description	Severely restricted (76–100% reduction)	Highly restricted (51–75% reduction)	Moderately restricted (26–50% reduction)	Minor restriction (0–25% reduction)
5 Role of site location to species overall population in the state	Score	1		4	5
	Description	Not or unlikely to be critical to species' survival		Likely to be critical to species' survival	Critical to species survival

Extract 1: Tables 3 and 4 scoring sheet guide extracted from Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy Version 1.2 April 2017.

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 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. **Table 12** outlines the attributes utilised to assess species stocking rate.

Table 12: Species stocking rate scoring

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

*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15



Key source population for breeding	/10
Key source population for dispersal	/5
Necessary for maintaining genetic diversity	/15
Near the limit of the species range	/15

Baseline Koala presence surveys for SSR

Koala presence and activity levels were determined through utilising the Spot Assessment Technique (SAT) (Phillips *et al.* 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*. Results from SAT surveys are compared against current available published scientific literature to identify an estimated Koala carrying capacity (stocking rate).

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 13** 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 13: Koala activity level classification (Phillips and Callaghan 2011)

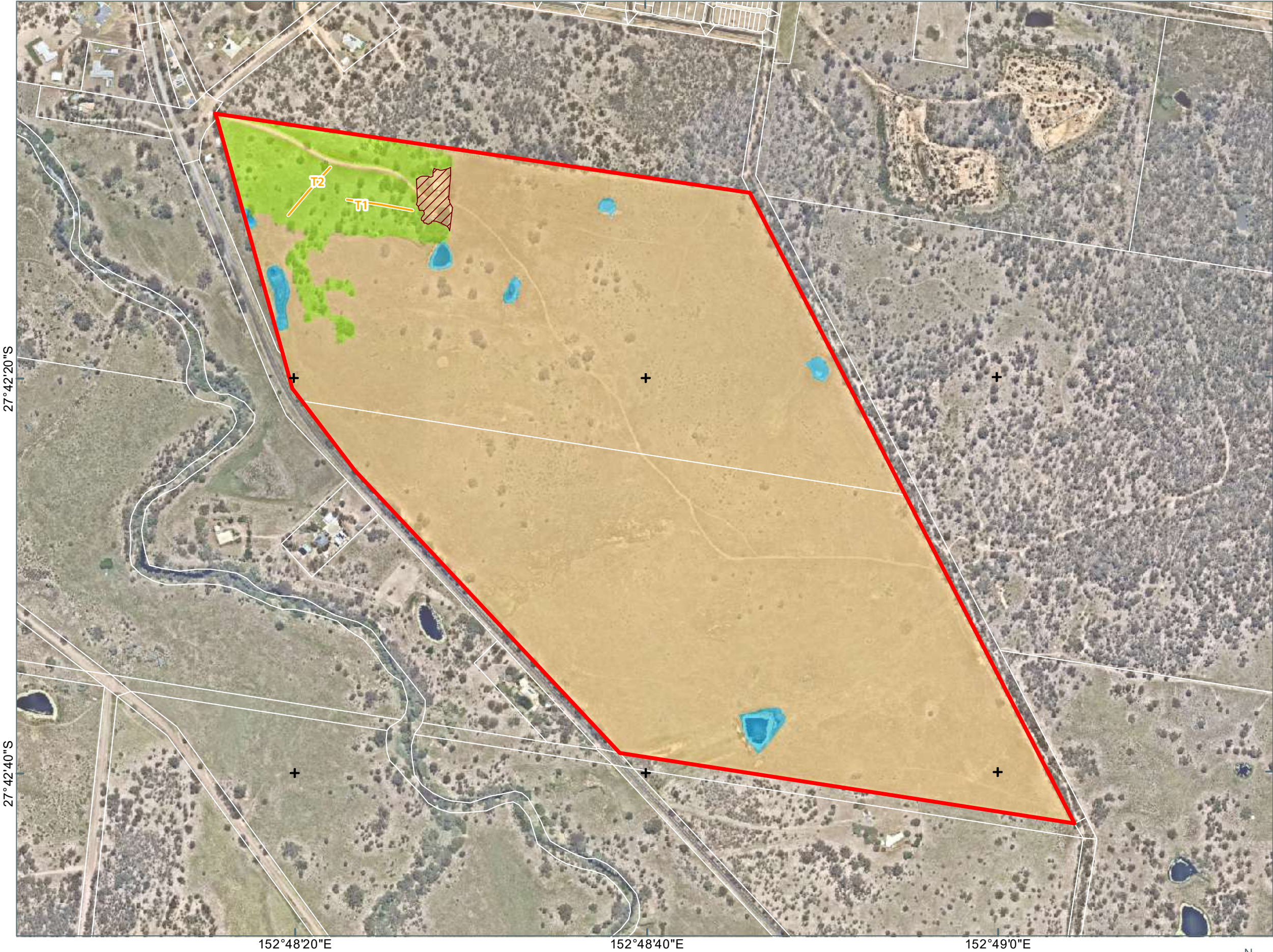
Activity	East Coast (low)	East Coast (med-high)	Western (med-high)
Low	<3.33%	<22.5%	<35.8
Moderate	3.33-12.6%	22.5-32.8%	35.8-46.7
High	>12.6%	>32.8	>46.7

A total of four (4) SAT surveys were completed across the MNES impact area, two (2) on 02 August 2022 and two (2) on 17 April 2024. An additional two (2) scat meanders were completed within the MNES impact area where there were not enough trees to complete a SAT survey, where the available trees were checked for scat.

The impact site is considered to have low suitability and so was assessed under the 'East Coast (low)' category. No scat were found during any of the SAT surveys or scat meanders conducted.



2. REFERRAL AREA IMPACTS



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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
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- LEGEND**
- Qld DCDB
 - Referral Area (EPBC 2023/09690) [77.8 ha]
 - MHQA Transects
 - Dwelling and Planted Trees
 - Vegetation Communities**
 - Koala Habitat Area [5.4 ha]
 - Scattered trees and paddocks – Not Koala Habitat [71.5 ha]
 - Dams and waterbodies [0.9 ha]



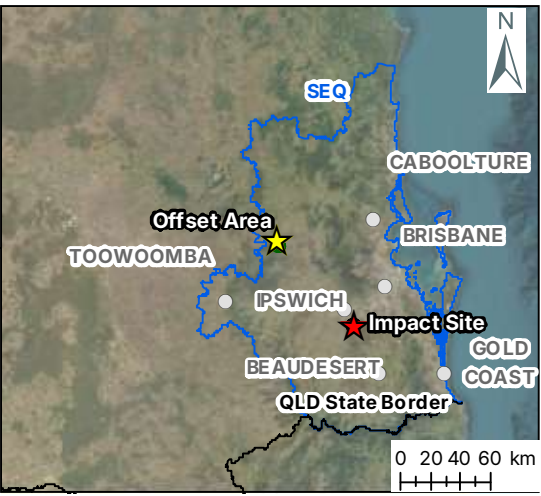
3. IMPACT AREA CONTEXT ASSESSMENT



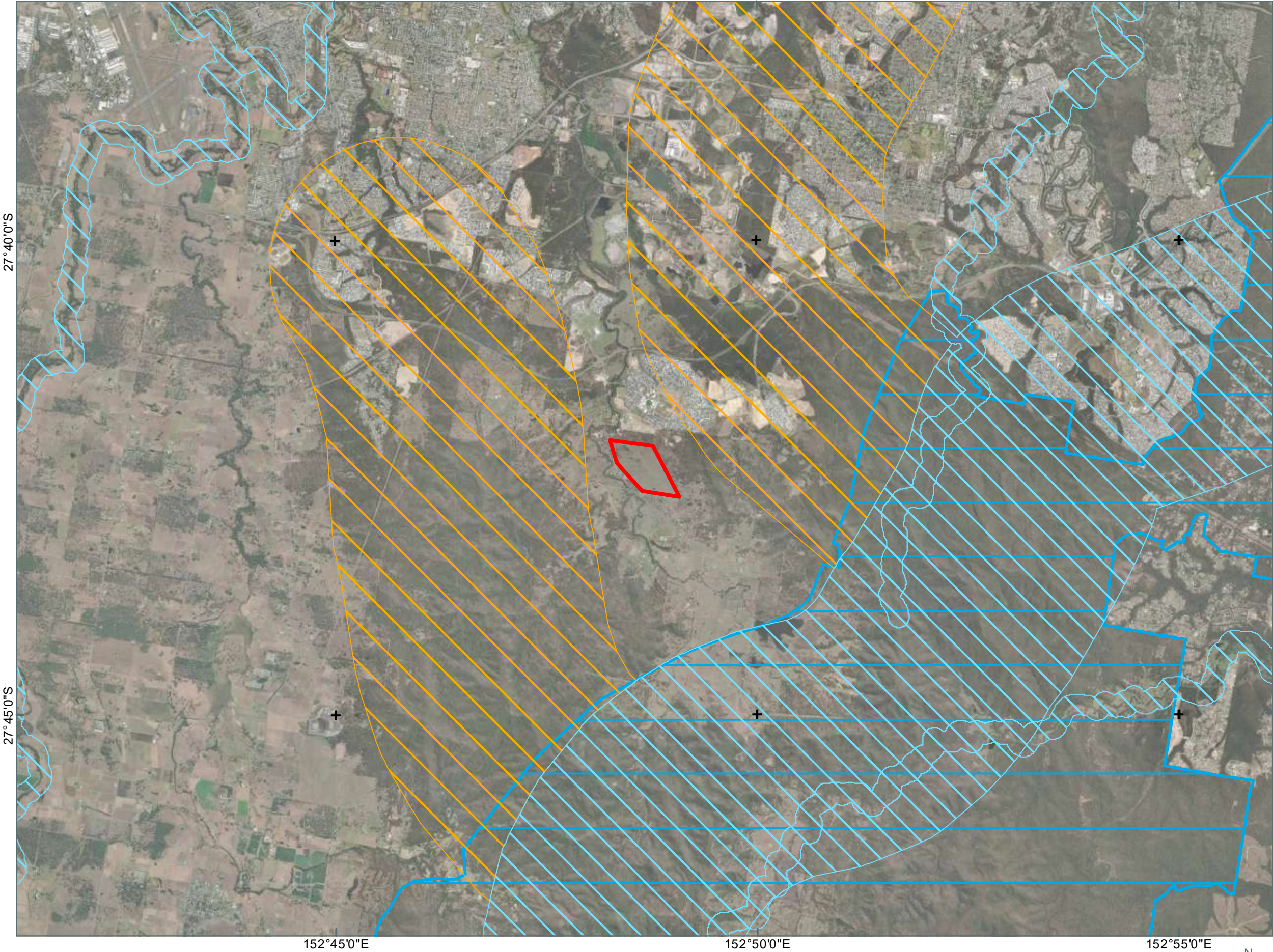
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- LEGEND**
- Qld DCDB
 - Referral Area (EPBC 2023/09690) [77.8 ha]
 - 1km Referral Area Buffer
 - Percentage of referral area boundary length supporting a connection off and on site to Koala critical habitat - 14%
 - Size of Koala critical habitat patch > 500 ha
 - Percentage of Koala critical habitat within 1km of referral area (48%)
 - Vegetation Communities**
 - Koala Habitat Area [5.4 ha]
 - Scattered trees and paddocks - Not Koala Habitat [71.5 ha]
 - Dams and waterbodies [0.9 ha]



4. IMPACT AREA ECOLOGICAL CORRIDORS



Notes:
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- LEGEND**
- Qld DCDB
 - Referral Area (EPBC 2023/09690) [77.8 ha]
 - Regional biodiversity corridor (SEQ Regional Plan 2017)
 - Regionally significant corridor (Biodiversity Planning Assessments)
 - State significant corridor (Biodiversity Planning Assessments)



5.3.2 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 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 habitat quality score of **4.75** out of the total of 10. This score is calculated based on the combined weighted habitat quality scores for each assessment unit.

Refer to **Table 14** for a summary of the results. The detailed results are presented in **Table 15** and **Table 16**. The complete raw data is provided at **Appendix B**.

Table 14: MHQA final weighted score summary

MHQA Final Weighting	AU1
Site Condition (/3)	1.62
Site Context (/3)	1.98
Species Stocking Rate (/4)	1.14
Assessment Unit Area (Impact) (ha)	5.4
Total Impact Area (ha)	5.4
AU Score	4.75

Site Condition

The site condition achieved a score of **1.62** out of **3** attributed to low species richness and lack of large trees and canopy cover.

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 it 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 referral area to be part of a patch size of larger than 500 ha. 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 referral area boundary length supporting a Koala critical habitat connection off and on-site calculated at 14 %, and consequently this attribute scored a **2 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 48 %, 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 **0 out of 6** was given to the Ecological Corridors component of Site Context (30 %). The site is not located within or adjacent to an ecological corridor (refer **Plan 4**).

→*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 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.

→*Threats to the species*

The 'threats to the species' attribute quantifies 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. This attribute was scored a **7 out of 15**. Notable threats include the proximity of Ripley Road and Bayliss Road that are more heavily utilised following construction of the South Ripley development to the north and are intended as significant transportation routes in the future. These roads do not currently have any fauna exclusion measures. Notably, residential uses ascribe a high threat score of 1 under the State guidelines.

→*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. Grey-headed Flying-fox and avi-fauna for example are considered highly mobile species due to their ability to fly quickly and over land barriers such as highly frequented roads or residential developments. Conversely, the Koala is considered a relatively immobile species, requiring land for movement, and covering relatively small distances on-ground compared to other highly mobile fauna.

The species mobility capacity for the Koala on-site was assigned the score of **10 out of 10**

Species Stocking Rate

The final component of the MHQA technique is species stocking rate. Species stocking rates are estimates of the Koala carrying capacity of the site at the time of undertaking the survey. A species stocking rate score of **20 out of 70** was attributed to AU1 as no scats or evidence of Koala were detected.

Detailed calculations for species stocking rate for Koala are provided in **Table 15**: Impact area – Koala MHQA results and **Table 16**.

5.3.3 Total quantum impact – Koala

The proposed action will result in an impact area of **5.4 ha** of vegetation identified as critical habitat for the Koala. With a weighted habitat quality score rounded to **5.00**, there is an overall Quantum Impact of **2.70 ha**.



Table 15: Impact area – Koala MHQA results

Assessment Unit - Regional Ecosystem	AU 1 - Koala habitat 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	100	5
Native plant species richness - trees	3	3	3	3	100.00	5
Native plant species richness - shrubs	5	2	1	1.5	30.00	2.5
Native plant species richness - grasses	8	3	3	3	37.50	2.5
Native plant species richness - forbs	26	1	4	2.5	9.62	0
Tree canopy height (Canopy)*	21	13	13	13	61.90	3
Tree canopy height (Sub-canopy)*	10	7	6	6.5	65.00	3
					*Average tree canopy height	3
Tree canopy cover (Canopy)**	40	47.4	10.4	28.9	72.25	5
Tree canopy cover (Sub-canopy)**	8	10.9	3	6.95	86.88	5
					**Average tree canopy cover	5
Shrub canopy cover	3	0.8	0.4	0.6	20.00	3
Native grass cover*	61	78	77	77.5	127.05	5
Organic litter*	20	13	4	8.5	42.50	3
Large trees (euc plus non-euc) (per ha)	18	0	2	1	5.56	5
Coarse woody debris (per ha)	272	0	13	6.5	2.39	0
Non-native plant cover	0	10	10	10	10.00	5
Quality and availability of food and foraging habitat	NA				-	5
Quality and availability of shelter	NA				-	5
Site Condition Score (/100)						54
Overall Site Condition Score - out of 3						1.62
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					2
Context	5					4
Ecological Corridors	6					0
Role of site location to species overall population in the state	5					4
Threats to the species	15					7
Species mobility capacity	10					10
Site Context Score (/56)						37
Overall Site Context Score - out of 3						1.98
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						4.75

Table 16: Impact area Koala species stocking rate results

Species Stocking Rate attributes	
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 the species population on site*	0/30
Total Species Stocking Rate Score	20/70
Species Stocking Rate Score – out of 4	1.14

*Species Stocking Rate supplementary table attributes	
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



5.4. Impact Assessment Summary

The overall habitat quality scores for Koala at the impact area are presented in **Table 17**.

As per the proposed EPBC Application (EPBC 2023/90690), the action proposes to impact 5.4 ha of Koala habitat with a MHQA score of **4.75** (rounded to 5) for Koala. The OAG (DoEE 2012) was used in consultation with DCCEEW to identify a total quantum of impact of **2.70 ha** for the Koala.

Table 17: Impact area MHQA for Koala

MHQA Final Weighting	AU 1
Site Condition (/3)	1.62
Site Context (/3)	1.98
Species Stocking Rate (/4)	1.14
Total Impact Area (ha)	5.4
Total Weighted Score	5.00



6. Overview of Offset Area

6.1. Offset Property Description and Tenure

The Little Kipper Creek Road Offset Area is located at Little Kipper Creek Road, Biarra, within the Somerset Regional Council (SRC) Local Government Area (LGA), approximately 11 km west of the Queensland town of Esk. The offset area comprises part of Lot 271 on CA311037. The offset area is located approximately 71 km north-west of the proposed impact area (refer Figure 3 and Figure 4). The offset area is currently zoned as Rural under the SRC Planning Scheme. Key details relating to the offset area are provided in Table 18.

Table 18: Little Kipper Creek Road Offset Area summary

Address	Little Kipper Creek Road, Biarra, Queensland, 4313
Lot / Plan	Part of Lot 271 on CA311037
Area	20 ha
Tenure	Freehold
Local Government Area	Somerset Regional Council

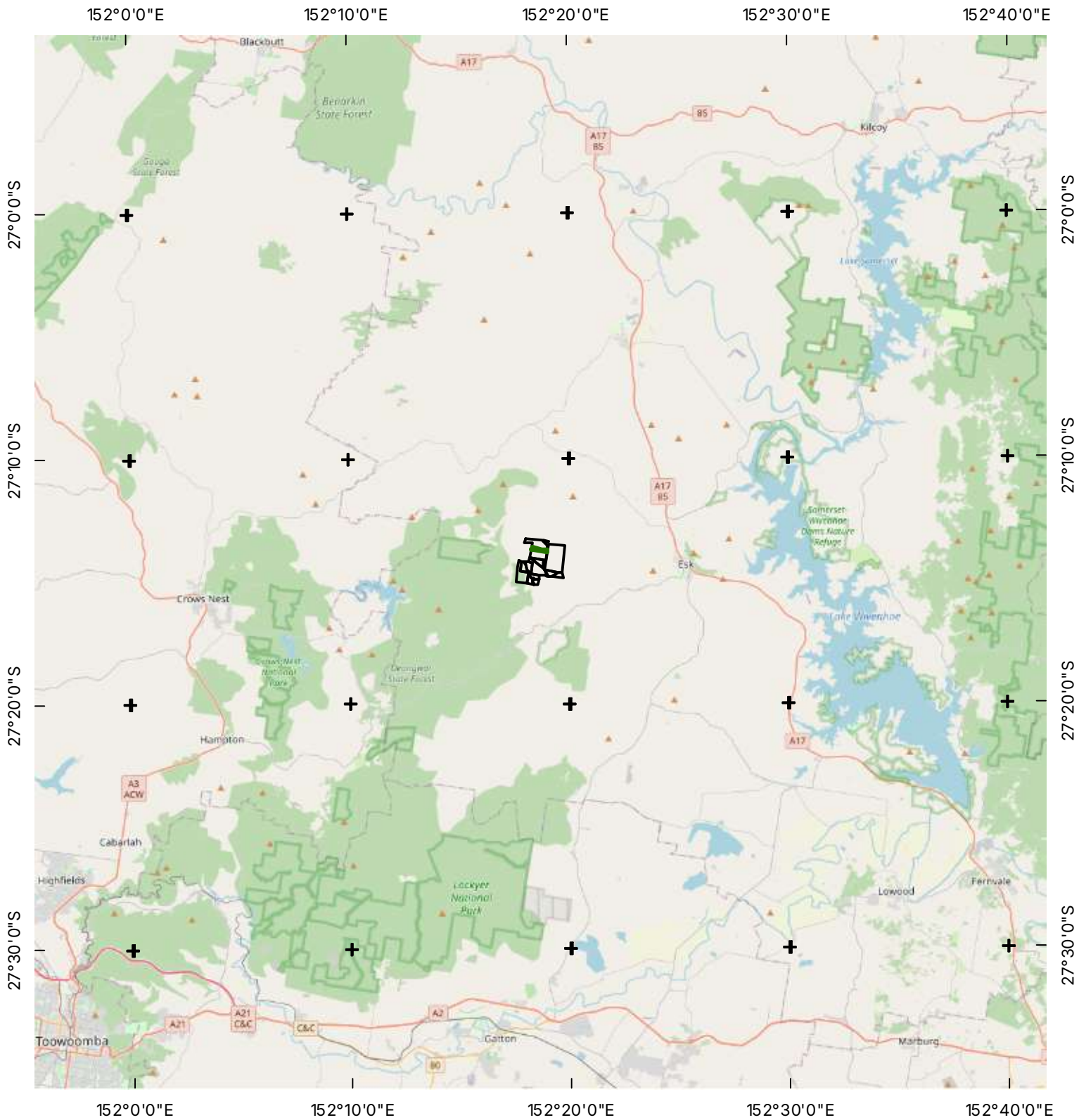
The Little Kipper Creek Road Offset Area forms part of the broader Little Kipper Creek Road Offset Property, which totals to approximately 821.4 ha (refer **Figure 3**). The offset area currently contains five (5) different vegetation communities, including non-remnant and regulated regrowth and remnant vegetation under the VMA.

The offset area is currently used for pastoral grazing and rural land uses. The site is highly disturbed as a result of grazing activities, with some heavily weeded vegetation along the mapped waterway in the west of the site and a few stands of eucalypts through the balance of otherwise open paddock with scattered *Lantana camara* (Lantana). 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 (refer to **Plan 6**). The offset area has been cleared extensively since at least the 1960s and remained cleared up to the present day.

The offset area is considered to have the capacity to meet the offset requirements given the location of the area amongst other offset sites with Koala trees and records present. This offset site can act as receiving area for rehabilitation and the creation/improvement of habitat value across the offset area. In addition, the location of the offset area near to a regional biodiversity corridor and within the same sub-bioregion as the impact area ensures the land will continue to provide habitat and fauna connectivity within the greater landscape. The vegetation adjoining the north and eastern offset site boundaries (~ 175 ha total) is mapped Category A (vegetation offsets or declared area), with two more vegetated lots (~ 180 ha total) approximately 700 m to the south of the offset site also mapped Category A and located partially within the nearby regional biodiversity corridor. The Pine Cliffs Nature Refuge is also located within the nearby biodiversity corridor, about 3 km west of the site.

Upon EPBC Act Approval, the offset will be protected by the mechanism chosen by DCCEEW, whether it is a Voluntary Declaration under the *Vegetation Management Act 1999* or a covenant either under the *Land Act 1994* or *Land Titles Act 1994*, which will provide protection for the duration of the impact. An assessment of the suitability of the offset area is provided in **Section 7**.





LEGEND

-  Offset Site Property
-  Offset Area (EPBC 2023/09690) - 20 ha

FIGURE 3

OFFSET AREA CONTEXT

PROJECT
RIPLEY ROAD, SOUTH RIPLEY
COORDINATE SYSTEM
GDA 2020 MGA Z56
SCALE (A4)
1:400,000

0 2 4 6 8 10 km



CLIENT



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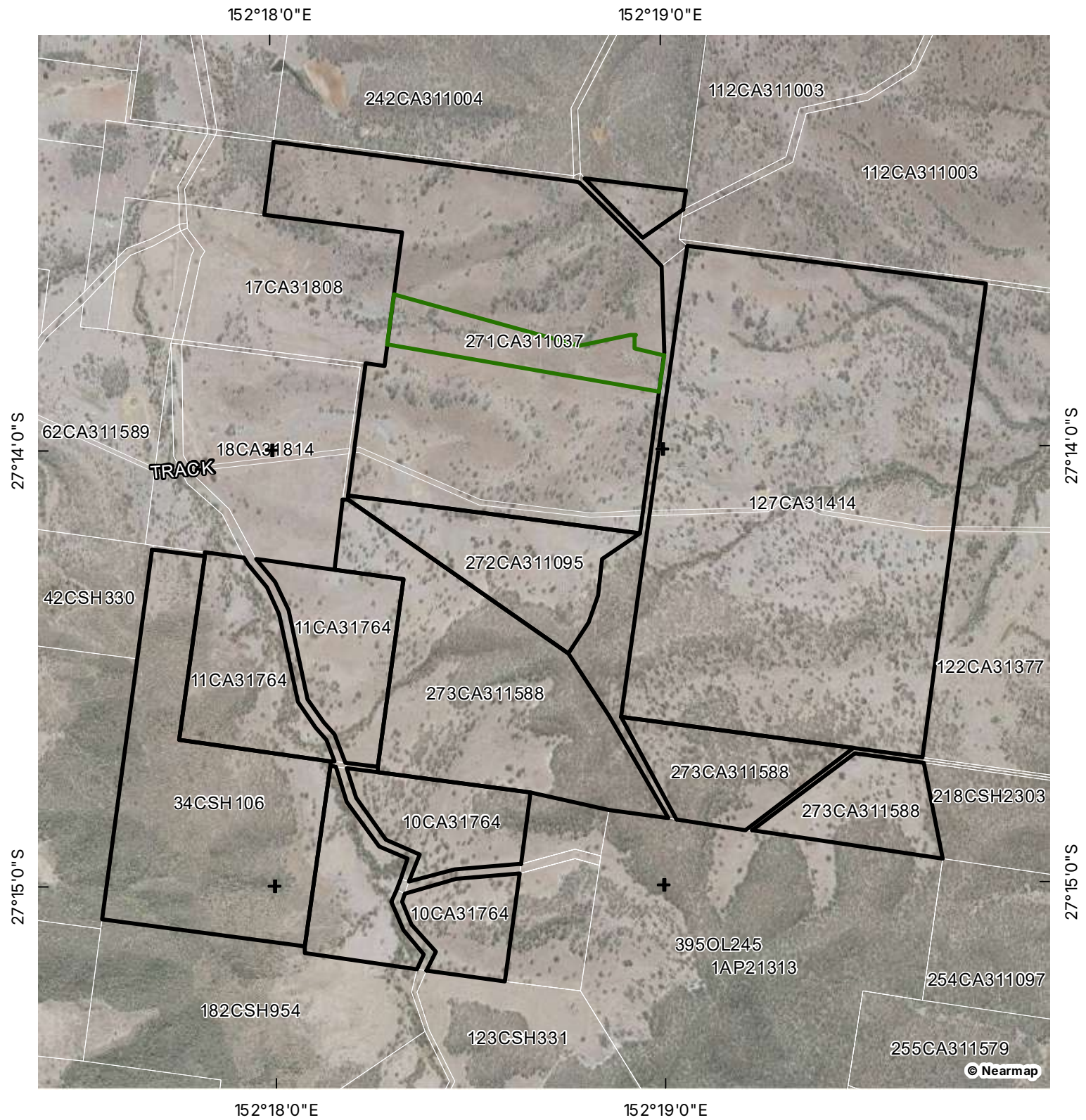
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FILE REFERENCE

11081 E Figure 3 Offset Context C

DATE 30/10/2025



LEGEND

- Qld DCDB
- Offset Site Property
- Offset Area (EPBC 2023/09690) - 20 ha

FIGURE 4

OFFSET AREA AERIAL

PROJECT
RIPLEY ROAD, SOUTH RIPLEY
COORDINATE SYSTEM
GDA 2020 MGA Z56
SCALE (A4)
1:22,500

0 100 200 300 400 500 m



CLIENT



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11081 E Figure 4 Offset Aerial C

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5. LITTLE KIPPER CREEK OFFSET SITE



