



ROSEVALE OFFSET MANAGEMENT PLAN

(EPBC2019/8398)

RESIDENTIAL DEVELOPMENT – NEW BEITH

02 MARCH 2026

[VERSION 5.5 - OMP]



Montauban Environmental Offsets

VERSION NUMBER AND DATE	PERSON RESPONSIBLE
VERSION 1.1 – OCTOBER 2021	CS & MG
VERSION 2.1 – JUNE 2022 (OMP COVERSION)	GT / CS
VERSION 2.2 – DECEMBER 2022 (OMP V2)	GT / CS
VERSION 3.1 – MARCH 2024 (OMP V3.1)	NT / AD
VERSION 3.2 – NOVEMBER 2024 (OMP V3.2)	TC / AD
VERSION 4.1 – JUNE 2025 (OMP V4.1)	TC / AD
VERSION 5.1 – NOVEMBER 2025 (OMP V5.1)	TC / AD
VERSION 5.2 – NOVEMBER 2025 (OMP V5.2)	TC / AD
VERSION 5.3 – DECEMBER 2025 (OMP V5.3)	TC / AD
VERSION 5.4 – FEBRUARY 2026 (OMP V5.4)	TC / AD
VERSION 5.5 – MARCH 2026 (OMP V5.5)	JB / GD / AD



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ACRONYMS AND ABBREVIATIONS

ACR	Annual Compliance Report
AU	Assessment Unit
DAWE	(Former) Department of Agriculture, Water and Environment
DCCEEW	Department of Climate Change, Energy the Environment and Water (Commonwealth)
DEHP	Department of Heritage and Protection – Former (Qld)
DES	Department of Environment and Science - Former (Qld)
DESI	Department of Environment, Science and Innovation – Former (Qld)
DETSI	Department of Environment, Tourism, Science and Innovation (Qld)
DILGP	Department of Infrastructure, Local Government and Planning (Qld)
DoEE	(Former) Department of Environment and Energy (Commonwealth)
DSDIP	Department of State Development, Infrastructure and Planning (Qld)
EDL	Ecologically Dominant Layer
EOP	EPBC Act Environmental Offset Policy (2012)
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
FHA	Foraging Habitat Assessment
GHFF	Grey-headed Flying-fox
ha	Hectare
KHA	Koala Habitat Area
km	Kilometres
LGA	Local Government Area
MEO	Montauban Environmental Offsets
m	Meter
mm	Millimetre
MSES	Matters of State Environmental Significance
NJKHT	Non-juvenile Koala Habitat Tree
OMP	Offset Management Plan
PA	Planning Act 2016 (Qld)
PR	Planning Regulation 2017 (Qld)
RAI	Relative Abundance Index
RE	Regional Ecosystem
SARA	State Assessment Referral Agency (part of DILGP)
SAT	Spot Assessment Technique
SEQ	South East Queensland
SEQERF	Southeast Queensland Ecological Restoration Framework
SHG	Saunders Havill Group
SPP	State Planning Policy 2017 (Qld)
SRRC	Scenic Rim Regional Council
VDEC	Voluntary Declaration
VMA	Vegetation Management Act 1999 (Qld)
WONS	Weeds of National Significance



DECLARATION OF ACCURACY

In making this declaration, I am aware that section 491 of the *Environment 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*. 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 (please print) _____

Organisation (please print) _____

Montauban Environmental Offsets

Date _____ / _____ / _____

491 Providing false or misleading information to authorised officer etc.

- (1) A person is guilty of an offence if the person:
- (a) provides information or a document to another person (the *recipient*); and
 - (b) knows the recipient is:
 - (i) an authorised officer; or
 - (ii) the Minister; or
 - (iii) an employee or officer in the Department; or
 - (iv) a commissioner;
 - (c) performing a duty or carrying out a function under this Act or the regulations; and knows the information or document is false or misleading in a material particular.
- (2) The offence is punishable on conviction by imprisonment for a term not more than 1 year, a fine not more than 60 penalty units, or both.

Note: Subsection 4B(3) of the *Crimes Act 1914* lets a court fine a body corporate up to 5 times the maximum amount the court could fine a person under this subsection



LEGALLY BINDING MECHANISM

The ROA 2 and its values (as finalised through the EPBC Act Approval) will be legally secured through a Voluntary Declaration (V-DEC) declared under the Queensland Government's *Vegetation Management Act 1999* (VMA). A V-DEC protects land and values and is binding on future owners. The Queensland Government describes the benefits of the VDEC as “*One of the strengths of a declaration is that it provides greater protection to areas of land containing environmentally valuable native vegetation*”.

The declaration and management plan will be noted on the land title, which informs prospective buyers of current declarations and management plans and where copies are available. This information is important to the property market as future owners will be bound by the plan and declaration (Queensland Government, 2017).

The legally securing of the land will be made through declaring the areas as having High Nature Conservation Values. Based on the VMA criteria the Offset Area will be declared as achieving items (d) and (f) below:

To be considered for declaration as an area of high nature conservation value, the area must be one or more of the following:

- a) a wildlife refugium—an area where a species or a group of species has retreated due to a threatening process (e.g. climatic change);*
- b) a centre of endemism—an area containing concentrations of species that are largely restricted to the area;*
- c) an area containing a vegetation clump or corridor that contributes to the maintenance of biodiversity;*
- d) an area that makes a significant contribution to the conservation of biodiversity;*
- e) an area that contributes to the conservation value of a wetland, lake or spring; or*
- f) another area that contributes to the conservation of the environment.*

The V-DEC will be lodged and legally secured by evidence of encumbrance on Registered Land Title prior to the commencement of any clearing works on the Impact Site. As noted, this protects the vegetation by way of purpose-built regulation on the title so all future land owners are aware of the restrictions prior to purchase.

In addition, the offset area will also be secured as a covenant under the *Land Act 1994* within 12 months of offset management commencing.



INTRODUCTION

This document is the Offset Management Plan (OMP) for Montauban Environmental Offsets (MEO) Rosevale Offset Area 2 (ROA 2), located at Tarome Road, Tarome in South East Queensland. This version of the OMP has been specifically prepared to respond to the Commonwealth Government's Department of Climate Change, Energy, the Environment and Water (DCCEEW) comments as schedule in the Preliminary Documentation package prepared for EPBC 2019/8398, located at Lot 4 RP45728, New Beith, (Dept comments received February 14, 2022). The offset to be provided at ROA 2 is for impacts on habitat defined as critical for the Koala and foraging habitat for the Grey-headed Flying-fox, Greater Glider, Regent Honeyeater and Swift Parrot. As part of the Preliminary Documentation lodgement MEO provided an Offset Strategy for consideration and approval of the then Department of Agriculture, Water and the Environment (now DCCEEW). During conversations regarding this strategy and comments provided on a number of submissions this previous Offset Strategy has been upgraded to an OMP for approval and greater certainty in the Proponent's approval conditions. This OMP is generally prepared in accordance with the DCCEEW *EPBC Act – Environmental Offset Policy* (October 2012).

The Department need to be aware that the Rosevale offset property is a wholly owned 800+ ha land holding for which a number of EPBC biodiversity offsets are proposed in a broad aggregation of conservation outcomes. MEO propose to utilise nearly all 800 ha of the land for MNES offsets of which EPBC 2019/8398 will include 541.45 ha. The offset area utilised for EPBC2019/8398 is herein referred to as Rosevale Offset Area 2 (ROA 2).

This Offset Management Plan (OMP) dated June 2025 outlines the existing site values for the 541.45 ha ROA 2. This OMP is provided both in response to commentary on the proposal by DCCEEW and for separate approval and thus while it includes some analysis of assessment items the OMP must be read in-conjunction with the Preliminary Documentation prepared by the Saunders Havill Group on behalf of Frasers Property New Beith Pty Ltd.

Structure of the Offset Management Plan

Section 1: Introduction

Section 2: Offset Site Summary

Section 3: Offset Site Suitability

Section 4: Offset Management Details

Section 5: Offset Site Management Actions, Performance outcomes and Monitoring

Section 6: Summary of MNES Offset Compensation

Section 7: Proposed Corrective Actions

Section 8: Risk Management

Section 9: Adaptive Management

Appendices

Appendix A: EPBC Offset Calculator Sheets

Appendix B: UAV Site Assessment Report

Appendix C: OAG Reference Tables

Appendix D: Greater Glider Habitat Analysis

Appendix E: Fencing and Signage Plan

Appendix F: MNES Habitat Quality Gain Tables

Appendix G: Hollow Monitoring and Management Plan



PURPOSE OF THE MANAGEMENT PLAN

The Rosevale Offset Area 2 (ROA 2) has been selected and designed to compensate for the New Beith Project's significant impact on Koala, Grey-headed Flying-fox, Greater Glider, Swift Parrot and Regent Honeyeater. The offset proposal is a direct land-based solution which consists of establishment of new habitat and restoration of regrowth and remnant habitat.

The Purpose of this Offset Management Plan (OMP) is to:

- Provide details and timing on the legally binding mechanism to secure the ROA 2 values at the Offset property;
- Provide baseline values for a range of key habitat quality indicators in the offset ROA 2 for repetitive use in measuring and monitoring habitat improvement commitments;
- Outline the specific management actions and tasks to be undertaken in the offset area for managing threats, pests and improving habitat values;
- Outline restrictions and operational controls on existing agricultural and grazing land uses;
- Establish robust and scientifically driven metrics, monitoring and reporting procedures to ensure the offset delivery achieves the predicted conservation gain for the species;
- Assign responsibilities for tasks, actions, operational controls, measuring, reporting, corrective actions and funding for all works at the Rosevale offset property;
- Identify, account for and manage risks associated with all or part of the offset outcomes not succeeding (Adaptive Management).

PROJECT DESCRIPTION – IMACT SITE

Frasers Property New Beith Pty Ltd ('the Proponent') seeks to develop a residential community on land located at Olson Road, New Beith, legally described as Lot 4 on RP45728. The proposed action includes mixed-density residential dwellings, open space for stormwater management, recreation and conservation, internal road network, and supporting infrastructure.

The referral area is located within Flagstone, Logan, Queensland approximately 40 kilometres south-west of Brisbane's CBD and situated within South East Queensland's (SEQ) south-west growth corridor. SEQ's south-west growth corridor is one of the largest job and industry growth areas in Australia and offers opportunities to accommodate significant levels of residential and employment growth. In 2009, Flagstone was identified as a Regional Development Area under the South East Queensland Regional Plan 2009 -2031 (SEQRP) by the State Government because of its potential to absorb a vast portion of the regional area's population over the subsequent three decades. The SEQRP 2017 (Shaping SEQ) recognises Flagstone as a large residential expansion area with an expected dwelling capacity of 19,000 by 2041 supported by existing and proposed infrastructure, which will strengthen economic and social connections within the sub-region and proximity to employment opportunities.



It is envisaged that the proposed action will provide approximately 2,257 residences for more than 5,400 people, and 1.609 ha of retail and commercial space servicing the growing Greater Flagstone community. The proposed action includes mixed-density residential dwellings, neighbourhood centre, internal road network and open space including a district sports park, local parks and conservation areas.

The design and layout of the Project has been refined through iterative application of the mitigation hierarchy so as to minimise potential impacts as far as practicable whilst still delivering the housing and community needs of the area. Targeted MNES flora and fauna surveys have been undertaken within the impact area between November 2018 and August 2024 to describe ecological value of the referral area and determine the likelihood of impact to listed threatened species. Although a PMST returned twenty-three (23) fauna species protected under the EPBC Act as potentially occurring within 5 km of the referral area, extensive targeted surveys determined only five (5) MNES species to potentially be at risk of impact from the Project. These species have become the focus of offset requirements.

Table 1 provides details on the offset requirements of the impact area:

Table 1: Details on impact area MNES offset requirements.

Address	Olson Road, New Beith	
RPD	Lot 4 on RP45728	
Project Area	246.8 ha	
MNES – Threatened Fauna	EPBC Status	Impacted Habitat Proposed to be Offset (ha)
Koala (<i>Phascolarctos cinereus</i>)	Vulnerable	187.09 ha
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	Vulnerable	187.09 ha
Greater Glider (<i>Petauroides volans</i>)	Vulnerable	246.8 ha and 360 hollow features
Swift Parrot (<i>Lathamus discolor</i>)	Critically Endangered	2,894 foraging tree features
Regent Honeyeater (<i>Anthochaera phrygia</i>)	Critically Endangered	1,570 foraging tree features

IMPACT AND OFFSET SUMMARY

Table 2 and **Appendix A** provide values from the Offsets Assessment Guide Calculator (the Guide) for each of the MNES to be offset. The Guide supports the EPBC Act Environmental Offsets Policy, using a balance sheet approach to calculate the offsets required to adequately compensate for unavoidable impacts to threatened species and ecological communities.



The calculator indicates that the impact area for the Koala (187.09 ha) obtained a score of 6/10 and quantum impact area of 112.25 QI ha, for the GHFF (187.09 ha) 6/10 and 112.25 QI ha, and for the Greater Glider (246.8 ha) 4/10 and 98.72 QI ha.

The offset area of 541.45 ha offsets the impact at 82.57% for Koala, 151.25% for Grey-headed Flying-fox, 105.29% and 93.92% (features) for the Greater Glider, at least 130% (features) for both the Swift Parrot and Regent Honeyeater.

Offset site suitability and appropriate management actions detailed in this OMP are considered to significantly contribute to the habitat quality and feature gains proposed.



Table 2: Summary of MNES Offset Compensation

	Impact Site			Non-Remnant Offset Area			Regrowth Offset Area - Hi			Regrowth Offset Area - Lo			Remnant Offset Area			Total % of Impact Offset
	Impact	Impact Score	Quantum Impact Area	Habitat Quality Gain / Features	Offset Area / Gain	% of Impact Offset	Habitat Quality Gain / Features	Offset Area / Gain	% of Impact Offset	Habitat Quality Gain / Features	Offset Area / Gain	% of Impact Offset	Habitat Quality Gain / Features	Offset Area / Gain	% of Impact Offset	
Koala	187.09 ha	6/10	112.25 QI ha	3/10 to 7/10	224.41 ha	57.62 %	6/10 to 7/10	111.85 ha	8.14 %	5/10 to 7/10	25.90 ha	3.77 %	6/10 to 7/10	179.29 ha	13.04 %	82.47 %
Grey-headed Flying-fox	187.09 ha	6/10	112.25 QI ha	3/10 to 8/10	224.41 ha	72.03 %	4/10 to 8/10	111.85 ha	32.55 %	4/10 to 8/10	25.90 ha	7.54 %	5/10 to 8/10	179.29 ha	39.13 %	151.25 %
Greater Glider	246.8 ha	4/10	98.72 QI ha	3/10 to 7/10	224.41 ha	65.52 %	5/10 to 7/10	111.85 ha	18.51%	4/10 to 7/10	25.90 ha	6.43 %	6/10 to 7 [#] /10	179.29 ha	14.83 %	105.29 %
Greater Glider Features	360	NA	NA	31	337	61.25 %	137	168	7.03 %	10	39	6.58 %	185	269	19.06 %	93.92 %
Swift Parrot Features	2,894	NA	NA													130 %*
Regent Honeyeater Features	1,570	NA	NA													130 %*

*At least 30% more features than needed will be planted to account for potential 30% losses noting many more are anticipated to be actually planted on-ground to achieve regional ecosystem reconstruction

#While the MHQA analysis suggests a two point gain is plausible, a conservative one point gain has been applied



OFFSET MANAGEMENT PLAN LIMITATIONS

This document is an Offset Management Plan (OMP). The OMP aligns with relevant principles and sections of the Environmental Management Plan Guideline (2014), however, is designed for on-ground implementation and not specific value assessment against the EPBC Offset Assessment Guide. A summary of the EPBC Offset Assessment Guide is provided further into this OMP. Quality value changes in this assessment are derived from specific actions listed in this OMP and thus where applicable assessment metrics have been listed in the measurement targets of Management Action Tables included in the relevant sections.

RESPONSIBLE PARTIES FOR OFFSET MANAGEMENT PLAN

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 entities retain key responsibilities for implementation of this OMP:

Frasers Property New Beith Pty Ltd (Project Proponent)

Frasers Property New Beith Pty Ltd are the owner and operational developer of the New Beith Project. Responsibilities include:

- Obtain and comply with all conditions of the EPBC approval for the project.
- Enter into a commercial agreement with Montauban Environmental Offsets for the delivery of EPBC Act compliant offsets.
- Fund all management actions / tasks as listed in the approved OMP at the Rosevale offset property.
- Report on the EPBC Act approval in Annual Compliance Reports or as triggered within conditions.

Montauban Environmental Offsets Pty Ltd (Offset Provider)

Montauban Environmental Offsets Pty Ltd (MEO) is a purpose-built environmental offset company. Responsibilities include:

- All on-ground implementation of the OMP.
- Monitoring and reporting on OMP actions, tasks and outcomes.
- Appointment of relevant experts or experienced contractors where required to undertake specified tasks within the ROA 2.
- Corrective actions for any non-compliance activities.
- Stakeholder relationships – Adjoining grazing operations and Scenic Rim Regional Council.
- Preparation of covenant on title with the Queensland Government.
- Review, Amendment and Adaptive Management changes of the approved OMP over the life of the offset.

Saunders Havill Group (Environmental Consultant)

Saunders Havill Group provide the tertiary trained and experienced field Ecologists in support of approval and ongoing compliance for the Rosevale offset property and Offset Management Zones. Responsibilities include:

- Collection, interrogation and analysis of robust scientifically justified survey data for use as the baseline values at the offset property.
- Repeating surveys as per the currency in this Offset Management Plan or as per conditions of approval for measuring improvement outcomes.



- Preparation and lodgment of the Legally Binding Mechanism (VDEC) with the Queensland Government.
- Audit offset reports against approval conditions as part of the New Beith Project Annual Compliance Reports



OFFSET SITE SUMMARY

The offset property (Rosevale) is located on Tarome Road, Tarome. The property is within the Scenic Rim Regional Council and is approximately 9.5 km north-west of Aratula. The offset site associated with this property, Rosevale Offset Area 2 (ROA 2), is located approximately 46 km southwest of the New Beith Project area, where MNES habitat impacts are proposed (refer **Plan 1**). The ROA 2 site was identified to achieve the offset required under the EPBC Act Preliminary Documentation.

Rosevale is contained on the following allotments:

Part of Lot 1/CC3571	Lot 4/RP31137
Lot 103/CH311061	Lot 71/CH311061
Lot 115/SP167206	Lot 72/CH311061
Lot 116/SP167206	Lot 77/CH311086
Lot 211/CH311636	Lot 9/CH311910
Lot 229/CH312601	Lot 86/RP234513
Lot 24/CH312265	Lot 68/CH311061
Lot 230/CH312495	

For this offset strategy, the proposed offset area is contained on the following allotments of the offset property:

Part of Lot 1/CC3571	Lot 230/CH312495
Lot 103/CH311061	Lot 71/CH311061
Lot 211/CH311636	Lot 72/CH311061
Lot 229/CH312601	Part of Lot 9/CH311910
Lot 24/CH312265	

The land tenure of Rosevale is freehold, where it retains a rural land use zoning under the Scenic Rim Planning Scheme 2020. Refer to **Figure 1** and **Figure 2** for the offset property context and aerial imagery, respectively. Key details relating to the offset site are in **Table 3**.

Table 3: Rosevale Offset Area 2 (ROA 2) Summary

Impact Site Address	New Beith Round Mountain, Flagstone, Queensland, 4280
Offset Site Address	Tarome Road, Tarome, Queensland, 4340
Area	541.45 ha
Tenure	Freehold
Current Land Use	Cattle grazing
Local Government Area	Scenic Rim Regional Council



The New Beith Offset Site area forms part of the broader Rosevale Offset Site and is referred to throughout the Offset Management Plan (OMP) as the Rosevale Offset Area 2 (ROA 2) or New Beith Offset Site. The entirety of the Rosevale Offset Site totals to approximately 800 ha of the land, the majority of which is associated with a number of proposed EPBC biodiversity offsets with a broad aggregation of conservation outcomes. The ROA 2 area on-site associated with the New Beith EPBC Act referral will account for 541.45 ha of the broader Rosevale Offset Site.

The offset property, Rosevale, comprises of mixed vegetation values, ranging from cleared open paddocks and dead plantation trees, through to regrowth and remnant open eucalypt forest. The ROA 2 site consists of open paddocks and dead plantation trees designated entirely as non-remnant which has been assessed throughout the report as Assessment Unit 1 (AU1), higher quality regrowth as Assessment Unit 2 Hi (AU2 Hi), lower quality regrowth as Assessment Unit 2 Lo (AU2 Lo) and remnant as Assessment Unit 3 (AU3).

For baseline habitat areas at the impact site and offset property, refer to **Plan 2** and **Plan 3**. A summary of field surveys is provided below:

Date	Field Survey Summary	Date	Field Survey Summary
23/09/2021	MHQA Transects	27/06/2024	Greater Glider Habitat Mapping
24/09/2021	MHQA Transects	01/07/2024	Greater Glider Habitat Mapping
28/09/2021	MHQA Transects	03/07/2024	Greater Glider Habitat Mapping
10/12/2021	MHQA Transects	04/07/2024	Greater Glider Habitat Mapping
20/04/2023	Weed and Pest Mapping	07/07/2024	Greater Glider Habitat Mapping
24/04/2023	Weed and Pest Mapping	10/07/2024	Greater Glider Habitat Mapping
27/04/2023	Weed and Pest Mapping	11/07/2024	Greater Glider Habitat Mapping
04/05/2023	Weed and Pest Mapping	15/07/2024	Greater Glider Habitat Mapping
15/05/2023	Pest Mapping	16/07/2024	Greater Glider Habitat Mapping
11/08/2023	Pest Mapping	17/07/2024	Greater Glider Habitat Mapping
02/11/2023	Pest Mapping	18/07/2024	Greater Glider Habitat Mapping
21/12/2023	Habitat stratification	19/07/2024	Greater Glider Habitat Mapping
22/01/2024	Habitat stratification	22/07/2024	Greater Glider Habitat Mapping
23/01/2024	Habitat stratification	24/07/2024	Greater Glider Habitat Mapping
01/02/2024	Habitat stratification and MHQA	29/07/2024	Greater Glider Habitat Mapping
02/02/2024	Habitat stratification and MHQA	30/07/2024	Greater Glider Habitat Mapping
24/06/2024	Greater Glider Habitat Mapping	06/08/2024	Greater Glider Habitat Mapping
25/06/2024	Greater Glider Habitat Mapping	08/08/2024	Greater Glider Habitat Mapping
26/06/2024	Greater Glider Habitat Mapping		

CONSERVATION BENEFITS OF THE ROSEVALE OFFSET PROPERTY

The MEO Rosevale offset property provides conservation benefit from a state and local planning and landscape context due to its relatively short distance from the proposed impact area (**Plan 1**). Additionally, a number of approved EPBC offsets for Koala and GHFF are present within 5 km of the site, indicating the area has been



identified to contain values to support these MNES (refer **Figure 2**). The nearest existing offset for impacts on Koala Habitat has been approved for the Barrams Road project in Ripley (EPBC referral 2021/9005) on the Rosevale Offset Site. The Rosevale Landholding is also 2 km north of and connected by a large tract of remnant vegetation to a large MNES offset for impacts on Koala, Grey-headed Flying-fox and Greater Glider habitat associated with approved Audale offset (EPBC 2018/8340). Furthermore, the ROA 2 site is also approximately 5 km south east of the large QTFN Koala and GHFF Offset site for EPBC matters (EPBC Referral numbers 2016/7817 & 2016/7724). Furthermore, the closest conservation area is Moorang Wildlife Corridor, approximately 700 m south of the site, which forms a part of a regional corridor that connects through to a State corridor associated with Main Range National Park 3 km south-west of the site.

The offset site is considered to have the capacity to meet the offset requirements, connection to existing highly connected vegetation to provide habitat, and dominated by non-remnant and regrowth areas that will act as receiving areas for rehabilitation and an increase in habitat value across the offset site. In addition, the location of the offset site within a state riparian biodiversity corridor and the same sub-bioregion as the impact site (refer **Figure 3** and **Figure 4**) ensures the land will continue to provide habitat and fauna connectivity within the greater landscape. Upon EPBC Act approval, the offset will be legally secured by a Voluntary Declaration (VDEC) under the State Vegetation Management Act and subsequently a covenant under the Land Act. Further, regional, state and landscape contextual values of ROA 2 and the broader Rosevale Offset Property are discussed in the following sections.

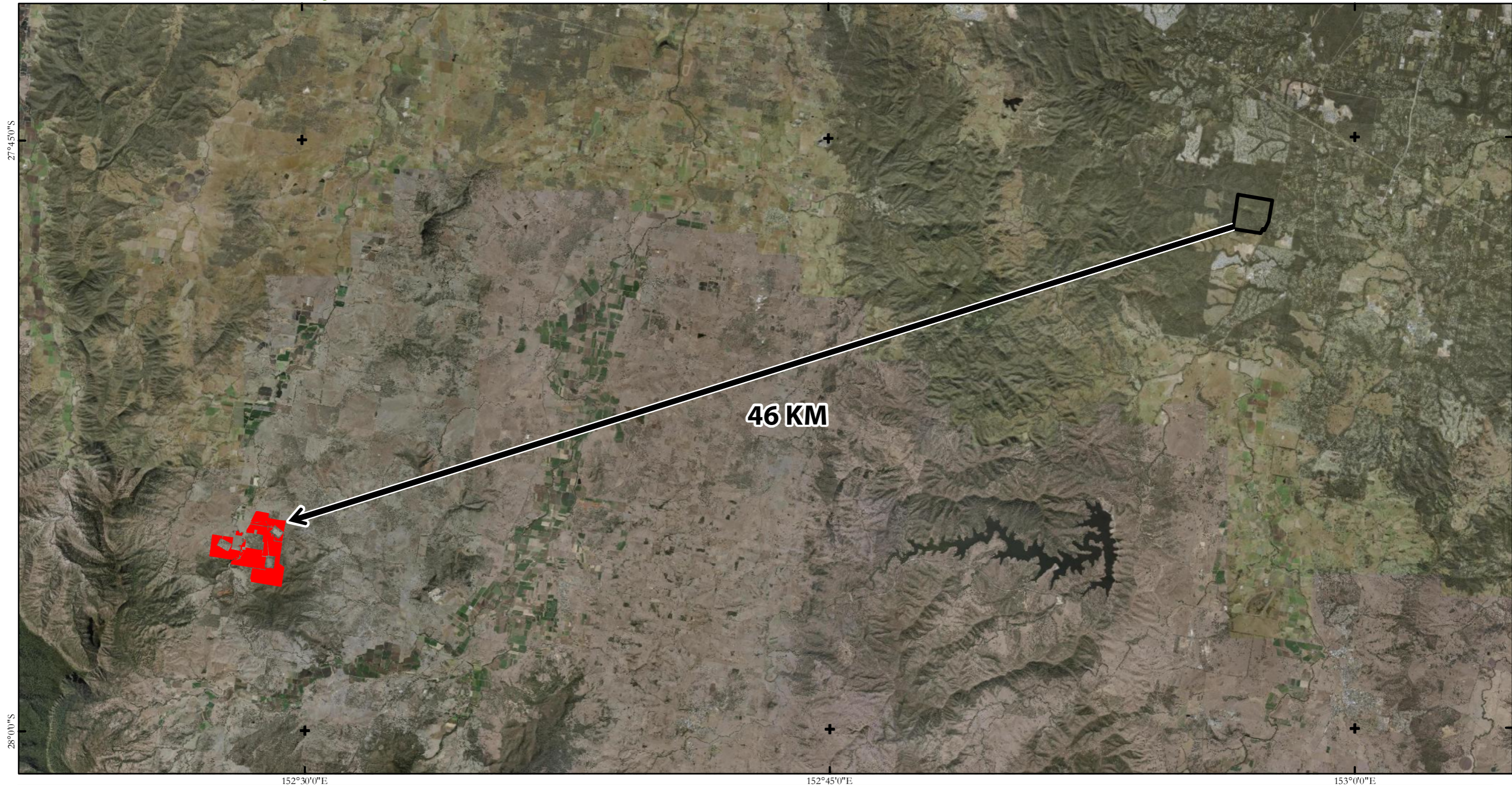
Although located within reasonable proximity of a number of MNES impact areas occurring in South East Queensland, the broad conservation benefits of the MEO Rosevale offset property are realised through its achievement of multi-jurisdictional biodiversity outcomes. The major offset property is located within the same bioregional and sub-bioregional as three of the largest Priority Development Areas in South East Queensland, known as Greater Ripley, Greater Flagstone and Yarrabilba Priority Development Areas (PDAs). To implement long planned infrastructure outcomes and housing targets, these PDAs will continue to see reductions in MNES habitat through both direct and indirect impacts. The Rosevale Offset Project will protect and improve existing values and significantly reinstate and create new habitat strategically located within the same sub bio-region ecological context where MNES habitat is being reduced.

MEO's Rosevale offset property is large in scale (over 800ha) and can cater for both very large and or an aggregation of smaller impacts within a single consolidated offset area and land holding. The site is diverse in existing environmental values with Assessment Units covering existing remnant vegetation, both immature and advanced regrowth vegetation and open paddocks designation for new habitat creation. Existing trees and habitat features provide the ideal foundation for expansion through revegetation. Additionally, the site includes ecosystems ranging from lower ridges, through foothills, flood plains and riparian waterways associated with Bundamba Creek and its tributaries. Evidence of MNES habitat features and species are observed over all parts of the site and through the surrounding fragmented and connected landscape.

Importantly the land holding is owned outright by MEO and managed by full time employees with co-existing rural business and pastoral uses and associated infrastructure, including water holdings, access tracks and fire trails, fencing and utility connections. MEO intends to utilise the bulk of the suitable areas on the site for biodiversity offsets (evidenced by the four separate EPBC projects currently seeking to utilise the land for offset outcomes). Ownership of the Rosevale offset property holding provides greater direct commercial control from the proponent and the conditions of approval onto the Rosevale offset property to ensure offset outcomes are achieved and de-risks inadvertent third party non-compliant uses from occurring.