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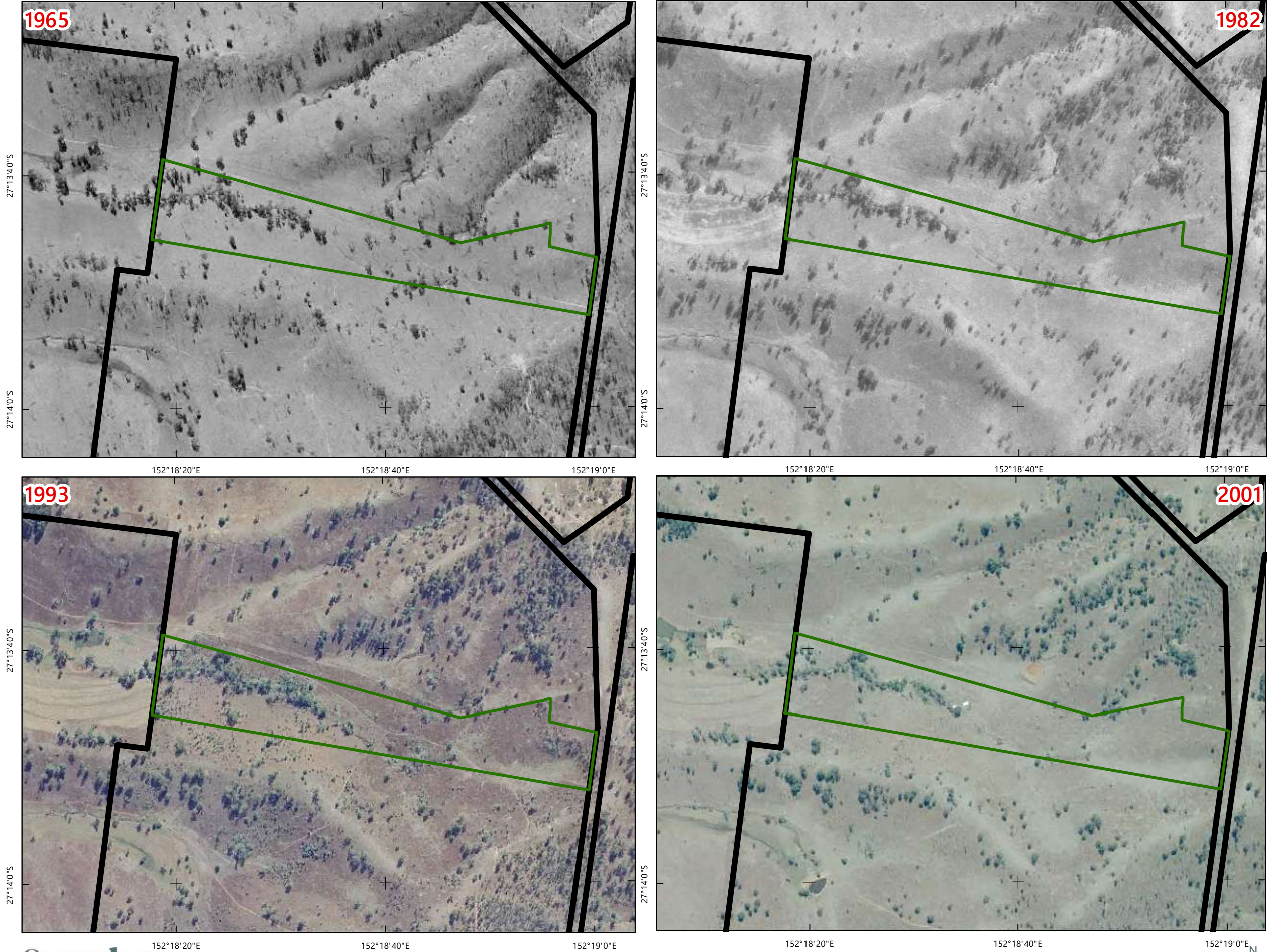
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- LEGEND**
- Qld DCDB
 - ▬ Offset Site Property
 - ▬ Adjoining Offset Site
 - ▬ Offset Area (EPBC 2023/09690) - 20 ha



6. OFFSET SITE HISTORICAL IMAGERY



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- LEGEND**
- Qld DCDB
 - Offset Site Property
 - Offset Area (EPBC 2023/09690) - 20 ha



7. Offset Area Suitability

As detailed in **Section 1**, one (1) offset area has been selected to be secured to wholly acquit the impacts to MNES proposed under the EPBC application (EPBC 2023/90690) and provide benefit additional to the required compensation for residual impacts. The suitability of the offset area is discussed within this section and considers the bioregional context of the site, ecological values, water resources and topography, and existing habitat values for Koala.

7.1. Bioregional Context

Queensland is divided into 13 biogeographical areas to identify biodiversity features at a regional scale. The offset area is located in the South East Queensland (SEQ) Bioregion. The SEQ Bioregion shares its western boundary with the Brigalow Belt Bioregion and extends from the Border Ranges on the New South Wales border, north to the dry coastal corridor between Gladstone and Rockhampton (DEHP 2016). The McPherson Range borders the southern boundary of the bioregion while the Great Dividing Range is to the west. 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 offset area are both in the same sub-bioregion, being the Moreton Basin.

7.2. Offset Area Values

7.2.1 Regional and landscape context

The offset site sits adjacent to the Biodiversity Planning Assessment regional 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 (refer **Plan 7**). 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 offset site will conserve freehold land surrounding the regional biodiversity corridor, extending the habitat within the adjoining legally bound environmental offset areas and that is generally available around the remnant vegetation within the regional biodiversity corridor. The offset site 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 habitat in the region. By assisting the 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 which aligns with offset principle 1 of the EOP.

7.2.2 Topography

The offset site has a relatively consistent topography characterised by open paddock and gently sloping hills. The topography of the offset area ranges from 196 Above Sea Level within the lower gully line areas to a maximum of



288 Above Sea Level. The offset site slopes gently up from west to east, with the highest point in the north-eastern corner of the site. A small gully runs along the mapped western waterway flowpath, creating a narrow, eroded channel only a few metres (m) wide. Refer to **Plan 8**.

7.2.3 Water resources

The offset area contains a waterway which flows downstream east-west in the western portion of the site. It is mapped under the VMA and Fisheries Act as two smaller waterways that connect into one closer to the western boundary. While the more central/southern of these smaller waterways was ground-truthed on site as following the notable, vegetated gully line on site, the northern line was not obvious during field surveys and is unlikely to provide more than overland flow after heavy rain. Similarly, a small 'low/level 1' mapped waterway in the north-western corner was also indiscernible from the surrounding land. The two smaller mapped waterways are categorised as 'low' and 'level 1' under the VMA and Fisheries Act respectively, with the conjoined waterway mapped as 'moderate', and 'level 2'. The waterway is not mapped by the *Queensland Water Act 2000*. Refer to **Plan 8**.

7.2.4 Koala habitat

The offset area comprises low quality Category X (non-remnant) vegetation. The site is dominated by cleared open paddock with scattered Lantana bushes and occasional stands of eucalypt trees, while the vegetation along the waterway gully is heavily infested by Lantana, but also contains a higher abundance of mature and regrowth eucalypt trees. There is a general lack of species diversity across the site, with canopy species heavily dominated by *Angophora subvelutina* (Broad-leaved Apple). Under the VMA, the vegetation around the gully line is mapped as pre-clear Endangered Regional Ecosystem (RE) 12.3.3/12.3.7, with the balance of the site mapped as pre-clear Least Concern RE12.9-10.2. These RE descriptions are presented in **Table 19** below.

The offset area was separated into two assessment units to delineate the vegetation present along the waterway and across the balance of the site.

Table 19: Regional ecosystem descriptions

Regional Ecosystem	Description (Queensland Herbarium)
12.3.3	<i>Eucalyptus tereticornis</i> woodland. <i>Eucalyptus crebra</i> and <i>E. moluccana</i> are sometimes present and may be relatively abundant in places, especially on edges of plains and higher level alluvium. Other species that may be present as scattered individuals or clumps include <i>Angophora subvelutina</i> or <i>A. floribunda</i> , <i>Corymbia clarksoniana</i> , <i>C. intermedia</i> , <i>C. tessellaris</i> , <i>Lophostemon suaveolens</i> and <i>E. melanophloia</i> . Occurs on Quaternary alluvial plains, terraces and fans where rainfall is usually less than 1000mm/y. Not a Wetland. (BVG1M: 16c).
12.3.7	Narrow fringing woodland of <i>Eucalyptus tereticornis</i> , <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> +/- <i>Melaleuca viminalis</i> . Other species associated with this RE include <i>Melaleuca bracteata</i> , <i>M. trichostachya</i> , <i>M. linariifolia</i> . North of Brisbane <i>Waterhousea floribunda</i> commonly occurs and may at times dominate this RE. <i>Melaleuca fluviatilis</i> occurs in this RE in the north of the bioregion. <i>Lomandra hystrix</i> often present in stream beds. Occurs on fringing levees and banks of rivers and drainage lines of alluvial plains throughout the region. Riverine. (BVG1M: 16a).
12.9-10.2	<i>Corymbia citriodora</i> subsp. <i>variegata</i> open forest or woodland usually with <i>Eucalyptus crebra</i> . Other species such as <i>Eucalyptus tereticornis</i> , <i>E. moluccana</i> , <i>E. acmenoides</i> and <i>E. siderophloia</i> may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of <i>Lophostemon</i>



Regional Ecosystem	Description (Queensland Herbarium)
	<i>confertus</i> (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. Not a Wetland. (BVG1M: 10b).

The dominance of vegetation communities containing foraging habitat values for the Koala suggests the offset area can provide value for this species with targeted restoration techniques.

7.2.5 Current management arrangement

Presently, the offset area is utilised for cattle grazing and is managed through various farming practices. This includes the use of the following management activities:

- Controlled grazing to ensure ground cover levels are maintained, subsoil moisture is retained, and pasture growth is encouraged;
- Invasive and noxious weed control targeting WONS, and;
- Establishing and maintaining adequate firebreaks across the property.

7.2.6 Current threats

The offset property is and has been utilised in various ways for agriculture, which attracts threats to both livestock and native wildlife. The major and obvious threat within the offset area and broader offset property is feral dogs. The SRC lists feral dogs as abundant and widespread throughout the Somerset region and has also listed wild dogs (*Canis familiaris dingo*, *Canis familiaris dingo* X *Canis familiaris*, *Canis familiaris*) as declared pest animals. The SRC website documents that wild dog numbers are at an all-time high across Somerset Regional Council area. Further, residents are increasingly engaged in raising livestock and poultry, resulting in a readily available food sources for wild dogs.

In addition, wild dogs and European foxes are confirmed to occur within the offset property. The Queensland WildNet database identifies 3 confirmed records of *Canis* sp. and/or *Canis familiaris*, 4 records of European foxes and 3 records of feral cats within 20 km of the offset area, located within connected vegetation. Wild dogs are known to travel up to 20 km seeking prey with home ranges of individuals likely to overlap with the offset area. Further, as discussed in detail in **Section 0**, both motion-sensor camera traps that were placed on site for the baseline surveys recorded wild dogs.

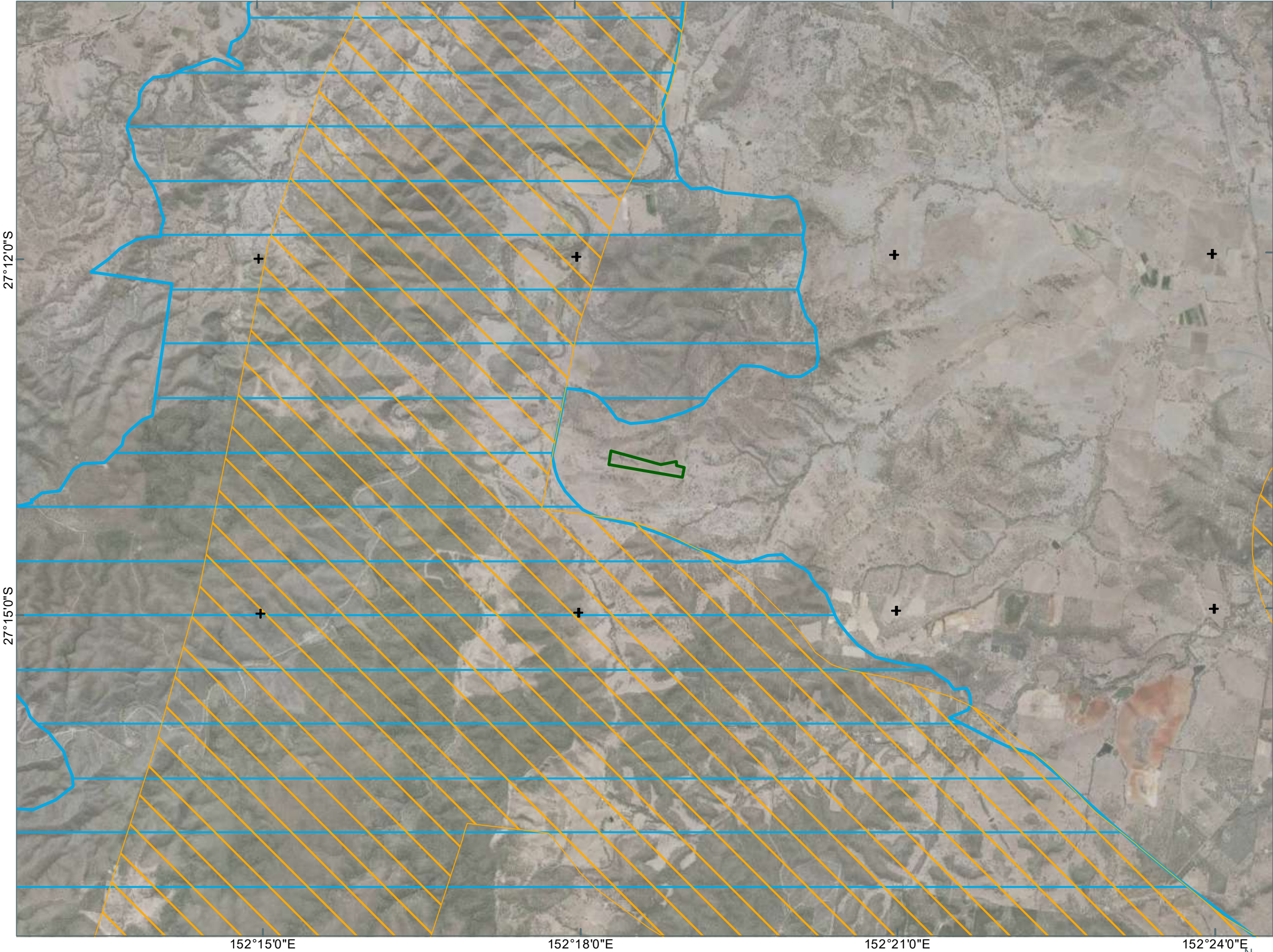
Presently, under the Queensland *Biosecurity Act 2014*, there is a 'general biodiversity obligation' for landholders to manage biosecurity risks that are under their control and take reasonable and practical steps in doing so. To determine the extent of management and whether it is necessary to take reasonable steps in managing the biosecurity risk, the landholder is required to assess the risk and its potential harm (i.e., extensive productivity loss). Currently, the landholder does not undertake feral animal control as it is assessed under the 'general biosecurity obligation' of the *Biosecurity Act 2014*, that feral animal threat to productivity does not have a positive cost benefit to the current land use (i.e., the expenditure to undertake feral animal control would not result in enough economic gain in productivity to warrant implementation).

Other threats include:

- clearing and harvesting of timber for pastoral uses,
- uncontrolled wildfire;
- barbed wire; and
- significant weed infestations, in particular, *Lantana camara*.



7. OFFSET SITE ECOLOGICAL CORRIDORS



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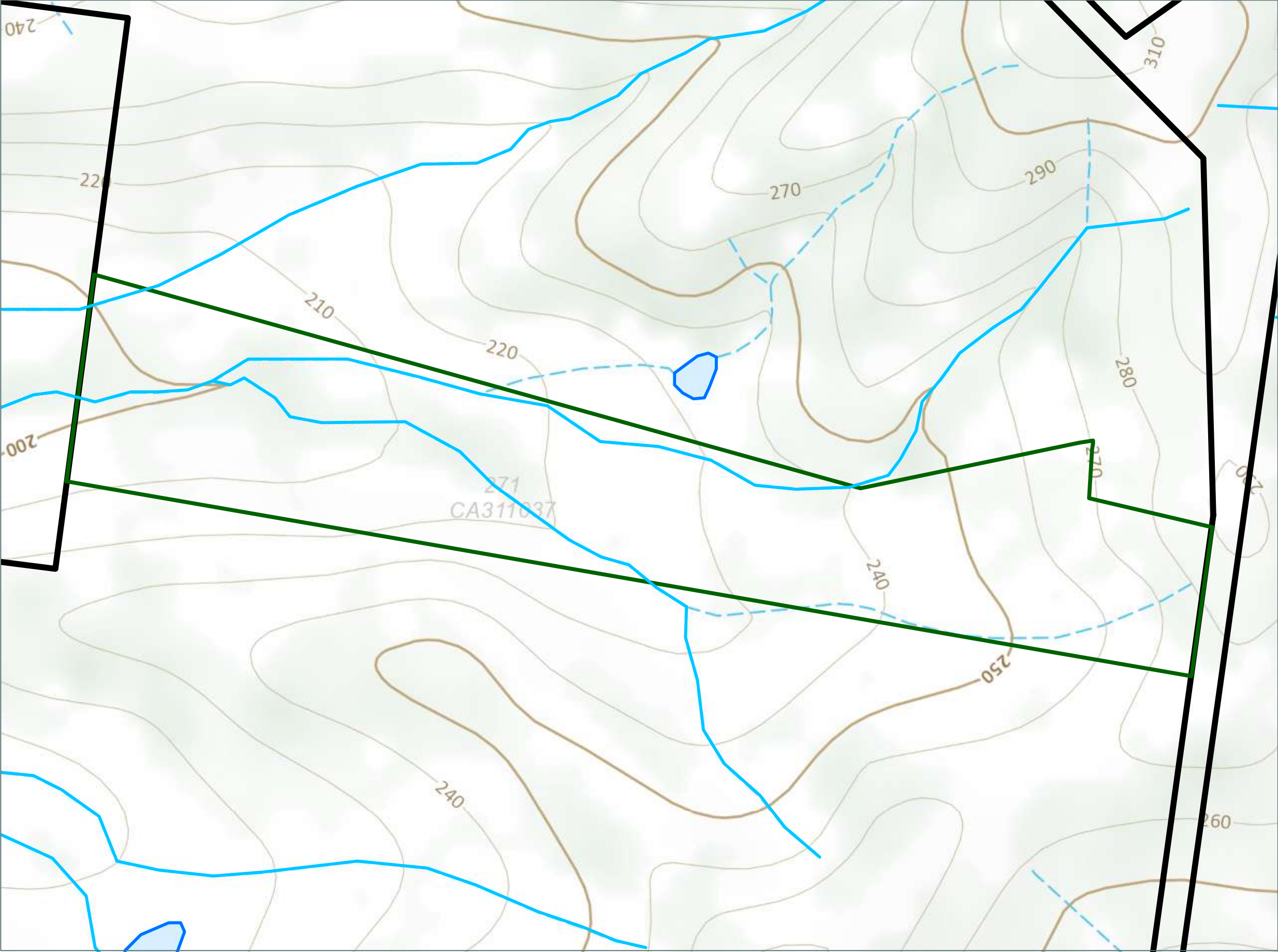
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- LEGEND**
- Offset Area (EPBC 2023/09690) - 20 ha
 - Regional biodiversity corridor (SEQ Regional Plan 2017)
 - Regionally significant corridor (Biodiversity Planning Assessments)
 - State significant corridor (Biodiversity Planning Assessments)



8. OFFSET SITE TOPOGRAPHY AND WATER RESOURCES



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- LEGEND**
- Offset Site Property
 - Offset Area (EPBC 2023/09690) - 20 ha
 - Watercourse / Drainage Feature
 - Mapped Reservoir



7.3. 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 20** lists the principles of the EPBC Act EOP and describes how the proposed offset has been developed to adhere to these principles.

Table 20: Offset suitability analysis – Environmental Offsets Policy

EOP Requirements	Delivery
Suitable offsets must:	
Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action	The impact site is mapped centrally within the Queensland Government's Ripley Valley Priority Development Area (RVPDA). The entire impact site and surrounds is zoned as 'Urban Living' under the RVPDA Development Scheme, and as a combination of 'Secondary Urban Centre East Neighbourhoods' and 'Neighbourhoods' on the Structure Plan. 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 South East Queensland region. The entire 77.8 ha impact site is required to be cleared to facilitate the development of the master-planned community, inclusive of 5.4 ha of unavoidable impact to Matters of National Environmental Significance (MNES), specifically potential Koala habitat. The small area of potential Koala habitat on site is reflective of the highly disturbed condition of the site, which is predominantly open paddock dominated by grass species. Given the planning intent of the site and surrounding area, the ability of the site to provide current and future conservation outcomes for Koala is limited. Regardless, as the impact area involves directly impacting 5.4 ha of critical Koala habitat, a land-based offset is proposed to address significant residual impacts to the species as a result of the to the Project. The offset area is significantly larger than the impact area, 20 ha, and will directly contribute to the ongoing viability of the Koala (<i>Phascolarctos cinereus</i>) via securing an area which is directly connected to regional corridors and maintaining the vegetation within this area to improve and increase habitat for Koala. Protection and management of the offset area in accordance with this OMP will improve conservation outcomes via providing a net gain in Koala habitat. The proposed offset area in its historic state, 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. Due to the long use for agricultural land, it is unlikely these land uses would change organically without the area being pursued as an EPBC offset area, and therefore the land would continue to be disturbed and provide limited viability to support population of Koala.



EOP Requirements	Delivery
Suitable offsets must:	
	As a result of the long-standing agricultural land uses, the site is highly disturbed with some heavily weeded vegetation present, particularly surrounding mapped State waterways. This OMP and associated management provide guidance for the regeneration and restoration of habitat, to enhance the habitat values for Koala and provide connection to the existing regional biodiversity corridor within the region whilst also reducing known threats to the species. The proposed restoration and improvement of the vegetation in the offset area through increasing abundance of Koala food trees and removal of weeds to encourage natural regeneration, intends to increase the overall area of Koala habitat in SEQ and compensate for the loss of 5.4 ha of Koala habitat in an urban area. The improvement and uplift of Koala habitat contributes to conservation outcomes by providing areas of refuge and increases resilience of the Koala 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 offset is built around direct offsets that easily compensate for the potential impact by providing approximately a 4 times larger offset area than the proposed impact area. The offset area will be legally secured for conservation purposes prior to the proposed impact occurring at the referral site and will endure for the duration of the impact. Legally securing and managing the offset area in accordance with this OMP protects the improved habitat from incompatible land uses that ultimately contribute to the viability of Koala.
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 1.2%. The use of this measurement in the OAG ensures that the appropriate level of statutory protection is applied. All threats to Koalas outlined in the Department's Species Profile and Threats Database and EPBC Act referral guidelines for the Endangered Koala (Koala referral guidelines) will be managed accordingly and 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 offset area for protection and management is 20 ha, delivering a 125.39% offset for the Koala, thus satisfying, and ultimately exceeding, DCCEEW's recommended minimum of a 90% direct offset area.



EOP Requirements	Delivery
Suitable offsets must:	Management actions are outlined within this OMP aim that to protect and enhance Koala habitat, compensating for and exceeding habitat quality of the impact. The offset and management actions will provide: • Legally secured and long-term protection of 20 ha of Koala habitat. • Improvement of habitat through direct revegetation and natural regeneration of Koala food trees through suppressing weeds. • Contribution to a large contiguous protected habitat and biodiversity corridor with reduced threats via revegetation efforts. • Long-term reduction in threats, through the removal of incompatible land uses (i.e. vegetation clearing for agriculture). • Reduced risk of Koala mortality or injury due to vehicle strike. • 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 and reduction of <i>Lantana camara</i> (Lantana). • Reduced risk of the spread of diseases and/or pathogens through best-practice access and weed washdown protocols.
Effectively account for and manage the risks of the offset not succeeding	Confidence in the success of the offset is typical of non-remnant vegetation ($\geq 75\%$). Given the detail and intensity of the management actions outlined within this OMP with the inclusion of a Detailed Rehabilitation Plan (Appendix G) this confidence is considered appropriate. The confidence is supported by the offset area selection, design of management actions, and clear monitoring and reporting procedures. The offset area contains well-maintained access tracks that will facilitate access to high priority weed treatment areas and planting areas. This offset area is the last remaining polygon within a much larger offset property with several approved offset areas, therefore a level of increased confidence would come with the aggregation of offset approvals within the one offset property which is undertaking identical management actions and outcomes across all offset approvals. Risks associated with the offset delivery will be mitigated and managed through the detailed management actions outlined in Section 9. Management actions have been drawn from offset targets that aim to protect and conserve large, connected areas of Koala foraging habitat to support viable populations.



EOP Requirements	Delivery
Suitable offsets must:	
Be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs	Legally securing the offset area for the duration of the impact will ensure existing and future owners are prohibited from conflicting land uses, such as vegetation clearing for agriculture and cropping activities. The proposed offset includes management beyond the minimum legislative requirements 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 offset area is surrounded by a wider landscape of connected Koala habitat, and more directly by potential habitat that is being actively rehabilitated under secured offsets. Management actions will ensure efficient delivery of outcomes over the offset area 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 offset area was not protected or managed for conservation outcomes. Protection and management of the offset area 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 and scattered trees within the offset area allows for the achievement of immediate and long-term conservation outcomes that occur as soon as the offset area is legally secured prior to the commencement of clearing at the project site. Legally securing the offset area 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 9 will commence and continue for the duration of the approval. In addition, adaptive management processes will ensure management actions respond to technology improvements, natural events and potential risks identified in the risk assessment. Transparent:



EOP Requirements	Delivery
Suitable offsets must:	- 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 (refer Section 4). Monitoring and reporting of the offset area will be summarised within the Offset Area Annual Report provided by the Offset Provider which is then included in the Annual Compliance Reports for project. Scientifically robust: - The proposed offset area was assessed by qualified and experienced Ecologists and the OMP was informed by State and Federal documents including DCCEEW Koala conservation advice. Ongoing management and monitoring actions will occur with guidance from the Invasive Plants and Animals Committee Australian Pest Animal and Weeds Strategies 2017–2027 and the South East Queensland Ecological Framework Manual. 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 offset area followed 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 offset areas are greater than the significant residual impact on Koala habitat at the impact site and provides a 125.39% offset for the Koala based on the quantum impact (using the OAG). - This OMP outlines appropriate management and monitoring actions to achieve the offset outcomes specified within the EPBC Act approval and provide an overall improved conservation outcome and net gain in Koala 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 (refer Sections 6 and 7). These provide minimum requirements for success/failure of management actions and triggers for corrective actions.



EOP Requirements	Delivery
Suitable offsets must:	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 <i>Environment Protection and Biodiversity Conservation Regulations 2000</i> (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. Annual Compliance Reports 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.

7.3.1 Recovery plans and 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 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 the 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 offset area 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 5.4 ha of Koala habitat, the habitat on-site and in the surrounding lots is intended for major urban development as part of the RVPDA. The habitat within the impact site is similar to that present within the offset site, being scattered Koala trees and cleared open area. At approximately four times the size of the impact site and with greater connectivity potential that will be protected, the rehabilitation of the proposed offset site will provide a net gain of Koala habitat by strategic habitat restoration. As it is surrounded by other offset sites and adjacent to a regional biodiversity corridor, this habitat is located well to maximise the projected benefit to Koala.

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 habitat critical to the survival of the Koala, all significant residual impacts are to be compensated through the provision of land-based offsets. Proposed offsets will be located amongst Koala-occupied areas of connected and resilient habitat, and within the same sub-bioregion as the impact site.



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 impacts of 5.4 ha to Koala habitat. However, as the project is located within the RVPDA, assessment under the Strategy is not triggered.

All vegetation clearing under the project will be governed by impact and pre-clearing management protocols, including preparation of site-based management plans and pre-start checklists.

Habitat restoration for Koalas

The project will impact 5.4 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 non-remnant, weeded condition it currently exists in as a result of extensive historical rural land uses.

Threat management

Section 4.8 lists the relevant threats to Koala (vehicle strike, dog attack and weed invasion) and effective mitigation measures to reduce risks during the construction and operational phases of the proposed action. Mitigation measures are to be incorporated into Vegetation Conservation and Management Plans, and Fauna Management Plans. All contractors and visitors are to undertake site inductions to address threats and risks to MNES.

Improved mapping, monitoring, research and reporting

Not applicable.

Strong community engagement and partnerships

Awareness signage and traffic calming devices will be employed 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.

In conclusion, the proposed action has considered the avoid, mitigate and offset hierarchy. The proposed master-planned residential community 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 offsets and a nearby regional biodiversity corridor that will ensure connectivity and longevity of the rehabilitated habitat is protected.



8. Baseline Surveys

8.1. Offset Area Baseline Surveys – Methodology

Baseline field surveys to determine habitat quality for Koala and non-native vertebrate pest presence were completed on 12 and 26 November 2024. Refer to **Table 21** and the subsections below for specific details on survey dates for each method applied.

Table 21: Offset area baseline field surveys methods summary

Date	Temperature	Rainfall	Methods implemented
12 November 2024	20.8°C min – 31.4°C max	0 mm	MHQA transects, camera installation, SAT surveys.
26 November 2024	14.6°C min – 30.7°C max	0 mm	Weed mapping, weed coverage transects, camera retrieval.

NB: Temperature data sourced from Bureau of Meteorology (BoM) – Station 040082 University of Queensland Gatton.

8.1.1 Habitat quality – Koala

The Koala habitat quality assessment methods used for the impact area (described in **Section 0**) were also applied to the offset area. Site condition within the offset area was assessed using the BioCondition method as recommended under the Queensland environmental offsets framework within the two (2) AUs identified in the offset area. These are summarised in **Table 22** and shown in **Plan 9** Assessment at multiple locations per assessment unit is necessary where possible to measure vegetation condition at representative locations across the spatial extent of each assessment unit. Field survey effort is provided as **Plan 10**.

Site condition was assessed through the completion of a total of three (3) MHQA transects within the offset area, one (1) in AU1 and two (2) in AU2. Given the small, lineal size of AU1, only 1 transect was able to be completed.

Table 22: Summary of assessment units and MHQA transects – offset area

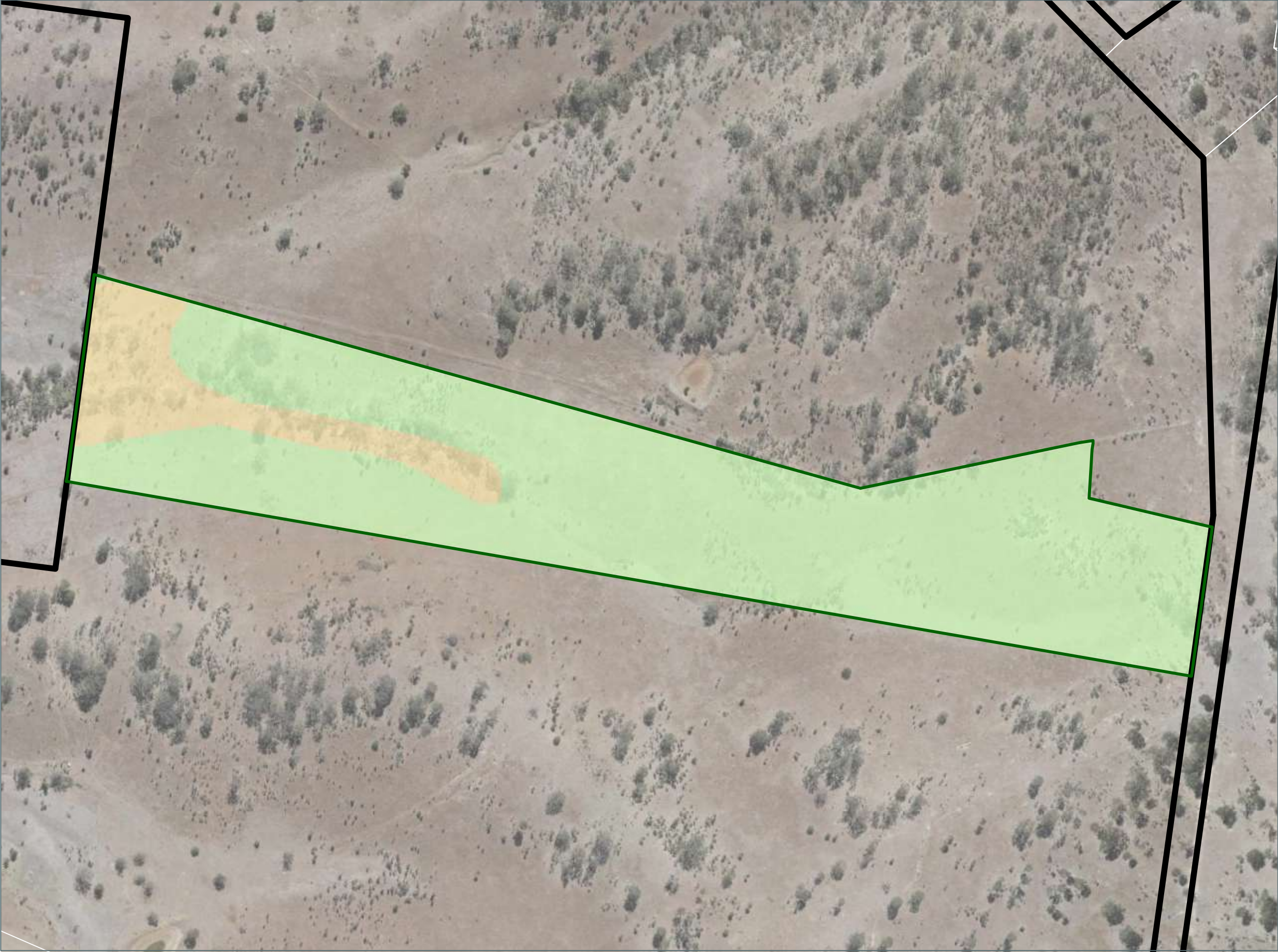
Assessment unit	Vegetation community	Area (ha)	MHQA transect
AU1	Non-remnant pre-clear RE12.3.3	2.7	Transect 1
AU2	Non-remnant pre-clear RE12.9- 10.2	17.3	Transects 2 and 3

8.1.2 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 at a site and is specified as an appropriate survey method in the EPBC Act Referral Guidelines for the Vulnerable Koala. Results from the SAT surveys are compared against current available published scientific literature to identify an estimated Koala carrying capacity (stocking rate) to be determined. A total of two (2) SAT surveys were completed across the offset area in conjunction with MHQA transects 1 and 3 (refer **Plan 10**) to target presence of Koala. MHQA Transect 2 did not contain sufficient trees to carry out a SAT survey.



9. OFFSET SITE ASSESSMENT UNITS



Notes:
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LEGEND

- Qld DCDB
- Offset Site Property
- Offset Area (EPBC 2023/09690) - 20 ha

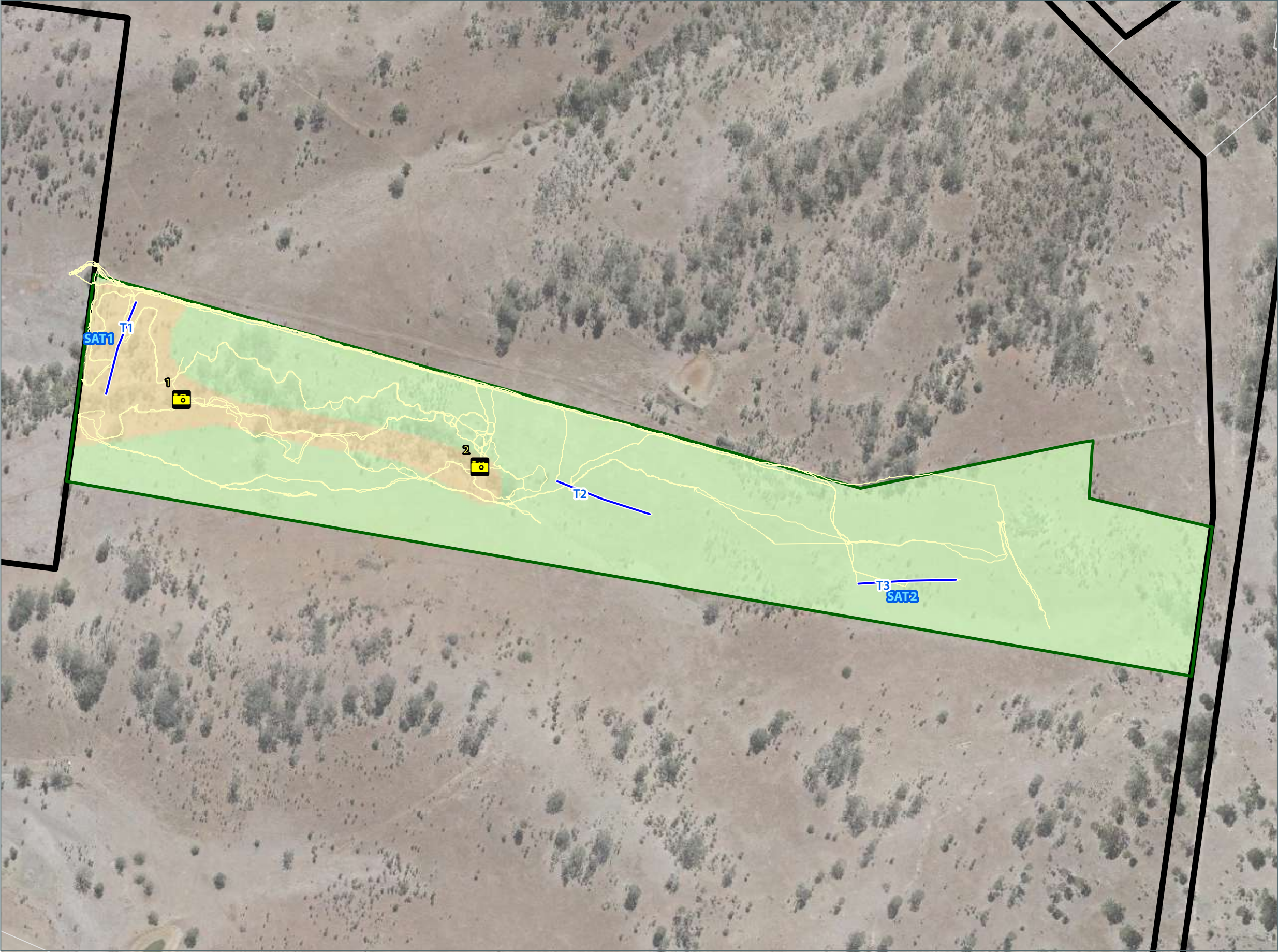
Assessment Units

Assessment Unit 1:
Non-remnant vegetation
(RE 12.3.3) - 2.7 ha

Assessment Unit 2:
Non-remnant vegetation
(RE 12.9-10.2) - 17.3 ha



10. OFFSET SITE BASELINE FIELD SURVEYS



Notes:
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LEGEND

- Qld DCDB
- Offset Site Property
- Offset Area (EPBC 2023/09690) - 20 ha

Assessment Units

Assessment Unit 1:
Non-remnant vegetation
(RE 12.3.3) - 2.7 ha

Assessment Unit 2:
Non-remnant vegetation
(RE 12.9-10.2) - 17.3 ha

Field Survey Effort

- Observational surveys

Trsct_Type

- MHQA Transects
- SAT Survey Locations
- Camera Trap Locations



8.1.3 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 infrared motion-triggered camera trapping. The use of camera trapping is considered to be 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 recommends 10 remote cameras per ha as the focus is on threatened species which are highly cryptic and often have small home ranges. In contrast, feral animals are far less cryptic and significantly more mobile with larger home ranges than most native species.

The purpose of this assessment is to survey for feral animal abundance; therefore, The *Survey Guidelines for Australia's Threatened Mammals* is considered excessive and not practical for an area of this size. **Table 23** below outlines key feral animal present within the region and their associated home ranges. Several published papers outline the density of cameras required to monitor abundance of specific feral mammals. This is most conveniently done utilising a grid-based system that can be 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 a grid based from 500 m x 500 m and frequently up to 1 km x 1 km. To ensure, the survey method provide suitable coverage. These distances were considered when developing the number of cameras and locations. Given the eastern extent of the offset area is largely treeless with limited evidence of animal tracks, cameras were focused towards the western extent of the offset site. Furthermore, grass paddocks that dominate the offset site present issues with false triggering where grass blowing in the wind triggers camera photos.

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. Camera trap set up and deployment was conducted as per the Queensland Government, *Terrestrial Vertebrate Fauna Survey Guidelines* for Queensland (June 2022). The guideline advises this survey technique should be utilised to identify fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts. As per the guidelines, cameras were attached 30cm – 100 cm from the ground on a tree or post and directed towards the bait station that is placed about 1.5 - 2m from the mounted camera. Once the broad camera location had been determined, 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).

The number of camera traps required for a specific survey area are dependent on the individual characteristics of the survey site (overall size and variety of vegetation communities) as well as the behaviours of the specific species being targeted (mobility/home range). Given the small size of the offset area (20 ha) and large home range of the target species (refer **Table 22**), two (2) camera traps were installed across the offset area as per the above set up and were deployed for a period of 14 nights from 12 November 2024 to 26 November 2024. Wild dogs are known to be active at all times of year however camera placement occurred in November as late-spring/early summer to coincides with peak activity times for wild dogs (Department of Agriculture and Fisheries, 2024). All future pest detection surveys should be conducted at the same time each year so that valid comparisons in species abundance/activity trends can be made.

The cameras were baited with chicken necks to target wild dogs and other known potential threats to MNES in the broader area. The bait station utilised does not allow the target animal to consume the bait. Additionally, weather conditions were dry throughout the survey period, and therefore it was not necessary to replenish the bait. Refer to **Plan 10** for the location cameras and **Table 24** for a description of camera deployment locations.



Table 23: Camera grid size justification

Target Animal	Approx. Home Range	References	Spacing Recommendations
Dog	>250ha	- Department of Primary Industries, NSW Government (2018), Guidelines for camera trapping wild dogs, foxes and feral cats - Northern Territory Government (2015), A guide for the use of remote cameras for wildlife survey in northern territory - Contardo, J. E. (2017). Occupancy of free-ranging dogs in relation to infrastructure and habitat on Navarino Island, Cape Horn Reserve, Chile - Department of Industry, (2017). NSW Wild Dog Management Strategy 2022-2027 - 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	1 km 500 m 700 m 700 m 700 m

Table 24: Fauna camera summary (12 November 2024 to 26 November 2024)

ID	Latitude	Longitude	Photo	Description of location
1	-27.22798°	152.306139°		Camera 1 was deployed in the eastern portion of the offset area where a dirt car track crossed the gully line. The primary focus was to have cameras evenly covering the offset area. Once the broad area was selected the ultimate camera location was based on the presence of animal tracks. Camera 1 was positioned towards one of these tracks



2	-27.229192°	152.309214°		Camera 2 was deployed in the central portion of the offset area just next to the gully line. The primary focus was to have cameras evenly covering the offset area. Once the broad area was selected the ultimate camera location was based on the presence of animal tracks. Camara 1 was positioned towards one of these tracks

8.1.4 Relative Abundance Index

The results of the motion-triggered camera detection survey (recorded species and number of occurrences over days of camera deployment) were utilised to provide relative abundance of non-native vertebrate pest species over the offset area, reducing bias and increasing repeatability.

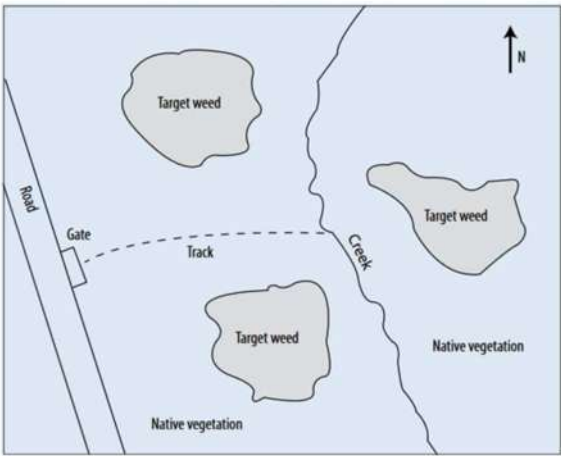
A relative abundance index (RAI) is then calculated for feral animal abundance, using the formula **RAI= D/TN x 100**, where D is number of individual detections and TN is the total number of camera-trap nights (all cameras combined). This methodology ensures that the surveys are representative of the entire area and are repeatable for future monitoring requirements. A higher RAI indicates a higher pest presence.

8.1.5 Weed cover

The primary weed species located within the offset area 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 offset area were mapped on-ground as polygons to produce a 'mud map' of the site (refer **Extract 2**). Each polygon was given an initial visual estimate of WONS percent coverage. 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 within each mapped area 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, as cover is instead accurately measured against the tape, typically standardised at 100 metres 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, however, can be interpreted as a percentage.

Three (3) 100 m transects were established across the offset area that, within the heavy *Lantana camara* along the western gully line, 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. Due to the relatively small size of the offset area, the location of transects are considered adequate to represent the general condition of the offset area. Refer to for the location of transects and the extent of initial mapped weed polygons.

Surveys to estimate the weed cover using the vegetation cover classes proposed by Auld (2009) will be undertaken by suitably qualified persons before the end of years 3, 5, 8, 10, 13, 15, 17, 19 and 20 of the offset and are recommended at Year 8, in addition to Modified Habitat Quality Assessment transects which also involve a component of weed cover estimation. Due to the location and size of weed patches during baseline surveys, only one transect was required to be completed for each patch category, but if additional transects are required as part of future surveys, the average cover percentage for a patch will be calculated. Results and progress against the management and monitoring actions will be reported on as part of the Annual Compliance Report.



8.2. Offset Area Baseline Assessment Results

8.2.1 Assessment unit description

Assessment Unit 1

This assessment unit is comprised of the vegetation surrounding the ephemeral waterway that exits from the western boundary and runs east-west through just less than half of the site (totalling 2.7 ha). This area showed higher shrub and canopy cover than the balance of the site. This assessment unit was reflective of Land zone 3 (alluvial) as evident by a drainage gully. This area is heavily dominated by *Lantana camara* (Lantana). The dominant canopy species is *Angophora subvelutina* (Broad-leaved Apple), with *Eucalyptus tereticornis* (Forest Red Gum), *Corymbia tessellaris* (Moreton Bay Ash), and *Lophostemon suaveolens* also present. Ground cover is a mixture of native and non-native grasses and forbs, including *Heteropogon contortus* (Black Speargrass), *Cymbopogon refractus* (Barbed Wire Grass), *Melinis repens* (Red Natal Grass), *Sporobolus pyramidalis* (Giant Rat's Tail Grass), *Chrysocephalum apiculatum* (Yellow Buttons), *Wahlenbergia stricta* (Queensland Bluebell), *Gomphocarpus physocarpus* (Balloon Cotton Bush) and *Verbena bonariensis* (Purple-top Verbena). The pre-clear RE mapping is composite RE12.3.3/12.3.7, species present were broadly reflected RE12.3.3 **Photo set 1** shows the vegetation present within this AU.

Habitat quality Transect 1 was completed within AU2.



Photo set 1: AU 1 vegetation, dominated by *Angophora subvelutina* (Broad-leaf Apple) and *Lantana camara* (Lantana).

Assessment Unit 2

Assessment Unit 2 comprises the balance of the site (12.8 ha) and is open paddock with scattered individual trees. This area is mapped as pre-clear RE 12.9-10.2, with scattered *Angophora subvelutina* (Broad-leaved Apple) and *Eucalyptus tereticornis* (Forest Red Gum) present. Canopy cover is sparse through this area and shrub layer is restricted to *Lantana camara* (Lantana). Ground layer species composition is similar to AU1 vegetation, dominated by non-native grasses *Melinis repens* (Red Natal Grass) and *Sporobolus pyramidalis* (Giant Rat's Tail Grass) with some native grasses and forbs including *Heteropogon contortus* (Black Speargrass), *Cymbopogon refractus* (Barbed Wire Grass), *Eragostis brownii* (Brown's Lovegrass), *Lobelia purpurascens* (White Root), and *Chrysocephalum apiculatum* (Yellow Buttons). **Photo set 2** shows the vegetation present within this AU.

Revegetation and assisted natural regeneration techniques in accordance with the SEQRF are required alongside weed and pest management to restore the majority of the proposed offset site to functional, quality Koala habitat for the local populations.

Habitat quality transects 2 and 3 were completed within AU1.





Photo set 2: Assessment Unit 2 vegetation, open paddock with scattered trees

8.2.2 Non-native vertebrate pest abundance survey

There were four (4) individual sightings of non-native animals over a combined total of twenty-eight (28) survey nights as part of preliminary baseline surveys (refer to **Table 25**). Non-native predator species were detected, being *Canis lupis familiaris* (Dog). Non-native herbivore species *Cervus elaphus* (Red Deer) was detected (refer **Photo set 3**). Other native fauna species were also captured during this survey. Any non-native animal was recorded as a new individual if >1 hour had elapsed between sightings.

A baseline RAI was calculated using the formula $RAI = D/TN \times 100$, where D is numbers of detection and TN is the total number of camera-trap nights (all cameras combined). This methodology ensures that the surveys are representative of the entire offset area and are repeatable for future monitoring requirements.

The RAI for non-native predators is **7.1**, and for non-native herbivore species is **21.4** (refer **Table 25** and **Table 26**).

Table 25: Non-native pest survey results summary

Camera	Species	Survey Duration (nights)	Detection	RAI
1	<i>Canis lupis familiaris</i> (Dog)	14	1	7.1
2	<i>Canis lupis familiaris</i> (Dog)	14	1	
Total		28	2	

Table 26: Non-native herbivore survey results summary

Camera	Species	Survey Duration (nights)	Detection	RAI
1	<i>Cervus elaphus</i> (Red deer)	14	5*	21.4
2	<i>Cervus elaphus</i> (Red deer)	14	1	
Total		28	6	

*Includes the direct observation of four individuals while on site (26.11.2024) in the vicinity of Camera 1.





Photo set 3: *Canis lupis familiaris* (Dog) and *Cervus elaphus* (Red deer) observed within the offset site in November 2024

8.2.3 Weed cover

Ground coverage on site is heavily dominated by weeds, specifically *Lantana camara* (Lantana) and non-native grass species such as *Melinis repens* (Red Natal Grass) and *Sporobolus sp.* (Rat's Tail Grass). Some native grasses and forbs were present through the paddock areas, but very rarely in notable quantities. Importantly, there is significant presence of *Lantana camara* (Lantana) across the site, a Weed of National Significance (WONS) and known barrier to Koala access of otherwise suitable habitat trees.

Lantana dominates the vegetation along the eastern gully line and is scattered across the balance of the site, decreasing in abundance east-west as distance from the gully line increases. The site was divided into three categories of Lantana abundance (low, moderate, and high), and within each category a line transect was conducted to confirm and quantify Lantana coverage. **Table 27** presents the summary of weed coverage transect data.

Lantana camara coverage was greatest surrounding the western waterway path (>80%) and considered 'high' (refer **Photo set 4**). Patches of Lantana were present adjoining this dense gully vegetation and becoming less dense further from the gully, with about 30-80% coverage and considered 'moderate' (refer **Photo set 5**). The balance of the site, open paddock, contains scattered individual and small patches of Lantana, with coverage recorded up to 30%, considered 'low' (refer **Photo set 6**). The results of the baseline weed surveys are displayed on **Plan 11** and raw data are provided at **Appendix C**.

Table 27: Weed coverage transects summary

	Total dominant species coverage (%)		Area (ha)	Relative cover of WONS (ha)
	WONS (Lantana)	Other flora species		
Transect 1 (>80% WONS)	81.9	18.1	2.8	2.29
Transect 2 (30-80% WONS)	50.6	49.4	1.9	0.95
Transect 3 (<30% WONS)	21.4	78.6	15.3	3.21
Total site cover (WONS)			20	6.45 (32.25% of total offset site)





Photo set 4: High abundance of *Lantana camara* along the gully line in the eastern portion of the offset site.

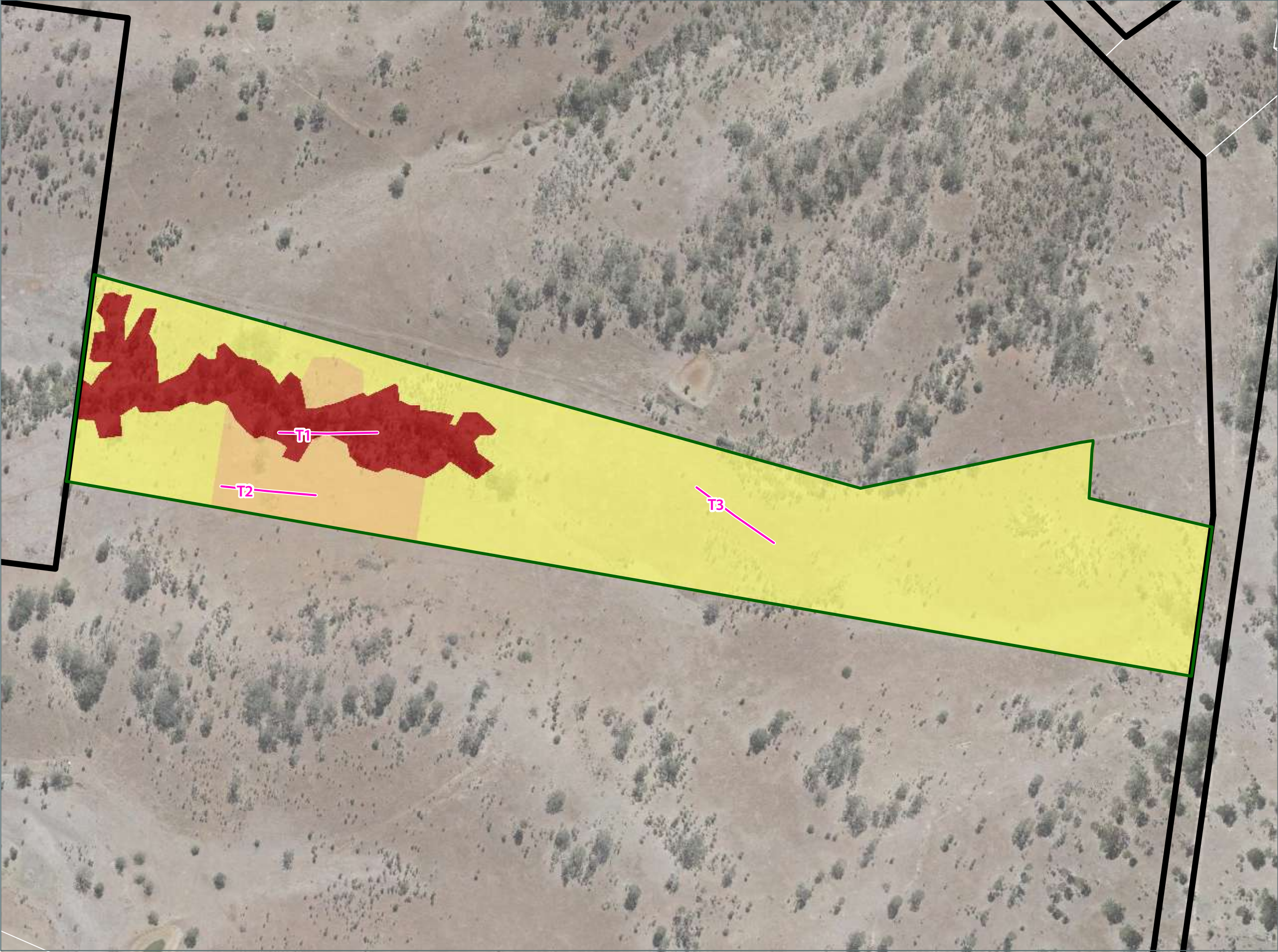


Photo set 5: Moderate abundance of *Lantana camara* adjoining gully vegetation in the eastern portion of the offset site.