1. Offset Property Context Plan



Montauban Environmental Offsets

1:175,000

0 1 2 4 km

Coordinate System: GDA2020 MGA Zone 56

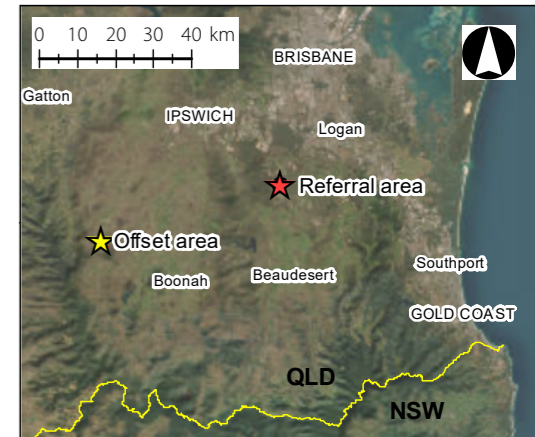
References:
 © State of Queensland, 2022
 Includes material © State of Queensland (Department of Resources); © Planet Labs

Date: 27/10/2025
 10559 E 01 OMP NB Offset Property Context Plan F

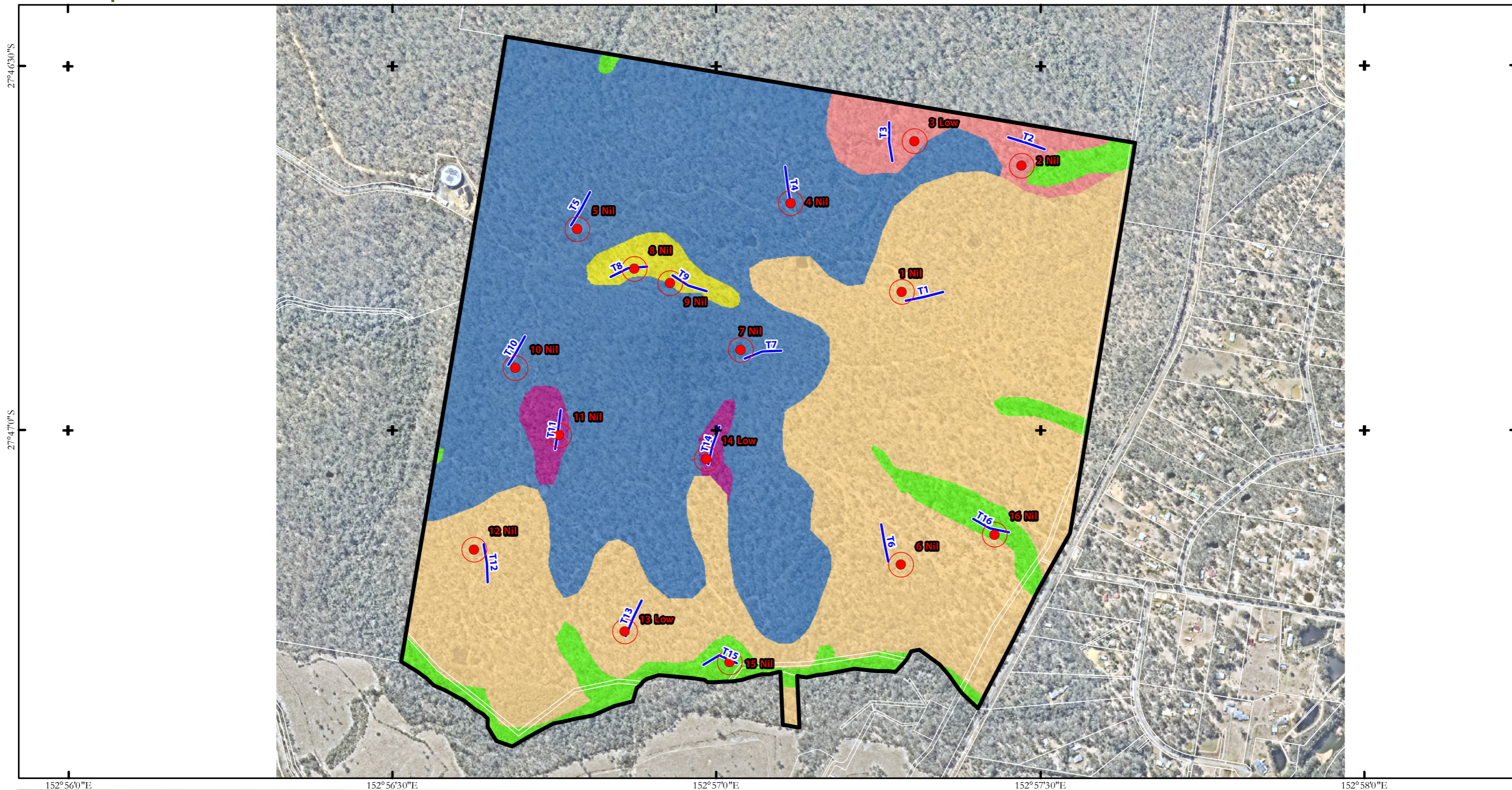
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Legend

-  Impact Area
-  Offset Area



2. Impact Site Assessment Units



Montauban Environmental Offsets

1:9,500
0 100 200 m

Coordinate System: GDA2020 MGA Zone 56

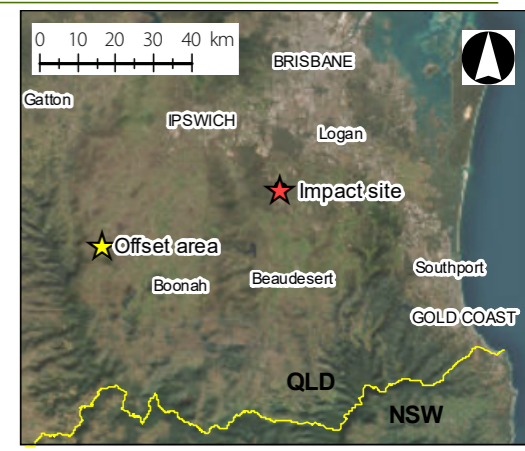
References:
© State of Queensland, 2022
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 21/10/2024
10559 E. 02 OMP NB Impact Site Assessment Units D

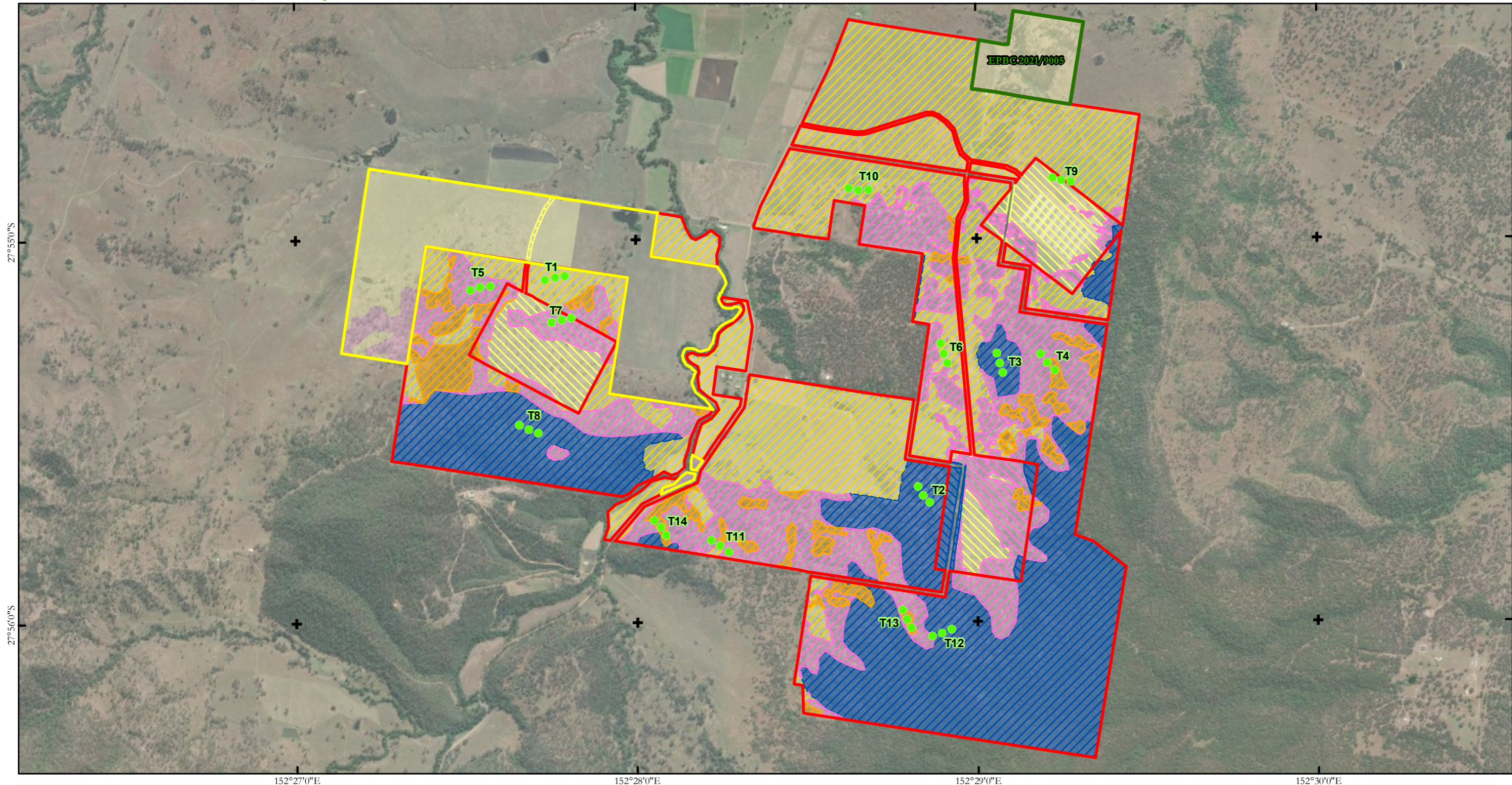
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Legend

- Impact Area
 - Qld DCDB
- Vegetation Assessment Units**
- AU-1 [14.42 ha] RE 12.3.11/12.3.7
 - AU-2 [110.08 ha] RE 12.9-10.2
 - AU-3 [3.37 ha] RE 12.9-10.7
 - AU-4 [3.51 ha] RE 12.9-10.3
 - AU-5 [8.06 ha] RE 12.9-10.2/12.9-10.7
 - AU-6 [107.36 ha] Non-remnant vegetation
- Koala Use SAT Surveys
 - Modified habitat quality transect



3. Offset Property Assessment Units



Montauban Environmental Offsets

Scale: 1:18,000
 0 100 200 300 400 m

Coordinate System: GDA2020 MGA Zone 56

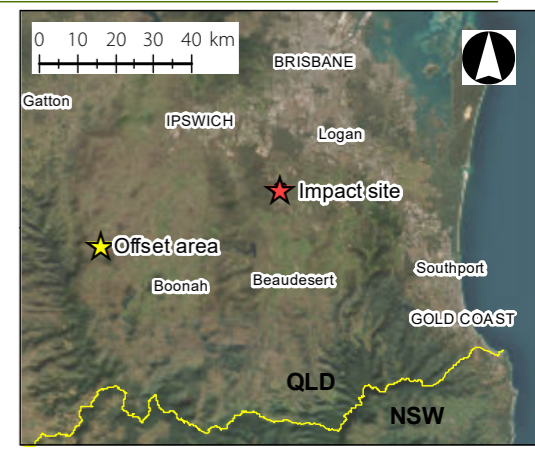
References:
 © State of Queensland, 2022
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

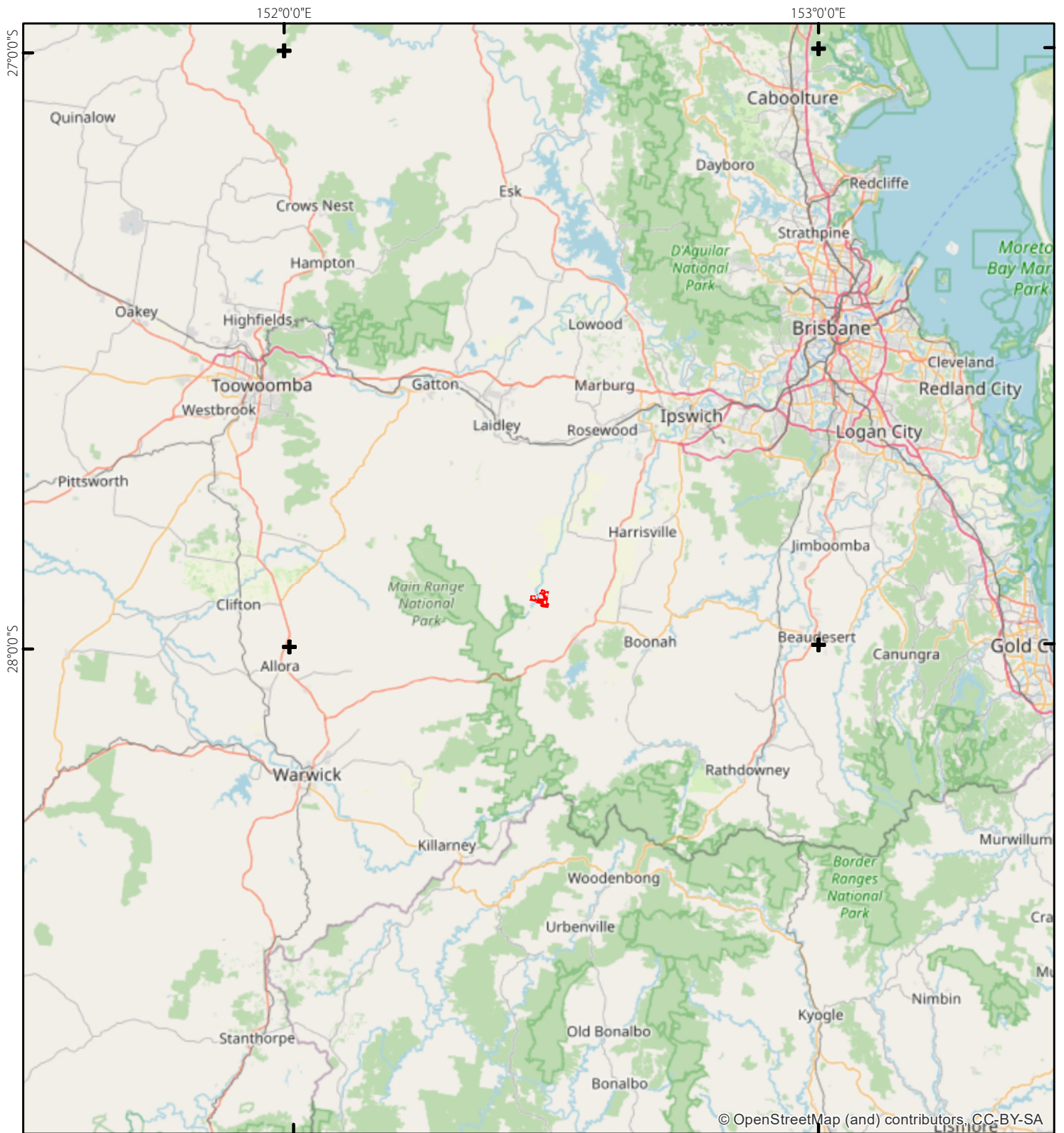
Date: 27/10/2025
 10559 E.03 OMP NB Offset Property Assessment Units G

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Legend

- Approved Offset Boundary
 - Future Offset Boundary
 - Offset Area
 - Poultry shed access track
- | Vegetation Assessment Units (AUs) (total) | Vegetation AUs (Offset) | Habitat Quality Transects |
|---|---|---|
| AU-1: Non-Remnant Vegetation | AU-1: Non-Remnant Vegetation [224.41 ha] | ●●● Habitat Quality Transects |
| AU-2: Hi Regrowth Vegetation | AU-2: Hi Regrowth Vegetation [111.85 ha] | AU-1: Non-Remnant Vegetation |
| AU-2: Lo Regrowth Vegetation | AU-2: Lo Regrowth Vegetation [25.90 ha] | AU-2: Regrowth Vegetation |
| AU-3: Remnant Vegetation | AU-3: Remnant Vegetation [179.29 ha] | AU-3: Remnant Vegetation |





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Legend

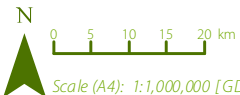
 Offset Area

Figure 1

Site Context

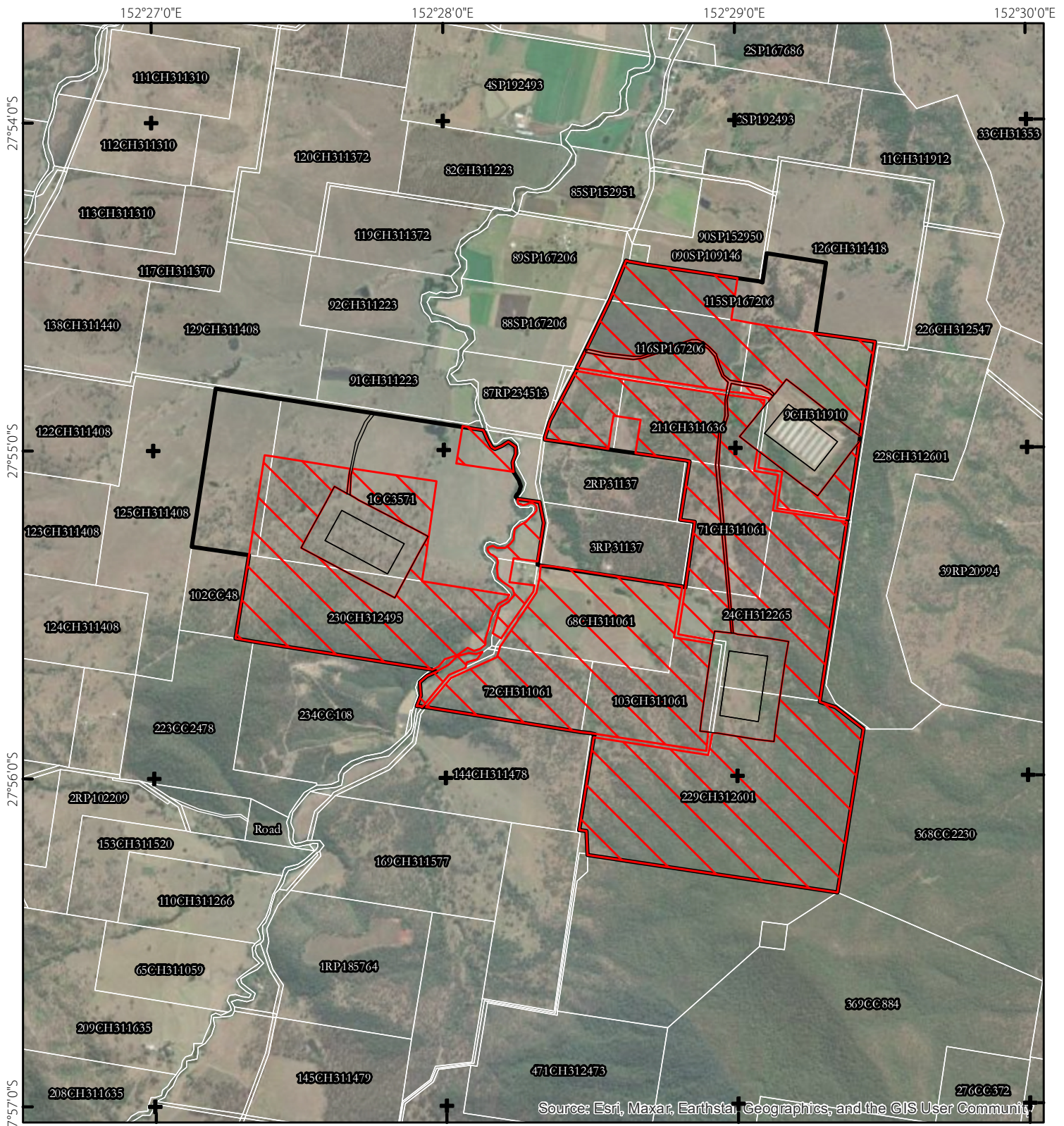
File ref. 10559 E Figure 1 OMP NB Site Context F
Date 27/10/2025
Project Aratula OMP 9383

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Montauban Environmental Offsets

Layer Source: © State of Queensland 2025



Legend





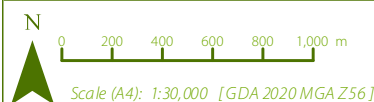
-  Qld DCDB
-  Offset Properties
-  Proposed Poultry Shed, 100m buffer area & access tracks
-  Offset Area

Figure 2

Site Aerial

File ref. 10559 E Figure 2 OMP NB Site Aerial F
Date 27/10/2025
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Montauban Environmental Offsets

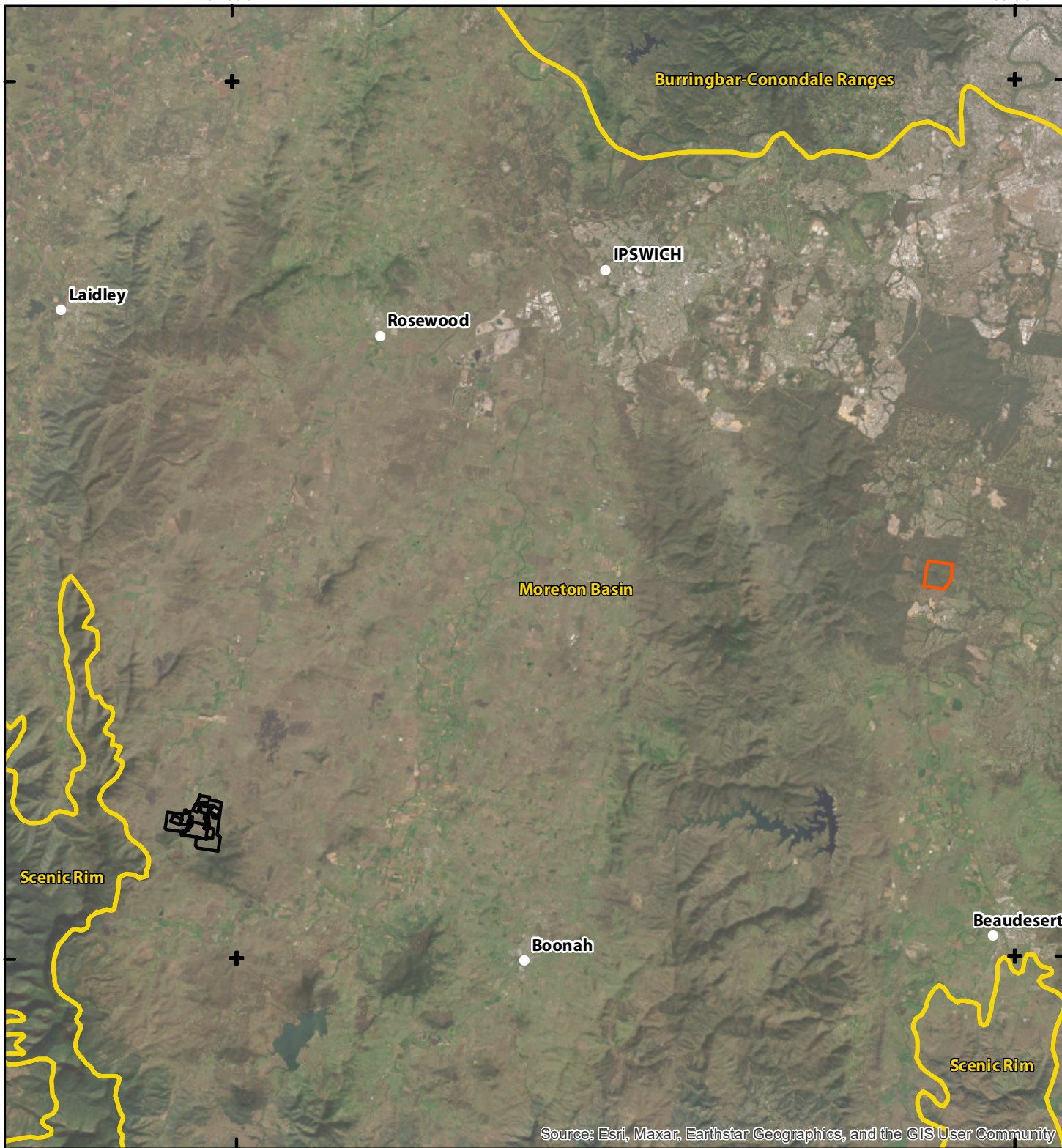
Layer Source: © State of Queensland 2025

152°30'0"E

153°0'0"E

27°30'0"S

28°0'0"S



Legend


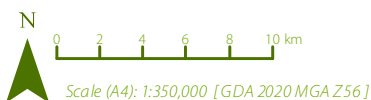
-  IBRA - Subregions
-  Offset area
-  Impact site

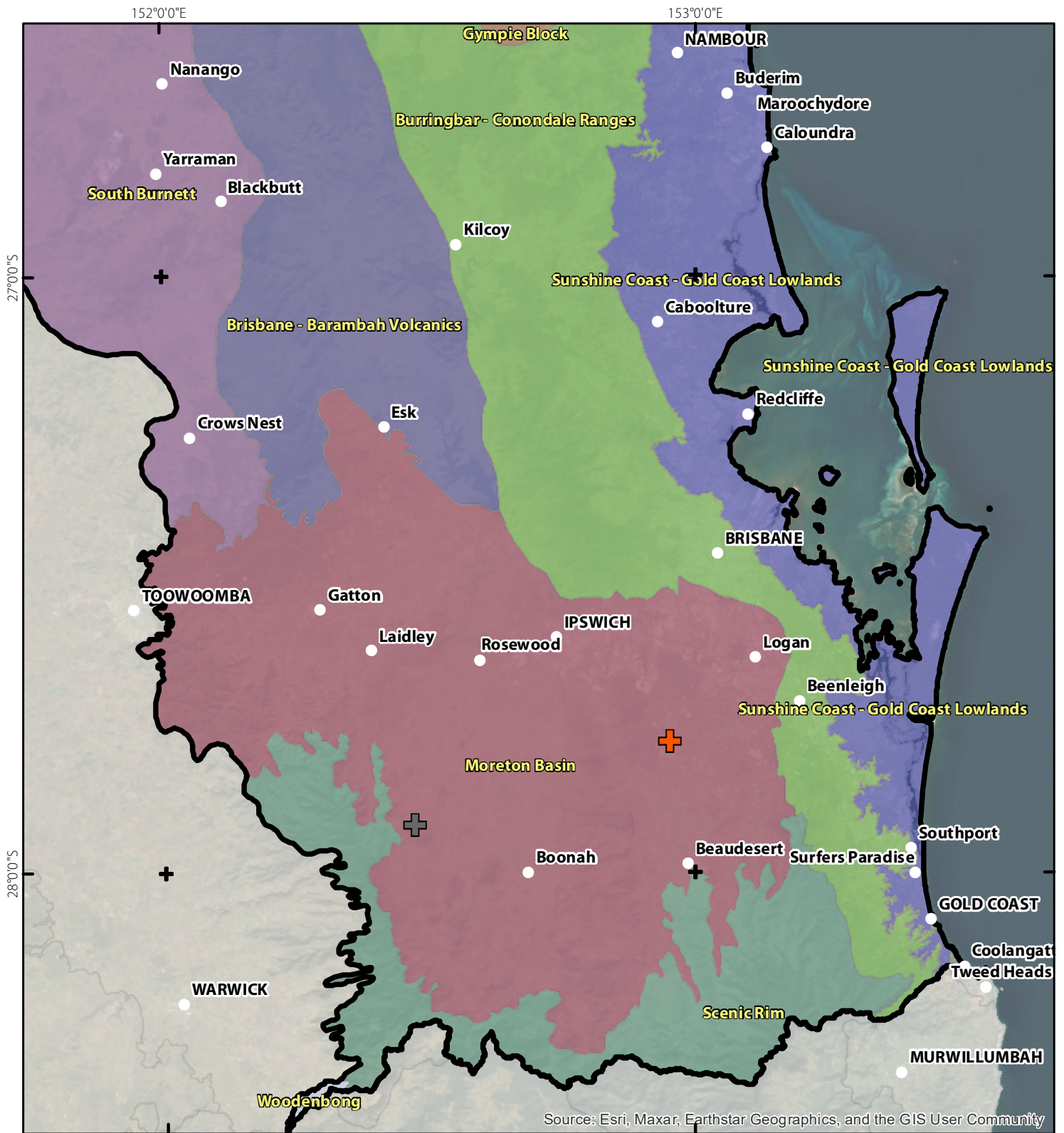
Figure 3

Interim Biographical Regionalisation of Australia - Moreton Basin Sub-Region

File ref. 10559 E Figure 3 OMP NB IBRA D
Date 27/10/2025
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Legend




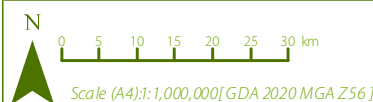
-  South East Queensland Bioregion
-  Offset Properties location
-  Impact site location

Figure 4

South East Queensland - Bioregion 12
Biographical Subregions

File ref. 10559 E Figure 4 OMP NB Bioregion 12 C
Date 27/10/2025
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ENVIRONMENTAL OUTCOMES AND OBJECTIVES

The object of this OMP is to summarise existing habitat for Koala (*Phascolarctos cinereus*), Grey-headed Flying-fox (*Pteropus poliocephalus*), Greater Glider (*Petauroides volans*), Swift Parrot (*Lathamus discolor*) and Regent Honeyeater (*Anthochaera phrygia*) within the offset area and to provide management actions designed to achieve the targets stipulated. The environmental outcomes to be achieved through implementing the OMP for the offset area are:

- Increase the number of available food and shelter trees at the ROA 2 offset site via:
 - i. Establishment of new food and shelter trees at the offset site
 - ii. Planting densities at the end of life of approval at least 90% at the offset site
- Improve recruitment to 100% of the EDL.
- Increase species richness in the shrub layer to benchmark.
- Improve tree canopy height and cover to benchmark.
- Improve shrub cover to benchmark.
- Increase coarse woody debris habitat.
- Improve quality and availability of food, foraging and shelter habitat.
- Decrease threats to species via control of Wild Dog and European Fox presence.
- Improve species mobility capacity via removal of fencing and increasing vegetation coverage.
- Improve species stocking rate and features where relevant.

This OMP identifies outcomes focused on management actions pursuant the EPBC Act, for the provision of Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*), Greater Glider (*Petauroides volans*), Swift Parrot (*Lathamus discolor*) and Regent Honeyeater (*Anthochaera phrygia*) habitat offset. The management objectives for the ROA 2 offset, in alignment with EOP will:

- Deliver an overall conservation outcome that improves the viability of habitat for the species’.
- Provide a direct offset that is in proportion to the level of statutory protection that applies to the species’.
- Be of a size and scale proportionate to the residual impacts on MNES 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 ROA 2 offset.

Further information on the suitability of the Rosevale Offset Area 2 (ROA 2) in achieving the proposed environmental outcomes is presented in Section 3 with regards to the conservation benefits and current values.

The achievement of environmental outcomes within the offset area will be measured using methodologies, monitoring and maintenance detailed in Section 4 and 5. The management actions detailed in this OMP aim to achieve the offset targets conditioned in the EPBC Act approval that endeavour to protect, restore, and reconnect areas of MNES habitat.

The approval holder must apply assisted natural regeneration, reconstructive plantings and threat mitigation to achieve the outcomes outlined in the tables below.