Photo set 6: Low abundance of *Lantana camara* throughout the balance of the site.

11. OFFSET SITE BASELINE WEED MAPPING



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- LEGEND**
- Qld DCDB
 - ▬ Offset Site Property
 - ▬ Offset Area (EPBC 2023/09690) - 20 ha
- Baseline Weed Mapping**
- Weed Transects
 - <30% Weeds of National Significance cover [15.3 ha]
 - 30-80% Weeds of National Significance cover [1.9 ha]
 - >80% Weeds of National Significance cover [2.8 ha]



8.2.4 Koala MHQA

Site condition (30%)

The site condition scoring for the offset area is summarised in **Table 28**. Refer to **Appendix D** for detailed baseline Koala MHQA scoring and **Appendix E** for the raw data.

Table 28: Site condition scores for offset area assessment units

	AU1	AU2
Pre-clear Regional Ecosystem	12.3.3	12.9-10.2
Remnant/Non-remnant/Regrowth	Non-remnant	Non-remnant
Recruitment of woody perennial species in EDL	5	5
Native plant species richness - trees	2.5	2.5
Native plant species richness - shrubs	0	0
Native plant species richness - grasses	2.5	2.5
Native plant species richness - forbs	2.5	2.5
Average tree canopy height*	5	3
Average tree canopy cover*	3.5	2
Shrub canopy cover	0	3
Native grass cover	1	3
Organic litter	5	3
Large trees	10	0
Coarse woody debris	5	0
Non-native plant cover	3	3
Quality and availability of food and foraging habitat	5	5
Quality and availability of shelter	5	5
Total (Out of 100)	55	39.5
Score out of 3	1.65	1.19

Quality and availability of food and foraging habitat

Scoring of Quality and availability of food and foraging habitat is based on the balance site condition attributes where their score is utilised as follows: <27/80 (<33% of benchmark) scores 1, between 27/80 (33% of benchmark) and 54/80 (66% of benchmark) scores 5 and above 54/80 (>66% of benchmark) scores 10. These attributes scored a **5 out of 10** for both AU1 and AU2.

Quality and availability of shelter

Scoring of Quality and availability of shelter **are based on** the balance site condition attributes where their score is utilised as follows: <27/80 (<33% of benchmark) scores 1, between 27/80 (33% of benchmark) and 54/80 (66% of benchmark) scores 5 and above 54/80 (>66% of benchmark) scores 10. These attributes scored a **5 out of 10** for both AU1 and AU2.



Site Context (30%)

The site context characteristics for Koala are shown on **Plan 12** with scores summarised in **Table 29**.

Table 29: Koala site context scores for offset area

	AU1 (non-remnant pre-clear 12.3.3)	AU2 (non-remnant pre-clear RE12.9.10-2)
Size of patch	10	10
Connectedness	2	2
Context	4	4
Ecological corridors	0	0
Role of the site location to species overall population in the state	4	4
Threats to species	7	7
Species mobility capacity	10	10
Total (out of 56)	37	37
Score out of 3	1.98	1.98

Size of patch

The offset area is connected to a patch of 1000 ha therefore achieves a score of **10 out of 10** (refer **Plan 12**).

Connectedness

The offset area shares 14% of its boundary with Koala habitat therefore achieves a score of **2 out of 5** (refer **Plan 12**).

Context

Retained critical Koala habitat within a 1 km buffer of the offset area was calculated at 58.5% and therefore achieves a score of **4 out of 5** (refer **Plan 12**).

Ecological corridors

The offset area is not located within a Statewide corridor of regional significance (refer **Plan 7**) therefore achieves a score of **0 out of 6**.

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 the 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 offset area scored a **4 out of 5**.



Threats to species

Threats to Koala are present across the broader Little Kipper Creek Offset Property including dog and fox attack, degradation of habitat through uncontrolled weed infestations (namely *Lantana camara* (Lantana)), uncontrolled wildfire, and the presence of barbed wire. Additional to this is the indirect threat of revegetation destruction by non-native feral herbivores.

The presence of moderate to severe Lantana infestations threatens Koala habitat by reducing the potential for natural regeneration of habitat. Wild dogs were recorded during camera trapping (RAI 7.1) and are known to occur across the broader Little Kipper Creek Offset Property. Additionally, the Queensland WildNet database identifies 3 confirmed records of *Canis* sp. and/or *Canis familiaris*, 4 records of European foxes and 3 records of feral cats within 20 km of the offset area, located within connected vegetation. Wild dogs are known to travel up to 20 km seeking prey with home ranges of individuals likely to overlap with the offset area.

Given the presence of multiple threats across the offset area, a score of **7** or 'moderate' was considered appropriate.

An adaptive management approach is proposed to manage threats from dogs and other vertebrate pest species for the life of the offset (20 years).

Species mobility capacity

Species mobility capacity is considered consistent across all AUs. While restrictions were present in the form of cleared paddocks and dense *Lantana camara* (Lantana) a score of **10 out of 10** was assigned.

Species stocking rate (40%)

Evidence of Koala was not recorded within the offset area during field surveys, though Koala presence in the area is known from surveys conducted across the adjoining offset sites in the broader Little Kipper Creek Offset Property.

Two (2) SATs labelled were completed at MHQA transects 1 and 3 returned a 'low' usage under the East Coast (med-high) activity category. SAT surveys were not completed for MHQA 2 due to a lack of trees. A summary of the SAT survey results completed at each MHQA transect are provided in **Table 30**, with raw data provided at **Appendix F**.

Table 30: Baseline SAT survey results

SAT ID (MHQA transect)	Number of scats	Evidence of Koala activity (%)	Koala use (East Coast med-high)
AU1 (MHQA 1)			
SAT 1	0	0	No use
AU2 (MHQA 3)			
SAT 2	0	0	No use

The SAT surveys demonstrate that Koala utilisation of the offset area is low, as expected given the current state of the vegetation on site, but has the capacity to support ecological gain for the Koala with rehabilitation efforts. Koala are known to occur in the locality, having been recorded previously across the adjoining offset areas, and it is assumed that utilisation of the site 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 **10 out of 70** for AU2 (refer to **Table 31**). Further details on the assessment are provided below:

- A Koala was observed adjacent to the offset area as part of surveys for adjoining offset areas, therefore 'presence detected on or adjacent to site' was assigned a score of **5 out of 10** for all assessment units.
- The presence of Koala habitat trees (albeit limited) resulted in a score of **15 out of 15** as habitat type reflects 'breeding' habitat within AU1. AU2 contains significantly fewer trees and dominated by cleared paddocks, this vegetation therefore reflects dispersal habitat and scores **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 offset area matrix (Little Kipper Creek Offset Property), Koala likely utilise the more heavily treed and connected habitat areas to the north, south, and west. It is anticipated that the capacity of the offset area to support Koala will improve with weed management and active regeneration.
- The offset area is not considered a key source for population for dispersal under 'role/importance of species population on-site' therefore was scored a **0 out of 15**.

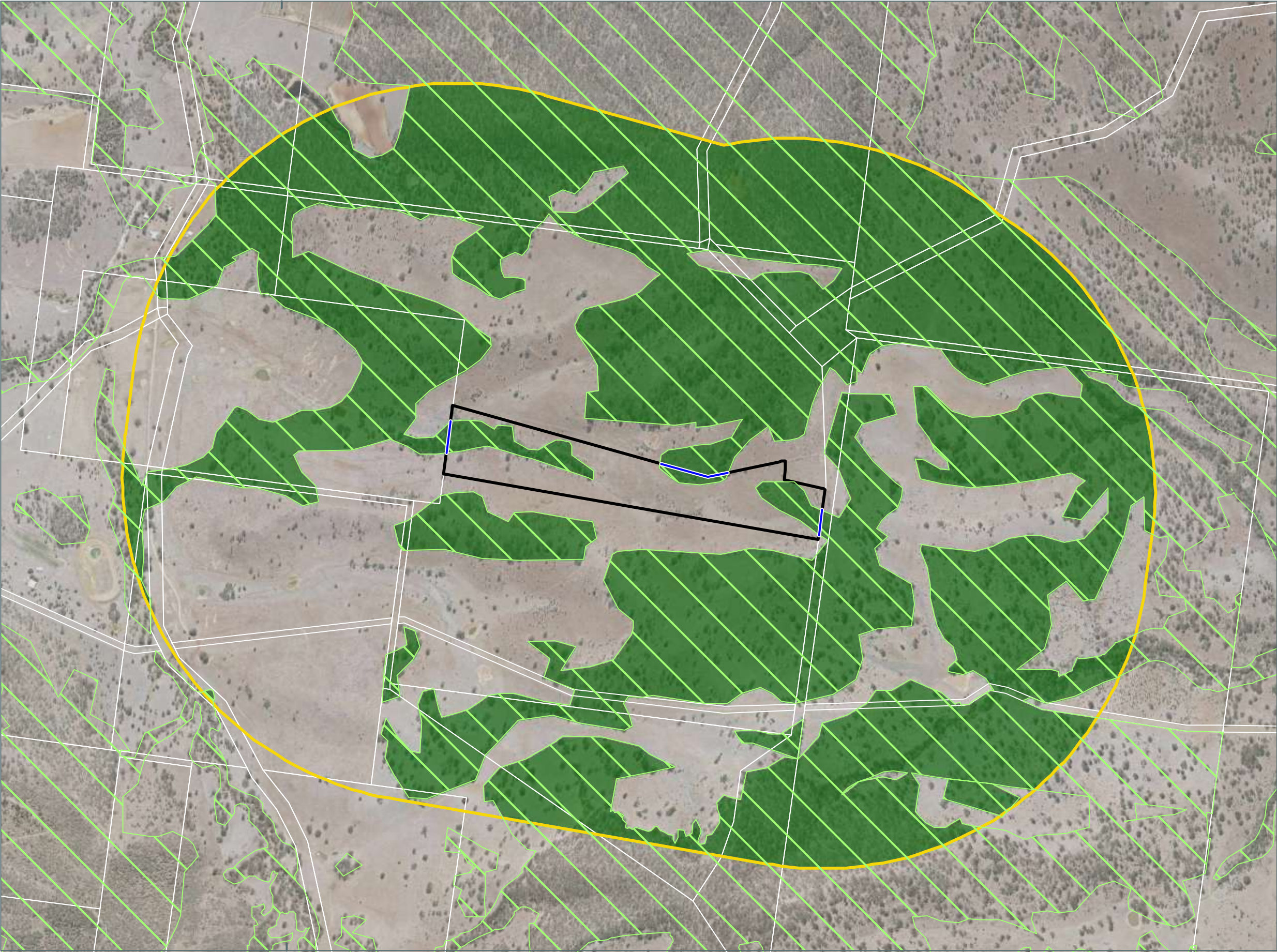
Table 31: Koala species stocking rate scores within offset area assessment units

Species Stocking Rate Table		
	AU1	AU2
Presence detected on or adjacent to site (neighbouring property with connecting habitat) (/10)	5	5
Species usage of the site (habitat type and evidenced usage) (/15)	15	5
Approximate density (per ha) (/30)	0	0
Role/importance of species population on site* (/15)	0	0
Total Species Stocking Rate Score (/70)	20	10
Species Stocking Rate Score – out of 4	1.14	0.57

*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15		
	AU1	AU2
Key source population for breeding (/5)	0	0
Key source population for dispersal (/5)	0	0
Necessary for maintaining genetic diversity (/15)	0	0
Near the limit of the species range (/15)	0	0



12. OFFSET SITE CONTEXT ASSESSMENT



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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.

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Updated data available at
<http://qds.spatialinformation.qld.gov.au/catalogue/>

- LEGEND**
- Qld DCDB
 - ▭ Offset Area (EPBC 2023/09690) - 20 ha
 - ▭ 1km Offset Area Buffer
 - Percentage of offset area boundary length supporting a connection off and on site to Koala critical habitat - 14%
 - ▨ Size of Koala critical habitat patch > 500 ha
 - Percentage of Koala critical habitat within 1km of offset area (58.5%)



8.2.5 Summary of baseline scores for offset area

The overall habitat quality scores for Koala at the offset area are presented in **Table 32**.

Table 32: Offset area MHQA score summary – Koala

	AU1	AU2
Site Condition (/3)	1.65	1.19
Site Context (/3)	1.98	1.98
Species Stocking Rate (/4)	1.14	0.57
MHQA Score	4.78 (rounded to 5)	3.74 (rounded to 4)



9. 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 3, 5, 8, 10, 13, 15, 17, 19 and 20 of the offset. These management actions are designed to minimise the risks associated with key threatening processes to the Koala and enhance the quality of the habitat within the offset area. The proposed monitoring actions are summarised in a monitoring and reporting schedule in **Section 4**.

9.1. Management Approach

The measures outlined in the following subsections are considered effective for the listed status of the Koala 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*

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 offset area.

9.2. Operational Management Units

The entire offset area is Category X (non-remnant) vegetation with pre-clear mapping indicating two separate vegetation communities. For the purpose of the management framework, Operational Management Units (OMUs) have been included to reflect pre-clear mapping and areas of existing vegetation. The OMUs detail the different actions required to achieve the environmental outcomes. Refer **Table 33**.

Table 33: Offset area operational management units

OMU	Assessment Unit	VMA Status	Regional Ecosystem	Area (ha)
OMU1	AU1	Category X	Non-remnant RE12.3.3/12.3.7 (some native canopy)	2.7
OMU2	AU2	Category X	Non-remnant RE12.9-10.2 (some native canopy)	4.7
OMU3	AU2	Category X	Non-remnant RE12.9-10.2 (cleared paddocks)	12.6



9.3. Management Action 1 – Legally Secure Offset Area

The offset area must be protected and managed against known and potential threats for the Koala in perpetuity to attain a conservation gain. As such, the offset area will be legally secured for conservation. A VDEC administered under the *Vegetation Management Act 1999 (Qld)* will be secured prior to impacts occurring. Following that and within 12 months of the commencement of the action, 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 secured.

Notification of declaration will be supplied to DCCEEW. The declared area will be recognised as making significant contribution to the conservation of biodiversity. Koala Farmland Fund, as the offset provider, will continue to manage the offset area for the life of the offset, whilst reporting required milestones and data to the proponent annually. Legally securing the offset area 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 Annual Compliance Report.



9.4. Management Action 2 – Non-native Vertebrate Pest Management

9.4.1 Justification

Feral or unwanted domestic dogs have been identified as 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.

Additionally, the presence of other non-native predators which may pose a lower level of threat, such as *Felis catus* (feral cat), *Vulpes vulpes* (European red fox), and various species of feral deer, have the potential to attack and indirectly stress Koalas making them more susceptible to disease. Predation rates by wild dogs are difficult to quantify because attack often occurs in areas infrequently visited by people, and the carcasses of 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 Somerset 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 another 38 (13.1% of the total) deaths but were not confirmed. 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 are also widely known to cause significant environmental destruction to soil and vegetation via digging, spreading weeds and consumption, particularly surrounding waterbodies. Therefore, Feral Pigs cause destruction of current habitat value and water resources, which has the potential to indirectly impacting 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 (*Oryctolagus cuniculus*) which impact native vegetation.

Key species assessed as high priority to receive management measures, and their associated risks, are presented in **Table 34**.

Table 34: 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)	<i>Canis familiaris</i> (Wild Dog) <i>Canis familiaris</i> dingo (Dingo)	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)	<i>Felis catus</i> (Feral Cat)	Class 2	Actual impacts on native fauna – HIGH	Widespread occurrence in low to medium densities	Control



Priority (category)	Scientific name (Common name)	Queensland Biosecurity Act 2014 status	Risks (potential and actual)	Distribution and prevalence	Objective
3 (medium)	<i>Vulpes vulpes</i> (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)	<i>Cercus timorensis</i> (Rusa Deer) <i>Sus scrofa</i> (Feral Pig) <i>Oryctolagus cuniculus</i> (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

9.4.2 Baseline surveys

Wild dog presence within the offset area was targeted through the use of motion-triggered baited camera traps. Camera trap set up and deployment was conducted as per the Queensland Government, *Terrestrial Vertebrate Fauna Survey Guidelines* for Queensland (June 2022). The guideline advises this survey technique should be utilised to identify fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts. 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. As per the guidelines, cameras were attached 30-100 cm from the ground on a tree or post and directed towards landscape features. Cameras were directed towards animal tracks to increase the chances of detection and identification, but the primary focus is to ensure an even spread of cameras across the site.

The number of camera traps required for a specific survey area are dependent on the individual characteristics of the survey site (overall size and variety of vegetation communities) as well as the behaviours of the specific species being targeted (mobility/home range). Given the small size of the project area and large home range of the target species (refer **Table 22**), two (2) camera traps were installed across the offset area as per the above set up and were deployed for a period of 14 nights from 12 November 2024 to 26 November 2024. Wild dogs are known to be active at all times of year however camera placement occurred in November as late-spring/early summer to coincides with peak activity times for wild dogs (Department of Agriculture and Fisheries, 2024).

Baseline motion-triggered camera trapping detected the presence of wild dogs and feral deer within the offset area. Wild dogs and European foxes have also been recorded during survey efforts across the broader offset property.

Baseline surveys and results are detailed in **Sections 8.1** and **Section 8.2**.

9.4.3 Proposed action and management 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 34** across the offset area 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 offset area, being Somerset Regional Council.
- Signage installation informing that feral animal control being undertaken within the offset area.

Control methods that may be implemented at the discretion of the suitably qualified pest contractor for predator species are listed in **Table 35**. These have been adapted from the *National Wild Dog Action Plan: Promoting and supporting community-driven action for landscape scale wild dog management* (WoolProducers Australia 2014). Any control methods will be used in consultation with local residents and authorities.

The implementation of the non-native vertebrate pest management actions will be reported annually by the Offset Provider in the Offset Area Annual Report and provide detail on detected species, control efforts, and total trapped/baited individuals during the given management period and identified trends of the population of non-native predators within the offset area.

The following tasks will require specific expertise or appointed contractors to complete:

- Baseline (completed) and repeat surveys to be completed by a senior tertiary trained ecologist, zoologist or environmental scientist with a minimum of five years industry field experience;
- Use of 1080 or sodium fluoroacetate poisons is regulated under the *Health (Drugs and Poisons) Regulations 1996*. Deployment and use of this control method to be via a registered contractor holding relevant permits and demonstrated experience;
- Hunting / shooting program to occur in accordance with all relevant Queensland Government permits and regulations.



Table 35: 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.
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.



Adaptive management for non-native predator species

Given the extended management timeline, it is not possible or intended that this Offset Management Framework will provide a detailed prescription of management actions. This framework has been based on the current state of knowledge of species ecology and best practice habitat management approaches for Koala habitat. It is anticipated that new techniques will become available over the course of the management period to monitor environmental values through indicators including vegetation composition, Koala absence, presence and abundance, and weed presence or density (including level of infestation). In addition, given the variable nature of pest management, an adaptive management approach has been adopted to ensure the Pest Management Plan works effectively for any species over the area, as well as integrating future research and insights into management and monitoring actions. This will ensure best practice techniques can be adopted as new information becomes available over time via an adaptive management approach, ensuring the anticipated delivery and measurement of offset outcomes.

Adaptive management refers to a way of managing natural resources where management actions are regularly reviewed and, if necessary, modified, based on observed changes in environmental condition and/or updates in knowledge which underpins the original management approach.

Adaptive management will be used to incorporate changes into management processes across the offset area, and will include the following:

- Assimilation of new data or information – such as updates to conservation advice or new threat abatement plans relevant to the Koala.
- Annual review of risks – to reassess existing risks/threats to the offset area and ensure best practice methodology is implemented to achieve effective management of target species.
- Annual review of management measure effectiveness – to reassess management actions where monitoring performance criteria are not met.

Completion Criteria

The following two completion criteria have been determined

- Reduced risk of injury or death of koala from non-native predator attacks within the offset area
- Non-native vertebrate pests and evidence of pests are suppressed within the offset area.

Koala Mortality Rate and Caveats

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.



9.4.4 Milestone monitoring

A suitably qualified person will complete monitoring for non-native vertebrate pests before the end of years 3, 5, 8, 10, 13, 15, 17, 19 and 20 of the offset.

The following non-native predator monitoring methodology will be implemented by a suitably qualified person:

- 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 may be utilised as rehabilitation works occur in the east of the offset area. Motion detection camera locations are to be recorded with hand-held GPS. GPS coordinates and photos to be recorded.
 - 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.
- Action Timing
 - Year 1 – Develop Pest Management Plan
 - Years 1 -5 – Commence Pest Management Activities as per Pest Management Plan
 - Year 3 – Replicated detailed baseline surveys and compare results with baseline results to demonstrate the completion criteria has been met (reduced risk of injury or death of Koala from non-native predator attacks and Non-native vertebrate pests and evidence of pests are suppressed). Adaptive management to occur where necessary
 - Year 5 – Replicated detailed baseline survey and compare results with baseline results to demonstrate the completion criteria has been met (reduced risk of injury or death of Koala from non-native predator attacks and Non-native vertebrate pests and evidence of pests are suppressed). Adaptive management to occur where necessary
 - Year 6 – 10 – Continue Pest Management Activities
 - Year 7 – Replicated detailed baseline survey and compare results with baseline results to demonstrate the completion criteria has been met (reduced risk of injury or death of Koala from non-native predator attacks and Non-native vertebrate pests and evidence of pests are suppressed). Adaptive management to occur where necessary
 - Year 10 – Replicated detailed baseline survey and compare results with baseline results to demonstrate the completion criteria has been met (reduced risk of injury or death of Koala from non-native predator attacks and Non-native vertebrate pests and evidence of pests are suppressed). Adaptive management to occur where necessary
 - Year 11 – 15 – Continue Pest Management Activities
 - Year 15 – Replicated detailed baseline survey and compare results with baseline results to demonstrate the completion criteria has been met (reduced risk of injury or death of Koala from non-native predator attacks and Non-native vertebrate pests and evidence of pests are suppressed). Adaptive management to occur where necessary
 - Year 15 – 20 – Continue Pest Management Activities
 - Year 20 – Replicated detailed baseline survey and compare results with baseline results to demonstrate the completion criteria has been met (reduced risk of injury or death of Koala from



non-native predator attacks and Non-native vertebrate pests and evidence of pests are suppressed).

Milestone monitoring survey results will be reported by the suitably qualified person in the years 3, 5, 8, 10, 13, 15, 17, 19 and 20 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.



9.5. Management Action 3 – Management of Weeds of National Significance

9.5.1 Justification

Weed control is fundamental to improving biodiversity and the ecological condition of the habitat within the offset area. Historical land uses across the offset area have resulted in the introduction, spread and persistence of a variety of environmental weeds. Whilst there have been a wide variety of environmental weeds recorded across the site, the key species to be controlled in the offset area is *Lantana camara* (Lantana), a WONS. The estimated cover of Lantana varies throughout the offset area from 0-30% within areas of relatively low weed persistence, 30-80% in areas adjoining the gully line vegetation in the eastern portion, and 80-100% along the gully line.

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 2019-2024 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 suppresses 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.

It is not possible to remove *L. camara* from the offset area 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 offset area following the initial treatment for follow-up weed control, is critical to prevent seed set and dispersal.

9.5.2 Proposed action

Weed management will be completed in accordance with a Weed management Plan developed for the offset area. This plan will work in collaboration within Management Action 5 – Regeneration management strategy. 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 for *L. camara* specifically are listed in

Table 36 and other WONS in **Table 37**.

The management actions must reduce the extent of or maintain WONS weed cover below 5% over the entire offset area by Year 10 of the offset, as detailed in the environmental outcomes. The timing for the implementation of management measures will be detailed in the Weed Management Plan and includes:

- Establish photo monitoring locations prior to treatment of WONS commencing.
- All WONS will receive initial treatment within first 18-months of the offset.
- Follow-up treatment of WONS will occur annually and where needed.



Table 36: Lantana management methods

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 37: Weed treatment and removal methods

No.	Family	Scientific name	Common name	Non-chemical control	Chemical control
1	Amaranthaceae	<i>Alternanthera philoxeroides</i>	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	<i>Andropogon gayanus</i>	Gamba Grass		
3	Annonaceae	<i>Annona glabra</i>	Pond Apple		
4	Basellaceae	<i>Anredera cordifolia</i>	Madeira Vine		
5	Asparagaceae	<i>Asparagus aethiopicus</i> cv. <i>Sprengeri</i>	Asparagus Ground Fern		
6	Asparagaceae	<i>Asparagus africanus</i>	Ornamental Asparagus, Asparagus Fern		
7	Asparagaceae	<i>Asparagus asparagoides</i>	Bridal Creeper		
8	Asparagaceae	<i>Asparagus declinatus</i>	Bridal Veil, South African Creeper		
9	Asparagaceae	<i>Asparagus plumosus</i>	Asparagus Fern		
10	Asparagaceae	<i>Asparagus scandens</i>	Climbing Asparagus Fern		
11	Cactaceae	<i>Austrocylindropuntia</i> spp.	Prickly Pears		
12	Cabombaceae	<i>Cabomba caroliniana</i>	Cabomba		
13	Asteraceae	<i>Chrysanthemoides monilifera</i> subsp. <i>Monilifera</i>	Boneseed		
14	Asteraceae	<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>	Bitou Bush		
15	Asclepiadaceae	<i>Cryptostegia grandiflora</i>	Rubber Vine		
16	Cactaceae	<i>Cylindropuntia</i> spp.	Prickly Pears		
17	Fabaceae	<i>Cytisus scoparius</i>	Common Broom		
18	Bignoniaceae	<i>Dolichandra (Macfadyena) unguis-cati</i>	Cat's Claw Creeper		
19	Pontederiaceae	<i>Eichhornia crassipes</i>	Water Hyacinth		
20	Fabaceae	<i>Genista linifolia</i>	Flax-leaved Broom, Mediterranean Broom		
21	Fabaceae	<i>Genista monspessulana</i>	Montpellier Broom, Cape Broom, Canary Broom		
22	Poaceae	<i>Hymenachne amplexicaulis</i>	Hymenachne		
23	Euphorbiaceae	<i>Jatropha gossypifolia</i>	Bellyache Bush		



No.	Family	Scientific name	Common name	Non-chemical control	Chemical control
24	Verbenaceae	<i>Lantana camara</i> var. <i>camara</i>	Lantana		
25	Solanaceae	<i>Lycium ferocissimum</i>	African Boxthorn		
26	Mimosaceae	<i>Mimosa pigra</i>	Giant Mimosa		
27	Gramineae	<i>Nassella neesiana</i>	Chilean Needle Grass		
28	Gramineae	<i>Nassella trichotoma</i>	Serrated Tussock		
29	Cactaceae	<i>Opuntia</i> spp.	Prickly Pears		
30	Cactaceae	<i>Parkinsonia aculeata</i>	Parkinsonia		
31	Asteraceae	<i>Parthenium hysterophorus</i>	Parthenium Weed		
32	Mimosaceae	<i>Prosopis pallida</i>	Algaroba		
33	Rosaceae	<i>Rubus fruticosus</i> aggregate	Blackberry		
34	Alismataceae	<i>Sagittaria platyphylla</i>	Delta Arrowhead, Arrowhead, Slender Arrowhead		
35	Salicaceae	<i>Salix</i> spp. except <i>S.babylonica</i> , <i>S.x calodendron</i> & <i>S.x reichardtii</i>	Willows (except Weeping Willow, Pussy Willow and Sterile Pussy Willow)		
36	Salviniaceae	<i>Salvinia molesta</i>	Salvinia		
37	Asteraceae	<i>Senecio madagascariensis</i>	Fireweed		
38	Solanaceae	<i>Solanum elaeagnifolium</i>	Silver Nightshade		
39	Tamaricaceae	<i>Tamarix aphylla</i>	Athel Pine		
40	Fabaceae	<i>Ulex europaeus</i>	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 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 **Table 38** for a summary of contemporary weed management techniques extracted from the SEQERF.

Table 38: 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 (<i>Ligustrum sinense</i>), 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 ochra.
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 (<i>Ipomoea cairica</i>) 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 (<i>Protasparagus plumosus</i>). 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 (<i>Erythrina</i> spp, Privet <i>Ligustrum</i> 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

9.5.4 Milestone monitoring

A suitably qualified person will complete monitoring for WONS before the end of years 3, 5, 8, 10, 13, 15, 17, 19 and 20 of the offset to track against the interim milestone and completion criteria in the environmental outcomes (see **Table 6** and **Table 7**).

The methodology for non-native plant survey will be repeated by the suitably qualified person in accordance with the monitoring and reporting schedule in **Section 4**. Surveys include the search and recording of infestations and MHQA transects to record weed cover. 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 8.1, 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 may be utilised if considered appropriate depending on the weed cover assessment.
 - Record non-native flora species list,
 - Provide photo monitoring at established locations to be set up in Year 1 of the offset with photo location and direction, and
 - Notes of any notable positive and/or negative changes in weed density and coverage.



Milestone monitoring survey results will be reported by the suitably qualified person in the years 3, 5, 8, 10, 13, 15, 17, 19 and 20. 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.



9.6. Management Action 4 – Bushfire Management Plan

9.6.1 Justification

Fire management of the offset area 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 offset area 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 offset area in the context of the surrounding landscape. The overall objective is to prevent fire-induced Koala mortality 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 offset area 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 offset area and broader offset property has internal tracks and access along existing fence lines that may act as fire trails. Specific actions as directed by the local authorities must be implemented which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads if required.

9.6.2 Proposed action and management measures

A specific 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 offset area within 1 year from the date of the approval. The BMP will assess baseline fuel loads and aim for no Koala mortalities to occur as a result of overall fuel hazard reduction action. The BMP will expand points on wider fire management concepts.

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.

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 can 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.

Subject to further approval by the Department, reduced load livestock grazing may also be applied in selected mature tree areas and/or once revegetation and assisted regeneration areas achieve specific metrics. It is



acknowledged that permanent high density / intensive grazing has potential to negatively affect vegetation composition so is not proposed. For this reason, temporary low impact grazing for short periods would occur only as a bushfire fuel load management tool which remains available when controlled burns are not suitable. Under no circumstances will the offset area be grazed outside of this management action.

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 the Department does not support even the temporary use of light grazing as a preferred bushfire load management tool when compared to traditional controlled burns. While the Offset Provider is of the belief both are important to help manage fuel loads and can occur without impact on the creation and management of Koala habitat, no grazing will occur within the approved offset area until subsequent Department approval for this use has been provided.

As part of providing further evidence on this management tool to the Department the following items will be considered and documented:

- A) Contemporary research and published literature on the use of low intensity grazing in the management of bushfire fuel loads and promoting conservation outcomes;
- B) Quantifiable triggers for when offset areas would be suitable for low intensity grazing without impact to conservation values:
 - a. Fuel loads (dry matter/ha) triggers for livestock to be introduced and removed from the area;
 - b. 5 years after replanting and or when trees and shrubs have become established;
 - c. Max number of animals per ha (Stocking rates / rotational grazing);
 - d. Temporary or permanent fencing requirements;
 - e. Timing and season for when grazing is likely to occur;
 - f. Metrics for measuring before and after fuel loads, weed cover, native regeneration cover and diversity; and
 - g. Monitoring, reporting and corrective metrics.

Therefore, where conditions are deemed by a bushfire management professional to not be conducive to fuel reduction via prescription burning, for two consecutive fire management seasons, low impact grazing, for short periods only, is proposed to reduce fuel loads to prevent potentially severe impacts of uncontrolled bushfire through the offset area. Under no circumstances will the offset area be grazed outside of this management action. Given perceived potential for negative impacts on vegetation composition, regular annual monitoring and reporting is proposed to ensure any possible negative impacts are identified early and management processes are appropriately adapted to ensure conservation outcomes are achieved.

9.6.3 Monitoring and reporting

Monitoring of the offset area 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.

The implementation of a Bushfire Management Plan will be reported annually by the Offset Provider in the Offset Area 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.



9.7. Management Action 5 – Habitat creation and regeneration

9.7.1 Justification

Habitat creation and regeneration is a key management action that will improve existing habitat values within the offset areas 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. Rehabilitation aims to enhance degraded areas through Management Action 3 (WONS removal) and assisted natural regeneration. 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 enough to trigger the recovery process and natural regeneration. Planting only occurs where necessary 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.

9.7.2 Management actions

The OMUs listed in **Section 9.2** will be established across the offset area. The extent of native tree abundance and WONS infestation differs marginally between these OMUs. Nevertheless, the key management actions across the OMUs will differ (refer below and **Table 39** for summary). Key management actions will include assisted natural regeneration practices and infill planting where some existing canopy patches are present (OMU 1 and OMU 2) with weed management required. Reconstruction and planting will be necessary within the cleared areas (OMU 3) to assist in vegetation coverage and composition (refer **Plan 13** for indicative locations of management areas). Management actions also include the installation of native coarse woody debris where necessary to achieve outcomes detailed in **Table 7**.

Table 39: Operational management unit rehabilitation method summary

OMU	Description	Rehabilitation Method
Non-remnant vegetation, pre-clear RE12.3.3 (OMU 1)	Some existing native canopy vegetation present	- Assisted natural regeneration - Weed removal/control - Bushfire management - Infill planting where necessary
Non-remnant vegetation, pre-clear RE12.9-10.2 (OMU 2)	Some existing native canopy vegetation present	- Assisted natural regeneration - Weed removal/control - Bushfire management - Infill planting where necessary - Installation of coarse woody debris
Non-remnant vegetation, pre-clear RE12.9-10.2 (OMU 3)	Cleared paddocks, no canopy present	- Reconstruction - Weed removal/control - Bushfire management - Planting - Installation of coarse woody debris

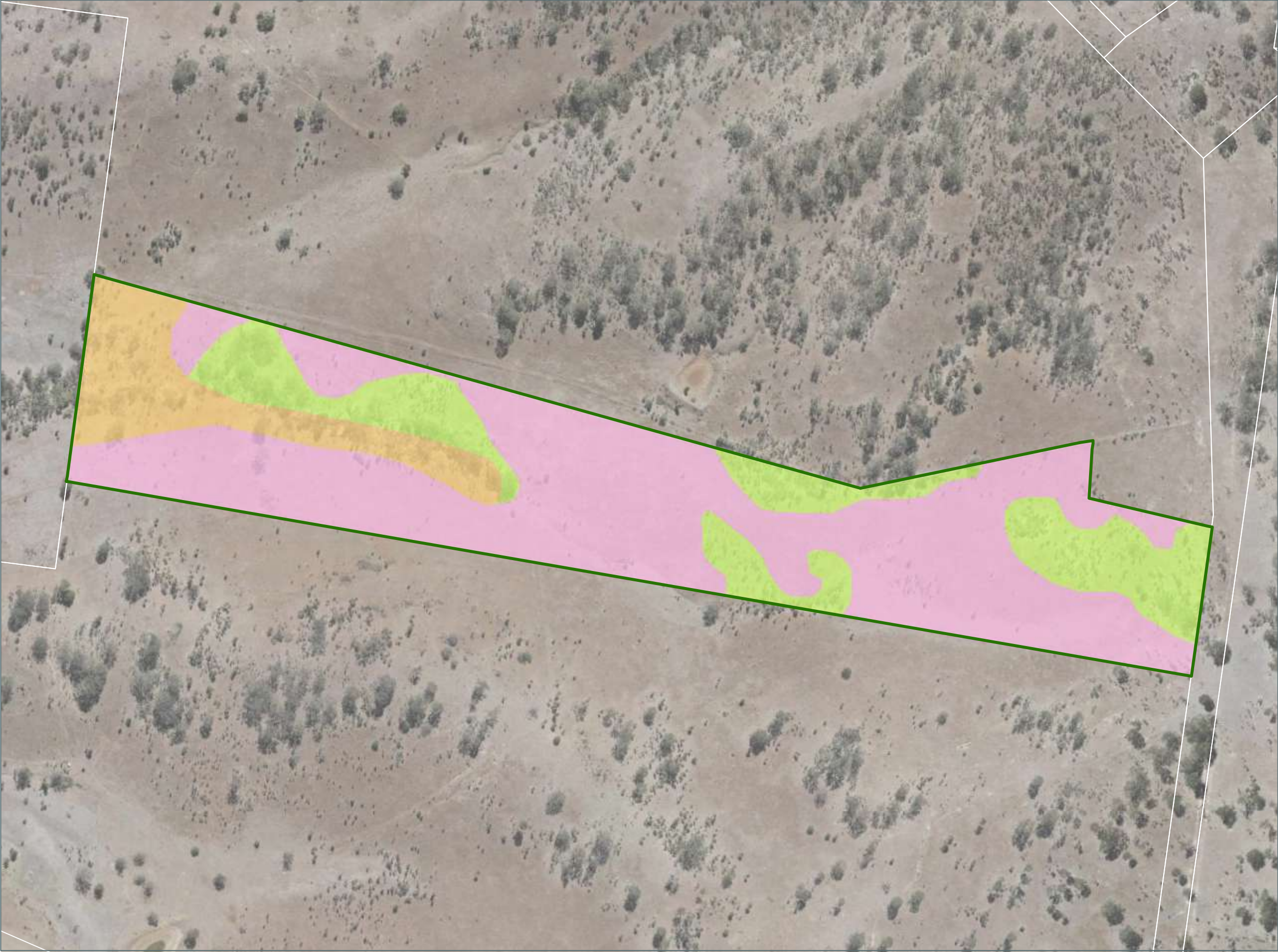


Detailed Rehabilitation Plan

In addition to the information provided below a Detailed Rehabilitation Plan is provided as **Appendix G**. This Detailed Rehabilitation Plan provides further information on the location and timing of management actions at the offset site to create habitat which will be implemented by the offset provider on-ground. This plan acts as standalone plan that can be extracted and utilised by contractors on-ground.



13. OFFSET SITE INDICATIVE MANAGEMENT AREAS



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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.

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Updated data available at <http://qdsatialinformation.qld.gov.au/catalogue/>

- LEGEND**
- Qld DCDB
 - Offset Area (EPBC 2023/09690) - 20 ha
 - Operational Management Unit 1 [2.7 ha]
 - Operational Management Unit 2 [4.7 ha]
 - Operational Management Unit 3 [12.6 ha]



On-ground works proposed within the OMUs include are detailed below.

Non-remnant vegetation, pre-clear RE12.3.3 – OMU 1

- 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 habitat.
- Assisted natural regeneration practices where weed treatment results in open areas – replanting with locally endemic species (infill planting if necessary).
- Removal of impediments to Koala movement such as old, unused fences.
- Introduction of management practices which support and favour habitat increase (e.g. bushfire management)
- Maintain and manage the land for the life of the offset (20 years from the legal securement/implementation of the offset area), including direct monitoring of Koala usage.

Non-remnant vegetation, pre-clear RE12.9-10.2 – OMU 2 and OMU 3

- 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 habitat.
- Assisted natural regeneration practices where weed treatment results in open areas – replanting with locally endemic species (infill planting if necessary) – OMU 2
- Reconstruction and direct planting in cleared areas – OMU 3
- 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.

Where some existing canopy is present, 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 open paddock areas where there is little vegetation, reconstruction will be required.

9.7.3 Rehabilitation methodology

Following the resolution of site analysis and management areas as part of rehabilitation design, prioritising site works will be considered. Prior to site works 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.

Site works can be typically broken down into the following categories:

- Primary Works
- Follow-up Works
- Maintenance Works

Primary works

Primary works, or initial works, within the site or a section of the site 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.

Follow-up works

At intervals, which will vary according to the type of weed impacting the site 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 site to assess the progress of vegetation regeneration and determine whether follow-up work is necessary. A site 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).

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.

Plant identification skills

Both native and weed species will be identified prior to primary weed removal works and ongoing throughout the follow-up and maintenance periods. This will maximise natural regeneration by reducing the likelihood of accidental weed spraying to native vegetation. Regenerating species are to be treated and maintained in a similar manner to planted tube stock. Where a contractor is unsure of species, advice will be sought from a botanist, specialist contractor, or confirmed with Queensland Herbarium. Refer to indicative Weed Treatment schedules derived from the *South East Queensland Ecological Restoration Framework: Manual* (2012) for an indication of weed species and treatments (refer **Table 38**).

Planting notes

Areas subjected to weed removal and control may require infill planting (assisted natural regeneration) where lack of natural regeneration is evident. Prior to installation, the following items will be considered:

- Species selection;
- Sourcing plant material;
- Timing of planting;
- Site preparation;
- Planting density; and
- Planting installation.

Species selection

Species selection is critical to achieving the desired ecological restoration outcomes for rehabilitation sites. Planting is typically derived from:

- Local and pre-clear Regional Ecosystem descriptions;
- Observed site native vegetation;
- Bioretention guideline requirements;
- Climatic and weather conditions observed on-site (frost, salt-spray, etc);
- 'Pioneer' species, which are useful in site stabilisation and encouraging native regeneration;
- The utilisation of flowering and fruiting species to attract wildlife and result in introduction of seeds;
- Diverse vegetation layers (trees, shrubs, groundcovers); and
- Species availability from seed propagation and or local nurseries.

Refer to **Table 40** for the potential native species planting list that may be used in rehabilitation sites, with species based on local and pre-clear VMA regional ecosystems; RE 12.3.3 and RE 12.9-10.2. This list is subject to change based on species availability and adaptation to site conditions. All trees in the T1 canopy layer will reflect Non-juvenile Koala Habitat Trees (NJKHTs). Primary food trees, preferred by Koala, have been designated with a (P)*, whilst secondary food trees, still important food and shelter trees, are designated with a (S*).



Table 40: Potential Planting List

Scientific Name	Common Name	Plant Form	RE	
Trees			12.3.3	12.9-10.2
<i>Corymbia citriodora subsp. Variegata</i> (S)*	Spotted Gum	T1		✓
<i>Eucalyptus tereticornis</i> (P)*	Forest Red Gum	T1	✓	✓
<i>Eucalyptus crebra</i> (P)*	Narrow-leaved Iron Bark	T1	✓	✓
<i>Eucalyptus siderophloia</i> (P)*	Grey Ironbark	T1		✓
<i>Eucalyptus moluccana</i> (S)*	Gum-topped Box	T1	✓	✓
<i>Angophora leiocarpa</i> (S)*	Smooth-barked Apple	T1		✓
<i>Angophora subvelutina</i> (S)*	Broad-leaved Apple	T1	✓	
<i>Eucalyptus melanophloia</i> (S)*	Silver-leaved Ironbark	T2	✓	
<i>Corymbia intermedia</i> (S)*	Pink Bloodwood	T2	✓	✓
<i>Corymbia tessellaris</i> (S)*	Moreton Bay Ash	T1	✓	✓
<i>Lophostemon suaveolens</i> (S)*	Swamp-top Box	T2	✓	
<i>Allocasuarina torulosa</i>	Forest Sheoak	T2		✓
<i>Alphitonia excelsa</i>	Soap Tree	T2 / S1	✓	✓
<i>Acacia disparrima</i>	Hickory Wattle	T2 / S1	✓	✓
<i>Acacia leiocalyx</i>	Black Wattle	T2 / S1	✓	✓
Shrubs				
<i>Pittosporum angustifolium</i>	Bitter Bush	S1		✓
<i>Petalostigma pubescens</i>	Quinine Bush	S1	✓	
<i>Acacia salicina</i>	Sally Wattle	S1	✓	



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<i>Jacksonia scoparia</i>	Dogwood	S1	✓	✓
<i>Hovea lorata</i>	Purple Pea Bush	S1		✓
<i>Persoonia sericea</i>	Silky Geebung	S1	✓	✓
Ground				
<i>Cymbopogon refractus</i>	Barbed-wire Grass	G	✓	✓
<i>Themeda triandra</i>	Kangaroo Grass	G	✓	✓
<i>Heteropogon contortus</i>	Black-spear Grass	G		✓
<i>Eragrostis brownii</i>	Browns Love Grass	G	✓	✓
<i>Eremophila debilis</i>	Winter Apple	G	✓	✓
<i>Hardenbergia violacea</i>	Native Sarsaparilla	G		✓
<i>Dichondra repens</i>	Kidney Weed	G	✓	
<i>Glycine tabacina</i>	Variable Glycine	G	✓	✓
<i>Lomandra multiflora subsp. multiflora</i>	Multi-flowered Matrush	G	✓	✓



Sourcing plant material

There are several options for sourcing plant material for infill planting purposes. Propagation from site seed is a good outcome but is often limited by the required timing of works. Sourcing plants from local nurseries is the more commonly chosen option and has the following benefits:

- Awareness of genetic considerations when collecting seed;
- Experience with breaking dormancy mechanisms in hard to germinate seeds;
- Highly successful propagation techniques;
- Ability to provide high quality stock to order; and
- Draw on industry resources.

Timing of planting

The timing of planting will ideally align with the wet season in SEQ (Summer and Autumn). This minimises the need for intensive watering to establishment planting. Planting between February - May is the most beneficial as it generally avoids intense heat periods of summer. However, it is understood planting may occur at various times within rehabilitation areas due to development timing needs.

Site preparation

Site or planting preparation includes:

- Fencing to exclude grazing animals and people (if required);
- Pre-spraying of exotic grasses and other weeds to planting areas;
- Consideration of source of water for new planting (access tracks, temporary irrigation);
- Arranging delivery of mulch, jute netting and tree guards (if required);
- Treatment of heavily compacted soils by ripping and or application of gypsum; and
- Soil amelioration as required.

Planting density

Plant density is calculated on a zone-by-zone basis to cater for various requirements, including infill-only requirements such as canopy trees at low densities.

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 Offset Management Framework, and local government policies and Australian Standards.

Plant installation methods shall include:

- Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of having been restricted or damaged. The landscape coordinator has the right to inspect and reject stock prior to planting.
- Plants are to be planted immediately after delivery to the planting site.
- Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In areas where planting substrate is deemed to be very poor (compacted, nutrient deficient, hydrophobic etc.) and above areas of potential frequent inundation and waterflow, topsoil may be used.
- Pre-water plant hole if soil is dry to decrease root stress upon planting and assess the infiltration of water through the soil.



- Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered in any less than 10 millimetres (mm) or any more than 20 mm of planting medium.
- Plants are to be watered thoroughly immediately after planting (ensure deep irrigation) and thereafter as required during the construction phase of the development depending on climatic conditions. Creation of a concave hollow around the base of each plant will aid water infiltration to the plant roots.
- A complete, long-term slow-release fertiliser such as Nutricote or similar is recommended, and will 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.
- To ensure successful establishment, all planting surfaces must be covered in:
 - a 100 mm layer of high-quality weed-free composted chip mulch (site mulch)- Note: to avoid possible stem rot in some 'drier' species ensure mulch is 'dished' and not covering plant stem by more than 20 mm. Where available, mulch material to be sourced from cleared vegetation material if adequately seasoned, or
 - Suitable individual anchored natural fibre weed mat (jute netting).
- A minimum 90% survival rate will be achieved.

Rehabilitation and Regeneration monitoring

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.

Photo monitoring

To monitor Management Action 5, 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 annually at the same location and 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.

Rehabilitation and Plantings

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.



9.7.4 Annual monitoring and reporting

Rehabilitation progress reports will be prepared by the suitably qualified regeneration contractor and included in the Offset Area Annual Report.

The suitably qualified regeneration contractor will complete annual monitoring tasks until establishment of plantings is achieved (typically after five years): \

9.7.5 Milestone monitoring

The suitably qualified person as appointed by the Proponent will complete MHQA surveys before the end of years 3, 5, 8, 10, 13, 15, 17, 19 and 20 of the offset to assess against the interim milestones and environmental outcomes (see **Table 6** and **Table 7**).

This will include:

- MHQA transects at baseline sampling locations;
- Weed line transects; and
- direct and indirect surveys to target Koala presence, including Spot Assessment Technique surveys, motion triggered camera trapping.

This milestone timing is considered appropriate as increased frequency occurs in the early stages of the offset (first 10 years) where significant works will have occurred. This monitoring timeframe allows corrective actions to take place earlier to ensure habitat improvements are as proposed.



9.8. Management Action 6 – Fencing and Signage

The offset area will be suitably fenced and marked with signage to discourage trespass and keep out unmanaged cattle grazing. Gates leading to the subject offset area will have signage installed for added protection.

In addition, cattle will be managed in and adjoining the offset area as specified in this OMP via a combination of temporary and existing paddock fencing and, in time, the temporary fencing may be upgraded to permanent or removed when the broader offset property, surrounding the subject offset area, is secured as an offset and managed under approval.

Any internal fences that include barbed wire will also be retrofitted to further reduce threats to MNES.

Refer to **Plan 14** for proposed offset area fencing and signage. Fauna friendly fencing are based on the following specifications:

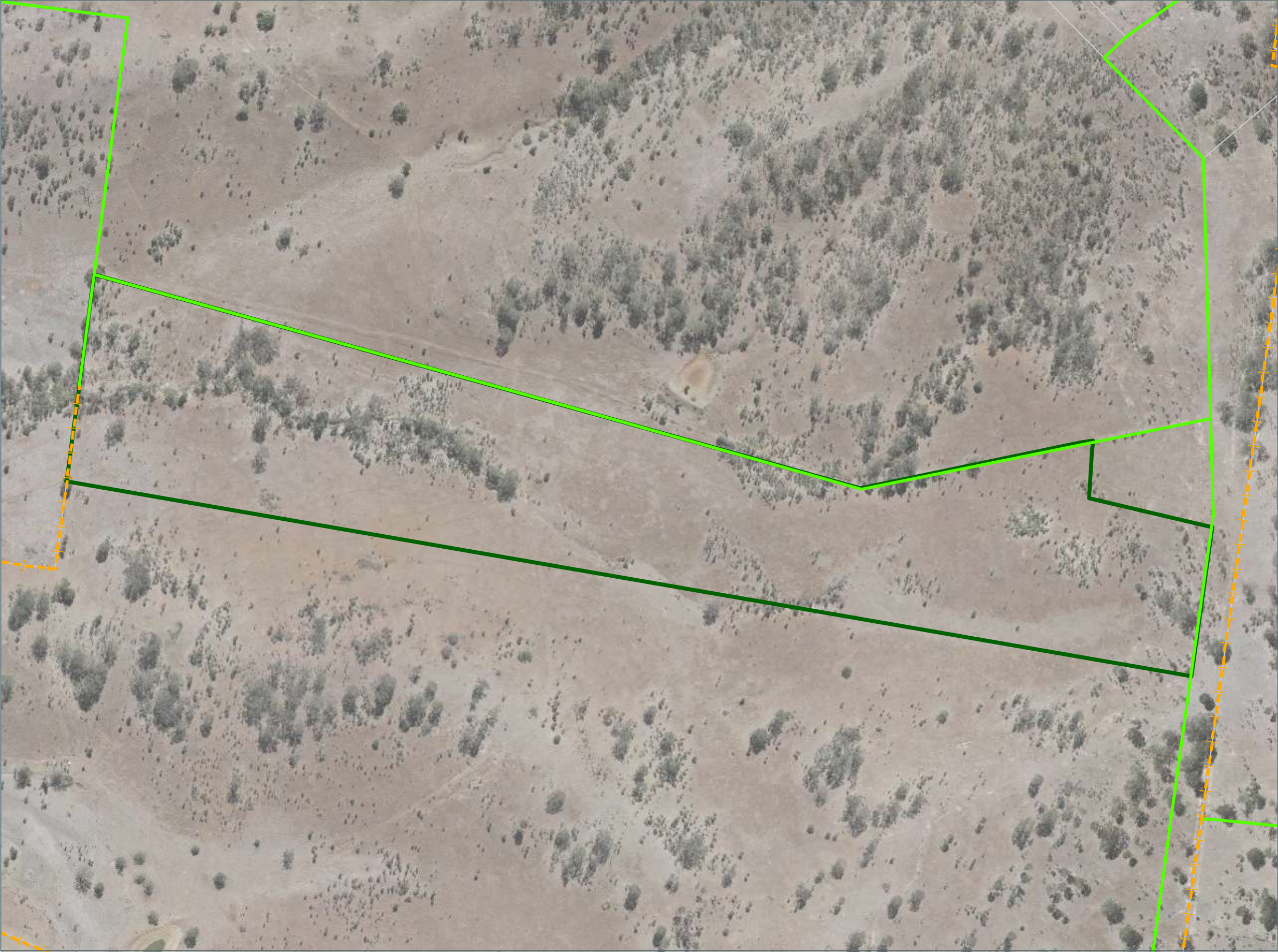
- Top strand plain wire, and
- Bottom strand either plain wire, or barbed wire set at a minimum 300 mm above ground.

9.8.1 Monitoring and reporting

- Fencing to be installed/retrofitted in line with **Plan 14**
- Action Timing
 - Year 1 - All fencing is to be in place by the end of the Year 1
 - Years 2 – 20 – Fencing is routinely inspected by offset provider for damage or cattle breaches. As part of this review any evidence of Koala mortality will be reported in the Offset Area Annual Report. Fencing to be repaired or altered if completion criteria is not being met (reduced risk of mortalities or injury to Koala as a result of fauna friendly barbed-wire fencing or stock breaches or unauthorised access). Actions occur within 2 weeks of incident being recorded if practicable
 - Years 3, 5, 8, 10, 13, 15, 17, 19 and 20 (milestone monitoring) – Confirmation of fauna friendly design fencing in place
- This risk of Koala mortality or injury as a result of new fauna friendly fencing is extremely low as fencing provides unobstructed dispersal opportunity. However should injuries or mortalities be observed, the fencing type will be reevaluated and replaced if necessary.
- The fence lines of the property will be routinely monitored by the offset provider to identify breakages where cattle can enter and any evidence of Koala injury or mortality caused by fencing. Fencing installation and cattle status will be reported on in the Offset Area Annual Report and EPBC Annual Compliance Report.



14. OFFSET SITE FENCING



Notes:
The information on this plan is not suitable for any purpose other than the expressed use of the Client. Property dimensions, areas, numbers of lots and contours and other physical features 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.

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Updated data available at
<http://qdsatialinformation.qld.gov.au/catalogue/>

- LEGEND**
- Qld DCDB
 - ▭ Offset Area (EPBC 2023/09690) - 20 ha
 - Existing Fauna Friendly Fencing
 - - - Existing Fencing to be Retrofitted to Fauna Friendly Design



9.9. Monitoring and constraints effectiveness

Milestone monitoring is to occur at the years 3, 5, 8, 10, 13, 15, 17, 19 and 20 mark of the offset and completed by suitable qualified person appointed by the offset provider and/or proponent. Each milestone monitoring event will replicate all surveys completed as part of the baseline results detailed in **Section 8.1**. These surveys include scientifically robust and repeatable methodologies. A summary of monitoring is provided in **Table 41**.