Table 4: OMP Management Actions Reference Table

Specific Action	Specific Action Reference	OMP Section	Issue	Action	Timeframe	Responsibility
Legally Secure Offset Area	1	Page 11	The site is not protected as an offset area.	The offset site will be secured by Voluntary Declaration under the Vegetation Management Act 1999 and covenant under the Land Act 1994.	The Voluntary Declaration will be secured as soon as possible post-approval and prior to the action commencing. The declaration will be in perpetuity. The covenant will be secured within 12 months.	Offset Provider
Feral Animal Management	1	Section 5.1	Feral pests and predator species, identified as a significant threat to MNES are present in the offset area.	Control the occurrence of feral animal species (namely Wild Dogs and European Foxes) within the ROA 2 for the life of the approval. Minimise MNES injury and mortality to the greatest extent possible within the ROA 2 for the life of the approval.	Feral animal management will be implemented for the life of the approval.	Offset Provider
Weed Control	2	Section 5.2	Weeds including Weeds of National Significance are present within the offset area.	Management of weeds of national significance (WONS), and other invasive species as seen fit is to occur in the entire ROA 2 with a particular focus on <i>Lantana camara</i> due to the known impacts to Koala movement. <i>Lantana camara</i> infestations are to be	Weeds will be suppressed for the life of the approval.	Offset Provider



Specific Action	Specific Action Reference	OMP Section	Issue	Action	Timeframe	Responsibility
				reduced to below 5 % of the ROA 2 area.		
Fencing and Stock Management and Discontinuation of Cropping	3	Section 5.3	Fencing for livestock is present on-site which increases risk of entanglement. Cessation of cropping and ploughing activities in order to utilise these areas for revegetation within areas currently not able to naturally regenerate. Livestock presence also limits potential natural regeneration of foraging species.	All internal fencing within the ROA 2 area is to be fenced with fauna friendly livestock exclusion fencing or removed entirely, followed by the removal of livestock from the ROA 2. Furthermore, proposed removal of any current fencing with potential entanglement impact to fauna (i.e., barbwire) where livestock has been removed.	Fencing removal or replacement to fauna friendly exclusion fencing will commence immediately. Livestock removal and discontinuation of cropping activities will also commence throughout years 1 – 2. All fencing to be inspected and reported throughout the life of the approval.	Offset Provider
Access and Trespass Management	4	Section 5.4	The impacts of unlawful access and trespassing mimic those listed in the ‘Stock Control’ management action (trampling, compacting, weed spread, fence destruction). Without a system for identifying and preventing or controlling access and trespassing the actions established for on-site stock management will be undermined.	ROA 2 offset will be fenced; however, the purpose of this management action is to target the boundary of the offset property which shares a common boundary with adjoining landholders. No new access tracks throughout ROA 2 unless to support offset outcomes.	Inspection and rectification of all external fence boundaries of ROA 2 and notification of purpose of ROA 2 to all adjoining landowners (where applicable). Maintaining fencing with regular inspections throughout life of approval.	Offset Provider
Regeneration Management Strategy	5 & 6	Sections 5.5 and 5.6	The majority of ROA 2 is utilised for grazing land and therefore assisted natural regeneration and	Cease grazing activities, implement weed suppression, and implement reconstruction plantings. Revegetation	The Regeneration Management Strategy will be implemented for the life of the approval. Removal of threats to species and	Offset Provider



Specific Action	Specific Action Reference	OMP Section	Issue	Action	Timeframe	Responsibility
			reconstruction efforts are required.	will occur in accordance with the pre-clear regional ecosystem technical description. Once the AU1 and AU2 revegetation reaches 70% of prescribed heights and 50% of prescribed canopy coverages it can be considered remnant.	soil preparation will begin in year 1 with reconstruction planting to follow in year 2.	
Hollow Monitoring and Management	7	Section 5.6	The number of hollows at the offset site needs to be augmented to provide additional shelter and nesting opportunities for the Greater Glider.	Install hollows and nest boxes where required to augment existing hollows and achieve densities specified in the relevant conservation advice (target 1.5 hollows / ha)	Hollows to be installed at required densities at tree maturity.	Offset Provider
Bushfire Management	8	Section 5.7	Bushfire risk must be mitigated.	Bushfire Management Plan to be compiled in Year 1 and implemented.	Year 1 onwards.	Offset Provider

Monitoring Summary

Monitoring action	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10	Year 15	Year 20
Pest monitoring	×	×	×	×	✓	✓	✓	✓
Weed photo monitoring	✓	✓	✓	✓	Annually for the monitoring period			
Weed mapping	×	×	×	×	✓	✓	✓	✓
MHQA	×	×	×	×	✓	✓	✓	✓
Habitat Planting	✓ (quarterly for features)	✓	✓	×	✓ (features)	✓ (features)	✓ (features)	✓ (features)
Assisted Regen	✓	✓	✓	✓	✓	✓	✓	✓
Hollow monitoring	✓ (quarterly from installation)	✓	✓	✓	Annually for the monitoring period			
Bushfire monitoring					Annually for the life of the offset			
Fencing and signage					Annually for the life of the offset			



Table 5: AUI Management Summary Koala

	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
SITE CONDITION								
Recruitment of woody perennial species in EDL	0	0	3	3	5	Recruitment of a minimum of >75% of the recruitment of woody perennial species in EDL benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement towards 75% has not been achieved at the 10-year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness - trees	0	2.5	5	5	5	Establish a minimum of 100% of the tree species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the sub-canopy layer species richness has not improved to greater than 95% at 10 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native plant species richness - shrubs	0	2.5	5	5	5	Establish a minimum of 100% of the shrub species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the shrub species richness has not improved to 40% by year 5 and then greater than 95% at 10 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - grasses	2.5	2.5	2.5	5	5	Establish to a minimum of 12 grass species (100% of the grass species richness benchmark) utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If grass species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - forbs	0	2.5	2.5	5	5	Establish a minimum of 100% of the forb species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If forb species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Tree canopy height (Canopy)*	0	3	3	3	5	Trees to be 70% of the tree canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 species plantings to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy height (Sub-canopy)*	3	3	3	3	5	Tree s to be a minimum 70% of the tree sub-canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 species plantings to be a minimum of 70% of the tree canopy height benchmark.
*Average tree canopy height	1.5	3	3	3	5			
Tree canopy cover (Canopy)**	0	0	0	2	5	Tree canopy cover to be 50% of the tree canopy cover (canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Tree canopy cover (Sub-canopy)**	0	0	0	2	5	Tree sub-canopy cover to be 50% of the tree canopy cover (sub-canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
**Average tree canopy cover	0	0	0	2	5			
Shrub canopy cover	0	3	3	5	5	Maintain shrub canopy cover at greater than 50% of the shrub canopy cover benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native grass cover*	5	5	5	5	5	Maintain native grass cover utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates native grass is not maintained then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter*	3	3	3	3	5	Organic Litter to be at least 50% of organic litter benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter has not improved to greater than 25% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees (euc plus non-euc) (per ha)	0	0	0	0	0			
Coarse woody debris (per ha)	2	2	2	5	5	Maintain a minimum of 50% of the coarse woody debris benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Non-native plant cover	3	5	10	10	10	Weed coverage to be less than 5% of the entire offset area utilising the management actions 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10-year mark, then remedial actions to reduce weed cover will be applied. This would include refining weed control methods.
Quality and availability of food and foraging habitat	1	1	5	5	10	Quality and availability of food and foraging habitat to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	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	1	1	5	5	10	Quality and availability of shelter to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of shelter is currently poor. All site condition remedial actions also apply to this criterium achieving a high rating.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Site Condition Score (/100)	19	33	54	66	85			
Overall Site Condition Score - out of 3	0.57	0.99	1.62	1.98	2.55			
SITE CONTEXT								
Size of patch	10	10	10	10	10			
Connectedness	2	2	2	2	2			
Context	4	4	4	4	4			
Ecological Corridors	6	6	6	6	6			
Role of site location to species overall population in the state	5	5	5	5	5			
Threats to the species	1	1	1	1	1	Threats removed from offset site and ongoing monitoring and control implemented by specific management actions 2 & 6 outlined in Table 2.	Baseline attributes are established. This criterium is reliant upon the suppression and control of identified pest species on-site, in particular wild dogs and European fox. 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 present, then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	4	4	4	7	7	Species mobility capacity will improve to limited restriction by specific management actions 1 through 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently restricted by the absence of habitat and presence of invasive flora and fauna. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a moderate rating.
Site Context Score (/56)	32	32	32	35	35			
Overall Site Context Score - out of 3	1.71	1.71	1.71	1.88	1.88			
SPECIES STOCKING RATE								
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	20	20	40	40	40	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in Table 2 Koala activity will be recorded providing evidence of breeding as per the conservation advice.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If usage levels are not transitioning toward low level at the 10-year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala activity has not improved to low level at 15 years, then the management period may be extended, and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala activity.
Species Stocking Rate Score (/70)	20.00	20	40	40	40			
Overall Species Stocking Rate Score - out of 4	1.14	1.14	2.29	2.29	2.29			
Overall Assessment Unit Score	3.43	3.85	5.62	6.14	6.71			



Table 6: AU2 Hi Management Summary Koala

	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
SITE CONDITION								
Recruitment of woody perennial species in EDL	5	5	5	5	5	Recruitment of a minimum of >75% of the recruitment of woody perennial species in EDL benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If recruitment is not maintained at 75% has not been achieved at the 10-year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness - trees	2.5	2.5	5	5	5	Maintain a minimum of 100% of the tree species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the sub-canopy layer species richness has not improved to greater than 95% at 10 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native plant species richness - shrubs	2.5	2.5	5	5	5	Maintain a minimum of minimum of 100% of the shrub species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the shrub species richness has not improved to 40% by year 5 and then greater than 95% at 10 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - grasses	2.5	2.5	2.5	5	5	Maintain a minimum of 100% of the grass species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If grass species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - forbs	0	0	0	2.5	2.5	Maintain a minimum of 25% of the forb species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the forb species richness has not improved to greater than 95% at 15 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Tree canopy height (Canopy)*	3	3	5	5	5	Tree species plantings to be a minimum of 70% of the tree canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy height (Sub-canopy)*	3	3	5	5	5	Tree species plantings to be a minimum of 70% of the tree sub-canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
*Average tree canopy height	3	3	5	5	5			
Tree canopy cover (Canopy)**	2	2	5	5	5	Tree canopy cover to be a minimum 50% of the tree canopy cover (canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Tree canopy cover (Sub-canopy)**	5	5	5	5	5	Tree sub-canopy cover to be a minimum of 50% of the tree canopy cover (sub-canopy benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover is not maintained at 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
**Average tree canopy cover	3.5	3.5	5	5	5			
Shrub canopy cover	3	3	3	5	5	Maintain shrub canopy cover of 50% of the shrub canopy cover benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native grass cover*	5	5	5	5	5	Maintain native grass cover utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates native grass is not maintained 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	Organic Litter to be 50% of benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter has not improved to greater than 25% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees (euc plus non-euc) (per ha)	5	5	5	5	5			
Coarse woody debris (per ha)	2	2	2	5	5	Maintain a minimum of 50% of the coarse woody debris benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Non-native plant cover	3	5	10	10	10	Weed coverage to be less than 5% utilising the management actions 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10-year mark, then remedial actions to reduce weed cover will be applied. This would include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	5	10	10	Quality and availability of food and foraging habitat to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of food and foraging habitat is currently moderate. All site condition remedial actions also apply to this criterium achieving a high rating.
Quality and availability of shelter	5	5	5	10	10	Quality and availability of shelter to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	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	Quality and availability of shelter is currently moderate. All site condition remedial actions also apply to this criterium achieving a high rating.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
							completed by suitably qualified professionals at 5, 10, 15 and 20 years.	
Site Condition Score (/100)	52	54	67.5	87.5	87.5			
Overall Site Condition Score - out of 3	1.56	1.62	2.03	2.63	2.63			
SITE CONTEXT								
Size of patch	10	10	10	10	10			
Connectedness	2	2	2	2	2			
Context	4	4	4	4	4			
Ecological Corridors	6	6	6	6	6			
Role of site location to species overall population in the state	5	5	5	5	5			
Threats to the species	7	7	7	7	7	Threats removed from offset site and ongoing monitoring and control implemented by specific management actions 2 & 6 outlined in Table 2.	Baseline attributes are established. This criterium is reliant upon the suppression and control of identified pest species on-site, in particular wild dogs and European fox. 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 present, then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	7	7	10	10	10	Species mobility capacity will improve to limited restriction by specific management actions 1 through 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently restricted by the absence of habitat and presence of invasive flora and fauna. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a high rating.
Site Context Score (/56)	41	41	44	44	44			
Overall Site Context Score - out of 3	2.20	2.20	2.36	2.36	2.36			
SPECIES STOCKING RATE								
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	40	40	40	40	40	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in Table 2 Koala activity will be recorded providing evidence of breeding as per the conservation advice.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If usage levels are not maintained at the 10-year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala activity has not maintained at 15 years, then the management period may be extended, and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala activity.
Species Stocking Rate Score (/70)	40.00	40	40	40	40			
Overall Species Stocking Rate Score - out of 4	2.29	2.29	2.29	2.29	2.29			



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Overall Assessment Unit Score	6.04	6.10	6.67	7.27	7.27			



Table 7: AU2 Lo Management Summary Koala

	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
SITE CONDITION								
Recruitment of woody perennial species in EDL	5	5	5	5	5	Recruitment of a minimum of >75% of the recruitment of woody perennial species in EDL benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If recruitment is not maintained at 75% has not been achieved at the 10-year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness - trees	2.5	2.5	5	5	5	Maintain a minimum of 100% of the tree species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the sub-canopy layer species richness has not improved to greater than 95% at 10 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native plant species richness - shrubs	2.5	2.5	5	5	5	Maintain a minimum of minimum of 100% of the shrub species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the shrub species richness has not improved to 40% by year 5 and then greater than 95% at 10 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - grasses	2.5	2.5	2.5	5	5	Maintain a minimum of 100% of the grass species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If grass species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - forbs	0	0	0	2.5	2.5	Maintain a minimum of 25% of the forb species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the forb species richness has not improved to greater than 95% at 15 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Tree canopy height (Canopy)*	3	3	5	5	5	Tree species plantings to be a minimum of 70% of the tree canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy height (Sub-canopy)*	3	3	5	5	5	Tree species plantings to be a minimum of 70% of the tree sub-canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
*Average tree canopy height	3	3	5	5	5			
Tree canopy cover (Canopy)**	0	0	0	5	5	Tree canopy cover to be a minimum 50% of the tree canopy cover (canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Tree canopy cover (Sub-canopy)**	2	2	2	5	5	Tree sub-canopy cover to be a minimum of 50% of the tree canopy cover (sub-canopy benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover is not maintained at 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
**Average tree canopy cover	1	1	1	5	5			
Shrub canopy cover	3	3	3	5	5	Maintain shrub canopy cover of 50% of the shrub canopy cover benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native grass cover*	5	5	5	5	5	Maintain native grass cover utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates native grass is not maintained then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter*	3	3	5	5	5	Organic Litter to be 50% of benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter has not improved to greater than 25% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees (euc plus non-euc) (per ha)	5	5	5	5	5			
Coarse woody debris (per ha)	0	0	2	5	5	Maintain a minimum of 50% of the coarse woody debris benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Non-native plant cover	3	5	10	10	10	Weed coverage to be less than 5% utilising the management actions 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10-year mark, then remedial actions to reduce weed cover will be applied. This would include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	5	10	10	Quality and availability of food and foraging habitat to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of food and foraging maintained. All site condition remedial actions also apply to this criterium achieving a high rating.
Quality and availability of shelter	5	5	5	10	10	Quality and availability of shelter to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	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	Quality and availability of shelter maintained. All site condition remedial actions also apply to this criterium achieving a high rating.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
							completed by suitably qualified professionals at 5, 10, 15 and 20 years.	
Site Condition Score (/100)	45.5	47.5	63.5	87.5	87.5			
Overall Site Condition Score - out of 3	1.37	1.43	1.91	2.63	2.63			
SITE CONTEXT								
Size of patch	10	10	10	10	10			
Connectedness	2	2	2	2	2			
Context	4	4	4	4	4			
Ecological Corridors	6	6	6	6	6			
Role of site location to species overall population in the state	5	5	5	5	5			
Threats to the species	1	1	1	1	1	Threats removed from offset site and ongoing monitoring and control implemented by specific management actions 2 & 6 outlined in Table 2.	Baseline attributes are established. This criterium is reliant upon the suppression and control of identified pest species on-site, in particular wild dogs and European fox. 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 present, then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	4	4	7	10	10	Species mobility capacity will improve to limited restriction by specific management actions 1 through 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently restricted by the absence of habitat and presence of invasive flora and fauna. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a high rating.
Site Context Score (/56)	32	32	35	38	38			
Overall Site Context Score - out of 3	1.71	1.71	1.88	2.04	2.04			
SPECIES STOCKING RATE								
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	40	40	40	40	40	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in Table 2 Koala activity will be recorded providing evidence of breeding as per the conservation advice.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If usage levels are not maintained at the 10-year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala activity has not maintained at 15 years, then the management period may be extended, and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala activity.
Species Stocking Rate Score (/70)	40.00	40	40	40	40			
Overall Species Stocking Rate Score - out of 4	2.29	2.29	2.29	2.29	2.29			
Overall Assessment Unit Score	5.37	5.43	6.07	6.95	6.95			



Table 8: AU3 Management Summary Koala

	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
SITE CONDITION								
Recruitment of woody perennial species in EDL	5	5	5	5	5	Recruitment of a minimum of >75% of the recruitment of woody perennial species in EDL benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If recruitment is not maintained at 75% has not been achieved at the 10-year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness - trees	2.5	2.5	5	5	5	Maintain a minimum of 100% of the tree species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the sub-canopy layer species richness has not improved to greater than 95% at 10 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native plant species richness - shrubs	2.5	2.5	5	5	5	Maintain a minimum of minimum of 100% of the shrub species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the shrub species richness has not improved to 40% by year 5 and then greater than 95% at 10 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - grasses	2.5	2.5	5	5	5	Maintain a minimum of 100% of the grass species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If grass species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - forbs	0	0	2.5	2.5	5	Maintain a minimum of 25% of the forb species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the forb species richness has not improved to greater than 95% at 15 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Tree canopy height (Canopy)*	5	5	5	5	5	Tree species plantings to be a minimum of 70% of the tree canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not maintained 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy height (Sub-canopy)*	5	5	5	5	5	Tree species plantings to be a minimum of 70% of the tree sub-canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not maintained 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
*Average tree canopy height	5	5	5	5	5			
Tree canopy cover (Canopy)**	5	5	5	5	5	Tree canopy cover to be a minimum 50% of the tree canopy cover (canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not maintained 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Tree canopy cover (Sub-canopy)**	5	5	5	5	5	Tree sub-canopy cover to be a minimum of 50% of the tree canopy cover (sub-canopy benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not maintained 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
**Average tree canopy cover	5	5	5	5	5			
Shrub canopy cover	3	3	5	5	5	Maintain shrub canopy cover of 50% of the shrub canopy cover benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native grass cover*	5	5	5	5	5	Maintain native grass cover utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates native grass is not maintained 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	Organic Litter to be 50% of benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter has not maintained greater than 50% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees (euc plus non-euc) (per ha)	5	5	5	5	5	Large trees to be a minimum 50% of benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If large tree threshold has not improved to greater than 50% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Coarse woody debris (per ha)	5	5	5	5	5	Maintain a minimum of 50% of the coarse woody debris benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates that coarse woody debris has not maintained to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Non-native plant cover	3	5	10	10	10	Weed coverage to be less than 5% utilising the management actions 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10-year mark, then remedial actions to reduce weed cover will be applied. This would include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	10	10	10	Quality and availability of food and foraging habitat to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of food and foraging maintained. All site condition remedial actions also apply to this criterium maintaining a high rating.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Quality and availability of shelter	5	5	10	10	10	Quality and availability of shelter to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of shelter maintained. All site condition remedial actions also apply to this criterium maintaining a high rating.
Site Condition Score (/100)	58.5	60.5	87.5	87.5	90			
Overall Site Condition Score - out of 3	1.76	1.82	2.63	2.63	2.70			
SITE CONTEXT								
Size of patch	10	10	10	10	10			
Connectedness	2	2	2	2	2			
Context	4	4	4	4	4			
Ecological Corridors	6	6	6	6	6			
Role of site location to species overall population in the state	5	5	5	5	5			
Threats to the species	7	7	7	7	7	Threats removed from offset site and ongoing monitoring and control implemented by specific management actions 2 & 6 outlined in Table 2.	Baseline attributes are established. This criterium is reliant upon the suppression and control of identified pest species on-site, in particular wild dogs and European fox. 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 present, then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	7	7	10	10	10	Species mobility capacity will improve to limited restriction by specific management actions 1 through 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	All site condition remedial actions, as well as threat reductions also apply to this criterium maintaining a high rating.
Site Context Score (/56)	41	41	44	44	44			
Overall Site Context Score - out of 3	2.20	2.20	2.36	2.36	2.36			
SPECIES STOCKING RATE								
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	40	40	40	40	40	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in Table 2 Koala activity will be recorded providing evidence of breeding as per the conservation advice.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If usage levels are not maintained at the 10-year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala activity has not maintained at 15 years, then the management period may be extended, and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala activity.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Species Stocking Rate Score (/70)	40.00	40	40	40	40			
Overall Species Stocking Rate Score - out of 4	2.29	2.29	2.29	2.29	2.29			
Overall Assessment Unit Score	6.24	6.30	7.27	7.27	7.34			



Table 9: AU1 Management Summary GHFF

Site Reference	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justifications / Management Actions	Monitoring	Adaptive Management
Vegetation Condition	5	5	5	10	10	Vegetation to reach remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The assessment unit is to reach regrowth status in 15 years and be progressing towards remnant status by 20 years as per VMA definitions, which require 70% of height and 50% of expected cover to be reached. If the vegetation is not progressing toward regrowth status at 10 years, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives
Species Richness	5	5	10	20	20	Species richness to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to achieve at least three foraging species by year 5 and seven by year 15. If the species diversity does not reflect this requirement at year 10, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Flower Score	5	8	8	8	8	Flower score to reach 8 utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Increase of flower scores by year 5 will be achieved by increasing winter flowering and foraging species on-site by two. If an increase in winter flowering species does not reflect this requirement at year 5, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	6.5	10	10	10	10	Timing of biological shortages to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Timing of biological shortages to improve. If the species present do not reflect this requirement at year 5, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Quality of Foraging Habitat	0	10	10	20	20	Quality of foraging habitat to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality of foraging habitat within the assessment unit is to achieve at least two species by year 5 and five by year 15. If the species present do not reflect this requirement at year 10, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Non-native Plant Cover	5	10	20	20	20	Weed cover score to be maximised utilising the management actions 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 25% has not been achieved by the 5-year mark then remedial actions to reduce weed cover will be applied. These include refining the weed control methods.
Site Condition Score	26.5	48	63	88	88			
MAX Site Condition Score	100	100	100	100	100			
Site Condition Score - out of 4	1.06	1.92	2.52	3.52	3.52			



Site Reference	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justifications / Management Actions	Monitoring	Adaptive Management
Size of patch	10	10	10	10	10			
Connectedness	3	3	3	3	3			
Context	6	6	6	6	6			
Ecological Corridors	10	10	10	10	10			
Role of site location to species overall population in the state	0	0	0	0	0			
Threats to the species	5	10	10	10	10	The proposed ROA 2 site is currently utilised for agriculture and therefore contains barbwire fencing which is a recognised threat to flying foxes. With management action 4 and 5 outlined in Table 2 barbwire fencing will be removed internally where cattle are removed and therefore the assessment unit 'Threats' will reduced to low within 5 years.	Baseline attributes and pest monitoring has been established. This criterium is largely reliant upon the management of barbwire fencing within ROA 2.	The control or removal of barbwire fencing internally within ROA 2 will provide an immediate and large reduction in threats. Further, pest management as outlined previously will continue to reduce potential threats.
Site Context Score	34	39	39	39	39			
MAX Site Context Score	60	60	60	60	60			
Site Context Score - out of 3	1.70	1.95	1.95	1.95	1.95			
GHFF Foraging Tree Density	0	4	6	8	10	The entirety of the offset is to consist of MNES habitat restoration activities as per management actions 1, 3, 4, 5 & 6 in Table 2. These actions will together maximise stem densities within AU1 by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve maximum by year 20. If the stem density does not achieve maximum by year 15 then remedial actions will be applied. These include remedial plantings of stock.
Species Stocking Rate Score	0	4	6	8	10			
MAX Species Stocking Rate Score	10	10	10	10	10			
Species Stocking Rate Score - out of 3	0.00	1.20	1.80	2.40	3.00			
Total	2.76	5.07	6.27	7.87	8.47			



Table 10: AU2 Hi Management Summary GHFF

Site Reference	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justifications / Management Actions	Monitoring	Adaptive Management
Vegetation Condition	10	10	10	20	20	Vegetation to reach remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The assessment unit is to reach remnant status in 15 years, which require 70% of height and 50% of expected cover to be reached. If the vegetation is not progressing toward remnant status at 10 years, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives
Species Richness	10	10	10	20	20	Species richness to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to achieve at least seven foraging species by year 15. If the species diversity does not reflect this requirement at year 10, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Flower Score	8	8	8	8	8	Flower score to maintain at 8 utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If maintenance in winter flowering species does not reflect this requirement at year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	10	10	10	10	10	Timing of biological shortages to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If maintenance of the species present is not evident at year 15, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Quality of Foraging Habitat	0	10	10	20	20	Quality of foraging habitat to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality of foraging habitat within the assessment unit is to achieve at least two species by year 5 and five by year 15. If the species present do not reflect this requirement at year 10, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Non-native Plant Cover	5	10	20	20	20	Weed cover score to be maximised utilising the management actions 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 25% has not been achieved by the 5-year mark then remedial actions to reduce weed cover will be applied. These include refining the weed control methods.
Site Condition Score	43	58	58	98	98			
MAX Site Condition Score	100	100	100	100	100			
Site Condition Score - out of 4	1.72	2.32	2.72	3.92	3.92			
Size of patch	10	10	10	10	10			
Connectedness	3	3	3	3	3			
Context	6	6	6	6	6			
Ecological Corridors	10	10	10	10	10			



Site Reference	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justifications / Management Actions	Monitoring	Adaptive Management
Role of site location to species overall population in the state	0	0	0	0	0			
Threats to the species	5	10	10	10	10	The proposed ROA 2 site is currently utilised for agriculture and therefore contains barbwire fencing which is a recognised threat to flying foxes. With management action 4 and 5 outlined in Table 2 barbwire fencing will be removed internally where cattle are removed and therefore the assessment unit 'Threats' will reduced to low within 5 years.	Baseline attributes and pest monitoring has been established. This criterium is largely reliant upon the management of barbwire fencing within ROA 2.	The control or removal of barbwire fencing internally within ROA 2 will provide an immediate and large reduction in threats. Further, pest management as outlined previously will continue to reduce potential threats.
Site Context Score	34	39	30	30	30			
MAX Site Context Score	60	60	60	60	60			
Site Context Score - out of 3	1.70	1.95	1.95	1.95	1.95			
GHFF Foraging Tree Density	2	4	6	8	8	The entirety of the offset is to consist of MNES habitat restoration activities as per management actions 1, 3, 4, 5 & 6 in Table 2. These actions will together maximise stem densities within AU1 by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve 8 by year 20. If the stem density does not achieve 8 by year 15 then remedial actions will be applied. These include remedial plantings of stock.
Species Stocking Rate Score	2	4	6	8	8			
MAX Species Stocking Rate Score	10	10	10	10	10			
Species Stocking Rate Score - out of 3	0.60	1.20	1.80	2.40	2.40			
Total	4.02	5.47	6.47	8.27	8.27			



Table 11: AU2 Lo Management Summary GHFF

Site Reference	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justifications / Management Actions	Monitoring	Adaptive Management
Vegetation Condition	10	10	10	20	20	Vegetation to reach remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The assessment unit is to reach remnant status in 15 years, which require 70% of height and 50% of expected cover to be reached. If the vegetation is not progressing toward remnant status at 10 years, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives
Species Richness	5	5	10	20	20	Species richness to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to achieve at least seven foraging species by year 15. If the species diversity does not reflect this requirement at year 10, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Flower Score	5	5	8	8	8	Flower score to maintain at 8 utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Increase of flower scores by year 10 will be achieved by increasing winter flowering and foraging species on-site. If an increase in winter flowering species does not reflect this requirement at year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	7.25	7.25	10	10	10	Timing of biological shortages to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Timing of biological shortages to improve. If the species present do not reflect this requirement at year 5, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Quality of Foraging Habitat	5	5	10	20	20	Quality of foraging habitat to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality of foraging habitat within the assessment unit is to achieve at least two species by year 5 and five by year 15. If the species present do not reflect this requirement at year 10, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Non-native Plant Cover	5	10	20	20	20	Weed cover score to be maximised utilising the management actions 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 25% has not been achieved by the 5-year mark then remedial actions to reduce weed cover will be applied. These include refining the weed control methods.
Site Condition Score	37.25	42.25	68	98	98			
MAX Site Condition Score	100	100	100	100	100			
Site Condition Score - out of 4	1.49	1.69	2.72	3.92	3.92			
Size of patch	10	10	10	10	10			
Connectedness	3	3	3	3	3			



Site Reference	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justifications / Management Actions	Monitoring	Adaptive Management
Context	6	6	6	6	6			
Ecological Corridors	10	10	10	10	10			
Role of site location to species overall population in the state	0	0	0	0	0			
Threats to the species	5	10	10	10	10	The proposed ROA 2 site is currently utilised for agriculture and therefore contains barbwire fencing which is a recognised threat to flying foxes. With management action 4 and 5 outlined in Table 2 barbwire fencing will be removed internally where cattle are removed and therefore the assessment unit 'Threats' will reduced to low within 5 years.	Baseline attributes and pest monitoring has been established. This criterium is largely reliant upon the management of barbwire fencing within ROA 2.	The control or removal of barbwire fencing internally within ROA 2 will provide an immediate and large reduction in threats. Further, pest management as outlined previously will continue to reduce potential threats.
Site Context Score	34	39	39	39	39			
MAX Site Context Score	60	60	60	60	60			
Site Context Score - out of 3	1.70	1.95	1.95	1.95	1.95			
GHFF Foraging Tree Density	0	4	6	8	8	The entirety of the offset is to consist of MNES habitat restoration activities as per management actions 1, 3, 4, 5 & 6 in Table 2. These actions will together maximise stem densities within AU1 by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve 8 by year 20. If the stem density does not achieve 8 by year 15 then remedial actions will be applied. These include remedial plantings of stock.
Species Stocking Rate Score	2	4	6	7	8			
MAX Species Stocking Rate Score	10	10	10	10	10			
Species Stocking Rate Score - out of 3	0.60	1.20	1.80	2.10	2.40			
Total	3.79	4.84	6.47	7.97	8.27			



Table 12: AU3 Management Summary GHFF

Site Reference	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justifications / Management Actions	Monitoring	Adaptive Management
Vegetation Condition	20	20	20	20	20	Vegetation to reach remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The assessment unit is to maintain remnant status. If the vegetation is not still remnant status at 10 years, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives
Species Richness	10	10	10	20	20	Species richness to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to be maintained. If the species diversity does not reflect this requirement at year 10, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Flower Score	5	8	8	8	8	Flower score to maintain at 8 utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Increase of flower scores by year 10 will be achieved by increasing winter flowering and foraging species on-site. If an increase in winter flowering species does not reflect this requirement at year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	10	10	10	10	10	Timing of biological shortages to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Timing of biological shortages to maintain. If the species present do not reflect this requirement at year 5, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Quality of Foraging Habitat	5	10	10	20	20	Quality of foraging habitat to be maximised utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality of foraging habitat within the assessment unit is to achieve at least two species by year 5 and five by year 15. If the species present do not reflect this requirement at year 10, then remedial actions will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Non-native Plant Cover	5	10	20	20	20	Weed cover score to be maximised utilising the management actions 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 25% has not been achieved by the 5-year mark then remedial actions to reduce weed cover will be applied. These include refining the weed control methods.
Site Condition Score	55	68	78	98	98			
MAX Site Condition Score	100	100	100	100	100			
Site Condition Score - out of 4	2.20	2.72	3.12	3.92	3.92			
Size of patch	10	10	10	10	10			
Connectedness	3	3	3	3	3			
Context	6	6	6	6	6			
Ecological Corridors	10	10	10	10	10			



Site Reference	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justifications / Management Actions	Monitoring	Adaptive Management
Role of site location to species overall population in the state	0	0	0	0	0			
Threats to the species	5	10	10	10	10	The proposed ROA 2 site is currently utilised for agriculture and therefore contains barbwire fencing which is a recognised threat to flying foxes. With management action 4 and 5 outlined in Table 2 barbwire fencing will be removed internally where cattle are removed and therefore the assessment unit 'Threats' will reduced to low within 5 years.	Baseline attributes and pest monitoring has been established. This criterium is largely reliant upon the management of barbwire fencing within ROA 2.	The control or removal of barbwire fencing internally within ROA 2 will provide an immediate and large reduction in threats. Further, pest management as outlined previously will continue to reduce potential threats.
Site Context Score	34	39	39	39	39			
MAX Site Context Score	60	60	60	60	60			
Site Context Score - out of 3	1.70	1.95	1.95	1.95	1.95			
GHFF Foraging Tree Density	5	5	6	8	8	The entirety of the offset is to consist of MNES habitat restoration activities as per management actions 1, 3, 4, 5 & 6 in Table 2. These actions will together maximise stem densities within AU1 by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve 8 by year 20. If the stem density does not achieve 8 by year 15 then remedial actions will be applied. These include remedial plantings of stock.
Species Stocking Rate Score	5	5	6	8	8			
MAX Species Stocking Rate Score	10	10	10	10	10			
Species Stocking Rate Score - out of 3	1.50	1.50	1.80	2.40	2.40			
Total	5.40	6.17	6.87	8.27	8.27			