Table 41: Summary of monitoring frequency

Monitoring Summary														
Monitoring Action	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 10	Year 13	Year 15	Year 17	Year 19	Year 20
Pest Monitoring	x	x	✓	x	✓	x	x	✓	✓	✓	✓	✓	✓	✓
Weed Photo monitoring	✓	✓	✓	✓	✓	x	x	x	x	x	x	x	x	x
Weed mapping	x	x	✓	x	✓	x	x	✓	✓	✓	✓	✓	✓	✓
MHQA	x	x	✓	x	✓	x	x	✓	✓	✓	✓	✓	✓	✓
Planting	✓	✓	✓	x	x	x	x	x	x	x	x	x	x	x
Bushfire Monitoring	Annually for the life of the offset													
Fencing and signage	Routinely monitored for the life of the offset													

9.10. Reporting requirements

An **Offset Area Annual Report (OAAR)** will be prepared by the Offset Provider for each year of the offset detailing management activities undertaken in accordance with the Management Framework and providing clear details on how performance targets specified in **Table 5** are being addressed and any adaptive management measures implemented. The OAAR will be provided to the Proponent and suitably qualified person preparing the Annual Compliance Report one (1) month after each year of the offset (commencing from the date of being legally secured).

A **Milestone Report** is proposed to be completed by a suitably qualified person appointed by the Proponent before the end of years 3, 5, 8, 10, 13, 15, 17, 19 and 20 of the offset detailing how the offset is progressing against the interim milestones, key performance indicators and environmental outcomes specified in **Section 3** and **Table 6** and **Table 7**. 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.

An **Annual Compliance Report (ACR)** will be prepared in line with any conditions associated with EPBC approval. The OAAR and Milestone Reports will be included as part of the Annual Compliance Reports. The reporting period for the action will be the year following the commencement of the action.

The ACR will be prepared by a qualified environmental person as directed by the Proponent and published on the project website each year by the conditioned date. The report will address the compliance with each of the conditions of approval, including any incident reports of undesirable impacts upon Koalas (including Koala habitat) and any monitoring and management milestones achieved during the previous 12 months, including progress on key management measures, attainment of performance targets and completion criteria, and adaptive implementation outcomes. The compliance report will also address the effectiveness of the management measures and how the offset area is progressing against performance and completion criteria.

Documentary evidence providing proof of the date of publication of the ACR and non-compliance with any of the conditions of the approval will be provided to DCCEEW at the time of publishing the compliance report if the action is approved. A broad template of the ACR is provided at **Section 9.11**.

Insert 1 provides a outline of the offset area reporting structure

Section 4 provides a monitoring and reporting schedule for the OMP. This includes the management action, monitoring actions, corrective action trigger, corrective action, reporting action and responsible person/party.

9.11. Annual Compliance Report inclusions

ACRs will be completed inline with *Annual Compliance Report Guidelines* for EPBC reporting. Ultimate inclusions within an ACR will be subject to the final approval documents (PD 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)

Offset Area Management

- Offset Area securement
- Offset Area management activities
- Performance and completion criteria relevance (detailed in milestone reports)
- Monitoring and adaptive implementation outcomes

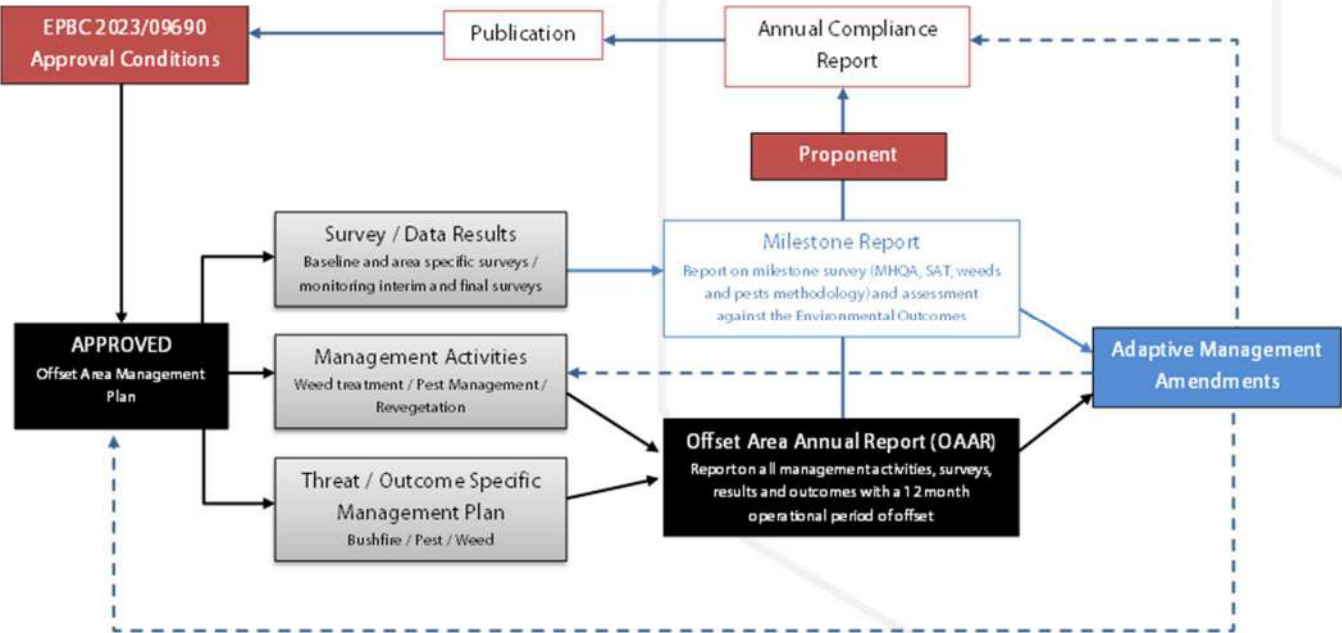
Compliance

- Non-compliance matters
- Approval conditions compliance table



9.12. 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.



Insert 1: Offset Actions Reporting structure



10. Adaptive Management

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 **KFF1 and/or The Proponent** without the requirement of approval from DCCEE (however a copy of OMP changes will be sent to DCCEE for record keeping). If material amendments likely to alter the environmental outcomes, or performance and completion criteria are proposed to the OMP, the amendments and justification for the contingency measures will be provided to DCCEE in writing.

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.
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 (KFF1) and an appointed suitably qualified person by the proponent.

10.1. 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.

10.1.1 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)
- 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*.

10.2. 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.

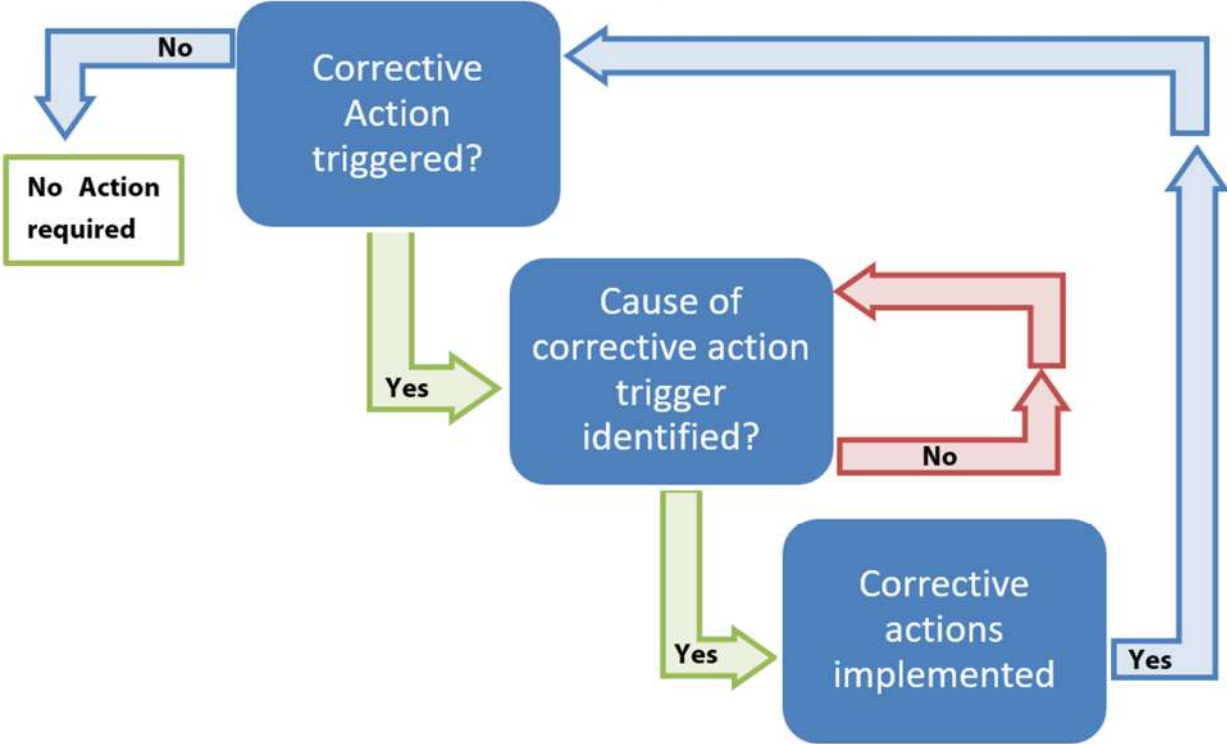
To identify the risk of failure, **Table 42** states the management action, completion criteria, corrective action triggers and corrective actions. In addition, a risk assessment has been completed in **Appendix H**.

10.2.1 Corrective Action Flowchart

Table 42 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 42: 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 offset area	- The offset area is legally secured for conservation via 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) prior to the impacts occurring. Securement via Voluntary Declaration (VDEC) administered under the <i>Vegetation Management Act 1999</i> (Qld) will be completed in the interim. - The Department is notified of the legal securement within 5 business days of commencing the implementation of the OMP <i>i.e.</i>, the date from which the offset area is legally secured. - The offset area is not used for other purposes – site access is restricted.	Offset area is not legally secured.	Administrative issues or timings	The offset area is legally secured prior to any impacts occurring.
Non-Native Vertebrate Pest Management	- Reduced risk of injury or death of Koala from non-native predator attacks within the offset area. - Non-native vertebrate pests and evidence of pests (predator and/or herbivore) are suppressed within the offset area.	Pest management is not implemented and risk of predation on Koalas is not reduced below baseline levels. Evidence of Koala mortality through predation is observed Monitoring actions and OAARs identify ongoing presence of predator pest species above the baseline levels. Monitoring actions and OAARs detect an increase in non-native	The suitably qualified pest management contractor is to investigate the cause of the corrective action trigger (i.e an increase in Wild dogs may indicate the presence of a den in the local area). - Climatic conditions promoting pest abundance - Management methods not successful to suppress pests	Where the risk of injury or death of Koala from non-native predator attacks has increased, by either an increase in relative abundance from baseline levels or by direct evidence of injury or mortality, 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



Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
		predators from the previous survey or relative to the baseline. The reduction in the number of non-native predators, relative to the baseline results have not been maintained from the time that it is first achieved, for the remainder of the life of the offset.	New den site in local area	contractor. Corrective actions will occur until target pests have been reduced as guided by the suitable qualified pest contractor. Corrective actions will occur within 3 months of a monitoring event where non-native predator detection has increased from baseline. Where recurrent pest animal species (predator and/or herbivore) are detected, re-engagement to re-deploy management measures. Where there is evidence of non-native predator activity, a trapping or baiting program by a suitably qualified pest contractor will be conducted within 3 months of detection until such time the target species has been reduced as guided by the suitably qualified pest contractor. 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.



Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
				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 offset area 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 is to be completed. In this instance, new locations of WONS or new species could indicate alternative spreading mechanisms (i.e via vehicles or workers). Additional management actions will be required (i.e vehicle wash downs for visitors). - 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 to 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 are to 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 6 and Table 7, the corrective actions will continue until achieved, extending the management period.
Bushfire management	- Reduced risk of high intensity fires in the offset area. - Vegetation composition and restoration regime is not negatively affected by prescribed fire regimes.	Bushfire management measures not implemented and/or a high intensity bushfire impacts the offset area.	Investigate the cause of the correction actions being triggered is to be completed. In this instance the cause of bushfire events will be	Undertake audit to inspect impacts within 2 weeks following an event (if deemed safe) and identify if any Koala mortality or injury has occurred.



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.	Unexpected bushfire event and resurgence of weeds/decreased habitat. Inappropriate fire regime negatively impacts vegetation composition and restoration	investigated, and bushfire management will be re-developed if required. - Climatic conditions - Accidental ignition by people or machinery - Bushfire management measures unsuitable	Following annual monitoring of fuel loads, implement actions as directed by the local authority which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads within 3 months or as soon as appropriate (<i>i.e.</i>, consider weather conditions). If required, recovery actions including weed control and management and/or infill planting may be undertaken to ensure the habitat quality performance criteria are achieved within the management period within 3 months following an audit if weather conditions are favourable. 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 as a result of inappropriate fire regimes is



Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
				observed during surveys. Re-assessment of the Bushfire Management Plan will occur, and remedial works (infill planting) will occur within 3 months.
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 Ecosystem benchmark to be reached. - Site condition metrics for Koala improves in accordance with environmental outcomes (see Table 6 and Table 7).	Regeneration measures not implemented as proposed; site condition metrics do not improve according to proposed 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.	Investigate the cause of the correction actions being triggered is to be completed such as the cause of planting stock failure (i.e climatic conditions, anthropogenic causes, in-frequent monitoring). Additional, management actions will be adaptable to ensure failures are not repeated. - Climatic conditions - Unsuitable methods of habitat creation or regeneration - Infrequent or insufficient monitoring/maintenance	Infill planting will be implemented if required within 3 months following MHQA survey intervals. Monitoring of infill planting to occur regularly after initial planting in accordance with watering schedules determined by the bush regeneration contractor and dependent on weather. Monitoring will be undertaken regularly by the Offset Provider or appointed suitably qualified regeneration contractor after planting in accordance with 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



Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
				integrated as required throughout the offset management period in response to changes or natural events. The management period may be extended to ensure environmental outcomes are able to be achieved.
Fencing and Signage	- Mortalities or injury to Koala 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.	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 regularly by the Offset Provider to identify damaged fencing or Koala mortalities as a result of fencing. Any damaged fencing is repaired within two weeks of being recorded.
Stochastic or nuisance events	While such events (eg. fire, flood, drought, vandalism etc) are rare and can be managed by the contractor, where events take place, restoration works are to replace losses and reporting to the DCCEEW is required	Evidence of damage to revegetation plantings and/or fencing as a result of extreme weather events, natural disaster or vandalism.	Investigate the cause of the correction actions being triggered is to be completed. Cause internal or external to offset site	Inspection of the offset area will occur within a month of the extreme weather event (if safe to do so) to assess plant stock and fencing. Implement supplementary planting and revegetation measures within 3 months of extreme weather events. Repair any fencing damage within 3 months of extreme weather event.



Action	Completion Criteria	Corrective Action Trigger	Potential causes of corrective action being triggered	Corrective Action
				Evidence of impacts and rectification measures are to be issued to the DCCEEW within three months.



10.3. Climate Change

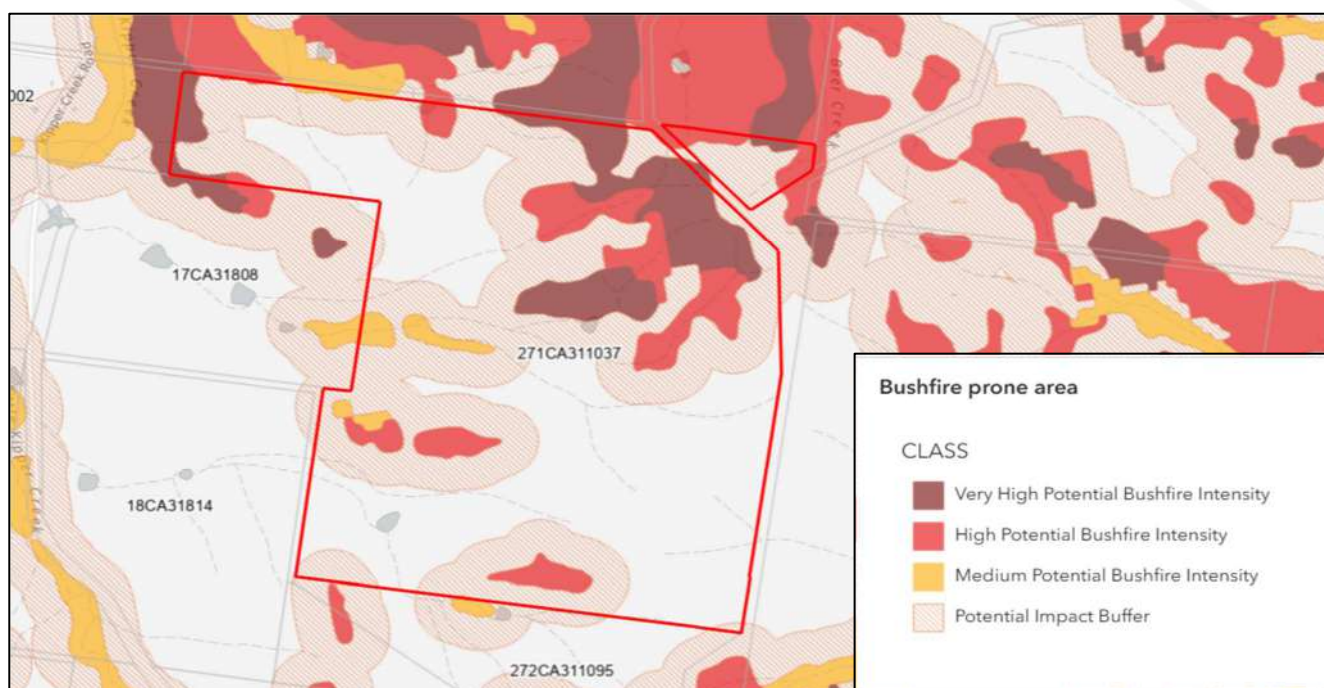
In addition to the risk of failure, corrective actions and triggers of the key management actions detailed in Table 41, the risk Climate Change imposes on the offset area has been included in this section and includes the following:

Climate Change Risk 1 – Wildfire

The offset land retains little to no existing 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 (refer **Insert 3** - Wildfire Hazard Mapping). A review of QGlobe fire scar mapping overlay indicates at least some of the offset area was exposed to wildfire in 2010/2011. The offset land retains limited vegetation interspersed with open pasture land and includes a system of boundary line firebreaks and access tracks for the protection of stock and farming infrastructure. This fire management system will be maintained and evolved 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 Offset Area 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, Somerset Regional Council Representatives and adjoining landowners to minimise wildfire risks at the regional scale.
- Consider taking out insurance for plant stock replacements.



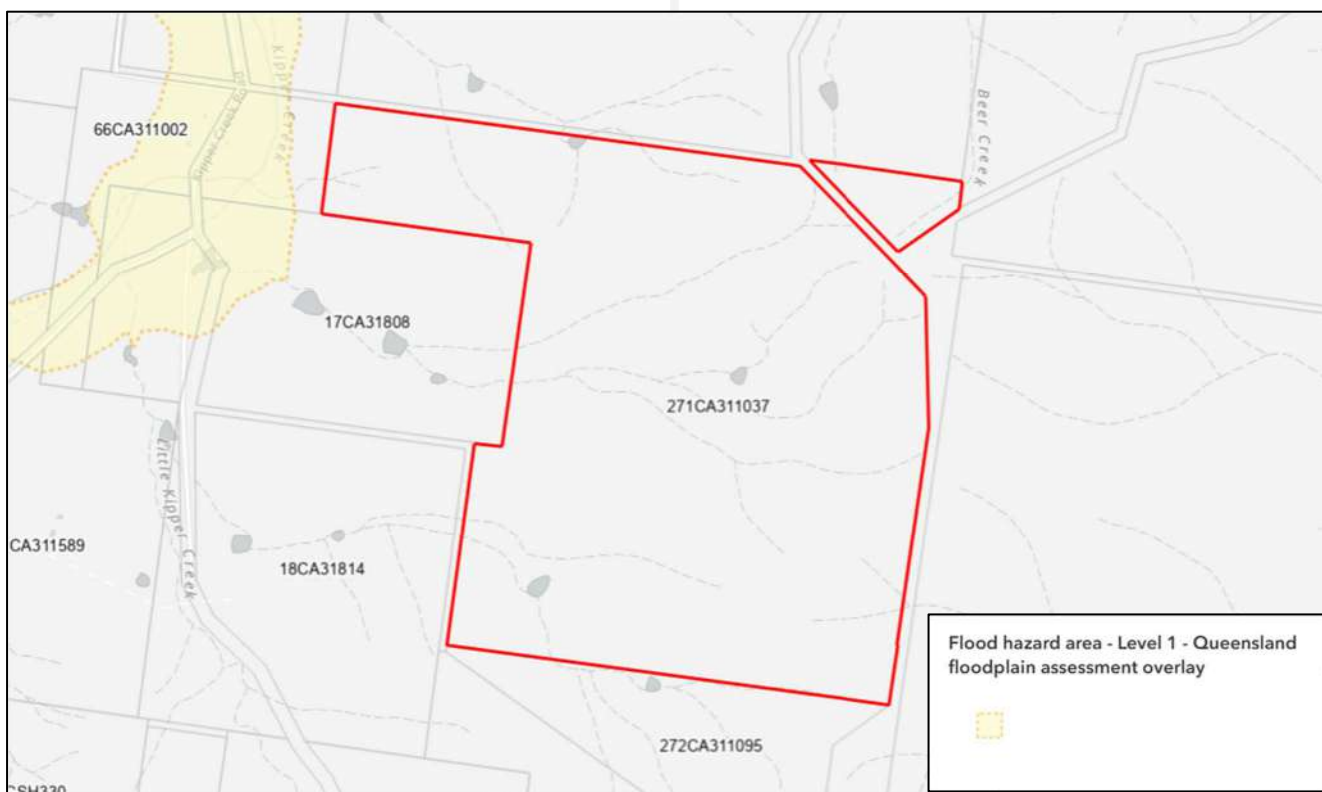
Insert 3: Queensland Government State Planning – Natural Hazard Risk and Resilience Mapping

Climate Change Risk 2 – Flooding

The local township of Esk and surrounding creek and river catchments are known for periodical flooding. The offset area retains only a small drainage line in the upper catchment. As such, no flooding overlay is mapped within the offset area with flooding associated with Kipper Creek to the west (refer **Insert 4** - Potential Flood Hazard areas mapped by State and Local Government). 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.
- Consider taking out insurance for planting stock located within adjacent to the flood zone to cover the cost of replacement works should a damaging rain / flood event occur.



Insert 4: Queensland Government State Planning – Natural Hazard Risk and Resilience Mapping

Climate Change Risk 3 – Drought

In March 2017 the Queensland Government declared the Somerset Region amongst a number of Local Government Areas as a drought area for the purposes of accessing funding and concessions for rural land holders. In 2019, significantly lower annual rainfall for the region occurred for a total 248 mm, well below the 738.2 mm average for all years. A review of rainfall data for 2025 indicates the annual total will surpass the rainfall average for all years (refer **Insert 5**).

The 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 700mm (Adams-Hosking, et al, 2011). Therefore, despite unprecedented drought conditions, the offset site has maintained an average annual rainfall amount >700mm rainfall similar to the optimal range to support koala presences.

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.

Summary statistics for all years

 [Information about climate statistics](#)

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	109.0	101.8	104.4	35.1	43.8	28.0	22.9	25.4	27.9	70.7	69.9	96.2	738.2

Insert 5: Long-term average of rainfall for nearest rain gauge to offset area (station 40823)



Climate Change Risk 4 – Climate factors – Shifting Habitat Range

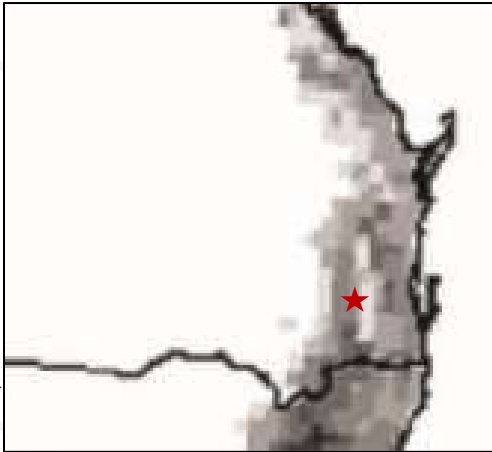
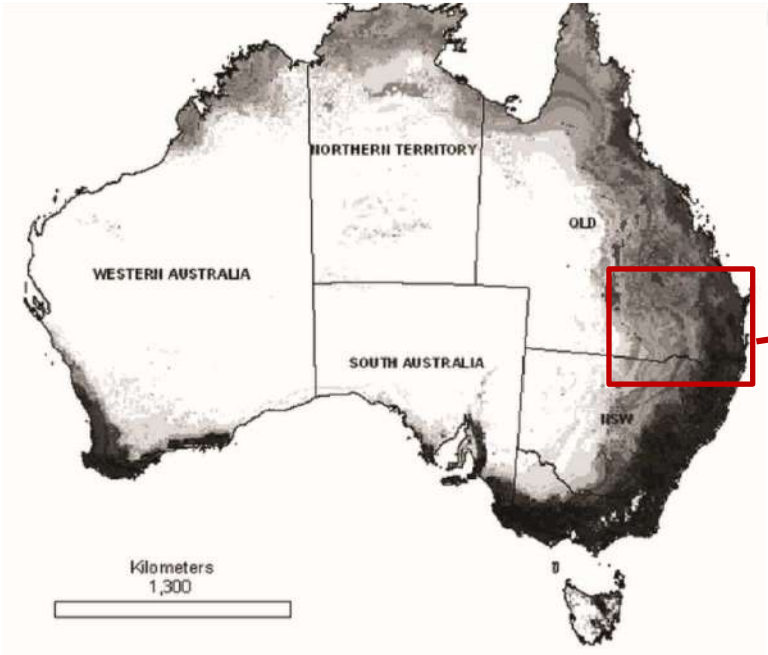
A number of contemporary case studies and research papers have investigated the combined weather characteristics of climate change on the current and future distribution of suitable Koala habitat into the future. Koalas are considered to be at risk of these factors because of their low tolerance to adapt to environmental changes combined with the number of existing non-climate related threats already well documented. More recently both species and their habitat have been affected nationally by the 2019-2020 bushfires.

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 eucalypt 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 future predicted koala habitat distribution in 2070 showing a substantial migration eastward. The study further concludes that:

"The highest probability of koala presence occurred at a mean maximum summer temperature of approximately 27oC 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, the offset area average rainfall for all years is 738.2 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 6** for estimated location of the Offset Site based on predicted changes in habitat distributions in 2070.





Insert 6: Modelled Habitat Distribution (2011 V 2070) – Adams-Hosking, et al. 2011



10.4. Limitations

Although an adaptive management plan will be implemented across the offset area 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 offset area 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 promotion of suitable habitat on-site through implementing the various management actions, along with the continuous monitoring of abundance, will assist in species utilisation of the site.

Further, the regular review of this Offset Management Plan, inclusive of the management actions and monitoring methodologies detailed within it, will assist in identifying areas requiring improvement, as well as identify methodology that has been successful. The success or required amendments to the management plans or works on-site will be assessed during the completion of the ACR as required under the EPBC Approval.

To ensure progress towards environmental outcomes and completion criteria is assessed correctly the baseline surveys have been developed to be repeatable and provide the data required for comparison 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 offset area.