Table 13: AU1 Management Summary Greater Glider

	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
SITE CONDITION								
Recruitment of woody perennial species in EDL	0	0	3	3	5	Recruitment of a minimum of >75% of the recruitment of woody perennial species in EDL benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement towards 75% has not been achieved at the 10-year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness - trees	0	2.5	5	5	5	Maintain a minimum of 100% of the tree species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the sub-canopy layer species richness has not improved to greater than 95% at 10 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native plant species richness - shrubs	0	2.5	5	5	5	Maintain a minimum of 100% of the shrub species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the shrub species richness has not improved to 40% by year 5 and then greater than 95% at 10 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - grasses	2.5	2.5	2.5	5	5	Maintain a minimum of 12 grass species (100% of the grass species richness benchmark) utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If grass species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - forbs	0	2.5	2.5	5	5	Establish a minimum of 100% of the forb species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If forb species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Tree canopy height (Canopy)*	0	3	3	3	5	Trees to be 70% of the tree canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 species plantings to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy height (Sub-canopy)*	3	3	3	3	5	Trees to be a minimum 70% of the tree sub-canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 species plantings to be a minimum of 70% of the tree canopy height benchmark.
*Average tree canopy height	1.5	3	3	3	5			
Tree canopy cover (Canopy)**	0	0	0	2	5	Tree canopy cover to be 50% of the tree canopy cover (canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Tree canopy cover (Sub-canopy)**	0	0	0	2	5	Tree sub-canopy cover to be 50% of the tree canopy cover (sub-canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
**Average tree canopy cover	0	0	0	2	5			
Shrub canopy cover	0	3	3	5	5	Maintain shrub canopy cover at 50% of the shrub canopy cover benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native grass cover*	5	5	5	5	5	Maintain native grass cover utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates native grass is not maintained then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter*	3	3	3	3	5	Organic Litter to be 50% of organic litter benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter has not improved to greater than 25% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees (euc plus non-euc) (per ha)	0	0	0	0	0			
Coarse woody debris (per ha)	2	2	2	5	5	Maintain a minimum of 50% of the coarse woody debris benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Non-native plant cover	3	5	10	10	10	Weed coverage to be less than 5% of the entire offset area utilising the management actions 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10-year mark, then remedial actions to reduce weed cover will be applied. This would include refining weed control methods.
Quality and availability of food and foraging habitat	1	1	1	5	10	Quality and availability of food and foraging habitat to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	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	1	1	1	5	10	Quality and availability of shelter to be optimal at remnant status utilising management action 8 Hollow Management outlined in Table 2.	Baseline Site Condition attributes are established. Establish monitoring and installation of hollows. Monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Failed hollows to be repaired or replaced as required.
Site Condition Score (/100)	14.5	21.5	28.0	58.0	92.5			



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Overall Site Condition Score - out of 3	0.44	0.65	0.84	1.74	2.78			
SITE CONTEXT								
Size of patch	10	10	10	10	10			
Connectedness	2	2	2	2	2			
Context	4	4	4	4	4			
Ecological Corridors	6	6	6	6	6			
Role of site location to species overall population in the state	5	5	5	5	5			
Threats to the species	7	15	15	15	15	The proposed ROA 2 site is currently utilised for agriculture and therefore contains barbwire fencing which is a recognised threat to flying foxes. With management action 4 and 5 outlined in Table 2 barbwire fencing will be removed internally where cattle are removed and therefore the assessment unit 'Threats' will reduced to low within 5 years.	Baseline attributes and pest monitoring has been established. This criterium is largely reliant upon the management of barbwire fencing within ROA 2.	The control or removal of barbwire fencing internally within ROA 2 will provide an immediate and large reduction in threats. Further, pest management as outlined previously will continue to reduce potential threats.
Species mobility capacity	4	4	4	7	10	Species mobility capacity will improve to optimal with the removal of clearings and habitat establishment by specific management actions 1 through 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently restricted by multiple fine scale obstacles. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a moderate rating.
Site Context Score (/56)	38	46	46	49	52			
Overall Site Context Score - out of 3	2.04	2.46	2.46	2.63	2.79			
SPECIES STOCKING RATE								
Species Stocking Rate (utilising SSR & SSR Supplementary Table(s))	15	15	15	15	20			
Species Stocking Rate Score (/70)	10.00	10	10	10	20			
Overall Species Stocking Rate Score - out of 4	0.86	0.96	0.86	0.86	1.14			
Overall Assessment Unit Score	3.33	3.97	4.16	5.22	6.54			
Features								



Table 14: AU2 Hi Management Summary Greater Glider

	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
SITE CONDITION								
Recruitment of woody perennial species in EDL	5	5	5	5	5	Recruitment of a minimum of >75% of the recruitment of woody perennial species in EDL benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If recruitment is not maintained at 75% has not been achieved at the 10-year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness - trees	2.5	2.5	5	5	5	Maintain a minimum of 100% of the tree species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the sub-canopy layer species richness has not improved to greater than 95% at 10 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native plant species richness - shrubs	2.5	2.5	5	5	5	Maintain a minimum of minimum of 100% of the shrub species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the shrub species richness has not improved to 40% by year 5 and then greater than 95% at 10 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - grasses	2.5	2.5	2.5	5	5	Maintain a minimum of 100% of the grass species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If grass species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - forbs	0	0	0	2.5	2.5	Maintain a minimum of 25% of the forb species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the forb species richness has not improved to greater than 95% at 15 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Tree canopy height (Canopy)*	3	3	5	5	5	Tree species plantings to be a minimum of 70% of the tree canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy height (Sub-canopy)*	3	3	5	5	5	Tree species plantings to be a minimum of 70% of the tree sub-canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
*Average tree canopy height	3	3	5	5	5			
Tree canopy cover (Canopy)**	2	2	5	5	5	Tree canopy cover to be a minimum 50% of the tree canopy cover (canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Tree canopy cover (Sub-canopy)**	5	5	5	5	5	Tree sub-canopy cover to be a minimum of 50% of the tree canopy cover (sub-canopy benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover is not maintained at 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
**Average tree canopy cover	3.5	3.5	5	5	5			
Shrub canopy cover	3	3	3	5	5	Maintain shrub canopy cover of 50% of the shrub canopy cover benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native grass cover*	5	5	5	5	5	Maintain native grass cover utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates native grass is not maintained 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	Organic Litter to be 50% of benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter has not improved to greater than 25% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees (euc plus non-euc) (per ha)	5	5	5	5	5			
Coarse woody debris (per ha)	2	2	2	5	5	Maintain a minimum of 50% of the coarse woody debris benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Non-native plant cover	3	5	10	10	10	Weed coverage to be less than 5% utilising the management actions 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10-year mark, then remedial actions to reduce weed cover will be applied. This would include refining weed control methods.
Quality and availability of food and foraging habitat	1	1	1	5	10	Quality and availability of food and foraging habitat to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	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	5	10	Quality and availability of shelter to be optimal at remnant status utilising management action 8 Hollow Management outlined in Table 2.	Baseline Site Condition attributes are established. Establish monitoring and installation of hollows. Monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Failed hollows to be repaired or replaced as required.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Site Condition Score (/100)	43.0	44.0	50.8	63.8	93.8			
Overall Site Condition Score - out of 3	1.29	1.32	1.52	1.91	2.81			
SITE CONTEXT								
Size of patch	10	10	10	10	10			
Connectedness	2	2	2	2	2			
Context	4	4	4	4	4			
Ecological Corridors	6	6	6	6	6			
Role of site location to species overall population in the state	5	5	5	5	5			
Threats to the species	7	15	15	15	15	The proposed ROA 2 site is currently utilised for agriculture and therefore contains barbwire fencing which is a recognised threat to flying foxes. With management action 4 and 5 outlined in Table 2 barbwire fencing will be removed internally where cattle are removed and therefore the assessment unit 'Threats' will reduced to low within 5 years.	Baseline attributes and pest monitoring has been established. This criterium is largely reliant upon the management of barbwire fencing within ROA 2.	The control or removal of barbwire fencing internally within ROA 2 will provide an immediate and large reduction in threats. Further, pest management as outlined previously will continue to reduce potential threats.
Species mobility capacity	7	7	10	10	10	Species mobility capacity will improve to optimal with the removal of clearings and habitat establishment by specific management actions 1 through 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently restricted by multiple fine scale obstacles. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a moderate rating.
Site Context Score (/56)	41	49	52	52	52			
Overall Site Context Score - out of 3	2.20	2.63	2.79	2.79	2.79			
SPECIES STOCKING RATE								
Species Stocking Rate (utilising SSR & SSR Supplementary Table(s))	20	20	20	20	20			
Species Stocking Rate Score (/70)	20.00	20	20	20	20			
Overall Species Stocking Rate Score - out of 4	1.14	1.14	1.14	1.14	1.14			
Overall Assessment Unit Score	4.63	5.09	5.29	5.68	6.58			
Features								



Table 15: AU2 Lo Management Summary Greater Glider

	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
SITE CONDITION								
Recruitment of woody perennial species in EDL	5	5	5	5	5	Recruitment of a minimum of >75% of the recruitment of woody perennial species in EDL benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If recruitment is not maintained at 75% has not been achieved at the 10-year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness - trees	2.5	2.5	5	5	5	Maintain a minimum of 100% of the tree species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the sub-canopy layer species richness has not improved to greater than 95% at 10 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native plant species richness - shrubs	2.5	2.5	5	5	5	Maintain a minimum of minimum of 100% of the shrub species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the shrub species richness has not improved to 40% by year 5 and then greater than 95% at 10 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - grasses	2.5	2.5	2.5	5	5	Maintain a minimum of 100% of the grass species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If grass species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - forbs	0	0	0	2.5	2.5	Maintain a minimum of 25% of the forb species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the forb species richness has not improved to greater than 95% at 15 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Tree canopy height (Canopy)*	3	3	5	5	5	Tree species plantings to be a minimum of 70% of the tree canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy height (Sub-canopy)*	3	3	5	5	5	Tree species plantings to be a minimum of 70% of the tree sub-canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not transitioned towards 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
*Average tree canopy height	3	3	5	5	5			
Tree canopy cover (Canopy)**	0	0	0	5	5	Tree canopy cover to be a minimum 50% of the tree canopy cover (canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Tree canopy cover (Sub-canopy)**	2	2	2	5	5	Tree sub-canopy cover to be a minimum of 50% of the tree canopy cover (sub-canopy benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover is not maintained at 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
**Average tree canopy cover	1	1	1	5	5			
Shrub canopy cover	3	3	3	5	5	Maintain shrub canopy cover of 50% of the shrub canopy cover benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native grass cover*	5	5	5	5	5	Maintain native grass cover utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates native grass is not maintained then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter*	3	3	5	5	5	Organic Litter to be 50% of benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter has not improved to greater than 25% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees (euc plus non-euc) (per ha)	5	5	5	5	5			
Coarse woody debris (per ha)	0	0	2	5	5	Maintain a minimum of 50% of the coarse woody debris benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Non-native plant cover	3	5	10	10	10	Weed coverage to be less than 5% utilising the management actions 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10-year mark, then remedial actions to reduce weed cover will be applied. This would include refining weed control methods.
Quality and availability of food and foraging habitat	1	1	1	5	10	Quality and availability of food and foraging habitat to be optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	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	1	1	1	5	10	Quality and availability of shelter to be optimal at remnant status utilising management action 8 Hollow Management outlined in Table 2.	Baseline Site Condition attributes are established. Establish monitoring and installation of hollows. Monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Failed hollows to be repaired or replaced as required.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Site Condition Score (/100)	23.8	24.8	32.8	63.8	93.8			
Overall Site Condition Score - out of 3	0.71	0.74	0.98	1.91	2.81			
SITE CONTEXT								
Size of patch	10	10	10	10	10			
Connectedness	2	2	2	2	2			
Context	4	4	4	4	4			
Ecological Corridors	6	6	6	6	6			
Role of site location to species overall population in the state	5	5	5	5	5			
Threats to the species	7	15	15	15	15	The proposed ROA 2 site is currently utilised for agriculture and therefore contains barbwire fencing which is a recognised threat to flying foxes. With management action 4 and 5 outlined in Table 2 barbwire fencing will be removed internally where cattle are removed and therefore the assessment unit 'Threats' will reduced to low within 5 years.	Baseline attributes and pest monitoring has been established. This criterium is largely reliant upon the management of barbwire fencing within ROA 2.	The control or removal of barbwire fencing internally within ROA 2 will provide an immediate and large reduction in threats. Further, pest management as outlined previously will continue to reduce potential threats.
Species mobility capacity	4	4	7	10	10	Species mobility capacity will improve to optimal with the removal of clearings and habitat establishment by specific management actions 1 through 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently restricted by multiple fine scale obstacles. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a moderate rating.
Site Context Score (/56)	38	46	49	52	52			
Overall Site Context Score - out of 3	2.04	2.46	2.63	2.79	2.79			
SPECIES STOCKING RATE								
Species Stocking Rate (utilising SSR & SSR Supplementary Table(s))	20	20	20	20	20			
Species Stocking Rate Score (/70)	20.00	20	20	20	20			
Overall Species Stocking Rate Score - out of 4	1.14	1.14	1.14	1.14	1.14			
Overall Assessment Unit Score	3.89	4.35	4.75	5.68	6.58			
Features								



Table 16 AU3 Management Summary Greater Glider

	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
SITE CONDITION								
Recruitment of woody perennial species in EDL	5	5	5	5	5	Recruitment of a minimum of >75% of the recruitment of woody perennial species in EDL benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If recruitment is not maintained at 75% has not been achieved at the 10-year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness - trees	2.5	2.5	5	5	5	Maintain a minimum of 100% of the tree species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the sub-canopy layer species richness has not improved to greater than 95% at 10 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native plant species richness - shrubs	2.5	2.5	5	5	5	Maintain a minimum of minimum of 100% of the shrub species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the shrub species richness has not improved to 40% by year 5 and then greater than 95% at 10 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - grasses	2.5	2.5	5	5	5	Maintain a minimum of 100% of the grass species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If grass species richness has not improved to greater than 95% at 15 years then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Native plant species richness - forbs	0	0	2.5	2.5	5	Maintain a minimum of 25% of the forb species richness benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the forb species richness has not improved to greater than 95% at 15 years, then remedial actions to improve the prospect of achieving 100% in 20 years will be applied. These include remedial plantings.
Tree canopy height (Canopy)*	5	5	5	5	5	Tree species plantings to be a minimum of 70% of the tree canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not maintained 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
Tree canopy height (Sub-canopy)*	5	5	5	5	5	Tree species plantings to be a minimum of 70% of the tree sub-canopy height benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If the tree height has not maintained 70% at year 15 then the prospect of extending the management period may be investigated. By Year 20 to be a minimum of 70% of the tree canopy height benchmark.
*Average tree canopy height	5	5	5	5	5			
Tree canopy cover (Canopy)**	5	5	5	5	5	Tree canopy cover to be a minimum 50% of the tree canopy cover (canopy) benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not maintained 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Tree canopy cover (Sub-canopy)**	5	5	5	5	5	Tree sub-canopy cover to be a minimum of 50% of the tree canopy cover (sub-canopy benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not maintained 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
**Average tree canopy cover	5	5	5	5	5			
Shrub canopy cover	3	5	5	5	5	Maintain shrub canopy cover of 50% of the shrub canopy cover benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If canopy cover has not reached 30% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Native grass cover*	5	5	5	5	5	Maintain native grass cover utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates native grass is not maintained 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	Organic Litter to be 50% of benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If organic litter has not maintained greater than 50% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees (euc plus non-euc) (per ha)	5	5	5	5	5	Large trees to be a minimum 50% of benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If large tree threshold has not improved to greater than 50% at 15 years, then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. This may include remedial plantings of advanced stock or extending the life of the offset to reach minimum objectives.
Coarse woody debris (per ha)	5	5	5	5	5	Maintain a minimum of 50% of the coarse woody debris benchmark utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If monitoring indicates that coarse woody debris has not maintained to between 50 and 200% by year 10 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Non-native plant cover	3	5	10	10	10	Weed coverage to be less than 5% utilising the management actions 3, 4, 5 and 6 outlined in Table 2 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10-year mark, then remedial actions to reduce weed cover will be applied. This would include refining weed control methods.
Quality and availability of food and foraging habitat	10	10	10	10	10	Quality and availability of food and foraging habitat to be maintained at optimal at remnant status utilising the management actions 1, 3, 4, 5 and 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of food and foraging habitat is maintained. All site condition remedial actions also apply to this criterium achieving a high rating.



	Score	Year 5	Year 10	Year 15	Year 20	Justifications / Management Actions	Monitoring	Adaptive Management
Quality and availability of shelter	1	1	1	5	10	Quality and availability of shelter to be optimal at remnant status utilising management action 8 Hollow Management outlined in Table 2.	Baseline Site Condition attributes are established. Establish monitoring and installation of hollows. Monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Failed hollows to be repaired or replaced as required.
Site Condition Score (/100)	48.3	49.3	57.8	73.8	95.0			
Overall Site Condition Score - out of 3	1.45	1.48	1.73	2.21	2.85			
SITE CONTEXT								
Size of patch	10	10	10	10	10			
Connectedness	2	2	2	2	2			
Context	4	4	4	4	4			
Ecological Corridors	6	6	6	6	6			
Role of site location to species overall population in the state	5	5	5	5	5			
Threats to the species	7	15	15	15	15	The proposed ROA 2 site is currently utilised for agriculture and therefore contains barbwire fencing which is a recognised threat to flying foxes. With management action 4 and 5 outlined in Table 2 barbwire fencing will be removed internally where cattle are removed and therefore the assessment unit 'Threats' will reduced to low within 5 years.	Baseline attributes and pest monitoring has been established. This criterium is largely reliant upon the management of barbwire fencing within ROA 2.	The control or removal of barbwire fencing internally within ROA 2 will provide an immediate and large reduction in threats. Further, pest management as outlined previously will continue to reduce potential threats.
Species mobility capacity	7	7	10	10	10	Species mobility capacity will improve to optimal with the removal of clearings and habitat establishment by specific management actions 1 through 6 outlined in Table 2.	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently restricted by multiple fine scale obstacles. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a moderate rating.
Site Context Score (/56)	41	49	52	52	52			
Overall Site Context Score - out of 3	2.20	2.63	2.79	2.79	2.79			
SPECIES STOCKING RATE								
Species Stocking Rate (utilising SSR & SSR Supplementary Table(s))	40	40	40	40	40			
Species Stocking Rate Score (/70)	40.00	40	40	40	40			
Overall Species Stocking Rate Score - out of 4	2.29	2.29	2.29	2.29	2.29			
Overall Assessment Unit Score	5.93	6.39	6.64	7.12	7.76			
Features								



OFFSET SITE SUITABILITY

LANDSCAPE CONTEXT

It is important that the offset area matches the environment of the impact area both from a vegetation perspective and landscape standpoint. For this reason, it is a benefit that both the impact and offset property occur within the same Interim Biogeographic Sub Region (SEQ 02 Moreton Basin Sub-region) as sought in draft Updated Offset Guideline material (**Figure 3**). The impact site and offset site are also located within the same Southeast Queensland bioregion (SEQ Bioregion 12) established and mapped by the Queensland Government. Furthermore, both the impact and offset properties are located within the same sub-region of Bioregion 12 mapped under the Southeast Queensland Biodiversity Planning documents (**Figure 4**) therefore experiencing similar climatic, landform, geological, topographical, vegetation and biota patterns. It is also noted that the impact and the offset property are located in adjacent Local Government Areas.

Within the South East Queensland Biodiversity Planning Assessment for the South East Queensland Bioregion (Version 4.1), the Rosevale offset property is located at the junction of a number of a number of State-wide and Regional Terrestrial Corridors. This is significant as the Peninsula Project offset area directly adjoins Bremer River which has a mapped State Significant Riparian Corridor situated around it (**Figure 5** and **Figure 7**).

Similarly, the southern allotments of the entire Rosevale offset property fall within the mapped extent of Regional Biodiversity Corridor 101 described as Kangaroo Mountain to Rosewood Corridor: Extends from Kangaroo Mountain (Main Range National Park) through to Mt Walker and Rosewood Regional (5km) (**Figure 6**). All habitat protection and habitat creation is supported by this strategic intent and importantly the land is not located within an area at threat of new development expansion, new road or rail upgrades or extractive resource uses. At the strategic scale the area is proposed for rural and environmental uses throughout the landscape context connecting to the significantly large Main Range and Border Range National Parks.

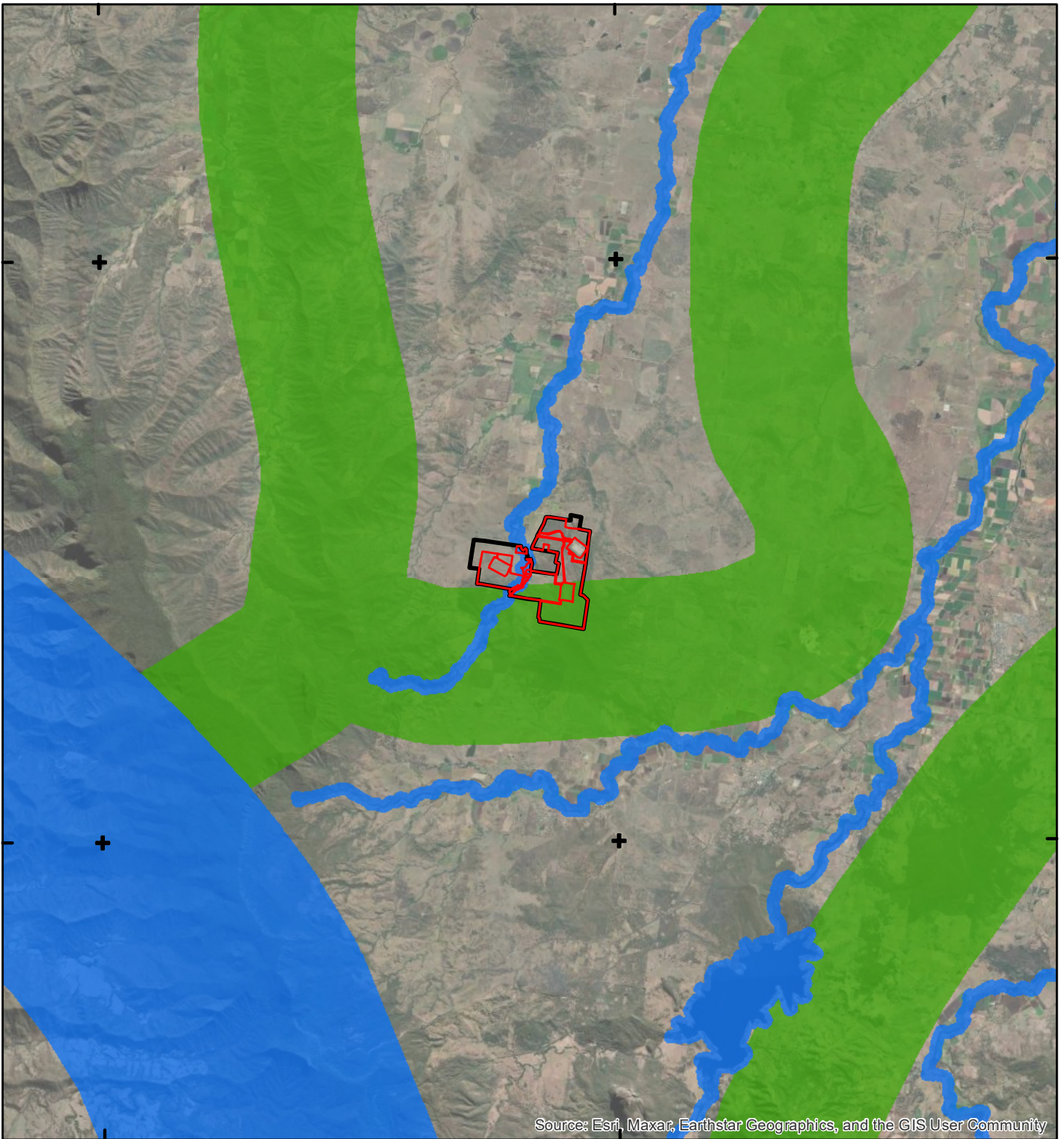


152°20'0"E

152°30'0"E

27°50'0"S

28°0'0"S



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend





-  Offset Properties
-  Offset Area
-  State Corridor Buffer
-  Regional Corridor Buffer

Figure 5

South East Queensland Bioregional
Planning Assessment - Corridor
Mapping (Landscape Context)

File ref. 10559 E Figure 5 OMP NB BPA Context D

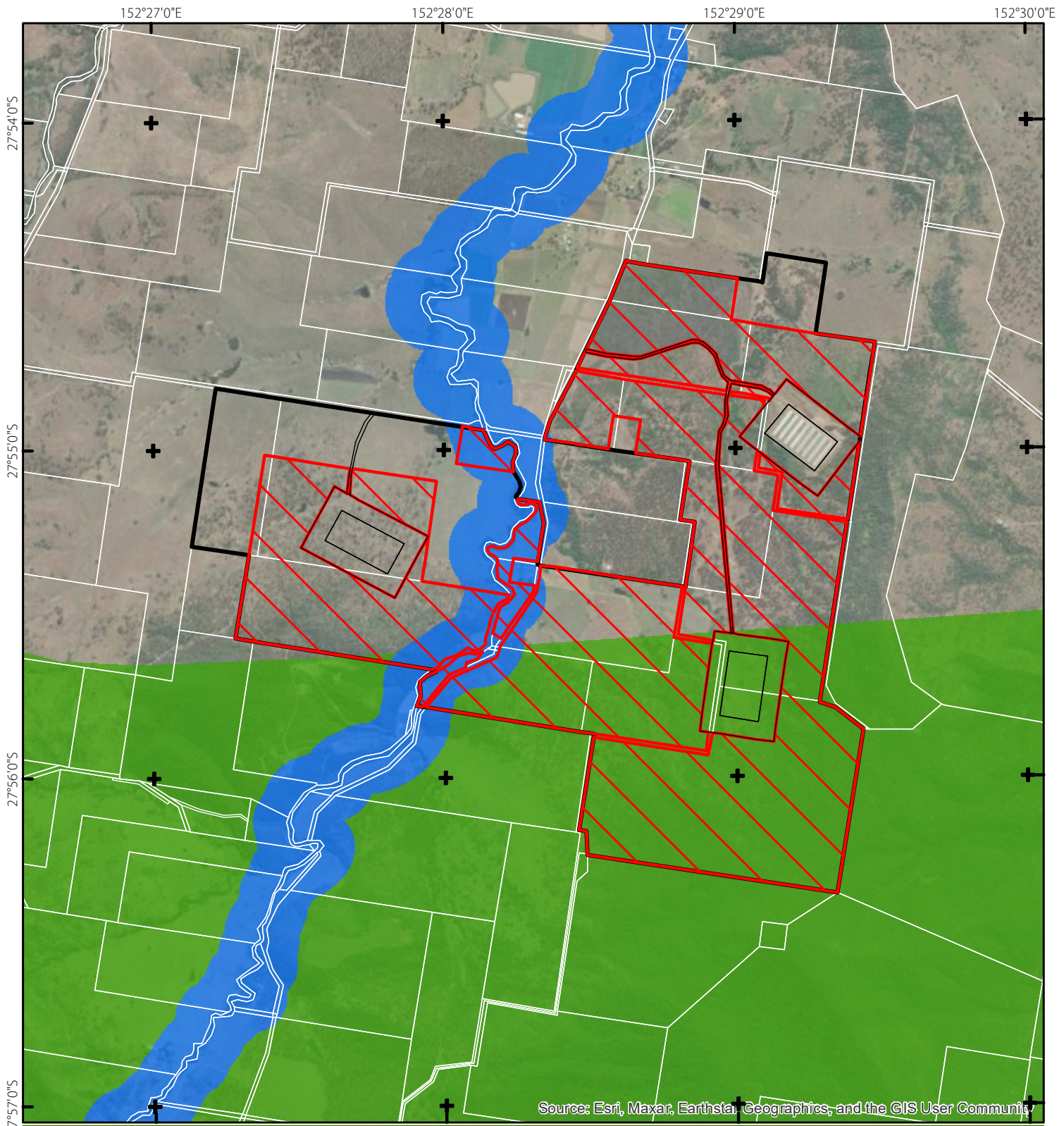
Date 27/10/2025

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Layer Source: © State of Queensland 2025



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend

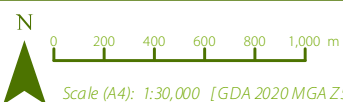
- Qld DCDB
- Proposed Poultry Shed, 100m buffer area & access tracks
- Offset Properties
- Offset Area
- State Corridor Buffer
- Regional Corridor Buffer

Figure 6

South East Queensland Bioregional
Planning Assessment - Corridor
Mapping (Site Context)

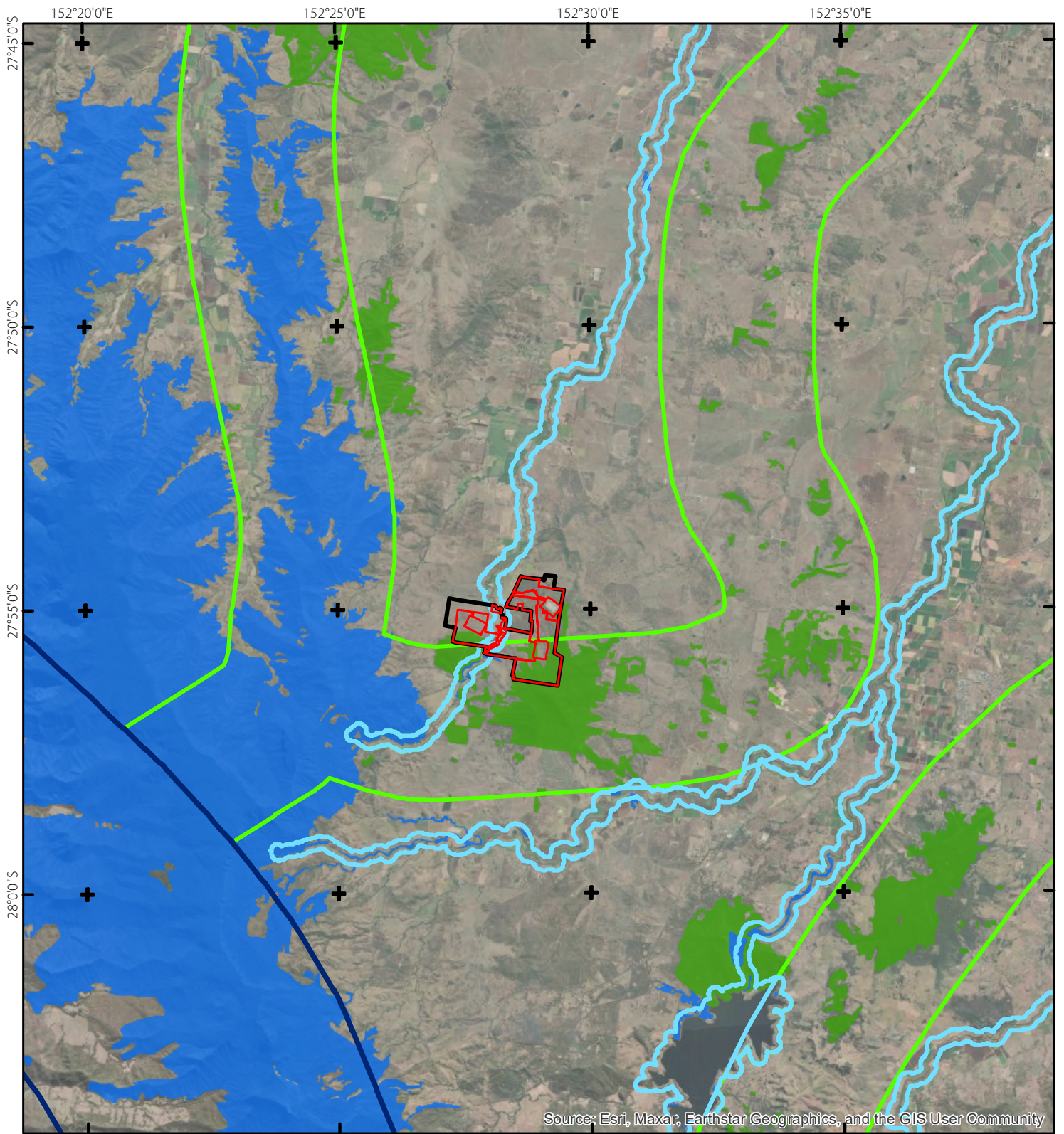
File ref. 10559 E Figure 6 OMP NB BPA Site D
Date 27/10/2025
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Scale (A4): 1:30,000 [GDA 2020 MGA Z56]





Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend

- Qld DCDB
- Offset Properties
- Offset Area
- State Corridor (Terrestrial)
- State Corridor (Riparian)
- Regional Corridor (Terrestrial)
- State Vegetation
- Regional Vegetation

Figure 7

South East Queensland Bioregional
Planning Assessment - Corridor Mapping

File ref. 10559 E Figure 7 OMP NB BPA Corridors D
Date 27/10/2025
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Montauban Environmental Offsets

Layer Source: © State of Queensland 2025

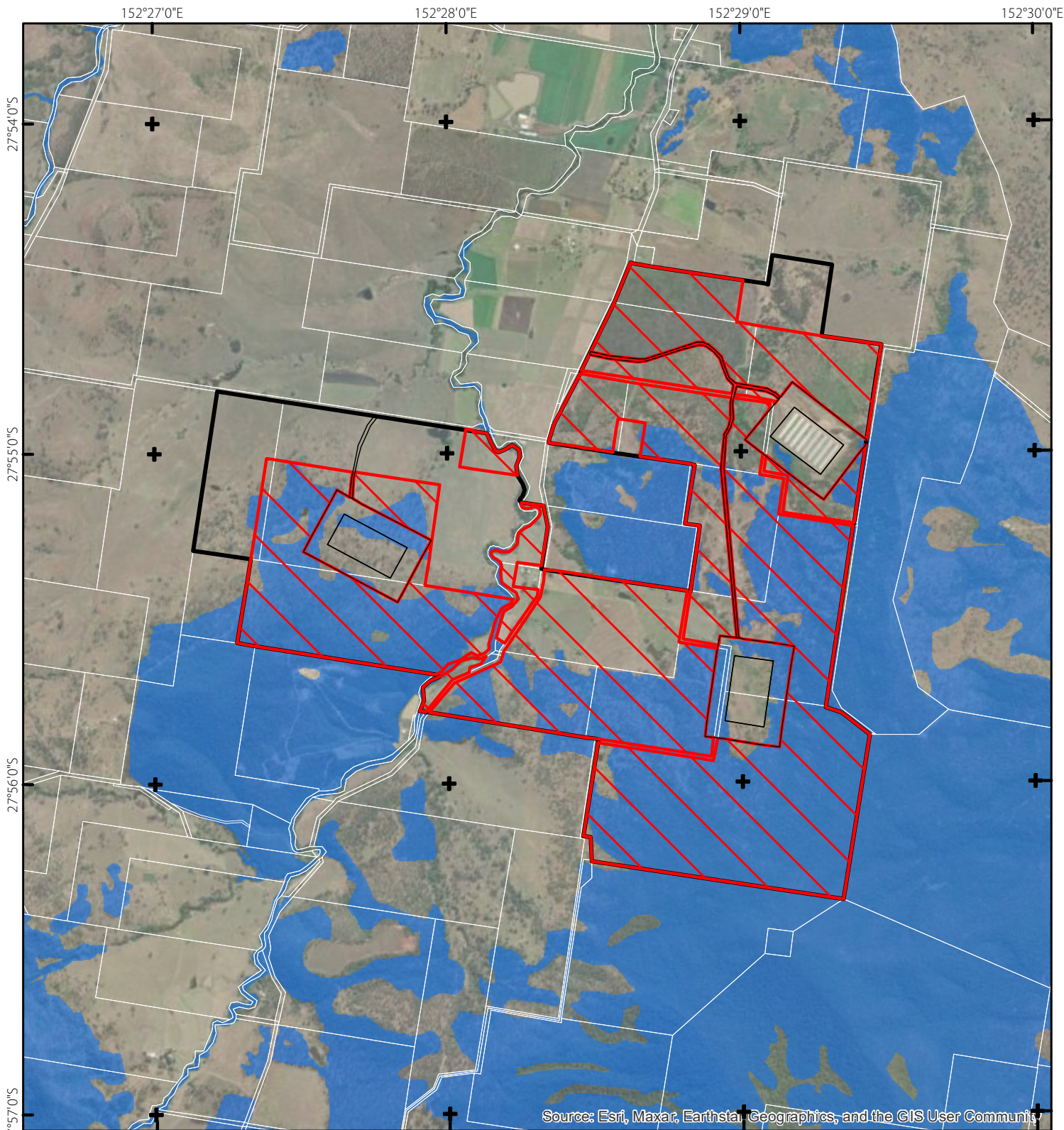
REGIONAL AND SITE CONTEXT

Surrounding state and local ecological value mapping to the offset site is considered significant to the conservation benefits it can provide. Locally the Rosevale offset property builds on a large cluster of vegetation mapped as ‘Essential Habitat’ for the Koala species by the Queensland Government (**Figure 8**). The mapping of vegetated strands and fragments within the Rosevale offset property and surrounding the offset property strongly indicates that in providing protected and created habitat through this project it will ultimately also form part of the essential habitat network for the Koala species. Where vegetation does occur on the offset property it is mapped as Core Koala Bushland under the Queensland Government’s South East Queensland Koala Conservation Strategy – 2020-2025 (**Figure 9**). Only a portion of ROA 2 contains KHA mapping however there are more significant patches surrounding. The revegetation and management of ROA 2 will therefore benefit surrounding KHA by reducing fragmentation and increasing safe fauna movement.

The unique characteristics of soil, land zone, topography, elevation and geographical region indicate that additional habitat creation through the offset works will also be mappable as Core Koala Bushland within 12-15 years of planting. Under the Scenic Rim Regional Council’s Biodiversity Strategy -2015-2025 the offset property contains a mix of areas mapped as ‘Core Nodes’ and ‘Landscape Linkage’ areas. Therefore, further supporting that uplift of the surrounding unmapped areas will eventually add to the network of connected vegetation and formalise a fauna refuge in perpetuity. In solidifying this area for offset purposes and rehabilitating the area, the Rosevale offset property will help link key stepping-stone nodes, as identified by SRRC, to the very large Main Range and Border Range National Parks (**Figure 10**).

Similarly, Moorang Wildlife Corridor, south of the offset site, forms a direct connection to the vegetation within the Rosevale Offset Property. As of October 2022, Scenic Rim Regional Council committed to a 50 percent increase in funding for their Environmental Grants Program. This budget increase benefits community groups and landholders that are working towards enhancing the Scenic Rims natural environment, preserving habitat for rare and threatened species and improving the quality of Scenic Rim waterways. This is inclusive of landholders who are working to reduce/eliminate wild pigs spreading weed seeds and eroding riparian areas in the Moorang area. Additionally, in April 2023, SRRC also introduced a biannual baiting program for Wild Dog controls where large land holdings can more readily access bait to manage feral species. These programs are set up to work most effectively where neighbouring properties coordinate. Therefore, the enhancement of the Rosevale Offset Site via the Project and intended management action of feral animal control coincides with SRRC Biodiversity Strategy and stops the vegetation on-site becoming a haven for feral animals.





Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend






-  Qld DCDB
-  Proposed Poultry Shed, 100m buffer area & access tracks
-  Offset Properties
-  Offset Area
-  VMA Essential Habitat

Figure 8

Qld Vegetation Management
Essential Habitat

File ref. 10559 E Figure 8 OMP NB EHAB D
Date 27/10/2025
Project Aratula OMP 9383

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Scale (A4): 1:30,000 [GDA 2020 MGA Z56]



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152°28'0"E

152°29'0"E

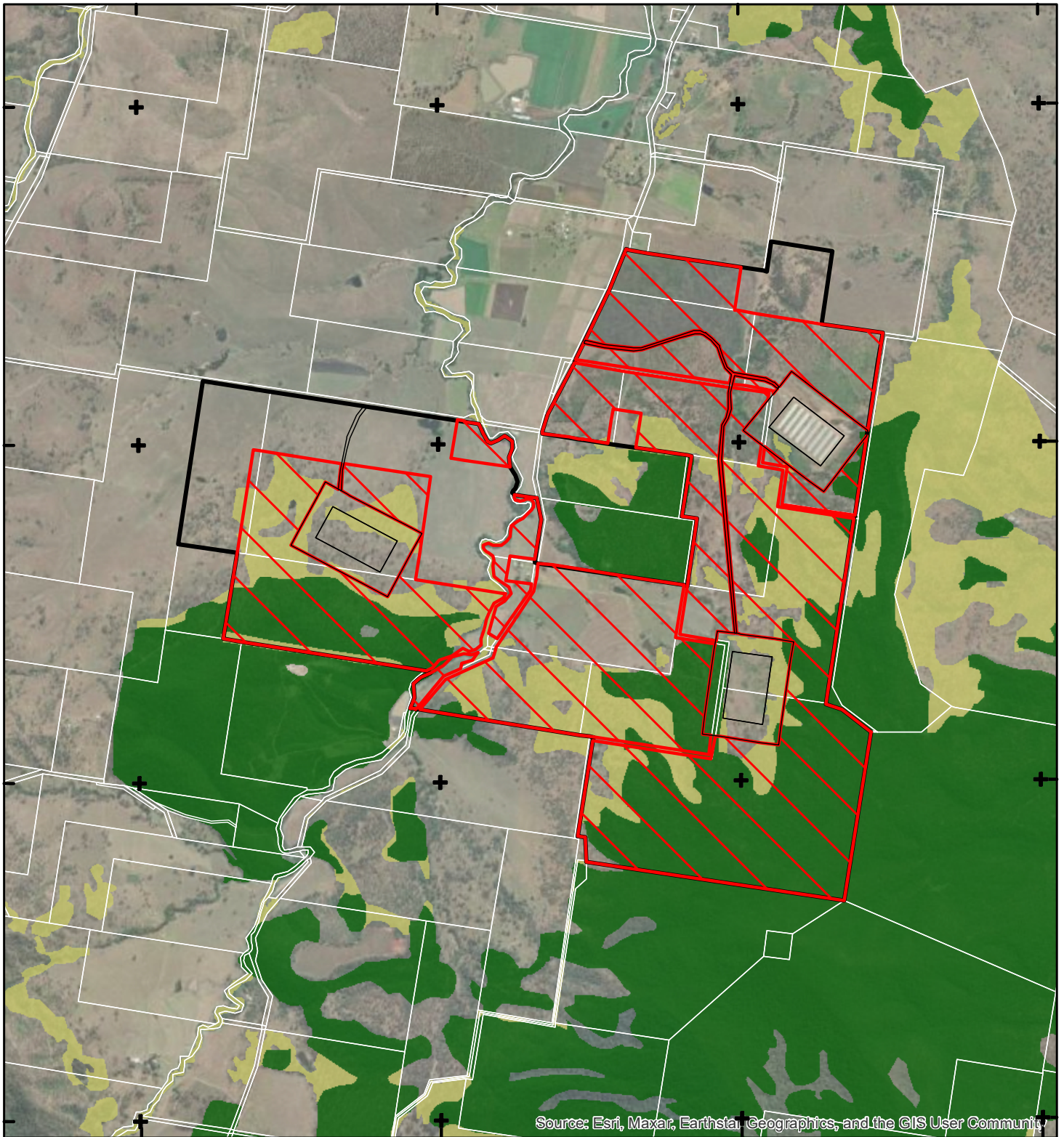
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27°54'0"S

27°55'0"S

27°56'0"S

27°57'0"S



Legend







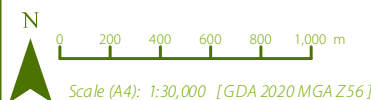
-  Qld DCDB
 -  Proposed Poultry Shed, 100m buffer area & access tracks
 -  Offset Properties
 -  Offset Area
- Koala Habitat Areas**
-  Core Remnant Koala Habitat Areas
 -  Core Regrowth Koala Habitat Areas

Figure 9

Qld Koala Habitat Areas

File ref. 10559 E Figure 9 OMP NB Koala 2019 D
Date 27/10/2025
Project Aratula OMP 9383

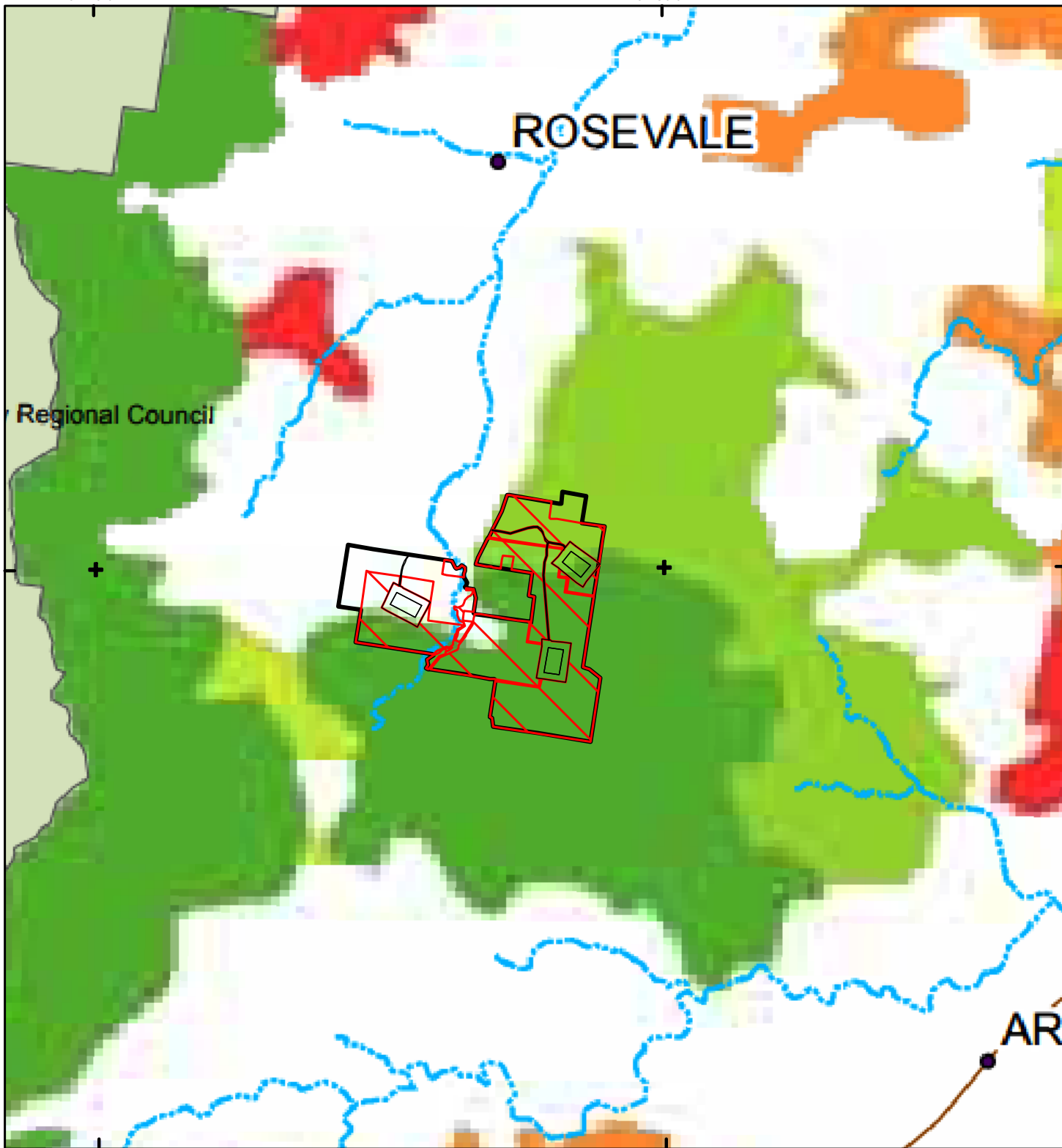
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152°25'0"E

152°30'0"E

27°55'0"S



Legend

-  Proposed Poultry Shed, 100m buffer area & access tracks
-  Offset Properties
-  Offset Area
-  Core
-  Core Node
-  Grassy Woodland
-  Woodland Node
-  Stepping Stone

Figure 10

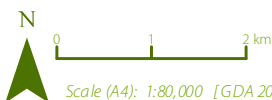
Scenic Rim Regional Council
Biodiversity Management Framework
for the Scenic Rim Region

File ref. 10559 E Figure 10 OMP NB Local Mapping D

Date 27/10/2025

Project Aratula OMP 9383

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Montauban Environmental Offsets

Layer Source: © State of Queensland 2025

CURRENT AND HISTORICAL VALUE CONTEXT

Analysis of threatened species records and regional ecosystem mapping across the offset site and surrounding area presents positive data on the potential for the region to provide significant conservation benefit to MNES listed species.

Koala

Within the offset property, vegetated areas contain a dominant mix of locally important koala tree species as listed in Table 35 of the ANU A review of Koala Habitat Assessment Criteria and Methods (8.17 South East QLD – Table 35 – Page 58). The Rosevale Offset Area 2 (ROA2) contains a mix of vegetation and habitat types linking to external vegetation patches (**Plan 4a**). A combination of existing Koala records from Wildnet and Atlas of Living Australia (**Plan 4b**), evidence of Koala usage via SAT surveys and the actual recording of the species utilising vegetation at the offset property provide strong confidence towards the future role the offset will play for the Koala Species. There is Koala Habitat Area (KHA) mapped within and directly south and west of ROA 2 (**Figure 9**). Adjoining vegetation patches are contained within a proposed offset area for separate EPBC Act projects. Ultimately, improving vegetation coverage and species diversity, and reducing potential threats within ROA 2 as a part of this project is highly conducive to improving habitat for Koala within the region. Restoring vegetation within this area will improve Koala movement opportunities and provide a wider area of foraging and breeding habitat.

Further supporting evidence for the site containing a high potential to support this species is pre-clear mapping (**Figure 11**) and actual on-site vegetation communities indicate the Rosevale Offset contains a broad distribution of the following regional ecosystem types (Code plus Dominant Species), which are dominated by Koala habitat and foraging trees:

12.3.3 – *Eucalyptus tereticornis*, *Eucalyptus crebra*, *Eucalyptus moluccana*

12.8.17 - *Eucalyptus melanophloia*, *Eucalyptus crebra*, *Eucalyptus tereticornis*, *Corymbia intermedia*

12.8.16 – *Eucalyptus melliodora*, *Eucalyptus crebra*, *Eucalyptus tereticornis*

12.8.14a - *Eucalyptus moluccana*, *Eucalyptus tereticornis*, *Eucalyptus siderophloia*

Grey-headed Flying-fox

Underlined flora species in the above regional ecosystems are additionally listed as significant food plants for the Grey-headed Flying-fox (Eby & Law 2008). ROA 2 and the surrounding landscape contains over 500 ha of foraging vegetation for the species (refer **Plan 5b**). Therefore, improvement of ROA 2 via management measures proposed with this project, re-planting, stock management, pest control and removal of internal barbwire fences where stock has been removed, has the potential to increase safe foraging habitat for Grey-headed Flying-fox (GHFF) and protect it in perpetuity. This species is known to the region, with GHFF recorded foraging within vegetation associated with the approved Aroona Offset Site (EPBC 2016/7817), which is 5 km north of ROA 2. Furthermore, the Rosevale offset property located approximately 14 km from the Mount French GHFF roosting camp [288], 31 km from the Laidley Plainlands Roost [372] and 36km from the Kooralbyn roost [551] (refer **Plan 5a**). Records under the National Flying Fox web viewer vary with the most recent surveys confirmed at the Kooralbyn and Laidley site. All the sites, excluding Laidley, which is under Ipswich City



Council jurisdiction, are listed as active under the Scenic Rim Regional Council Flying-Fox Management Strategy. The DCCEEW species profile and threats database for GHFF indicates that this species is capable of nightly flights of up to 50 km from their roost to forage in a variety of different feeding areas. Therefore, the surrounding roosts are all within a reasonable distance from the offset area that it is likely GHFF would forage within the current foraging habitat present surrounding ROA 2.

Greater Glider

The vegetated areas and pre-clear regional ecosystems occurring on the offset property are considered ‘habitat’ for the Greater Glider as per the Conservation Advice (DCCEEW 2022). Further, the variety of vegetation species is considered to provide suitable foraging habitat for the species, and if structural composition permits, suitable denning habitat.

It is important to note that although the nearest sighting of a Greater Glider is located to the west in association with the Main Range National Park, suitable habitat with vegetated gullies and steep slopes adjoins the south-eastern aspect of the offset property (refer **Plan 6a** to **Plan 6c**). Furthermore, the species has been recorded within the site (refer **Appendix B** and **Plan 6a4**). It is therefore anticipated that the Greater Glider would inhabit and reside within this vegetation with potential to move through the vegetated portions of the offset site. Improvement of the ecological values and vegetation as a part of this project would initially improve connectivity and movement opportunities for Greater Glider and ultimately increase the potential range for this species.

Swift Parrot and Regent Honeyeater

The Swift Parrot and Regent Honeyeater have a preference for the following tree species within the South East Queensland (SEQ) region:

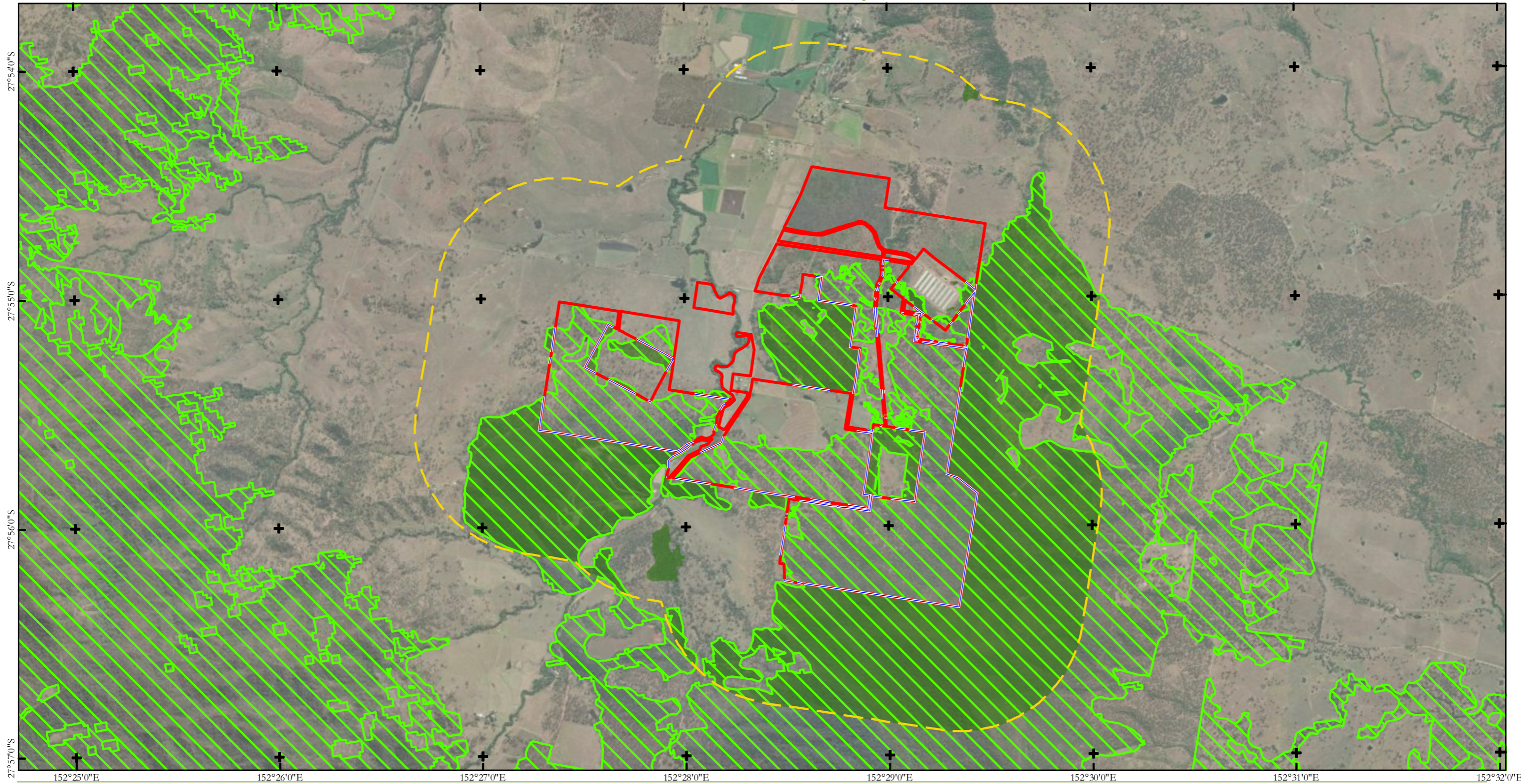
- *Eucalyptus melliodora* (Yellow Box)
- *Eucalyptus tereticornis* (Forest Red Gum)
- *Corymbia citriodora* (Spotted Gum)
- *Eucalyptus robusta* (Swamp Mahogany)
- *Eucalyptus pilularis* (Blackbutt)

Within the offset property, two of the five species (*E. melliodora* and *E. tereticornis*) occur as dominant species within vegetation communities, while *C. citriodora* also occurs within the property as a sub-dominant species.

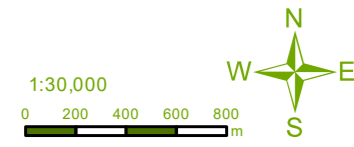
Sightings of the bird species typically occurs further south in the Hunter Valley region of NSW, with sporadic occurrences in the Warwick region and even rarer sightings within the SEQ region (refer **Plan 7a** to **Plan 8b**). The offset property is located approximately 50 km north-east of Warwick. Through the restoration and rehabilitation of suitable vegetation communities for the Swift Parrot and Regent Honeyeater the availability of foraging resources for the two species will be expanded within the SEQ region and importantly, within close proximity of Warwick where the birds are known to occur.



4a. Koala Context Assessment - Offset Property



Montauban Environmental Offsets








1:30,000
Coordinate System: GDA2020 MGA Zone 56

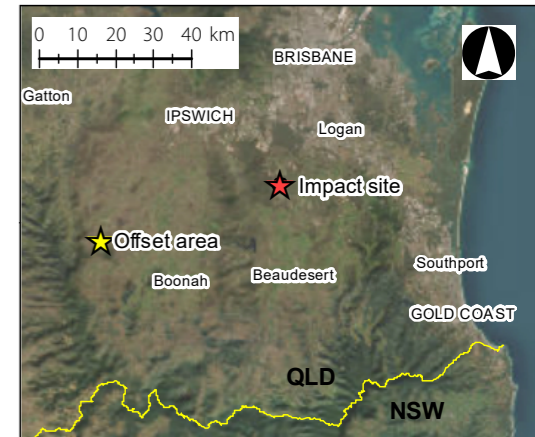
References:
© State of Queensland, 2022
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 27/10/2025
10559 E 04a OMP NB Offset Koala Context Assessment F

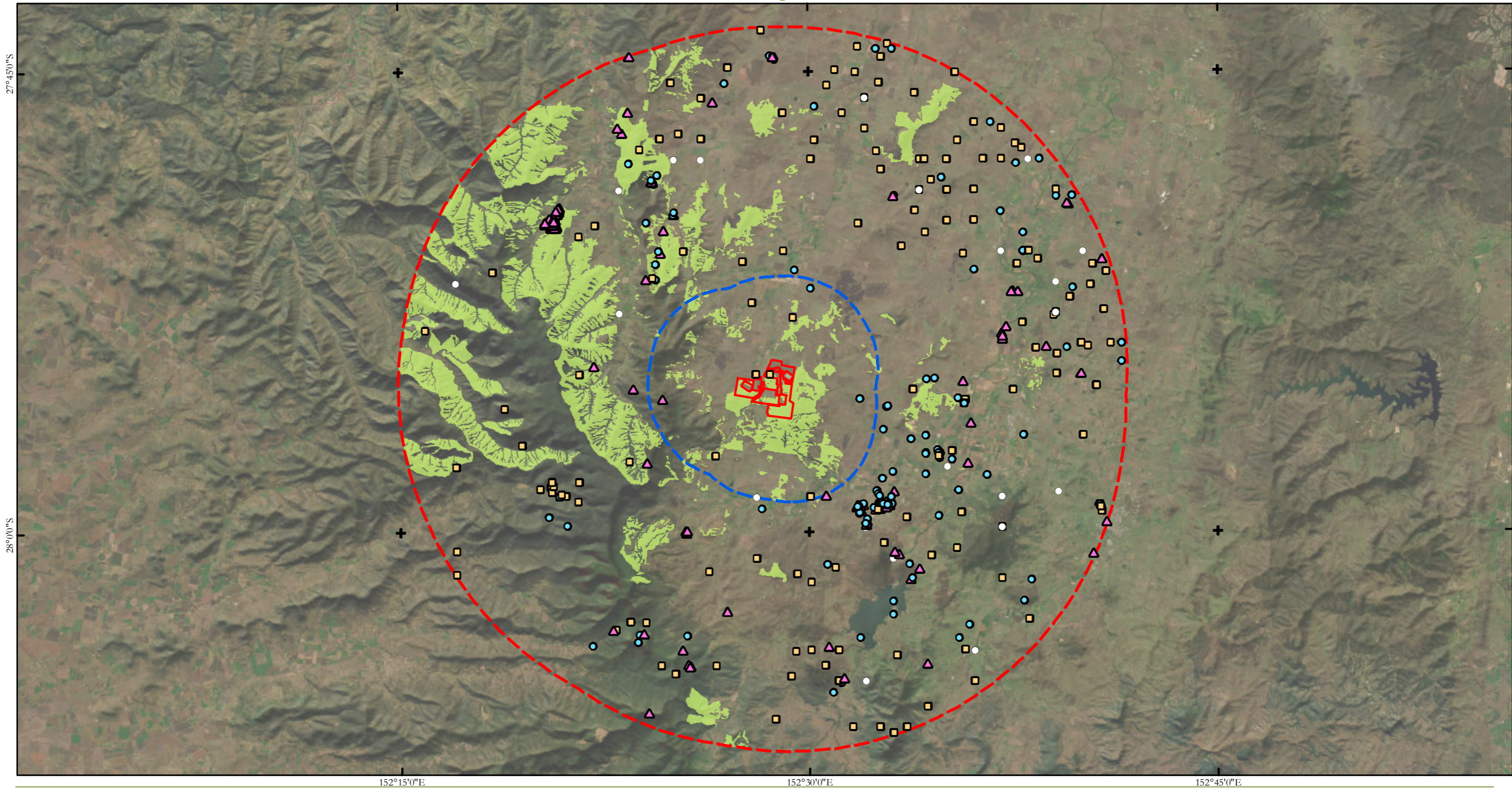
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Legend

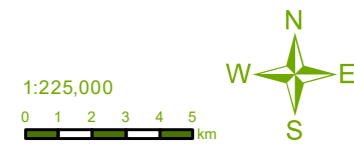
-  Offset Area
-  1km buffer
-  Percentage of Offset Area boundary length supporting a koala critical habitat connection off and on site - 39%
-  Percentage of Koala Critical habitat within 1km of Offset Area (44%)
-  Size of Koala critical habitat patch >200m corridor connectivity (>500 ha)



4b. Koala Context Assessment - Wider Region



Montauban Environmental Offsets



Coordinate System: GDA2020 MGA Zone 56

References:
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 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 27/10/2025
 10559 E 04b OMP NB Koala Regional Context Assessment F