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12. Appendices

Appendix A

Offset Assessment Guide Calculator Results and Justification

Appendix B

Impact Area – MHQA

Appendix C

Offset Area – Raw Weed Mapping Transect Data

Appendix D

Offset Area – Koala MHQA Baseline data

Appendix E

Offset Area – Baseline MHQA raw data

Appendix F

Offset Area – Baseline SAT raw data

Appendix G

Detailed Rehabilitation Plan

Appendix H

Risk Assessment



Appendix A

Offset Assessment Guide Calculator Results and Justification



Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

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	5.4	Hectares	
				Quality	5	Scale 0-10	
				Total quantum of impact	2.70	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	2.70	Adjusted hectares	AUI	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	2.7	Risk of loss (%) without offset	0%	Risk of loss (%) with offset	0%	0.00	90%	0.00	0.00	0.32	11.82%	No	\$690,000.00	EIANZ offset costs guide
						Future area without offset (adjusted hectares)	2.7		Future area with offset (adjusted hectares)	2.7												
						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)	7	2.00	75%	1.50	1.18					
	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 (\$)
	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	2.7	0.32	11.82%	No	\$690,000.00	\$417,531,219.25
	Area of community	0				\$0.00	\$0.00
						\$690,000.00	\$417,531,219.25

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser

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	5.4	Hectares	
				Quality	5	Scale 0-10	
				Total quantum of impact	2.70	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	2.70	Adjusted hectares	AU2	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	17.3	Risk of loss (%) without offset	0%	Risk of loss (%) with offset	0%		90%	0.00	0.00				
							Future area without offset (adjusted hectares)	17.3	Future area with offset (adjusted hectares)	17.3	0.00	90%	0.00	0.00							
						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)	7	3.00	75%	2.25	1.77				
	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	2.7	3.07	113.57%	Yes	\$690,000.00	N/A	\$690,000.00
	Area of community	0				\$0.00		\$0.00
						\$690,000.00	\$0.00	\$690,000.00

Appendix B

Impact Area – MHQA



Assessment Unit - Regional Ecosystem	AU 1 - Koala habitat 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	100	5
Native plant species richness - trees	3	3	3	3	100.00	5
Native plant species richness - shrubs	5	2	1	1.5	30.00	2.5
Native plant species richness - grasses	8	3	3	3	37.50	2.5
Native plant species richness - forbs	26	1	4	2.5	9.62	0
Tree canopy height (Canopy)*	21	13	13	13	61.90	3
Tree canopy height (Sub-canopy)*	10	7	6	6.5	65.00	3
*Average tree canopy height						3
Tree canopy cover (Canopy)**	40	47.4	10.4	28.9	72.25	5
Tree canopy cover (Sub-canopy)**	8	10.9	3	6.95	86.88	5
**Average tree canopy cover						5
Shrub canopy cover	3	0.8	0.4	0.6	20.00	3
Native grass cover*	61	78	77	77.5	127.05	5
Organic litter*	20	13	4	8.5	42.50	3
Large trees (euc plus non-euc) (per ha)	18	0	2	1	5.56	5
Coarse woody debris (per ha)	272	0	13	6.5	2.39	0
Non-native plant cover	0	10	10	10	10.00	5
Quality and availability of food and foraging habitat	NA				-	5
Quality and availability of shelter	NA				-	5
Site Condition Score (/100)						54
Overall Site Condition Score - out of 3						1.62
SITE CONTEXT						
Size of patch	10					10
Connectedness	5					2
Context	5					4
Ecological Corridors	6					0
Role of site location to species overall population in the state	5					4
Threats to the species	15					7
Species mobility capacity	10					10
Site Context Score (/56)						37
Overall Site Context Score - out of 3						1.98
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						4.75



Species Stocking Rate attributes	
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 the species population on-site*	0/30
Total Species Stocking Rate Score	20/70
Species Stocking Rate Score – out of 4	1.14

*Species Stocking Rate supplementary table attributes	
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



Appendix C

Offset Area – Raw Weed Mapping Transect Data



Weed Line Transect			
Date: 12.11.2024			Transect ID: 1, high density Lantana
Distance (m)		Interval	Dominant species coverage
Start	End		
0	12.3	12.3	<i>Lantana camara</i>
12.3	15.2	2.9	Non-native grass*
15.2	23.7	8.5	<i>Lantana camara</i>
23.7	27	3.3	Non-native grass*
27	36.8	9.8	<i>Lantana camara</i>
36.8	37.1	0.3	Non-native grass*
37.1	42.2	5.1	<i>Lantana camara</i>
42.2	45.8	3.6	Non-native grass*
45.8	57.1	11.3	<i>Lantana camara</i>
57.1	59.1	2	Non-native grass*
59.1	69.5	10.4	<i>Lantana camara</i>
69.5	74.8	5.3	Non-native grass*
74.8	88.6	13.8	<i>Lantana camara</i>
88.6	89.3	0.7	Non-native grass*
89.3	100	10.7	<i>Lantana camara</i>
Total		100	
Total <i>Lantana camara</i>		81.9	
Total non-native grass		18.1	

*Non-native grass dominated by *Melinis repens* (Red Natal Grass) and *Sporobolus sp.* (Rat's tail grass)). Some scattered native forbs present such as *Chrysocephalum apiculatum* (Yellow Buttons).



Weed Line Transect			
Date: 12.11.2024			Transect ID: 2, moderate density Lantana
Distance (m)		Interval	Dominant species coverage
Start	End		
0	2.3	2.3	<i>Lantana camara</i>
2.3	11.7	9.4	Non-native grass*
11.7	15.3	3.6	<i>Lantana camara</i>
15.3	17.7	2.4	Non-native grass*
17.7	21	3.3	<i>Lantana camara</i>
21	33	12	Non-native grass*
33	58.1	25.1	<i>Lantana camara</i>
58.1	61	2.9	Non-native grass*
61	63.7	2.7	<i>Lantana camara</i>
63.7	71.2	7.5	Non-native grass*
71.2	73.5	2.3	<i>Lantana camara</i>
73.5	75.7	2.2	Non-native grass*
75.7	81	5.3	<i>Lantana camara</i>
81	87	6	Non-native grass*
87	93	6	<i>Lantana camara</i>
93	100	7	Non-native grass*
Total		100	
Total <i>Lantana camara</i>		50.6	
Total non-native grass		49.4	

*Non-native grass dominated by *Melinis repens* (Red Natal Grass) and *Sporobolus sp.* (Rat's tail grass)). Some scattered native forbs present such as *Chrysocephalum apiculatum* (Yellow Buttons).



Weed Line Transect			
Date: 12.11.2024			Transect ID: 3, low density Lantana
Distance (m)		Interval	Dominant species coverage
Start	End		
0	3.3	3.3	<i>Lantana camara</i>
3.3	5.6	2.3	Non-native grass*
5.6	18.9	13.3	<i>Lantana camara</i>
18.9	20.7	1.8	Non-native grass*
20.7	24.2	3.5	<i>Lantana camara</i>
24.2	27.7	3.5	Non-native grass*
27.7	51	23.3	<i>Lantana camara</i>
51	56.6	5.6	Non-native grass*
56.6	59.8	3.2	<i>Lantana camara</i>
59.8	63.3	3.5	Non-native grass*
63.3	70.5	7.2	<i>Lantana camara</i>
70.5	72.5	2	Non-native grass*
72.5	78.9	6.4	<i>Lantana camara</i>
78.9	81.6	2.7	Non-native grass*
81.6	100	18.4	<i>Lantana camara</i>
0	3.3	3.3	Non-native grass*
Total		100	
Total <i>Lantana camara</i>		21.4	
Total non-native grass		78.6	

*Non-native grass dominated by *Melinis repens* (Red Natal Grass) and *Sporobolus sp.* (Rat's tail grass)). Some scattered native forbs including *Chrysocephalum apiculatum* (Yellow Buttons) and native grass, *Heteropogon contortus* (Black Speargrass) present.



Appendix D

Offset Area – Koala MHQA Baseline data



Assessment Unit - Regional Ecosystem	AU 1 - RE12.3.3				
	RE12.3.3 Benchmark	Transect 1	Average of Transect(s)	% Benchmark	Score
SITE CONDITION					
Recruitment of woody perennial species in EDL	100	100	100	100	5
Native plant species richness - trees	5	4	4	80.00	2.5
Native plant species richness - shrubs	5	1	1	20.00	0
Native plant species richness - grasses	9	6	6	66.67	2.5
Native plant species richness - forbs	25	7	7	28.00	2.5
Tree canopy height (Canopy)*	25	20	20	80.00	5
Tree canopy height (Sub-canopy)*	9	10	10	111.11	5
*Average tree canopy height					5
Tree canopy cover (Canopy)**	40	11	11	27.50	2
Tree canopy cover (Sub-canopy)**	8	14.7	14.7	183.75	5
**Average tree canopy cover					3.5
Shrub canopy cover	4	0	0	0.00	0
Native grass cover*	52	19	19	36.54	1
Organic litter*	20	17	17	85.00	5
Large trees (euc plus non-euc) (per ha)	14	10	10	71.43	10
Coarse woody debris (per ha)	588	297	297	50.51	5
Non-native plant cover	0	40	40	40.00	3
Quality and availability of food and foraging habitat	NA			-	5
Quality and availability of shelter	NA			-	5
Site Condition Score (/100)					55
Overall Site Condition Score - out of 3					1.65
SITE CONTEXT					
Size of patch	10				10
Connectedness	5				2
Context	5				4
Ecological Corridors	6				0
Role of site location to species overall population in the state	5				4
Threats to the species	15				7
Species mobility capacity	10				10
Site Context Score (/56)					37
Overall Site Context Score - out of 3					1.98
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					4.78



Species Stocking Rate attributes	
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 the species population on site*	0/30
Total Species Stocking Rate Score	20/70
Species Stocking Rate Score – out of 4	1.14

*Species Stocking Rate supplementary table attributes	
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



Assessment Unit - Regional Ecosystem	AU 2 - 12.9-10.2					
	RE12.9-10.2 Benchmark	Transect 2	Transect 3	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	100	100	100	5
Native plant species richness - trees	6	1	2	1.5	25.00	2.5
Native plant species richness - shrubs	7	0	1	0.5	7.14	0
Native plant species richness - grasses	7	3	5	4	57.14	2.5
Native plant species richness - forbs	13	6	8	7	53.85	2.5
Tree canopy height (Canopy)*	21	9	9	9	42.86	3
Tree canopy height (Sub-canopy)*	12	4	4	4	33.33	3
				*Average tree canopy height		3
Tree canopy cover (Canopy)**	64	0	16.2	8.1	12.66	2
Tree canopy cover (Sub-canopy)**	20	0	8.2	4.1	20.50	2
				**Average tree canopy cover		2
Shrub canopy cover	6	0	1.5	0.75	12.50	3
Native grass cover*	21	11	23	17	80.95	3
Organic litter*	48	0	19	9.5	19.79	3
Large trees (euc plus non-euc) (per ha)	38	0	0	0	0.00	0
Coarse woody debris (per ha)	506	0	0	0	0.00	0
Non-native plant cover	0	60	30	45	45.00	3
Quality and availability of food and foraging habitat	NA				-	5
Quality and availability of shelter	NA				-	5
					Site Condition Score (/100)	39.5
					Overall Site Condition Score - out of 3	1.19
SITE CONTEXT						
Size of patch	10	10	10	10		10
Connectedness	5	0	0	0		2
Context	5	4	4	4		4
Ecological Corridors	6	0	0	0		0
Role of site location to species overall population in the state	5	5	5	5		4
Threats to the species	15	7	7	7		7
Species mobility capacity	10	7	7	7		10
					Site Context Score (/56)	37
					Overall Site Context Score - out of 3	1.98
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						3.74



Species Stocking Rate attributes	
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 the species population on site*	0/30
Total Species Stocking Rate Score	10/70
Species Stocking Rate Score (/4)	0.57

*Species Stocking Rate supplementary table attributes	
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



Appendix E

Offset Area – Baseline MHQA raw data



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	1	Job Number / Property	11081

Part B - Site Data

Recorders	JG & TM	Date	12.11.2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na	1	12.3.3	

Site description and Location (including details of discrete polygons within the assessment unit)

Pre-clear 12.3.3/12.3.7. Cat X. South facing slope towards waterway. *Angophora subvelutina* dominated open woodland. High density lantana, especially surrounding the waterway. Ground cover dominated by native grasses with weeds.

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	4			EDL / Dom / R
Scientific Name	<i>Angophora subvelutina</i>	Common Name	Broad-leaved Apple	EDL/D/R
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	EDL/R
Scientific Name	<i>Corymbia tessellaris</i>	Common Name	Moreton Bay Ash	
Scientific Name	<i>Lophostemon suaveolens</i>	Common Name	Swamp Box	

Shrub species richness:				
Total number of species	1			
Scientific Name	<i>Angophora subvelutina</i>	Common Name	Broad-leaved Apple	

Grass species richness:				
Total number of species	6			
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass	
Scientific Name	<i>Cymbopogon refractus</i>	Common Name	Barbed Wire Grass	
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo Grass	
Scientific Name	<i>Chloris truncata</i>	Common Name	Australian Windmill Grass	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass	
Scientific Name	<i>Digitaria didactyla</i>	Common Name	Queensland Couch	

Forbs and others (non grass ground) species richness:				
Total number of species	7			
Scientific Name	<i>Dichondra repens</i>	Common Name	Kidney Weed	
Scientific Name	<i>Lespedeza sericea</i>	Common Name	Bush Clover	
Scientific Name	<i>Glycine clandestina</i>	Common Name	Twining Glycine	
Scientific Name	<i>Schenkia australis</i>	Common Name	Spikey Century	
Scientific Name	<i>Wahlenbergia stricta</i>	Common Name	Queensland Bluebell	
Scientific Name	<i>Centella asiatica</i>	Common Name	Pennywort	
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons	

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	40.00%		
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Balloon Cotton Bush
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purple-top Verbena
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Giant Rat's Tail Grass
Scientific Name	<i>Solanum mauritianum</i>	Common Name	Wild Tobacco

Scientific Name	<i>Bidens pilosa</i>	Common Name	Cobbler's Pegs
Scientific Name	<i>Calyptracarpus vialis</i>	Common Name	Creeping Cinderella
Scientific Name	<i>Taraxacum officinale</i>	Common Name	Common Dandelion

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Course Woody Debris (Meters per hectare)	297.00		
1	1.20	26	
2	0.50	27	
3	1.00	28	
4	0.80	29	
5	2.50	30	
6	1.50	31	
7	1.70	32	
8	2.00	33	
9	4.50	34	
10	6.50	35	
11	4.00	36	
12	2.00	37	
13	1.50	38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	

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	0%	5%	70%	20%	0%	19%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	5%	10%	0%	0%	0%	3%
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	80%	0%	10%	10%	15%	23%
Non native forbs and shrubs	10%	15%	10%	5%	45%	17%
Litter	5%	0%	10%	55%	15%	17%
Rock	0%	0%	0%	0%	0%	
Bare Ground	0%	70%	0%	10%	25%	21%
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 :	540	Number of large eucalypt trees:	A.subvelutine: 740, 930, 610, 590 E.tereticornis: 690
Non- Eucalypt Large tree DBH benchmark used:	200	Number of large non eucalypt trees:	0
Total number of large trees recorded:	5		
Total Number Large Trees per ha:	10		

Median Tree Canopy Height Measurements	Canopy:	20	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:	11.0%	Sub-canopy:	14.70%	Emergent:	
Shrub canopy cover %	0.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	34.8	42.7	7.9	T2	26.7	27.6	0.9
T1	67.0	70.1	3.1	T2	47.1	56.2	9.1
T1			0.0	T2	77.5	80.9	3.4
T1			0.0	T2	91.1	92.4	1.3
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
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 J: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	Lophostemon suaveolens	Swamp Box	180	N
2	Eucalyptus tereticornis	Forest Red Gum	190	N
3	Angophora subvelutina	Broad-leaved Apple	130	N
4	Eucalyptus tereticornis	Forest Red Gum	300	N
5	Angophora subvelutina	Broad-leaved Apple	100	N
6	Angophora subvelutina	Broad-leaved Apple	130	N
7	Angophora subvelutina	Broad-leaved Apple	100	N
8	Lophostemon suaveolens	Swamp Box	170	N
9	Angophora subvelutina	Broad-leaved Apple	100	N
10	Lophostemon suaveolens	Swamp Box	160	N
11	Angophora subvelutina	Broad-leaved Apple	100	N
12	Angophora subvelutina	Broad-leaved Apple	160	N
13	Angophora subvelutina	Broad-leaved Apple	110	N
14	Angophora subvelutina	Broad-leaved Apple	100	N
15	Angophora subvelutina	Broad-leaved Apple	100	N
16	Angophora subvelutina	Broad-leaved Apple	120	N
17	Angophora subvelutina	Broad-leaved Apple	100	N
18	Angophora subvelutina	Broad-leaved Apple	100	N
19	Angophora subvelutina	Broad-leaved Apple	110	N
20	Angophora subvelutina	Broad-leaved Apple	140	N
21	Angophora subvelutina	Broad-leaved Apple	140	N
22	Angophora subvelutina	Broad-leaved Apple	800	N
23	Angophora subvelutina	Broad-leaved Apple	220	N
24	Angophora subvelutina	Broad-leaved Apple	110	N
25	Angophora subvelutina	Broad-leaved Apple	150	N
26	Lophostemon suaveolens	Swamp Box	140	N
27	Angophora subvelutina	Broad-leaved Apple	170	N
28	Angophora subvelutina	Broad-leaved Apple	190	N
29	Angophora subvelutina	Broad-leaved Apple	140	N
30	Lophostemon suaveolens	Swamp Box	130	N
Total				

[Attach Landscape Photos Here](#)

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	2	Job Number / Property	11081

Part B - Site Data

Recorders	JG and TM	Date	12.11.2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na	AU2	12.9-10.2	

Site description and Location (including details of discrete polygons within the assessment unit)

Open paddock with scattered eucalyptus regrowth and patchy lantana

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	1			EDL / Dom / R
Scientific Name	<i>Angophora subvelutina</i>	Common Name	Broad-leaved Apple	EDL/D/R
Scientific Name		Common Name		

Shrub species richness:				
Total number of species	0			
Scientific Name		Common Name		
Scientific Name		Common Name		

Grass species richness:				
Total number of species	3			
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass	
Scientific Name	<i>Aristida calycina</i>	Common Name	Dark Wiregrass	
Scientific Name	<i>Aristida vagans</i>	Common Name	Threeawn Aristida	
Scientific Name		Common Name		

Forbs and others (non grass ground) species richness:				
Total number of species	6			
Scientific Name	<i>Dichondra repens</i>	Common Name	Kidney Weed	
Scientific Name	<i>Centella asiatica</i>	Common Name	Pennywort	
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons	
Scientific Name	<i>Wahlenbergia stricta</i>	Common Name	Queensland Bluebell	
Scientific Name	<i>Lespedeza sericea</i>	Common Name	Bush Clover	
Scientific Name	<i>Schenkia australis</i>	Common Name	Spikey Century	
Scientific Name		Common Name		

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	60.00%		
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Giant Rat's Tail Grass
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purple Top Verbena
Scientific Name	<i>Heliotropium amplexicaule</i>	Common Name	Blue Heliotrope
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Bolloon Cotton Bush
Scientific Name	<i>Taraxacum officinale</i>	Common Name	Common Dandelion
Scientific Name	<i>Bidens pilosa</i>	Common Name	Cobbler's Pegs
Scientific Name	<i>Neonotonia wightii</i>	Common Name	Glycine
Scientific Name		Common Name	

Part E - Coarse Woody Debris: (*list lengths of individual logs in meters)

Total Length of Coarse Woody Debris (Meters per hectare)			
1	0.00	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	0%	10%	0%	30%	15%	11%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	5%	10%	15%	20%	40%	18%
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	55%	60%	50%	35%	45%	49%
Non native forbs and shrubs	38%	20%	35%	15%	0%	22%
Litter	0%	0%	0%	0%	0%	
Rock	0%	0%	0%	0%	0%	
Bare Ground	2%	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:	N/A	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:	9	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 %	0.00%					

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

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 J: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
NA	Not enough trees			
Total				

Attach Landscape Photos Here

North



South



East





Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	3	Job Number / Property	11081

Part B - Site Data

Recorders	JG and TM	Date	12.11.2024

Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na	AU2	12.9-10.2	

Site description and Location (including details of discrete polygons within the assessment unit)

Open paddock with scatterd regrowth A.subvelutina

Part C - Native Species Richness: (*list species below)

Tree species richness:				
Total number of species	2			EDL / Dom / R
Scientific Name	<i>Angophora subvelutina</i>	Common Name	Broad-leaved Apple	EDL/D/R
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	
Scientific Name		Common Name		

Shrub species richness:				
Total number of species	1			
Scientific Name	<i>Angophora subvelutina</i>	Common Name	Broad-leaved Apple	
Scientific Name		Common Name		

Grass species richness:				
Total number of species	5			
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass	
Scientific Name	<i>Eragrostis brownii</i>	Common Name	Brown's Lovegrass	
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo Grass	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass	
Scientific Name	<i>Cynodon dactylon</i>	Common Name	Couch Grass	
Scientific Name		Common Name		

Forbs and others (non grass ground) species richness:				
Total number of species	8			
Scientific Name	<i>Dichondra repens</i>	Common Name	Kidney Weed	
Scientific Name	<i>Centella asiatica</i>	Common Name	Pennywort	
Scientific Name	<i>Chryscephalum apiculatum</i>	Common Name	Yellow Buttons	
Scientific Name	<i>Wahlenbergia stricta</i>	Common Name	Queensland Bluebell	
Scientific Name	<i>Polymeria calycina</i>	Common Name	Slender Bindweed	
Scientific Name	<i>Glycine clandestina</i>	Common Name	Twining Glycine	
Scientific Name	<i>Juncus usitatus</i>	Common Name	Common Juncus	
Scientific Name	<i>Lobelia purpurascens</i>	Common Name	White Root	
Scientific Name		Common Name		

Part D - Non-Native Plant Cover: (*list species below)

Total percentage cover within plot	30.00%		
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Giant Rat's Tail Grass
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purple Top Verbena
Scientific Name	<i>Ageratum houstonianum</i>	Common Name	Blue Billy Goat Weed
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Bolloon Cotton Bush
Scientific Name	<i>Taraxacum officinale</i>	Common Name	Common Dandelion
Scientific Name	<i>Emilia sonchifolia</i>	Common Name	Emilia
Scientific Name	<i>Neonotonia wightii</i>	Common Name	Glycine
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)			
1	0.00	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	0%	10%	20%	60%	25%	23%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	5%	5%	0%	0%	5%	3%
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	75%	70%	45%	15%	30%	47%
Non native forbs and shrubs	10%	10%	5%	5%	10%	8%
Litter	10%	5%	30%	20%	30%	19%
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:	N/A	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:	9	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:	16.2%	Sub-canopy:	8.20%	Emergent:	
Shrub canopy cover %	1.50%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	34.5	42.2	7.7	T2	57.1	62.9	5.8
T1	45.0	50.5	5.5	T2	67.3	69.7	2.4
T1	77.1	80.1	3.0	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	94.7	96.2	1.5	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 J: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	Angophora subvelutina	Broad-leaved Apple	210	N
2	Angophora subvelutina	Broad-leaved Apple	100	N
3	Angophora subvelutina	Broad-leaved Apple	160	N
4	Angophora subvelutina	Broad-leaved Apple	110	N
5	Angophora subvelutina	Broad-leaved Apple	100	N
6	Angophora subvelutina	Broad-leaved Apple	130	N
7	Eucalyptus tereticornis	Forest Red Gum	190	N
8	Angophora subvelutina	Broad-leaved Apple	170	N
9	Angophora subvelutina	Broad-leaved Apple	200	N
10	Angophora subvelutina	Broad-leaved Apple	140	N
11	Angophora subvelutina	Broad-leaved Apple	140	N
12	Angophora subvelutina	Broad-leaved Apple	140	N
13	Angophora subvelutina	Broad-leaved Apple	190	N
14	Angophora subvelutina	Broad-leaved Apple	110	N
15	Angophora subvelutina	Broad-leaved Apple	150	N
16	Angophora subvelutina	Broad-leaved Apple	170	N
17	Angophora subvelutina	Broad-leaved Apple	160	N
18	Angophora subvelutina	Broad-leaved Apple	140	N
19	Angophora subvelutina	Broad-leaved Apple	220	N
20	Angophora subvelutina	Broad-leaved Apple	200	N
21	Angophora subvelutina	Broad-leaved Apple	120	N
22	Angophora subvelutina	Broad-leaved Apple	180	N
23	Angophora subvelutina	Broad-leaved Apple	170	N
24	Angophora subvelutina	Broad-leaved Apple	150	N
25	Angophora subvelutina	Broad-leaved Apple	130	N
26	Angophora subvelutina	Broad-leaved Apple	140	N
27	Angophora subvelutina	Broad-leaved Apple	180	N
28	Angophora subvelutina	Broad-leaved Apple	110	N
29	Angophora subvelutina	Broad-leaved Apple	210	N
30	Angophora subvelutina	Broad-leaved Apple	110	N
Total				

Attach Landscape Photos Here
North



South



East



West



Appendix F

Offset Area – Baseline SAT raw data



Spot Assessment Technique (SAT) Survey				
Date: 12.11.2024		SAT ID: 1, adjoining MHQA 1		
Tree No.	Scientific Name	Common Name	DBH	Scat present?
1	<i>Lophostemon suaveolens</i>	Swamp Box	180	N
2	<i>Eucalyptus tereticornis</i>	Forest Red Gum	190	N
3	<i>Angophora subvelutina</i>	Broad-leaved Apple	130	N
4	<i>Eucalyptus tereticornis</i>	Forest Red Gum	300	N
5	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
6	<i>Angophora subvelutina</i>	Broad-leaved Apple	130	N
7	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
8	<i>Lophostemon suaveolens</i>	Swamp Box	170	N
9	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
10	<i>Lophostemon suaveolens</i>	Swamp Box	160	N
11	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
12	<i>Angophora subvelutina</i>	Broad-leaved Apple	160	N
13	<i>Angophora subvelutina</i>	Broad-leaved Apple	110	N
14	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
15	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
16	<i>Angophora subvelutina</i>	Broad-leaved Apple	120	N
17	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
18	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
19	<i>Angophora subvelutina</i>	Broad-leaved Apple	110	N



20	<i>Angophora subvelutina</i>	Broad-leaved Apple	140	N
21	<i>Angophora subvelutina</i>	Broad-leaved Apple	140	N
22	<i>Angophora subvelutina</i>	Broad-leaved Apple	800	N
23	<i>Angophora subvelutina</i>	Broad-leaved Apple	220	N
24	<i>Angophora subvelutina</i>	Broad-leaved Apple	110	N
25	<i>Angophora subvelutina</i>	Broad-leaved Apple	150	N
26	<i>Lophostemon suaveolens</i>	Swamp Box	140	N
27	<i>Angophora subvelutina</i>	Broad-leaved Apple	170	N
28	<i>Angophora subvelutina</i>	Broad-leaved Apple	190	N
29	<i>Angophora subvelutina</i>	Broad-leaved Apple	140	N
30	<i>Lophostemon suaveolens</i>	Swamp Box	130	N
Total scats (/30)				0
Percentage				0
East Coast (med-high) Activity Category				Low



Spot Assessment Technique (SAT) Survey				
Date: 12.11.2024		SAT ID: 2, adjoining MHQA 3		
Tree No.	Scientific Name	Common Name	DBH	Scat present?
1	<i>Angophora subvelutina</i>	Broad-leaved Apple	210	N
2	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
3	<i>Angophora subvelutina</i>	Broad-leaved Apple	160	N
4	<i>Angophora subvelutina</i>	Broad-leaved Apple	110	N
5	<i>Angophora subvelutina</i>	Broad-leaved Apple	100	N
6	<i>Angophora subvelutina</i>	Broad-leaved Apple	130	N
7	<i>Eucalyptus tereticornis</i>	Forest Red Gum	190	N
8	<i>Angophora subvelutina</i>	Broad-leaved Apple	170	N
9	<i>Angophora subvelutina</i>	Broad-leaved Apple	200	N
10	<i>Angophora subvelutina</i>	Broad-leaved Apple	140	N
11	<i>Angophora subvelutina</i>	Broad-leaved Apple	140	N
12	<i>Angophora subvelutina</i>	Broad-leaved Apple	140	N
13	<i>Angophora subvelutina</i>	Broad-leaved Apple	190	N
14	<i>Angophora subvelutina</i>	Broad-leaved Apple	110	N
15	<i>Angophora subvelutina</i>	Broad-leaved Apple	150	N
16	<i>Angophora subvelutina</i>	Broad-leaved Apple	170	N
17	<i>Angophora subvelutina</i>	Broad-leaved Apple	160	N
18	<i>Angophora subvelutina</i>	Broad-leaved Apple	140	N



19	<i>Angophora subvelutina</i>	Broad-leaved Apple	220	N
20	<i>Angophora subvelutina</i>	Broad-leaved Apple	200	N
21	<i>Angophora subvelutina</i>	Broad-leaved Apple	120	N
22	<i>Angophora subvelutina</i>	Broad-leaved Apple	180	N
23	<i>Angophora subvelutina</i>	Broad-leaved Apple	170	N
24	<i>Angophora subvelutina</i>	Broad-leaved Apple	150	N
25	<i>Angophora subvelutina</i>	Broad-leaved Apple	130	N
26	<i>Angophora subvelutina</i>	Broad-leaved Apple	140	N
27	<i>Angophora subvelutina</i>	Broad-leaved Apple	180	N
28	<i>Angophora subvelutina</i>	Broad-leaved Apple	110	N
29	<i>Angophora subvelutina</i>	Broad-leaved Apple	210	N
30	<i>Angophora subvelutina</i>	Broad-leaved Apple	110	N
Total scats (/30)				0
Percentage				0
East Coast (med-high) Activity Category				Low



Appendix G

Detailed Rehabilitation Plan



KIPPER CREEK OFFSET SITE

EPBC 2023/09690

Detailed Rehabilitation Plan

DWG NO.	DRAWING TITLE	ISSUE	DATE
11081 E 01 RP D	COVER SHEET	D	11/11/2025
11081 E 02 RP D	INTRODUCTION AND NOTES	D	11/11/2025
11081 E 03-04 RP D	SITE PREPARATION	D	11/11/2025
11081 E 05 RP D	REHABILITATION ZONES	D	11/11/2025
11081 E 06 RP D	PLANTING SPECIES SCHEDULE	D	11/11/2025



KIPPER CREEK OFFSET SITE - EPBC 2023/09690

Detailed Rehabilitation Plan - *Introduction and Notes*

INTRODUCTION

This Rehabilitation Plan (RP) has been prepared by **Saunders Havill Group (SHG)** for **AW Bidco 6 Pty Ltd and Koala Farmland Fund** for the Kipper Creek Offset Site - EPBC 2023/09690.