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Legend

- Offset Area
- 5km Offset Area Buffer
- 20km Offset Area Buffer

Potential Koala habitat within 20km of offset site

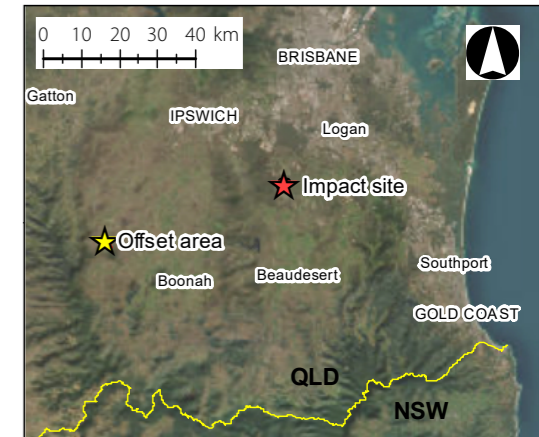
Koala Records within 20km of Site (ALA, 02.2024)

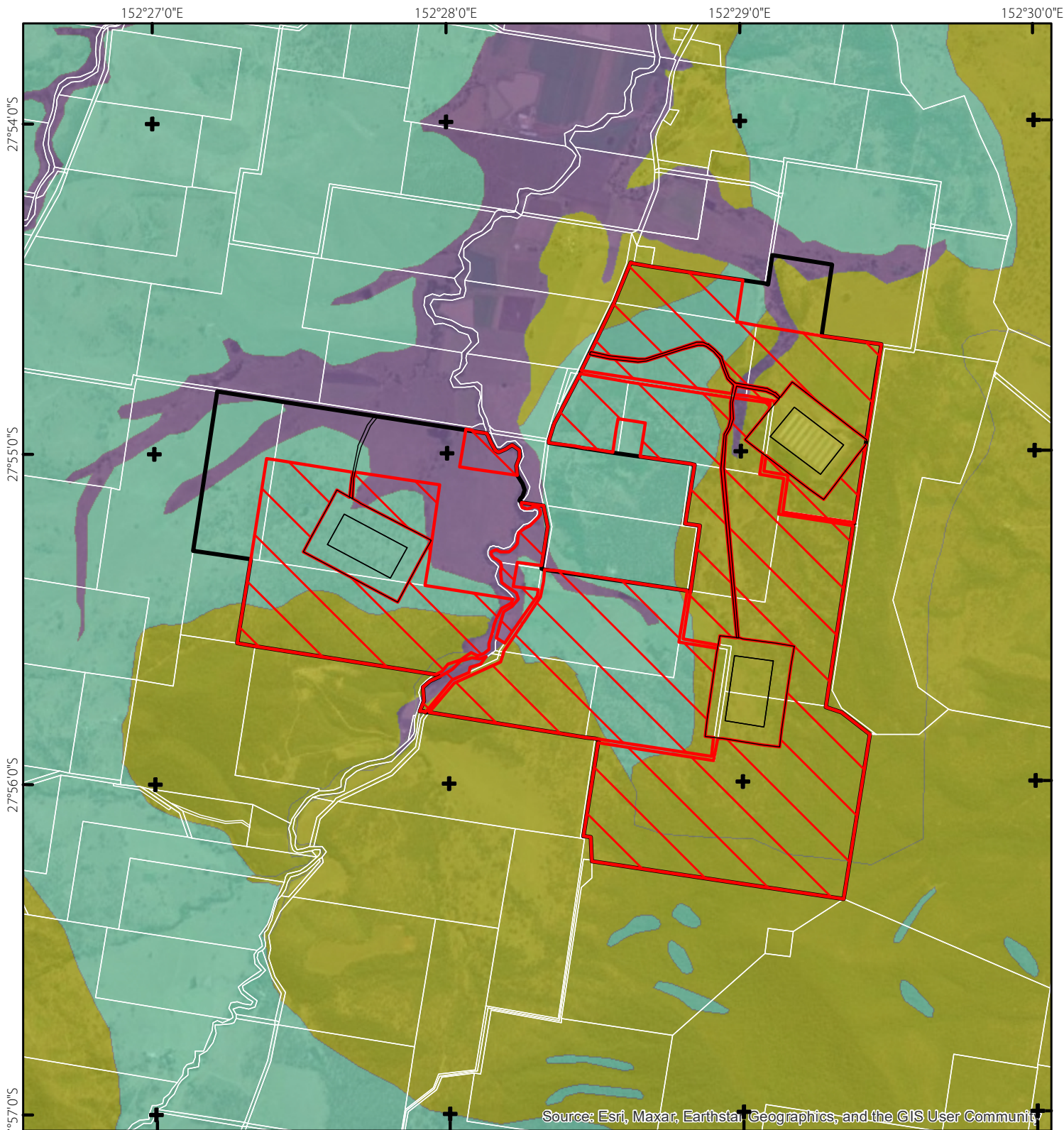
▲ Koala (*Phascolarctos cinereus*) Records within 20km of Offset Area recorded within the last 5 years - 234

● Koala (*Phascolarctos cinereus*) Records within 20km of Offset Area recorded between 5 and 20 years ago - 149

○ Koala (*Phascolarctos cinereus*) Records within 20km of Offset Area recorded without a sighting date - 60

Koala (*Phascolarctos cinereus*) Records within 20km of Offset Area recorded over 20 years ago - 176





Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend

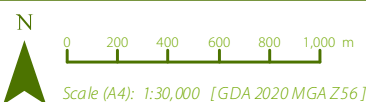
- | | |
|---|---|
| Qld DCDB | Biodiversity Status of Pre-Clear Regional Ecosystems |
| Proposed Poultry Shed, 100m buffer area & access tracks | Endangered |
| Offset Properties | Of Concern |
| Offset Area | Not of Concern |

Figure 11

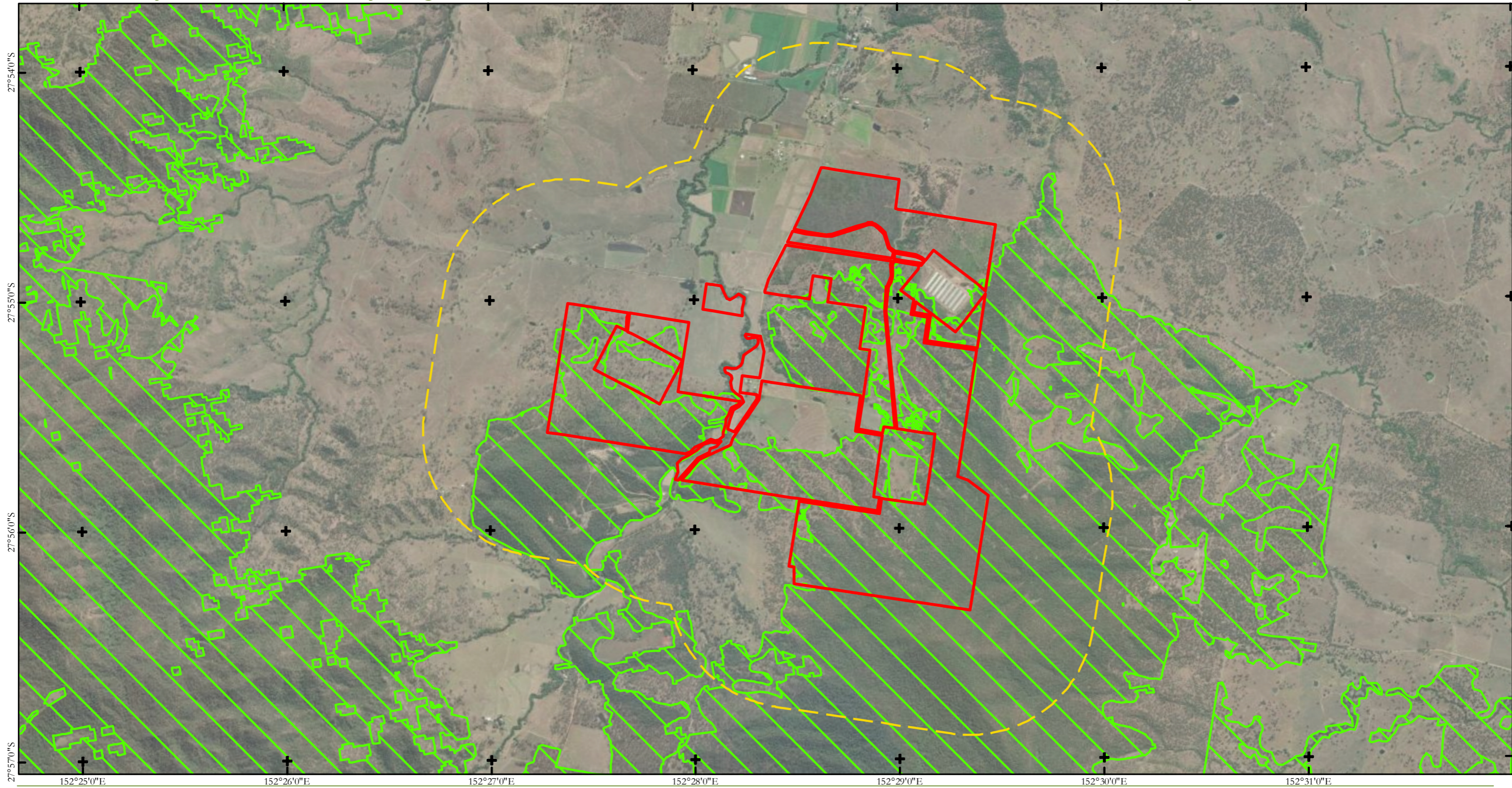
Qld Pre-Clear Vegetation and Biodiversity Status Mapping

File ref. 10559 E Figure 11 OMP NB PreClear D
Date 27/10/2025
Project Aratula OMP1

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5a. Grey-headed Flying-fox Context Assessment - Offset Property



Montauban Environmental Offsets




1:30,000
 0 200 400 600 m
 Coordinate System: GDA2020 MGA Zone 56

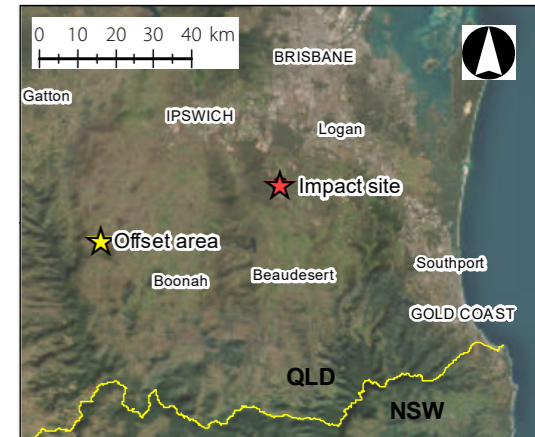
References:
 © State of Queensland, 2022
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 27/10/2025
 10559 E 05a OMP NB GHFF Context Assessment D

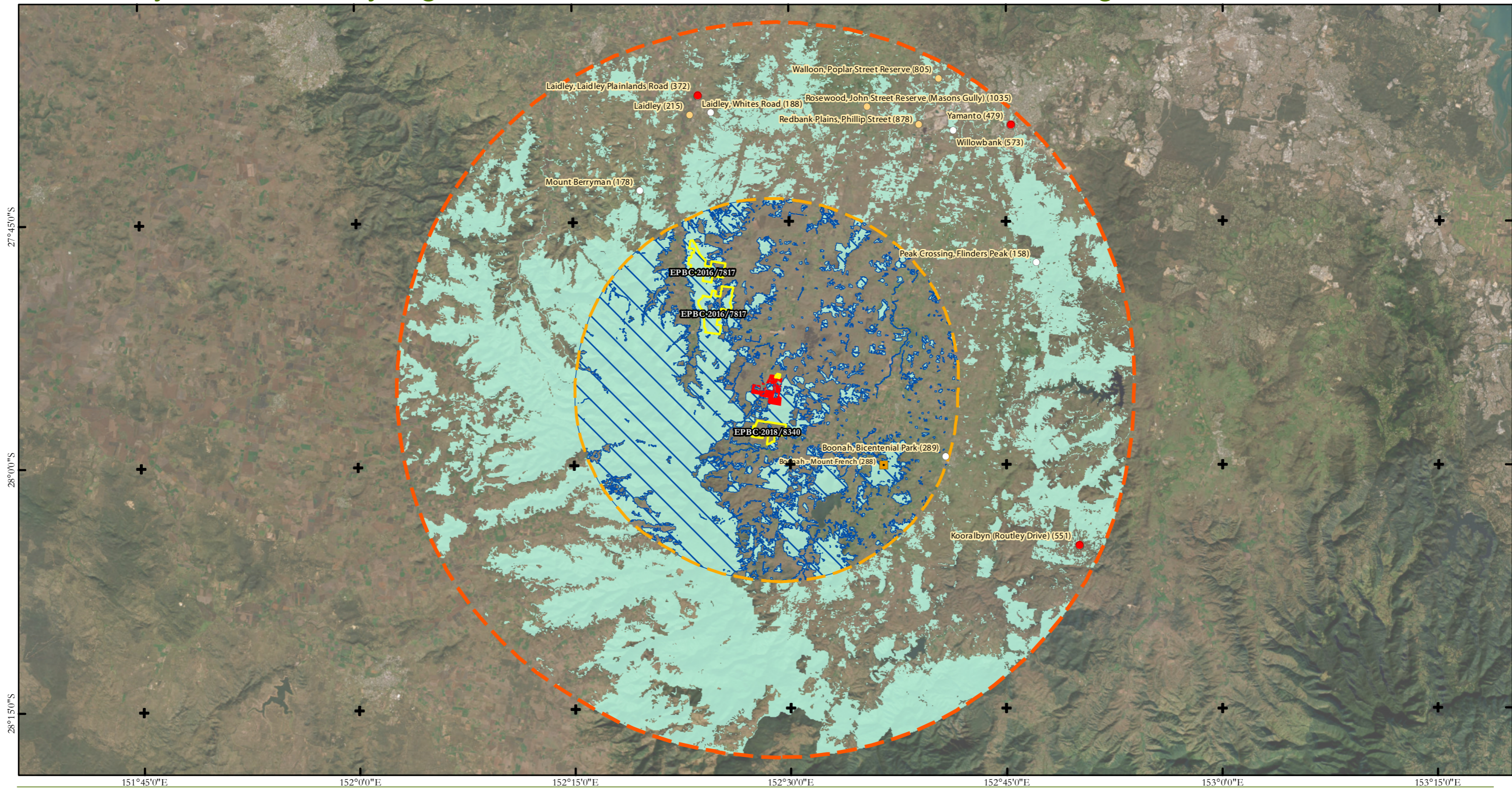
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Legend

-  Offset Area
-  1km buffer
-  Size of foraging habitat patch connectivity (>500 ha)



5b. Grey-headed Flying-fox Context Assessment - Wider Region



Montauban Environmental Offsets

1:425,000

0 2 4 6 8 10 km

Coordinate System: GDA2020 MGA Zone 56

References:
 © State of Queensland, 2022
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

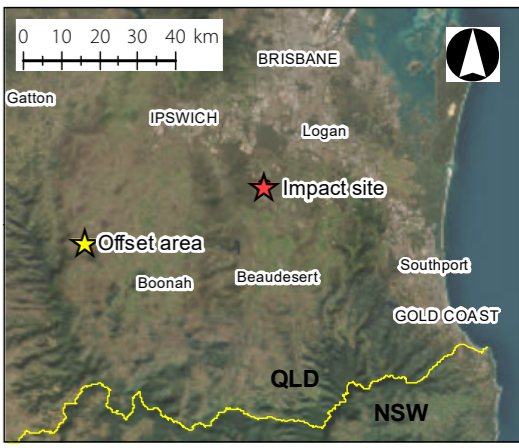
Date: 27/10/2025

10559 E 05b OMP NB GHFF Regional Context Assessment E

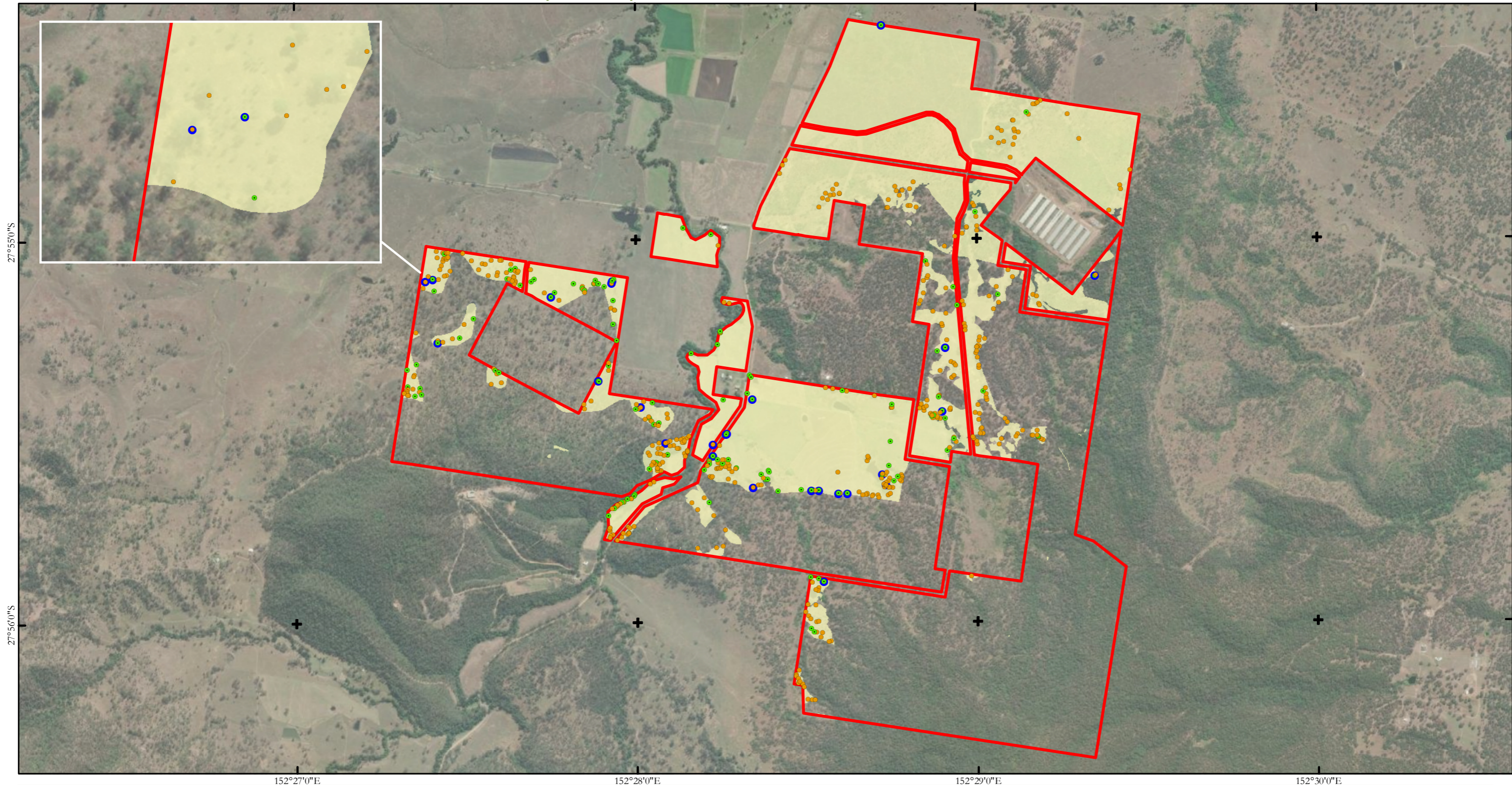
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Legend

- Offset Area
- Offset Area 40km Buffer
- Referral Area 20km Buffer
- ▨ Potential and Known Grey-headed Flying-fox Foraging Habitat Within 20km of Offset Site [45%]
- Offset site 40km buffer area - Potential and Known Grey-headed Flying-fox Foraging Habitat
- Grey-headed Flying Fox roost inactive within recent surveys
- Grey-headed Flying Fox roost active within recent surveys
- Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above
- Nationally significant Grey-headed Flying Fox roost active within recent surveys
- Nationally significant Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above
- Existing Approved Grey-headed Flying-fox Offset
- Grey-headed Flying-fox Roost Active as per Scenic Rim Regional Council Flying-fox Management Strategy



6a-1. Greater Glider Habitat (AU1)



Montauban Environmental Offsets

1:18,000
0 200 400 600 m

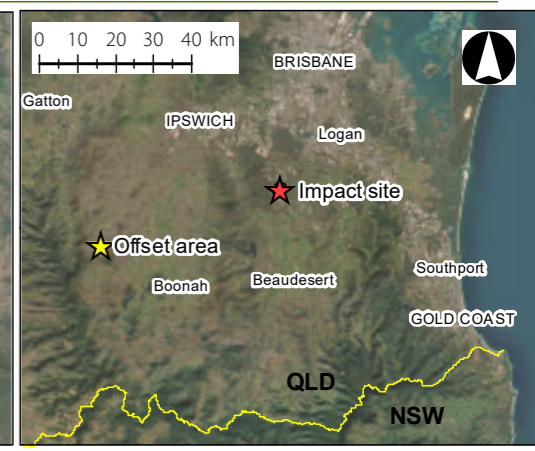
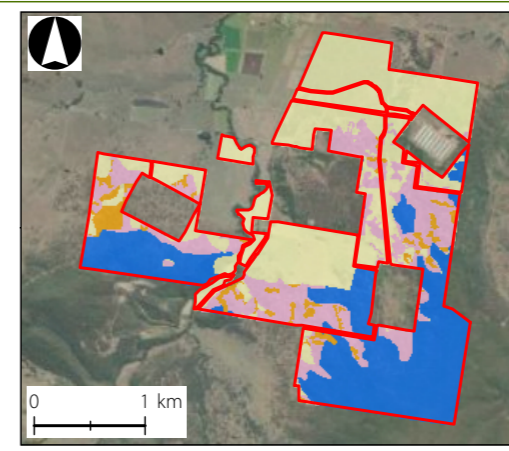
Coordinate System: GDA2020 MGA Zone 56

References:
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 7/11/2025
10559 E 06a1 OMP NB GG AU Habitat C

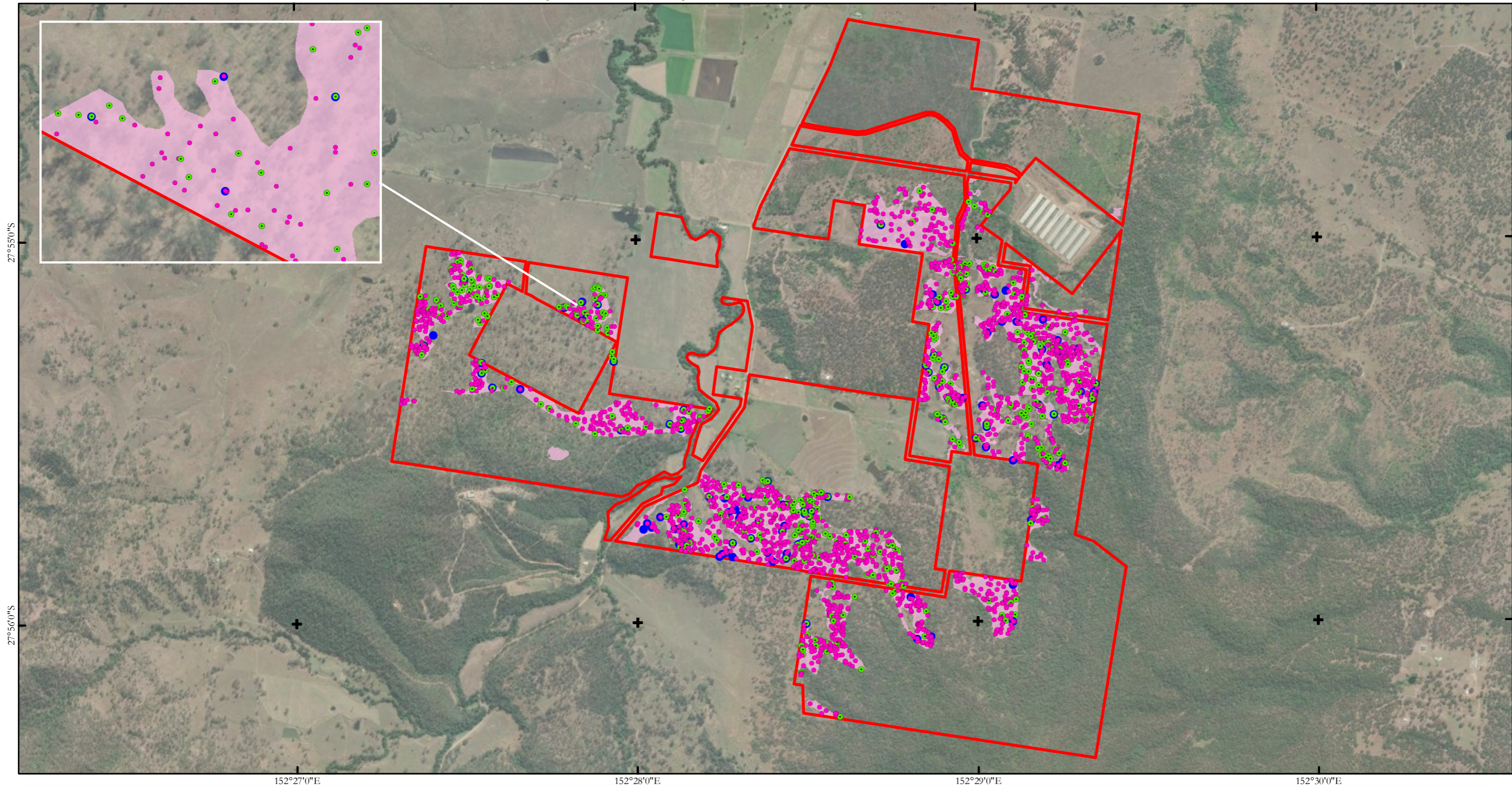
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- Legend**
- Offset Area
 - AU-1: Non-Remnant Vegetation [224.41 ha]
 - Tree with DBH >= 500 mm within AU-1 [count: 119]
 - Tree with DBH < 500mm & >= 300mm within AU-1 [count: 444]
 - Tree with hollows within AU-1 [count: 26]



References:
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

6a-2. Greater Glider Habitat (AU2 Hi)



Montauban Environmental Offsets

Scale: 1:18,000
0 200 400 600 m

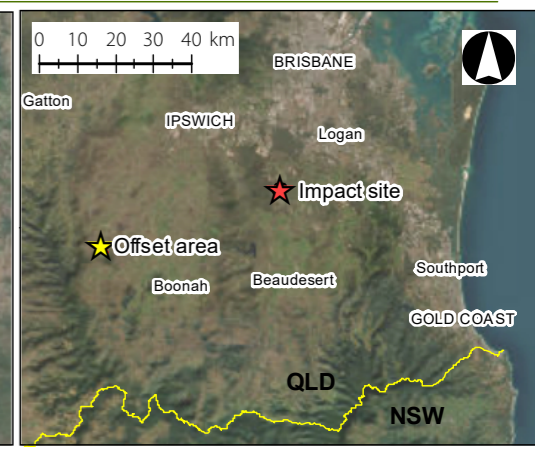
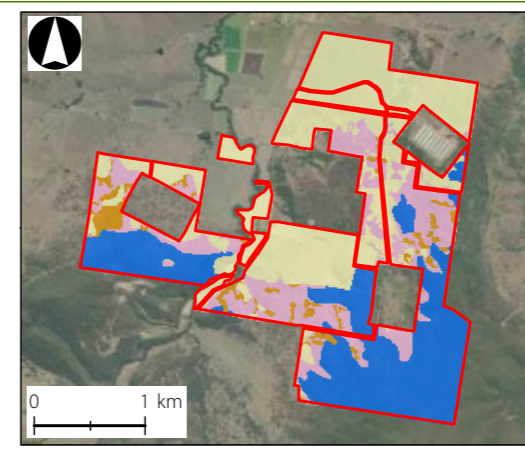
Coordinate System: GDA2020 MGA Zone 56

References:
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 7/11/2025
10559 E 06a2 OMP NB GG AU2 Habitat C

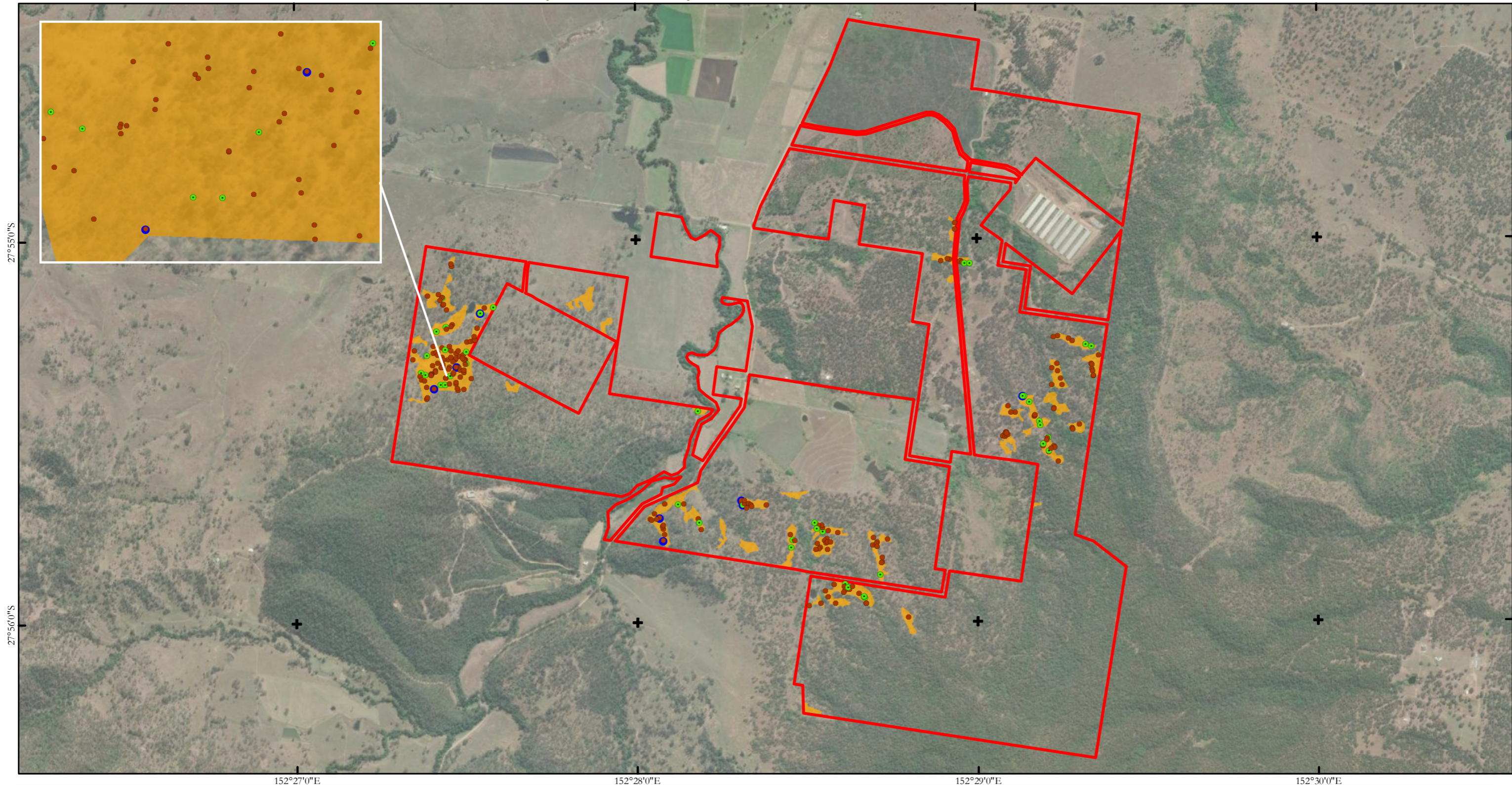
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- Legend**
- Offset Area
 - AU-2: Hi Regrowth Vegetation [111.85 ha]
 - Tree with DBH >math>= 500\text{ mm}</math> within AU-2 Hi [count: 445]
 - Tree with DBH <math>< 500\text{mm}</math> & >math>= 300\text{mm}</math> within AU-2 Hi [count: 2,385]
 - Tree with hollows within AU-2 Hi [count: 114]