The primary objective of this RP 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 RP is to function as a guide and reference document for the proposed rehabilitation techniques and planting palettes proposed for the EPBC 2023/09690 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 3.

- Natural Regeneration
- Assisted Natural Regeneration
- Reconstruction
- Fabrication

In all approaches, a level of infill planting is required in each Environmental Management Zone (EMZ) to achieve the offset outcomes proposed for each species.

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 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.
Fabrication (Type Conversion)	
Applies:	Where site conditions have been irreversibly changed. When it is not possible to restore the original native plant community. Where a better-adapted local plant community can be planted that will function within the changed conditions. In situations such as the construction of a wetland plant community to mitigate increased urban storm-water run-off.
Role of planting:	Revegetation (planting) is the major component in a fabrication program.
Goal vegetation community:	The re-establishing planted community should be similar to a naturally occurring plant community of the same type (e.g. a constructed freshwater wetland should resemble a natural system in terms of 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.

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 information is included in the Offset Area Management Plan (OAMP):

- 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, vegetation dispersal and structure
- Describe the fauna use onsite
- Describe estimated native regeneration response.

The baseline data in the OAMP provides 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 considered:

- Fauna movement opportunities via ecological corridors and adjoining offset areas;
- Diversity and type of fauna and distribution on site;
- Habitat opportunities e.g. Dense foliage, roosting areas, and log hollows;
- Fauna disturbance and vicinity of works to significant nesting areas and or fauna movement;
- Quality and quantity of habitat e.g. foraging trees; and
- Stage weed removal and or altering of weed control technique if the weeds are currently forming a significant fauna habitat.

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 3.

METHODOLOGY – SITE PREPARATION

Prior to preparation works commencing, the site should 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

Site works can be typically broken down into the following activities:

- Controlled cool burns
- Cultivation of soil
- Weed control
- Establishment of site nursery
- Water sprinkler and pump set-up
- Seedling inspections

DISCLAIMER

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References:

South East Queensland Ecological Restoration Framework (2012)
Guideline for the preparation of a Rehabilitation Plan (GCC)

AMENDMENTS

ISSUE	DATE	DESCRIPTION
A	15/09/2025	CLIENT DRAFT
B	28/10/2025	AMENDMENTS
C	7/11/2025	AMENDMENTS
D	11/11/2025	AMENDMENTS

DRAWN	CHECKED
LS	LB
LS	LB
LS	LB
LS	LB

CLIENT

AW BIDCO 6 PTY LTD
AND KOALA FARMLAND FUND

PROJECT

KIPPER CREEK OFFSET SITE
EPBC 2023/09690

DRAWING TITLE

DETAILED
REHABILITATION PLAN

DRAWING NO.

11081 E 02 RP D



KIPPER CREEK OFFSET SITE - EPBC 2023/09690

Detailed Rehabilitation Plan - *Site Preparation*

SITE PREPARATION – BUSHFIRE MANAGEMENT

Rehabilitation works will be done in accordance with the Bushfire Management Plan (BMP) that 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.

The rehabilitation works will aim to ensure:

- Reduced risk of high intensity fires in the offset area.
- 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.

SITE PREPARATION – WEED CONTROL 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).

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 <i>Biosecurity Act 2014</i> or another Act.
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

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 varying weed species and scenarios. Refer to adjacent schedules for an indication of weed management techniques.

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 (<i>Ligustrum sinense</i>), 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 (<i>Ipomoea cairica</i>) which produce long stolons extending metres along 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 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 (<i>Protasparagus plumosus</i>). 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 (<i>Erythrina</i> spp, <i>Privet Ligustrum</i> 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 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. 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:

South East Queensland Ecological Restoration Framework (2012)

Guideline for the preparation of a Rehabilitation Plan (GCC)

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PROJECT

KIPPER CREEK OFFSET SITE
EPBC 2023/09690

DRAWING TITLE

DETAILED
REHABILITATION PLAN

DRAWING NO.

11081 E 03 RP D



KIPPER CREEK OFFSET SITE - EPBC 2023/09690

Detailed Rehabilitation Plan - *Site Preparation (Continued)*

SITE PREPARATION – NURSERY ESTABLISHMENT

Establishment of site nursery – this is established at the planting site for the storage and watering of seedlings prior to planting and in a location that provides: shade if hot temperatures are expected, a source of water for irrigation, and proximity for regular dispatch to the planting areas. The length of time the seedlings are stored on site before planting should be minimised. Species selection is critical in achieving the desired ecological restoration outcomes for rehabilitation sites. Planting is typically derived from:

- Local Regional Ecosystem (RE) descriptions.
- Observed site native vegetation.
- Climatic and weather conditions observed on site (frost, salt-spray, etc.
- 'Pioneer' species are useful in site stabilisation and encouraging native regeneration.
- Utilising flowering and fruiting species are useful to attract wildlife and result in introduction of seeds.
- Diverse vegetation layers (trees, shrubs, groundcovers)
- Species availability from seed propagation and or local nurseries

Sourcing Plant Material

There are a number of options for sourcing plant material for revegetation purposes. Propagation from site seed is a good outcome however is often limited by required timing of works. Sourcing planting from local nurseries is the commonly chosen option and has the following benefits:

- Awareness of genetic considerations when collecting seed.
- Experience with breaking dormancy mechanisms in hard to germinate seeds.
- Highly successful propagation techniques.
- Ability to provide high quality stock to order
- Draw on industry resources.

PLANTING METHODOLOGY

Primary weed management works, areas requiring infill planting (assisted natural regeneration), and larger scale planting (reconstruction and fabrication) can be undertaken. Prior to installation, the following items should be considered:

- Timing of planting
- Site preparation
- Planting density
- Planting installation

Timing of Planting

The timing of planting should ideally be aligned with the wet season in SEQ (summer and autumn). This minimises the need for intensive watering to establishment planting. Planting between February to May is the most beneficial as it also seeks to avoid intense heat periods of summer. Furthermore, planting at flood-prone and frost-prone locations should aim for plant establishment prior to the onsite of flooding / frost events. Despite this, it is understood planting may occur at various times within rehabilitation areas due to development timing needs.

Site Preparation

Site or planting preparation includes:

- Fencing to exclude grazing animals and people (if required)
- Pre-spraying of exotic grasses and other weeds to planting areas
- Consideration of source of water for new planting (access tracks, temporary irrigation)
- Arranging delivery of mulch, jute netting and tree guards (if required)
- Treatment of heavily compacted soils by ripping and or application of gypsum
- Soil amelioration as required

Planting Density

Plant density is calculated on a zone by zone basis. This allows planting to cater for various requirements including standard revegetation, infill only requirements such as canopy trees at low densities, as well as dense bioretention plantings as per Bioretention Technical Guidelines. Refer to plant schedule for species and planting densities.

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 minimize 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 RP, 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.

Seeds 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 (eg 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.

- Timing** must occur during seasons of high rainfall and mild temperatures. Dry weather conditions, extreme high temperatures, and extreme low temperatures will have a negative impact on seed germination and seedling survival.
- 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.

POST PLANTING

Pest management – pest animals fall into two distinct groups, namely native and feral animals. Both groups potentially impact planting by eating, and otherwise damaging revegetation. Pest animals are to be managed in accordance with the property wide pest management plan developed by the offset provider.

Weed control – typically, weed control maintenance will be undertaken for two years after planting, or until the plated seedlings are tall enough to access full sunlight and adequate soil moisture free from adjacent competing plants. This maintenance is limited to controlling weeds in proximity to installed plants that are directly threatening, or creating competition for, installed plants. Care should be taken to ensure weed control approaches do not impact planted seedlings and herbicide application is used precisely and selectively. 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.

MEASUREMENT ACTION

- Plant survival rates** will be routinely assessed post completion of planting by the end of year 2.
- Two-year post plant maintenance programme** involving pest control, weed management, and any necessary additional planting.
- Routine photo monitoring** completed by the restoration contractor at least bi-annually for the first three (3) years post-planting.
- Baseline surveys methodology to be repeated** at years 3, 5, 8, 10, 13, 15, 17, 19 and 20 will help ensure strong results are being achieved, and advise the need for adaptive measures are undertaken, where necessary.

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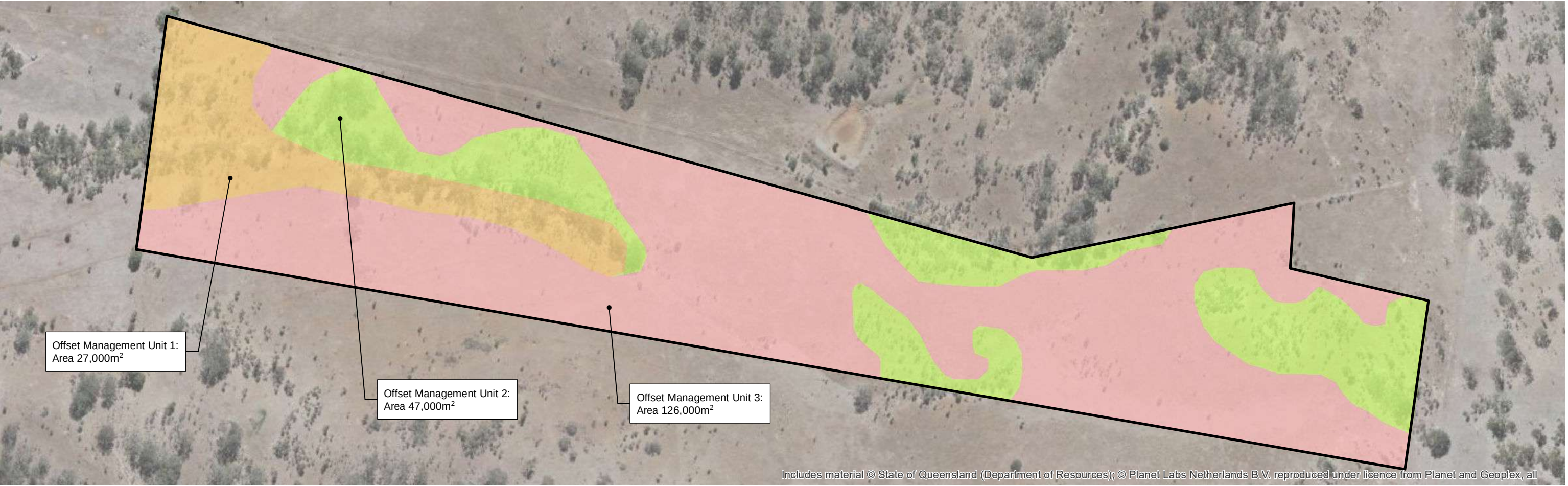
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KIPPER CREEK OFFSET SITE - EPBC 2023/09690

Detailed Rehabilitation Plan - *Rehabilitation Zones*



MANAGEMENT ZONES LEGEND

Offset Management Unit 1 – Non-remnant vegetation, pre-clear RE 12.3.3 Assisted Natural Regeneration

Existing native trees, shrubs and groundcovers to be protected and retained. Appropriate (sensitive) weed management methodology within this zone to encourage natural regeneration, minimise damage to existing native vegetation and stabilise soil.

In areas where no natural mulching or existing groundcovers are occurring, any bare, eroded or erosion-prone areas to be appropriately cultivated, topsoiled and blanket mulched with 100mm thick aged forest mulch. Blanket mulch within areas prone to inundation or washout to be secured with a natural fibre netting or substituted with a natural fibre matting in heavily eroded/inundated areas. Avoid mulching where existing natural resources may be impacted.

Infill planting of bare areas beneath existing native canopy trees with a mixture of shrubs and groundcovers throughout, and trees installed at locations >3m from existing tree trunks. Tubestock trees, shrubs and groundcovers to be installed at rates of 1:10m², 1:5m² and 1:1m² respectively.

Refer to Rehabilitation Notes for additional details, plant species and densities.

Offset Management Unit 2 – Non-remnant vegetation, pre-clear RE 12.9-10.2 Assisted Natural Regeneration

Existing native trees, shrubs and groundcovers to be protected and retained. Appropriate (sensitive) weed management methodology within this zone to encourage natural regeneration, minimise damage to existing native vegetation and stabilise soil.

In areas where no natural mulching or existing groundcovers are occurring, any bare, eroded or erosion-prone areas to be appropriately cultivated, topsoiled and blanket mulched with 100mm thick aged forest mulch. Blanket mulch within areas prone to inundation or washout to be secured with a natural fibre netting or substituted with a natural fibre matting in heavily eroded/inundated areas. Avoid mulching where existing natural resources may be impacted.

Infill planting of bare areas beneath existing native canopy trees with a mixture of shrubs and groundcovers throughout, and trees installed at locations >3m from existing tree trunks. Tubestock trees, shrubs and groundcovers to be installed at rates of 1:10m², 1:5m² and 1:1m² respectively.

Refer to Rehabilitation Notes for additional details, plant species and densities.

Offset Management Unit 3 – Non-remnant vegetation, pre-clear RE 12.9-10.2 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.

Planting works within the first two years will focus primarily on trees to allow time for establishment. Systematic infill 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.

Entire zone to be planted with a mixture of trees, shrubs and groundcovers at rates of 1:10m², 1:5m² and 1:1m² respectively or at densities to support foraging habitat offset species requirements

Refer to Rehabilitation Notes for additional details, plant species and densities.



KIPPER CREEK OFFSET SITE - EPBC 2023/09690

Detailed Rehabilitation Plan - *Planting Species Schedule*

Offset Management Unit 1 – Non-remnant vegetation, pre-clear RE 12.3.3 Assisted Natural Regeneration [27,000m²]				
Notes: 1) Setback trees 3 metres minimum from all property boundaries, sewer and service alignments 2) Distribute plants in groups on site in random arrangement - to be confirmed with rehabilitation contractor on site 3) Plant species according to tolerances and site conditions 4) Plant quantities to be confirmed by rehabilitation supervisor according to site conditions and nursery availability. Unsuitable or unavailable species to be substituted with other species from this schedule. 5) Species consistent with RE technical description. 6) Infill planting quantities to be determined by rehabilitation contractor utilising species from this planting schedule.				
SCIENTIFIC NAME	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY
TREES				1 PER 10 m²
<i>Eucalyptus tereticornis</i> (P)*	Forest Red Gum	T1	Tube	-
<i>Eucalyptus crebra</i> (P)*	Narrow-leaved Iron Bark	T1	Tube	-
<i>Eucalyptus moluccana</i> (S)*	Gum-topped Box	T1	Tube	-
<i>Angophora subvelutina</i> (S)*	Broad-leaved Apple	T1	Tube	-
<i>Eucalyptus melanophloia</i> (S)*	Silver-leaved Ironbark	T2	Tube	-
<i>Corymbia intermedia</i> (S)*	Pink Bloodwood	T2	Tube	-
<i>Corymbia tessellaris</i> (S)*	Moreton Bay Ash	T1	Tube	-
<i>Lophostemon suaveolens</i> (S)*	Swamp-top Box	T2	Tube	-
<i>Alphitonia excelsa</i>	Soap Tree	T2 / S1	Tube	-
<i>Acacia disparrima</i>	Hickory Wattle	T2 / S1	Tube	-
<i>Acacia leiocalyx</i>	Black Wattle	T2 /S1	Tube	-
SHRUBS				1 PER 5 m²
<i>Petalostigma pubescens</i>	Quinine Bush	S1	Tube	-
<i>Acacia salicina</i>	Sally Wattle	S1	Tube	-
<i>Jacksonia scoparia</i>	Dogwood	S1	Tube	-
<i>Persoonia sericea</i>	Silky Geebung	S1	Tube	-
GROUND COVERS				1 PER 1 m²
<i>Cymbopogon refractus</i>	Barbed-wire Grass	G	Tube	-
<i>Themeda triandra</i>	Kangaroo Grass	G	Tube	-
<i>Eragrostis brownii</i>	Browns Love Grass	G	Tube	-
<i>Eremophila debilis</i>	Winter Apple	G	Tube	-
<i>Dichondra repens</i>	Kidney Weed	G	Tube	-
<i>Glycine tabacina</i>	Variable Glycine	G	Tube	-
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Multi-flowered Matrush	G	Tube	-

Offset Management Unit 2 – Non-remnant vegetation, pre-clear RE 12.9-10.2 Assisted Natural Regeneration [47,000m²]				
Notes: 1) Setback trees 3 metres minimum from all property boundaries, sewer and service alignments 2) Distribute plants in groups on site in random arrangement - to be confirmed with rehabilitation contractor on site 3) Plant species according to tolerances and site conditions 4) Plant quantities to be confirmed by rehabilitation supervisor according to site conditions and nursery availability. Unsuitable or unavailable species to be substituted with other species from this schedule. 5) Species consistent with RE technical description. 6) Infill planting quantities to be determined by rehabilitation contractor utilising species from this planting schedule.				
SCIENTIFIC NAME	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY
TREES				1 PER 10 m²
<i>Corymbia citriodora</i> subsp. <i>Variegata</i> (S)*	Spotted Gum	T1	Tube	-
<i>Eucalyptus tereticornis</i> (P)*	Forest Red Gum	T1	Tube	-
<i>Eucalyptus crebra</i> (P)*	Narrow-leaved Iron Bark	T1	Tube	-
<i>Eucalyptus siderophloia</i> (P)*	Grey Ironbark	T1	Tube	-
<i>Eucalyptus moluccana</i> (S)*	Gum-topped Box	T1	Tube	-
<i>Angophora leiocarpa</i> (S)*	Smooth-barked Apple	T1	Tube	-
<i>Corymbia intermedia</i> (S)*	Pink Bloodwood	T2	Tube	-
<i>Corymbia tessellaris</i> (S)*	Moreton Bay Ash	T1	Tube	-
<i>Allocasuarina torulosa</i>	Forest Sheoak	T2	Tube	-
<i>Alphitonia excelsa</i>	Soap Tree	T2 / S1	Tube	-
<i>Acacia disparrima</i>	Hickory Wattle	T2 / S1	Tube	-
<i>Acacia leiocalyx</i>	Black Wattle	T2 /S1	Tube	-
SHRUBS				1 PER 5 m²
<i>Pittosporum angustifolium</i>	Bitter Bush	S1	Tube	-
<i>Jacksonia scoparia</i>	Dogwood	S1	Tube	-
<i>Hovea lorata</i>	Purple Pea Bush	S1	Tube	-
<i>Persoonia sericea</i>	Silky Geebung	S1	Tube	-
GROUND COVERS				1 PER 1 m²
<i>Cymbopogon refractus</i>	Barbed-wire Grass	G	Tube	-
<i>Themeda triandra</i>	Kangaroo Grass	G	Tube	-
<i>Heteropogon contortus</i>	Black-spear Grass	G	Tube	-
<i>Eragrostis brownii</i>	Browns Love Grass	G	Tube	-
<i>Eremophila debilis</i>	Winter Apple	G	Tube	-
<i>Hardenbergia violacea</i>	Native Sarsaparilla	G	Tube	-
<i>Dichondra repens</i>	Kidney Weed	G	Tube	-
<i>Glycine tabacina</i>	Variable Glycine	G	Tube	-
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Multi-flowered Matrush	G	Tube	-

Offset Management Unit 3 – Non-remnant vegetation, pre-clear RE 12.9-10.2 Reconstruction [126,000m²]				
Notes: 1) Setback trees 3 metres minimum from all property boundaries, sewer and service alignments 2) Distribute plants in groups on site in random arrangement - to be confirmed with rehabilitation contractor on site 3) Plant species according to tolerances and site conditions 4) Plant quantities to be confirmed by rehabilitation supervisor according to site conditions and nursery availability. Unsuitable or unavailable species to be substituted with other species from this schedule. 5) Species consistent with RE technical description. 6) Number of species planted to include a minimum of 5 different species from trees, 2 from shrubs and 5 from ground covers.				
SCIENTIFIC NAME	COMMON NAME	PLANT FORM	POT SIZE	PLANTING DENSITY
TREES				1 PER 10 m²
<i>Corymbia citriodora</i> subsp. <i>Variegata</i> (S)*	Spotted Gum	T1	Tube	-
<i>Eucalyptus tereticornis</i> (P)*	Forest Red Gum	T1	Tube	-
<i>Eucalyptus crebra</i> (P)*	Narrow-leaved Iron Bark	T1	Tube	-
<i>Eucalyptus siderophloia</i> (P)*	Grey Ironbark	T1	Tube	-
<i>Eucalyptus moluccana</i> (S)*	Gum-topped Box	T1	Tube	-
<i>Angophora leiocarpa</i> (S)*	Smooth-barked Apple	T1	Tube	-
<i>Corymbia intermedia</i> (S)*	Pink Bloodwood	T2	Tube	-
<i>Corymbia tessellaris</i> (S)*	Moreton Bay Ash	T1	Tube	-
<i>Allocasuarina torulosa</i>	Forest Sheoak	T2	Tube	-
<i>Alphitonia excelsa</i>	Soap Tree	T2 / S1	Tube	-
<i>Acacia disparrima</i>	Hickory Wattle	T2 / S1	Tube	-
<i>Acacia leiocalyx</i>	Black Wattle	T2 /S1	Tube	-
SHRUBS				1 PER 5 m²
<i>Pittosporum angustifolium</i>	Bitter Bush	S1	Tube	-
<i>Jacksonia scoparia</i>	Dogwood	S1	Tube	-
<i>Hovea lorata</i>	Purple Pea Bush	S1	Tube	-
<i>Persoonia sericea</i>	Silky Geebung	S1	Tube	-
GROUND COVERS				1 PER 1 m²
<i>Cymbopogon refractus</i>	Barbed-wire Grass	G	Tube	-
<i>Themeda triandra</i>	Kangaroo Grass	G	Tube	-
<i>Heteropogon contortus</i>	Black-spear Grass	G	Tube	-
<i>Eragrostis brownii</i>	Browns Love Grass	G	Tube	-
<i>Eremophila debilis</i>	Winter Apple	G	Tube	-
<i>Hardenbergia violacea</i>	Native Sarsaparilla	G	Tube	-
<i>Dichondra repens</i>	Kidney Weed	G	Tube	-
<i>Glycine tabacina</i>	Variable Glycine	G	Tube	-
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Multi-flowered Matrush	G	Tube	-



Appendix H

Risk Assessment



Risk assessment for offset area

A qualitative risk assessment which considers the risks of achieving the objectives and outcomes for the offset area 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, **KFF1 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 offset area, 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 or proximal to the offset area location. 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 generation¹.

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				
Likelihood		Minor	Moderate	High	Major	Critical
	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	Climate change 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 offset area. Legislative reform prejudices proposed tenure arrangements for offset properties.	Management action 1: Legally secure the offset for conservation via a covenant under either Chapter 6 Part 4 Division 8A of the <i>Land Act 1994 (Qld)</i> or Part 6 Division 4A of the <i>Land Titles Act 1994 (Qld)</i> prior to the impacts occurring. Securement via Voluntary Declaration (VDEC) administered under the <i>Vegetation Management Act 1999 (Qld)</i> will be used in the interim.	R	Mod	Low	Clearing of the 5.4 ha impact area cannot occur without legally securing the offset area.	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 initial and ongoing introduced predator control measures not result in a reduction of 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



Offset Management Plan

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		
							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: - 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 <i>Lantana camara</i>), and under the <i>Biosecurity Act 2014</i>, to reduce weed cover to target thresholds. - Undertake weed management in accordance with the OMP.	U	Mod	Low	Annual photo monitoring and mapping of weed infestations, and 5-year targeted transects and MHQA surveys of non-native plant cover to ensure reduction across offset area. Surveys in-line with weed management strategy. Repeated surveys of baseline data including 5 yearly habitat monitoring data as part of the framework.	If weed survey indicates weed cover is not reduced since previous survey, the weed control program will be expanded/ adapted to improve outcomes.
High intensity fire	A high intensity uncontrolled fire occurs within the offset area/s 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 offset area, the following actions will be undertaken: - Implement fire control - Repair any fire breaks and access tracks. - Stay informed through the Rural Fire Service.



Offset Management Plan

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		
							- 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). - 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 offset area 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 offset area 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 offset area 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 OMP.	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.



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		
Stochastic extreme weather events	Natural disaster or extreme weather events (flooding, cyclone, severe storms) impact the site damaging fencing or plantings.	Management Action 5: - Implement infill planting and additional direct seeding if required. Management Action 6: - Installation and maintenance of offset area fencing	P	Minor	L	Inspection of the offset area will occur within a month of the extreme weather event (if safe to do so) to assess plant stock and fencing. Plantings will be most susceptible to flood or wind damage from extreme weather whilst in a juvenile stage, where corrective actions will be implemented and the timeline of the offset is unlikely to be impacted. As plant stock grows it will be less susceptible to failure as a result of extreme weather. It is therefore anticipated that consequences from extreme weather events will be minor.	- If there is a high rate of plant stock failure as a result of a severe weather event, adaptive management and corrective actions will be implemented and may include, additional supplementary planting, direct seeding, fertiliser, water spike, mulching, tree guards, etc. - Repair any fencing damage within 3 months of extreme weather event.