References:
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

6a-3. Greater Glider Habitat (AU2 Lo)



Montauban Environmental Offsets

1:18,000
0 200 400 600 m

Coordinate System: GDA2020 MGA Zone 56

References:
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

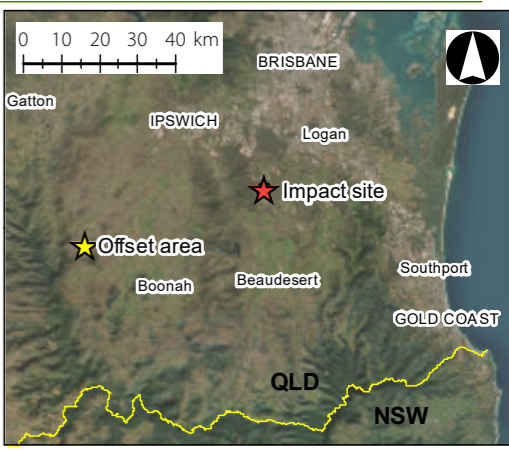
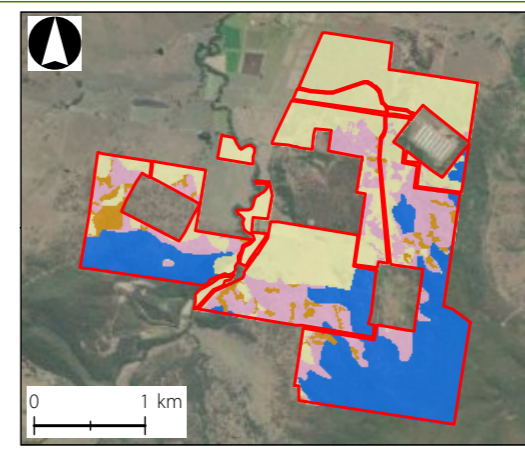
Date: 7/11/2025

10559 E 06a3 OMP NB GG AU3 Habitat C

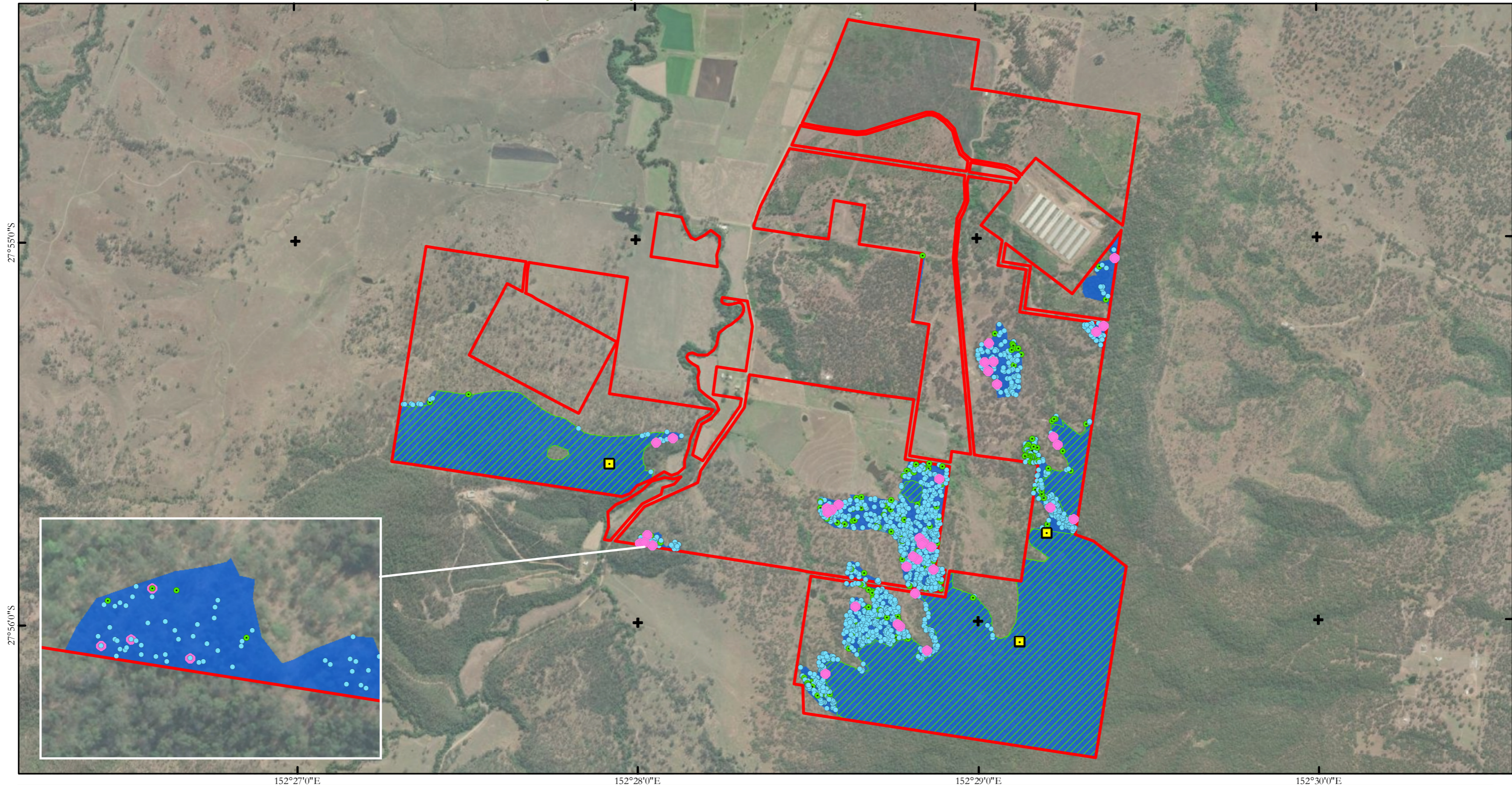
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- Legend**
- Offset Area
 - AU-2: Lo Regrowth Vegetation [25.90 ha]
 - Tree with DBH >math>= 500\text{mm}</math> within AU-2 Lo [count: 41]
 - Tree with DBH <math>< 500\text{mm}</math> & >math>= 300\text{mm}</math> within AU-2 Lo [count: 201]
 - Tree with hollows within AU-2 Lo [count: 8]

References:
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



6a-4. Greater Glider Habitat (AU3)



Montauban Environmental Offsets

1:18,000

0 200 400 600 m

Coordinate System: GDA2020 MGA Zone 56

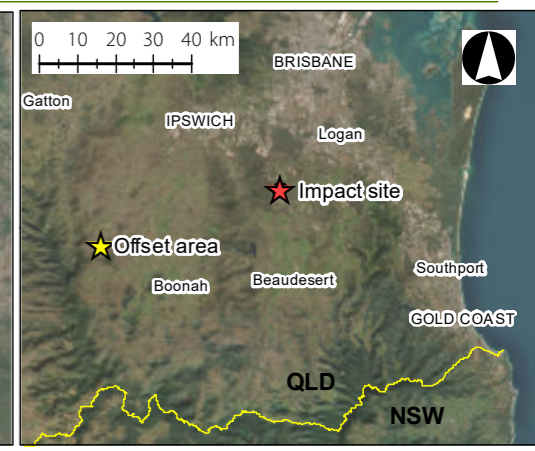
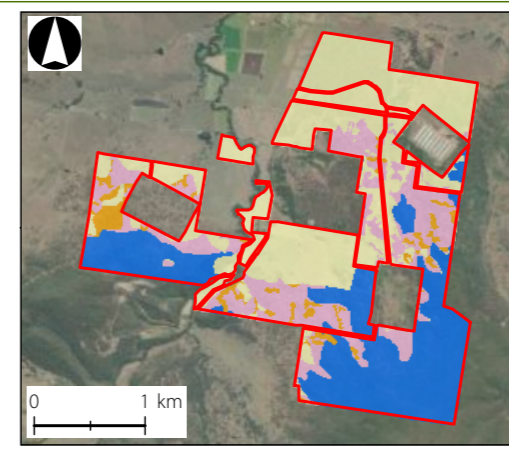
References:
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Date: 7/11/2025

10559 E 06a4 OMP NB GG AU4 Habitat C

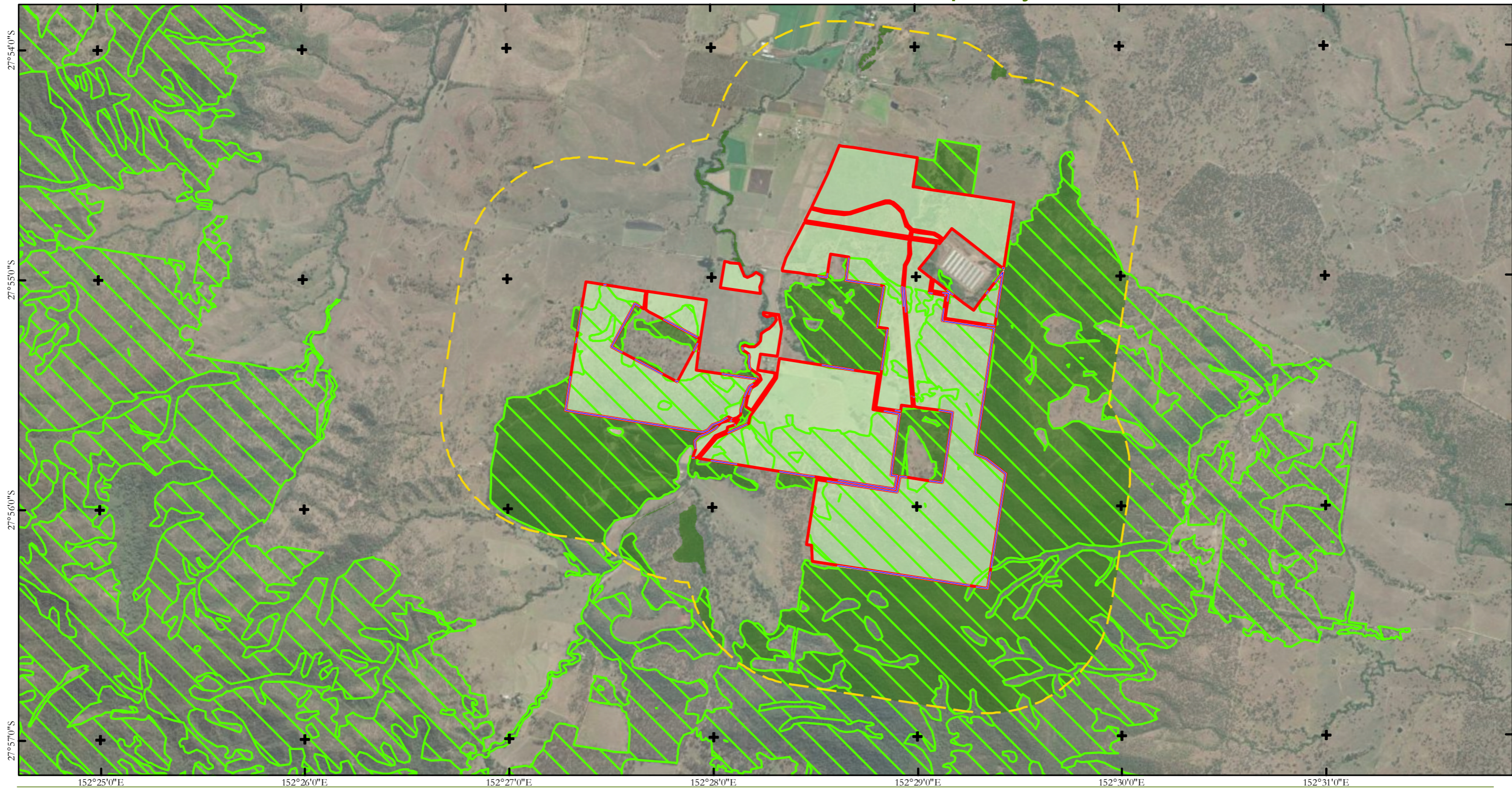
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- Legend**
- Offset Area
 - AU-3: Remnant Vegetation [179.29 ha]
 - AU-3 area with no tree plot [136.41 ha of 179.29 ha]
 - Tree with DBH >= 500 mm within AU-3 [count: 161]
 - Tree with DBH < 500mm & >= 300mm within AU-3 [count: 1,424]
 - Tree with hollows within AU-3 [count: 37]
 - Greater Glider sighting location



References:
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 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

6b. Greater Glider Context Assessment - Offset Property



Montauban Environmental Offsets

1:30,000

0 200 400 600 800 m

Coordinate System: GDA2020 MGA Zone 56

References:
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Date: 27/10/2025
 10559 E 06b OMP NB GG Context Assessment F

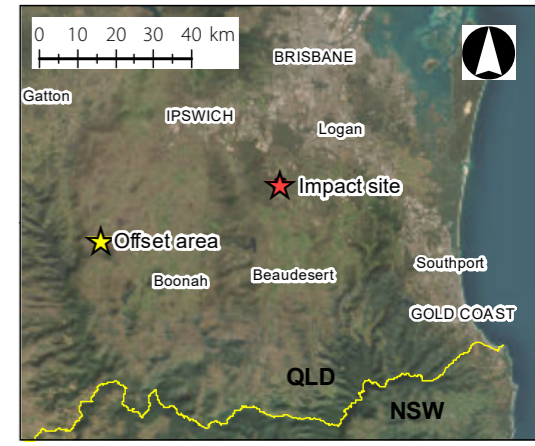
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Legend

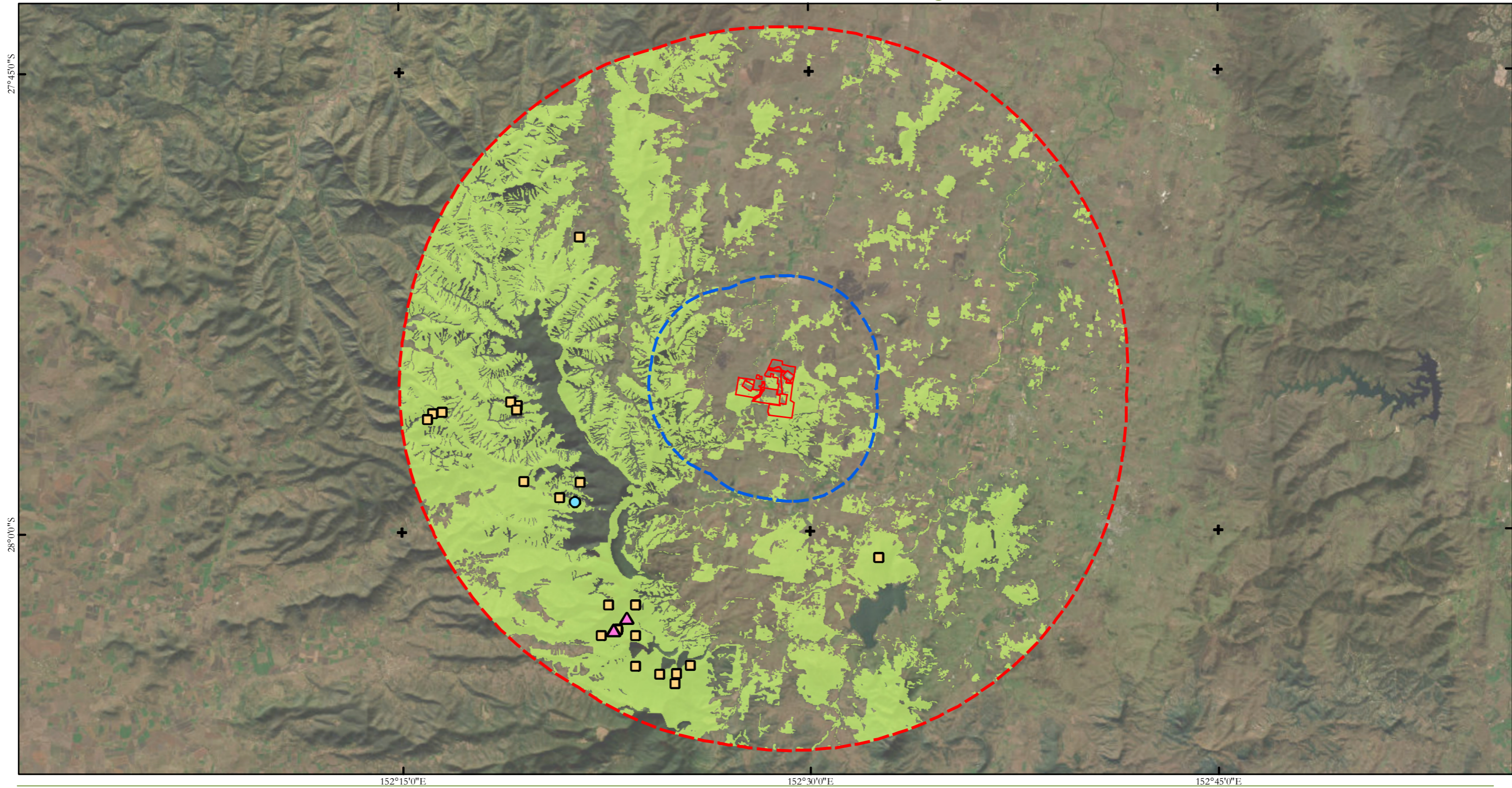
- Offset Area
- 1km buffer
- Potential Greater Glider habitat onsite [540.45 ha]

Percentage of Offset Area boundary length supporting a Greater Glider habitat connection off and on site - 36%

- Percentage of Greater Glider habitat within 1km of Offset Area (42%)
- Size of Greater Glider habitat patch >200m corridor connectivity (>500 ha)



6c. Greater Glider Context Assessment - Wider Region



Montauban Environmental Offsets

1:225,000

0 1 2 3 4 5 km

Coordinate System: GDA2020 MGA Zone 56





References:
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Date: 27/10/2025

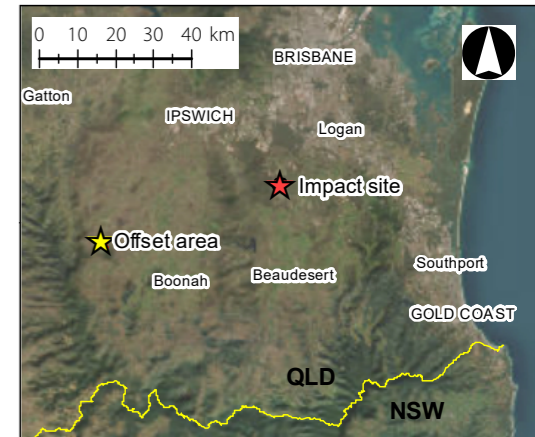
10559 E 06c OMP NB GG Regional Context Assessment F

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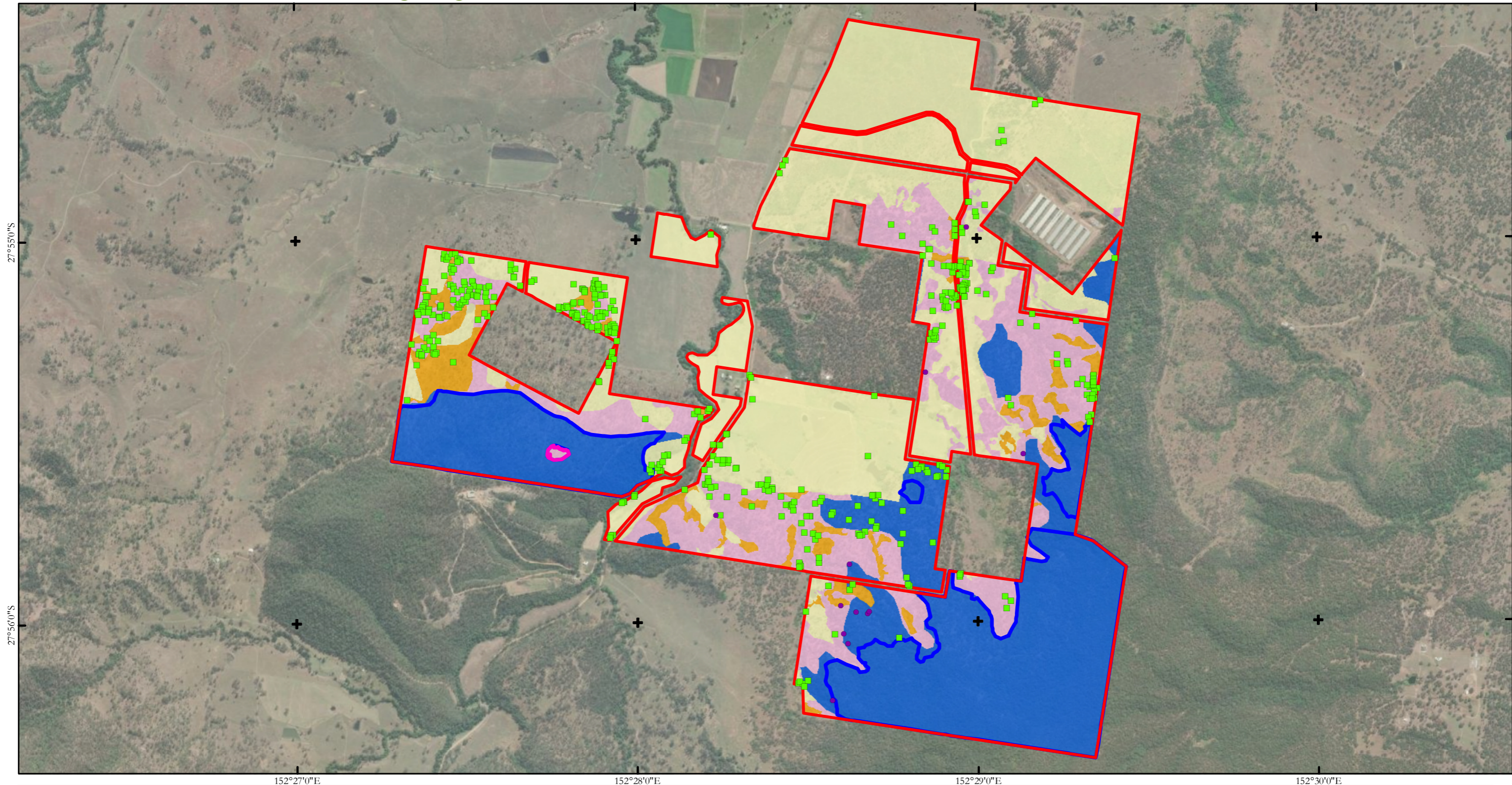
Legend

-  Offset Area
-  5km Offset Area Buffer
-  20km Offset Area Buffer
-  Potential Greater Glider habitat within 20km of offset site

-  Central Greater Glider (*Petauroides armillatus*) Records within 20km of Offset Area recorded over 5 years ago - 32
-  Central Greater Glider (*Petauroides armillatus*) Records within 20km of Site (ALA, 2024)
-  Central Greater Glider (*Petauroides armillatus*) Records within 20km of Offset Area recorded between 5 to 20 years ago - 4
-  Central Greater Glider (*Petauroides armillatus*) Records within 20km of Offset Area recorded within the last 5 years - 3



7a. Swift Parrot Foraging Habitat



Montauban Environmental Offsets

1:18,000
0 200 400 600 m

Coordinate System: GDA2020 MGA Zone 56

References:
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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10559 E 07a OMP NB SP AU Habitat C

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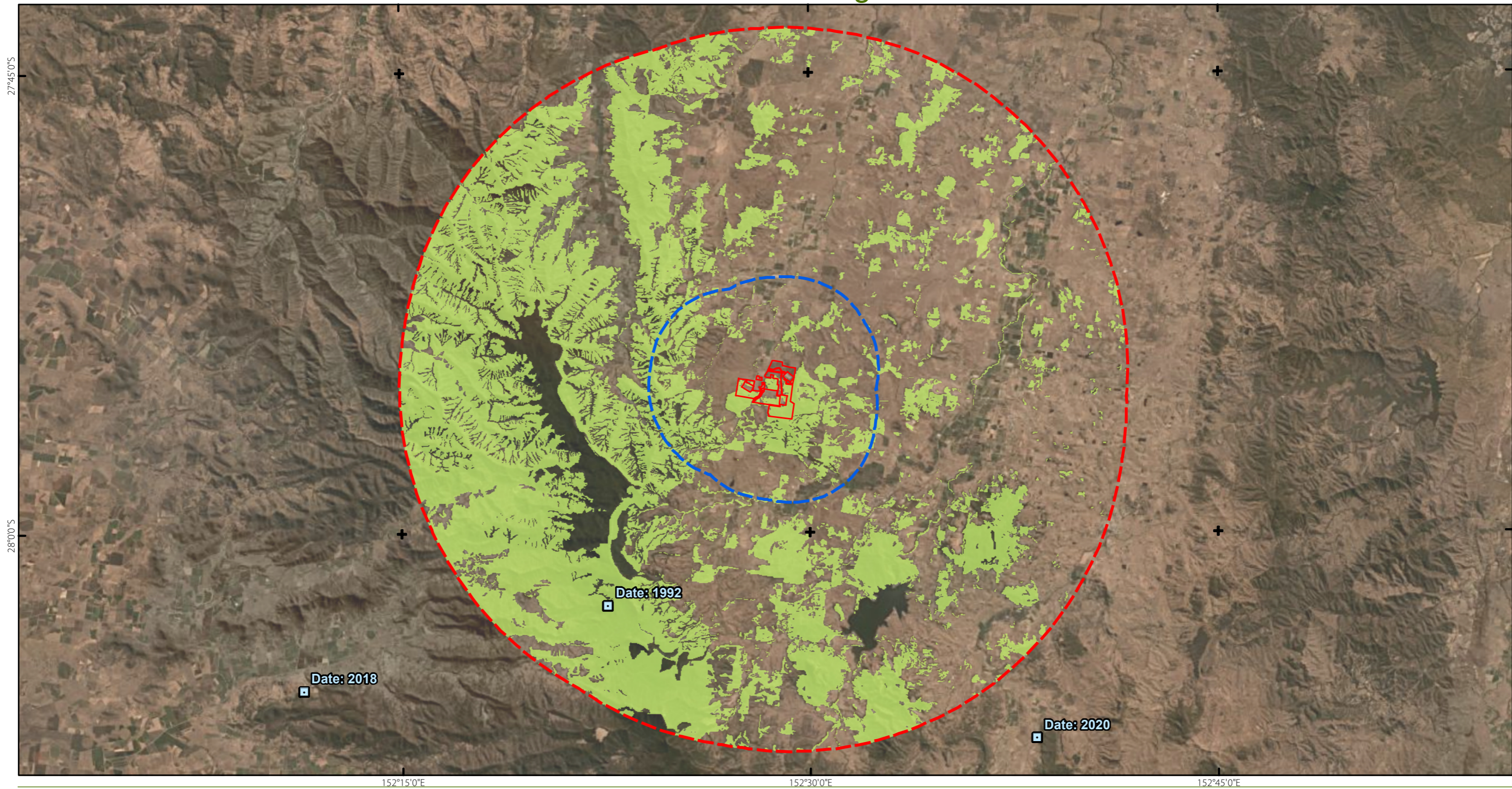
Legend

- Offset Area
- Vegetation Assessment Units (AUs)**
- AU-1: Non-Remnant Vegetation [224.41 ha]
- AU-2: Hi Regrowth Vegetation [111.85 ha]
- AU-2: Lo Regrowth Vegetation [25.90 ha]
- AU-3: Remnant Vegetation [179.29 ha]
- AU-2 Hi area with no tree plot [0.48 ha of 112.27 ha]
- AU-3 area with no tree plot [136.41 ha of 179.29 ha]
- *Eucalyptus tereticornis*
AU-1: count: 112
AU-2 Hi: count: 288
AU-2 Lo: count: 17
AU-3: count: 37
- *Corymbia citriodora*
AU-1: count: 1
AU-2 Hi: count: 4
AU-2 Lo: count: 0
AU-3: count: 7



References:
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

7b. Swift Parrot Context Assessment - Wider Region








References:
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Date: 27/10/2025
10559 E 07b OMP NB SP Regional Context Assessment G

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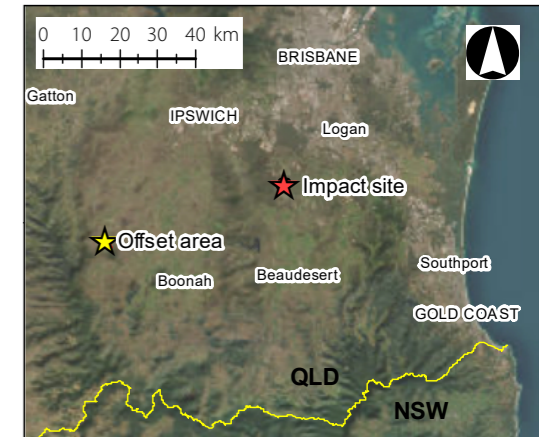
Legend

-  Offset Area
-  5km Offset Area Buffer
-  20km Offset Area Buffer
-  Potential Swift Parrot habitat within 20km of offset site
-  Swift Parrot (*Lathamus discolors*) Records within 20km of Offset Area recorded more than 20 years ago - 1

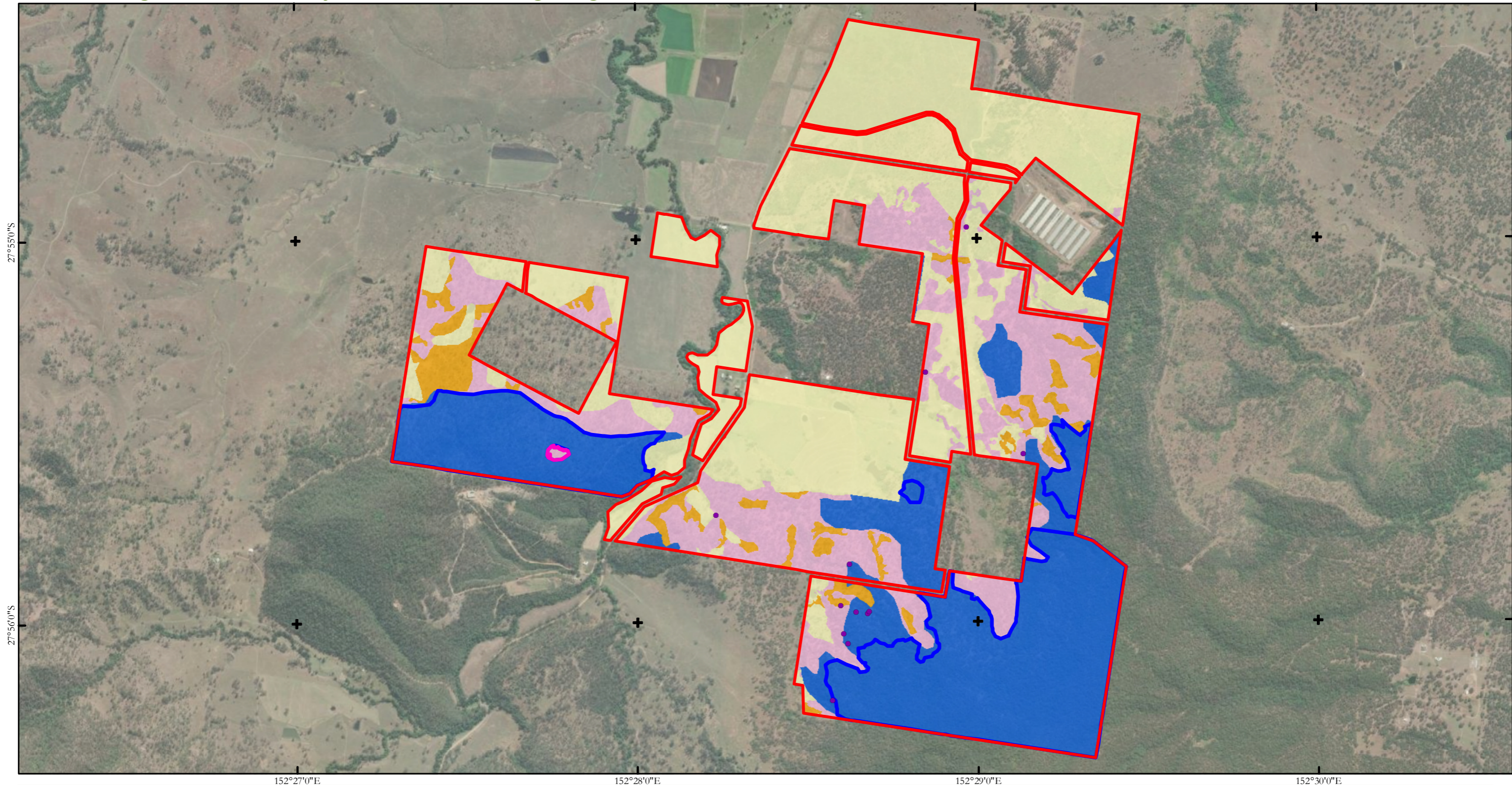


Coordinate System: GDA2020 MGA Zone 56

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8a. Regent Honeyeater Foraging Habitat



Montauban Environmental Offsets

1:18,000

0 200 400 600 m

Coordinate System: GDA2020 MGA Zone 56

References:
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References:
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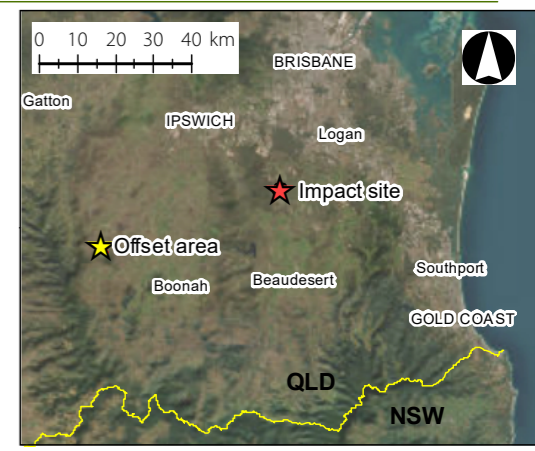
Date: 27/10/2025

10559 E 08a OMP NB RHE AU Habitat C

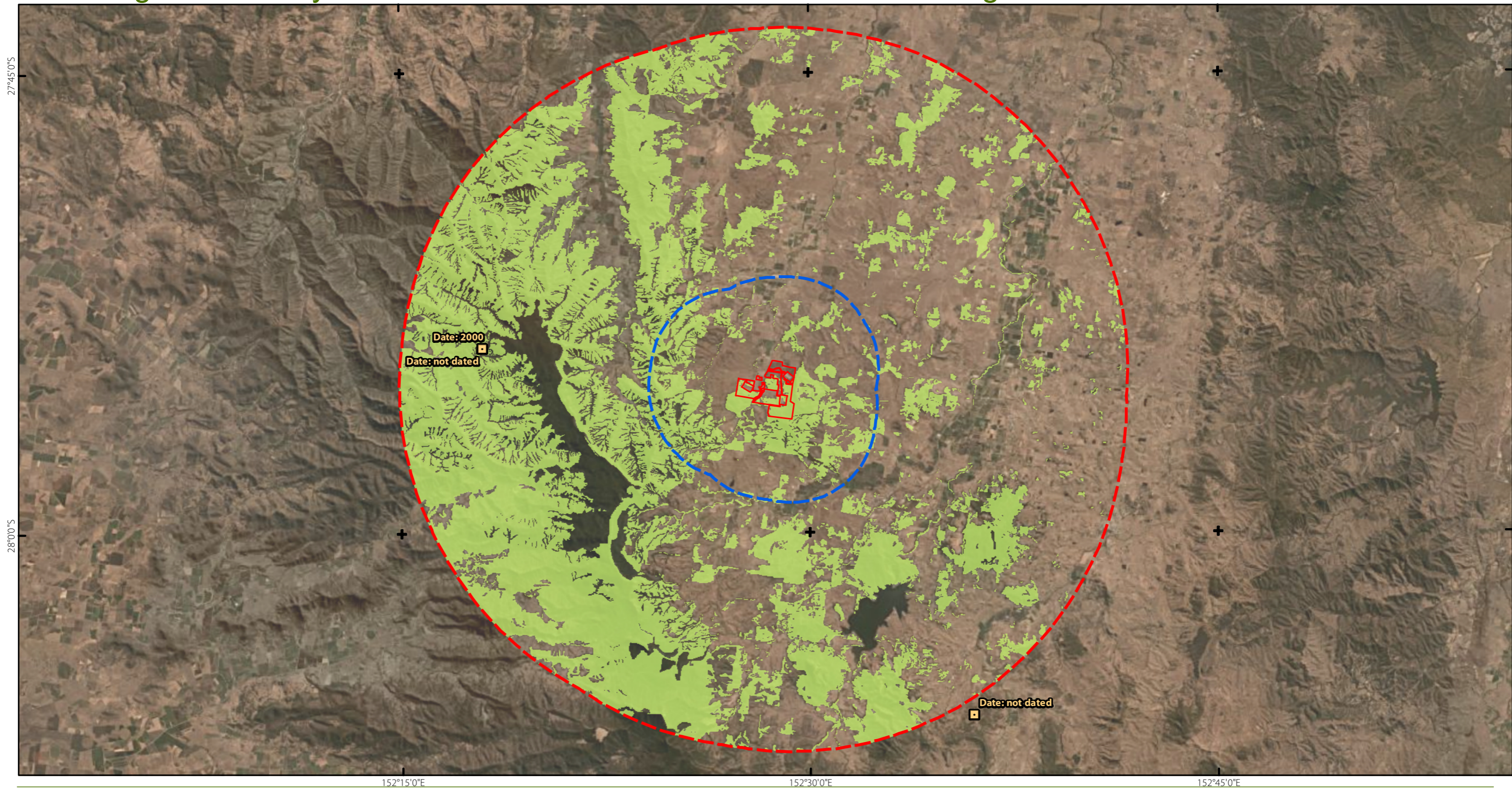
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Legend

- Offset Area
- Vegetation Assessment Units (AUs)**
- AU-1: Non-Remnant Vegetation [224.41 ha]
- AU-2: Hi Regrowth Vegetation [111.85 ha]
- AU-2: Lo Regrowth Vegetation [25.90 ha]
- AU-4: Remnant Vegetation [179.29 ha]
- AU-2 Hi area with no tree plot [0.48 ha of 112.27 ha]
- AU-3 area with no tree plot [136.41 ha of 179.29 ha]
- *Corymbia citriodora*
AU-1: count: 1
AU-2 Hi: count: 4
AU-2 Lo: count: 0
AU-3: count: 7



8b. Regent Honeyeater Context Assessment - Wider Region



Montauban Environmental Offsets

1:225,000

0 1 2 3 4 5 km

Coordinate System: GDA2020 MGA Zone 56

References:
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References:
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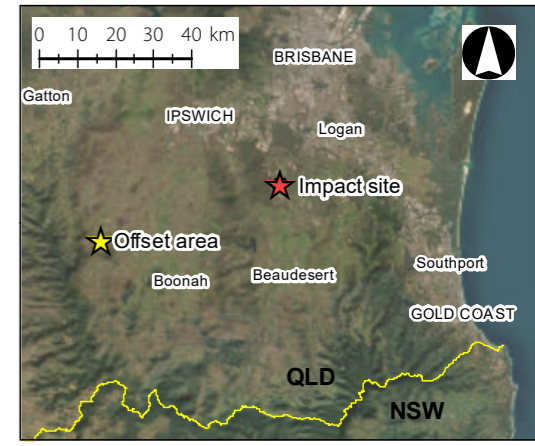
Date: 27/10/2025

10559 E 08b OMP NB RHE Regional Context Assessment G

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Legend

- Offset Area
- 5km Offset Area Buffer
- 20km Offset Area Buffer
- Potential Swift Parrot habitat within 20km of offset site
- Regent Honeyeater (*Anthochaera phrygia*) Records within 20km of Offset Area recorded more than 20 years ago - 1 [additional not dated record -1]



OFFSET SUITABILITY AND COMPLIANCE ANALYSIS

The objective of this OMP is to outline appropriate management actions which achieve the offset outcomes specified within the EPBC Act and provide an overall improved conservation outcome and net gain in MNES habitat and thereby ensuring the long-term viability of MNES populations.

The implementation of this OMP will enhance habitat for MNES through improvements to vegetation, reduction and key threats and provision of shelter and safe movement opportunity. **Table 17** lists the principles of the EPBC Act Environmental Offsets Policy and describes how the proposed offset strategy has been developed to adhere to these principles.

Table 17: Compliance with EPBC Act Environmental Offsets Policy Principles

Principle	Offset Strategy Compliance
<i>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</i>	<p>The offset area delivers a conservation gain for the Koala, Grey-headed Flying-fox (GHFF), Greater Glider, Swift Parrot and Regent Honeyeater through:</p> <ol style="list-style-type: none"> The creation of new habitat for the protected matters through the revegetation of 224.41 ha and enhancement of 137.74 ha of regrowth vegetation and 179.29 ha of remnant habitat through weed removal and pest management actions. Providing new connectivity with surrounding habitat for the protected matters. Introducing, funding and continually improving offset area Management Actions to reduce and manage threats (feral dogs, feral cats, Weeds of National Significance i.e., Lantana) in protected and created habitat areas. Averting the direct and indirect losses via declaring the land a Voluntary Declaration area for High Value Conservation under the <i>Vegetation Management Act 1999</i> and covenant under the <i>Land Act 1994</i>. This removes future wholesale and selective clearing opportunities and through the management plan removes ongoing impacts caused by livestock intrusion into habitat areas and removes associated fencing infrastructure which may currently restrict wildlife movement. Provides a 541.45 ha environmental offset which facilitates east-west connectivity to the Main Range National Park.
<i>be built around direct offsets but may include other compensatory measures</i>	<p>The offset area includes legally securing the land area and undertaking necessary improvements to achieve offset outcome for impacts calculated on the Frasers Property New Beith Pty Ltd New Beith Project for Koala, GHFF and Greater Glider and for impacts on Swift Parrot and Regent Honeyeater. The Offset Area is wholly achieved through direct delivery to land.</p>
<i>be in proportion to the level of statutory protection that applies to the protected matter</i>	<p>The Koala, GHFF and Greater Glider are scheduled within the EPBC Act as ‘Vulnerable’ at the time of the EPBC referral decision. Under the International Union for Conservation of Nature (IUCN) data the probability of annual extinction is 0.2. This factor applies through the</p>



	<p>meta data of the Offset Guide assessment calculation sheets for which each species has been assessed.</p> <p>The Swift Parrot and Regent Honeyeater are scheduled within the EPBC Act as ‘Critically Endangered’ at the time of the EPBC referral decision. Under the IUCN data the probability of annual extinction is 6.8 %. This factor applies through the meta data of the Offset Guide assessment calculation sheets for which each species has been assessed.</p>
<p><i>be of a size and scale proportionate to the residual impacts on the protected matter</i></p>	<p>Direct and indirect impacts for the protected matters have been calculated at the impacts site using the Modified Habitat Quality Assessment (MHQA) Foraging Habitat Assessment (FHA) for all potentially impacted MNES. Within the Assessment Guide calculator the Quantum Impact for each species is listed as:</p> <ul style="list-style-type: none"> • Koala (112.25 QI ha) • Grey-headed Flying-fox (112.25 QI ha) • Greater Glider (98.72 QI ha and 360 features) • Swift Parrot (2,894 features) • Regent Honeyeater (1,570 features) <p>To achieve an offset for the impacts on the above-mentioned species the offset area provides a direct land-based outcome over 541.45_ha through habitat recreation activities on historically cleared land devoid of native vegetation and enhancement and management of remnant and regrowth habitat through weed removal and pest management.</p>
<p><i>effectively account for and manage the risks of the offset not succeeding</i></p>	<p>The offset area forms part of the balance land of a large rural scale operation. This offset strategy identifies 7 key risks to some, or all, of the offset principles and outcomes not being achieved. These are:</p> <ul style="list-style-type: none"> • Wildfire • Drought • Shifting habitat range • Plant stock failure • Feral animal control • Weeds of National Environmental Significance (WoNs) increasing and • Livestock control, access and trespass management <p>Each of these risks have influenced the specific management actions proposed in the relevant assessment units where the risk may occur and more importantly the monitoring, measuring of success and adaptive management for the offset succeeding. Further, the offset provider intends to engage third party, suitably qualified professional(s) to ensure that the management outcomes of the offset land are achieved and risk of the offset not succeeding is mitigated.</p>



	<p>Repetitive monitoring and survey replication is to be a feature of the Offset Management Plan to ensure adaptive management changes are made as soon as identified and throughout the life of the offset. In addition to completion criteria, interim milestones will be developed for each management measure.</p>
<p><i>be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs</i></p>	<p>The New Beith Project occurs in the Greater Flagstone Priority Development Area (PDA) declared by the State Government for the fast-tracking of new housing fronts to ensure South East Queensland can cater for the predicted demand. There are few environmental controls at the impacts site with the Queensland Government's <i>Environmental Offset Act 2014</i> not being applicable.</p> <p>The relatively economical PDA Implementation Guideline 17 applies a small financial figure to the clearing of Koala habitat (\$5,000-\$15,000 per Ha) subject to state mapping, however this guideline does not link to the EPBC Requirements for offset.</p> <p>There are no guidelines or controls around offset or rehabilitation for the Grey-headed Flying-fox, Greater Glider, Swift Parrot or Regent Honeyeater.</p> <p>Further, the offset site is currently utilised for various rural activities, and not protected or managed for conservation purposes.</p> <p>Therefore, without the triggering of the EPBC Act and the Controlled Action Assessment the offset as proposed in the Offset Strategy is not required for either of the protected matters and the offset site would not be protected in perpetuity for conservation purposes.</p>
<p><i>be efficient, effective, timely, transparent, scientifically</i></p>	<p>Through conditions of approval the offset area will be legally secured prior to the commencement of any clearing on the impact site. The offset area and its value (as finalised through the EPBC Act Approval) will be legally secured through a Voluntary Declaration (V-Dec) declared under the Queensland Government's <i>Vegetation Management Act 1999</i> and covenant under the <i>Land Act 1994</i>. A V-Dec protects land and values and is binding on future owners. The declaration and management plan will be noted on the land title, which informs prospective buyers of current declarations and management plans and where copies are available. This information is important to the property market as future owners will be bound by the plan and declaration. The legally securing of the land will be made through declaring the area as having High Nature Conservation Values. The V-Dec will be lodged and legally secured by evidence of encumbrance on Registered Land Title prior to the commencement of any clearing works on the Impact Site. The covenant will be subsequently secured within 12 months.</p> <p>The offset management plan is to list the specifically designed scientific methodologies for the measuring of base line and improved outcomes for</p>



	the protected matters. The OMP will also require the use of tertiary trained and experienced experts along with appropriately certified and experienced contractors where necessary for the implementation of a host of actions.
<i>have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced</i>	<p>The offset property is owned by a large rural enterprise who has a variety of rural activities occurring on-site. The third party offset provider will fund all actions listed as approved in an offset management plan. An executed legal contract (Offset Provider Deed) is in place outlining the legal and committed relationship of the funding and delivery of the offset outcomes.</p> <p>Clearly articulated goals are to be approved within the Offset Management Plan for each proposed action within each assessment unit. Collectively these goals link directly to the achievement of the overall <i>conservation gain</i> for the protected matters as designed, assessed and calculated through the selection and delivery of the offset area.</p> <p>The management actions and implementation schedule to be included in the offset management plan are designed to be measured, monitored, audited and enforced year upon year during the life of the offset.</p>

TECHNICAL SURVEY METHODOLOGIES

A number of technical survey methodologies have been deployed at the offset site to assist in the assessment and documenting of offset outcomes. These are documented in detail in this section and include:

- Modified Quality Habitat Assessment Tools (refer **Plan 3**)
- Grey-headed Flying-fox – Foraging Habitat Assessment (refer **Plan 3**)
- Baseline Weed Surveys (refer **Plan 9**)
- Baseline Pest Surveys (refer **Plan 11**)

Koala Habitat - Modified Habitat Quality Assessment Tool

The offset property 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. The purpose of this guideline is to provide a methodology for proponents to determine the habitat quality of a site under the Queensland Environmental Offsets framework. The guideline is a step-by-step methodology explaining how to measure habitat quality for land-based offsets. This methodology has been adopted and tailored/modified to assess the impacts and offsets relating to Matters of National Environmental Significance (MNES).

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

The modified habitat quality assessment (MHQA) combines the three (3) core indicators into two (2) (site condition and site context) with each Site Condition being weighted 30% of the final score and Site Context being weighted 30% of the final score. The balance of the weighting (40%) has been attributed to the third indicator which is independent of the traditional habitat quality assessment, being species stocking rate. The species stocking rate has been added to the MHQA to better incorporate MNES, and for the purpose of this



project, the vulnerable-listed Koala MNES. 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 property is suitable to establish a desired capacity to support the prescribed environmental matters being offset. The on-site condition is a key element of habitat quality and has a direct influence on the biodiversity it supports. Site condition is assessed using a suite of attributes to describe the structure and function of the vegetation community, and is benchmarked against the expected range for a relatively undisturbed community.

The site condition assessment under the MHQA is assessed using fifteen (15) condition characteristics being:

- recruitment of woody perennial species in 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 shelters have been added to the site condition indicator. The two Koala habitat index attributes are based on the balance site condition attributes were their score is utilised as follows; <27/80 scores 1, between 27/80 and 54/80 scores 5 and above 54/80 scores 10.

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, 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.

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 site at the time of undertaking the survey. Given the discreet nature of the Koala and limited to no published literature on habitat carrying capacity of the species, the species stocking rate scoring methodology has been derived through the collation of site specific surveys and surrounding contextual habitat analysis and SAT surveys depicted in **Plan 3. Table 18** outlines the attributes utilised to assess species stocking rate.

Table 18: 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
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
Total Species Stocking Rate Score	/70
Species Stocking Rate Score – out of 4	



Grey-headed Flying-fox Foraging Habitat Assessment Tool

The offset property has been assessed using a GHFF Foraging Habitat Assessment (GHFF FHA) tool developed by the Saunders Havill Group (2019) which adopts characteristics of the Queensland State Governments “*Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy*” Version 1.2 April 2017, while also integrating published scientific literature on GHFF foraging habitat.

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

The GHFF FHA tool combines the aspects of the three (3) core indicators and published scientific literature into two (2) (site condition and site context) with site condition being weighted with 40% and site context weighted at 30% of the final score. The balance of the weighting (30%) has been attributed to the third indicator which is independent of the traditional habitat quality assessment, being species stocking rate. The species stocking rate assessment incorporated in the GHFF FHA tool is focussed on ‘foraging habitat’ for GHFF rather than GHFF stocking rates (presence/absence of the species). This assessment of ‘foraging habitat’ for species stocking rate has been incorporated in the GHFF FHA tool as Grey-headed Flying-fox roosting camp or species presence was not observed on-site, however, suitable foraging habitat for the species was evident. Therefore, the density of foraging habitat available on-site is considered an appropriate assessment benchmark for species stocking rate.

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

Site Condition (40%)

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

The site condition assessment under the GHFF FHA is assessed using six (6) condition characteristics being:

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

Assessment methodology of the above condition characteristics is outlined below:



- Vegetation condition – This condition characteristic is assessed using the Queensland *Vegetation Management Act 1999* vegetation community status definition, being Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant). This characteristic is scored from a desktop mapping perspective and verified on-ground during assessment.
- Species richness (canopy trees) – This condition characteristic is assessed using a 100 m X 20 m plot following the contour of the land when possible. Within the plot, all canopy tree and subcanopy tree specimens are recorded. It should be noted that non-GHFF foraging species are also documented.
- Flower scores (average) – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the ‘species richness (canopy trees)’ characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining the flower score of the recorded canopy species. The individual score for each flowering GHFF foraging tree is then divided by the number of species recorded (GHFF foraging and non-GHFF foraging trees) to produce an average. The benchmark values for this condition characteristic have been derived from the findings published by Eby and Law (2008) (*Ranking the feeding habitat of Grey-headed flying foxes for conservation management*).
- Timing of biological shortages – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the ‘species richness (canopy trees)’ characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining the ability of the canopy species in the vegetation community to produce foraging habitat during biological shortages (food shortages, pregnancy and birthing, lactation, mating and conception, migration paths and fruit industries). It should be noted that this condition characteristic is weighted and ‘food shortages’ has been weighted heavier than the balance of the characteristics which are equal, as ‘food shortages’ is recognised as a major issue.
- Quality of foraging habitat – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the ‘species richness (canopy trees)’ characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017) and determining which canopy species recorded contain a flower score greater than 0.65 wt p*r and is recognised as a significant food plant by Eby and Law (2008). It should be noted that species recorded that are not prescribed a value by Eby and Law (2008) but are recognised as GHFF foraging trees, have been given an average weighted value of related species or, in the case of *Eucalyptus crebra* (Narrow-leaved Ironbark) been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the *Draft Recovery Plan for the Grey-headed Flying-fox* (DoEE 2017).
- Non-native plant cover – This condition characteristic is assessed using a 100 m X 20 m plot following the contour of the land when possible. All non-native plant cover was assessed by estimating the cover of exotic species over the 100 m X 20 m plot.

It should be noted that for on-ground assessment purposes, the 100 m X 20 m plot utilised for the GHFF FHA overlaps with the on-ground condition characteristics of the Koala MHQA.



Site Context (30%)

The site context assessment deals with the site and its adjacent surroundings. Site context is measured using a suite of attributes to describe the location of the habitat within the surrounding landscape and the influence of its associated threats. This assessment also considers the influence of adjacent vegetated areas and ecological corridors. Under the GHFF FHA, site context is measured using the following six (6) characteristics:

- Size of patch;
- Connectedness (active GHFF roost camps in a 20 km radius);
- Context (percentage of GHFF foraging habitat in a 20 km radius);
- Ecological corridors;
- Role of site location to species overall population in the state (active GHFF national flying-fox monitoring viewer 'level 3' roost camps in a 20 km radius); and
- Threats to the species.

Assessment methodology of the above context characteristics is outlined below:

- Size of patch – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the directly connected patch of GHFF foraging habitat to site measured. This context characteristic is measured using GIS. The benchmark values for this context characteristic are those used in the traditional habitat quality assessment.
- Connectedness – This context characteristic is assessed by analysing the number of active GHFF roost camps (over the past year of monitoring (2020-2021)) within a 20 km radius of the site. For consistency purposes this assessment is to utilise the data provided on the national flying-fox monitoring viewer (Australian Government).
- Context – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the percentage of GHFF foraging habitat within a twenty (20) kilometre buffer of the site measured. This context characteristic is measured using GIS.
- Ecological corridors – This context characteristic is assessed using the traditional habitat quality assessment methodology which involves determining the proximity of the site to state, bioregional, regional or sub-regional corridors.
- Threats to species – This context characteristic is assessed by analysing the published scientific literature regarding threats to GHFF and determining the number and severity of the threatening processes observed at or adjacent to the site.
- Role of site location to species overall population in the state (active GHFF national flying-fox monitoring viewer 'level 3' roost camps in a 20 km radius) – This context characteristic is assessed by analysing the number of active GHFF roost camps level 3 or greater (over the past year of monitoring (2020-2021)) within a 20 km radius of the site. For consistency purposes this assessment is to utilise the data provided on the national flying-fox monitoring viewer (Australian Government).

Species Stocking Rate (30%)

The GHFF FHA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment methodology. As discussed above, species stocking rate for GHFF associated with this



proposed action is related to the density of GHFF foraging habitat at the site at the time of undertaking the survey.

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

This methodology involves assigning the strata for canopy (T1) and subcanopy (T2) and then counting the number of individual tree specimens within the 100 m X 20 m plot. A tree that branches into two or more stems above 30 cm above the ground is counted as one individual. This data was then analysed and GHFF foraging tree density per hectare was extrapolated and determined.

The species stocking rate scoring was determined by analysing the Technical Descriptions of Regional Ecosystems of Southeast Queensland (Ryan 2019) and the stem density per hectare associated with the technical description of the regional ecosystem.

Table 19: GHFF FHA Vegetation Condition Scoring

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

Table 20: GHFF FHA Species Richness Scoring

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

Table 21: GHFF FHA Flower Score (average) Scoring

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



Table 22: GHFF FHA Timing of Biological Shortages Scoring

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

Table 23: GHFF FHA Quality of Foraging Habitat (trees >0.65 wt p*r) Scoring

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

Table 24: GHFF FHA Non-Native Plant Cover Scoring

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

Table 25: GHFF FHA Size of Patch Scoring

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

Table 26: GHFF FHA Connectedness Scoring

Score	Description
0	< 1 active Grey-headed Flying-fox camp within a 20 km radius



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

Table 27: GHFF FHA Context Scoring

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

Table 28: GHFF FHA Ecological Corridors Scoring

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

Table 29: GHFF FHA Threats to Species Scoring

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

Table 30: GHFF FHA Role of Site Location to Species Overall Population in the State Scoring

Score	Description
1	1 – 2 active level 3 Grey-headed Flying-fox camp within a 20 km radius
6	2 – 4 active level 3 Grey-headed Flying-fox camp within a 20 km radius
10	> 4 active level 3 Grey-headed Flying-fox camp within a 20 km radius



Greater Glider

Features-based Assessment - Hollows

All trees over 300 mm DBH were plotted throughout the offset area with 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 estimated in metres from ground;
- canopy spread estimated in metres from ground;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).

Greater Glider Habitat - Modified Habitat Quality Assessment Tool

The subject site has been assessed using a modified version of the Queensland State Government Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy Version 1.2 April 2017. 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.

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

For the spatial analysis, the modified habitat quality assessment (MHQA) 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 Vulnerable-listed Greater Glider. The following subsections detail the methodology utilised to assess the site condition, site context and species stocking rate under the MHQA.

- Site condition (30%)
- The site condition assessment under the MHQA is assessed using 15 condition characteristics being:
- recruitment of woody perennial species in 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 (refer 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. The two habitat index attributes are based on the site condition attributes that relate to the presence of canopy and hollows calculated as follows:

- Quality and availability of food and foraging habitat is scored as a proportion against the T1 canopy cover benchmark where <33% of the benchmark scores 1, 33% to 66% scores 5, and >66% scores 10.
- Quality and availability of shelter habitat is scored based on hollow counts per hectare plus an error margin of 20% based on relevant literature relative to conservation advice expectations, where <1 hollow estimate per ha scores 1, 1 to 2 hollows per ha scores 5, and greater than 2 hollows per ha scores 10.

The T1 canopy cover is considered a suitable metric for foraging habitat given the size class includes only the T1 dominant layer and all Regional Ecosystems contain Greater Glider foraging species within the Ecologically Dominant Layer according to the relevant Regional Ecosystem technical descriptions.

As the Greater Glider is most reliant upon upper tree canopy for foraging and hollows for shelter than other ecosystem attributes, the overall Site Condition score has been weighted 40% for the traditional condition attributes (species richness etc.), 20% for quality of foraging habitat and 40% for quality of shelter habitat.

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;
- connectedness;
- context;
- State mapped 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, Greater Glider habitat as per Eyre et al. (2022). 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.

Assessment methodology for site context assessment for Greater Glider 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 GIS by measuring the length of 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 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, 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 or not 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 Greater Glider are predominantly habitat loss, barbed wire, and uncontrolled bushfire and feral animal predation. Threats are scored as per the relevant State guideline.
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 Greater Glider and is scored on the presence of roads or cleared areas.

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 Greater Glider carrying capacity of the site at the time of undertaking the survey. Given the discreet nature of the Greater Glider and limited to no published literature on habitat carrying capacity of the species, the species stocking rate scoring methodology has been derived through the collation of site-specific surveys and surrounding contextual habitat analysis.

- Species stocking rate is calculated using the following parameters:
- Species presence on or adjacent to the site – evidence of Greater Glider in the form of scats or direct observation on or adjacent to the site.
- Species usage of the assessment unit (habitat type and evidenced usage) – the type of habitat includes vegetation structure such as whether or not it contains remnant, regrowth or non-remnant vegetation values, and evidenced usage is the confirmed presence or use of the species within the habitat. Both factors are used to inform the species usage of the site (dispersal, foraging or breeding). Depending on the level of variability in vegetation and usage patterns across the site, this characteristic may be scored differently for assessment units.



- Approximate density of the species – ‘no’, ‘low’, ‘moderate’ or ‘high’ determined through evidence of Greater Glider records and/or confirmed presence through targeted surveys in the assessment unit.
- Role/importance of species population on site – 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.

Scoring Weight Justification

For this project, Site Condition and Site Context were given a weighted score out of three (3), while Species Stocking Rate was 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 Greater Glider. 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 Site Context were assigned the equal weighting (scored out of 3). The Greater Glider is known to occupy a variety of Regional Ecosystems (Eyre et al. 2020); however, the site condition of the habitat is considered to directly influence the long-term Greater Glider carrying capacity. Site Context is considered an important component when assessing the Greater Glider 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 (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 Greater Glider, 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.

Feature-based Assessment – Hollows

The features-based impact assessment to cater for Greater Glider denning and breeding habitat relies on hollow counts plus an error margin of 20% for field surveys based on relevant literature. The entire tree trunk and branches are visually surveyed from ground for habitat values including hollows.

All trees containing hollows and trees ≥ 300 mm DBH were located with 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 estimated in metres from ground;
- canopy spread estimated in metres from ground;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).
Hollows where recorded, were separated into the following size categories:
 - Small (0-99 mm DBH),
 - Medium (100-299 mm diameter), and
 - Large (≥ 300 mm diameter).

The impact for the Greater Glider is based on the direct and functional loss of all impact assessment units (246.8 ha at MHQA score of 4/10) and 360 features (hollows including 20% margin).



Swift Parrot

Features-based Assessment – Foraging Trees

All foraging species were plotted throughout the offset area with 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 estimated in metres from ground;
- canopy spread estimated in metres from ground;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).

The intent for the features based uplift for Swift Parrot is to deliver at least 130% of the offset requirement across all three offset sites to allow a buffer of 30% for planting losses, which is well above the acceptable margin of 10% losses under the South East Queensland Ecological Restoration Framework. **Table 31** summarises the number of plantings required at the offset site to achieve this goal.

Table 31: Swift Parrot Features Summary

Impacted Features	Required Offset*	EMZ Areas** - Montauban (ha)	EMZ Areas – All Sites (ha)	Montauban Area Proportion	Offset Count – Montauban
2,894	18,707	339.19	830.34	0.41	7,642

*OAG required features to achieve 100% offset requirements plus 30% margin

Refer **Plan 14

In essence, from **Table 31** at least 7,642 *Eucalyptus tereticornis* and *Eucalyptus melliodora* need to be planted at the Montauban offset site to achieve 130% of the OAG requirements for features factoring in all offset sites (refer **Appendix C** for OAG features reference showing 14,390 features achieves 100.05% of the offset requirement). Where *Eucalyptus melliodora* is utilised, it is as a replacement for *Corymbia citriodora* as a more suitable listed key foraging species reflecting pre-clear Regional Ecosystem predictions at the offset site

Further analysis shows that, when the offset site is broken into Environmental Management Zones (EMZs) for rehabilitation (refer **Plan 14** and **Action 5** for further details), 339.19 ha of the offset site is suitable for restoration works including plantings. Review of the Regional Ecosystem technical descriptions across EMZs suggests that on average 9% of plantings will be *Eucalyptus tereticornis* and 10% of plantings will be *Eucalyptus melliodora* in EMZ1 and EMZ2. If we assume for the purpose of this analysis that for EMZ1 open paddock trees can be planted at a density of 1/10 m² and for EMZ2 sparse regrowth trees can be planted at a density of 1/50 m² as per the South East Queensland Ecological Restoration Framework, then it is anticipated an estimated 42,072 *E. tereticornis* and *E. melliodora* could be planted at the offset site to achieve expected tree species richness and relative abundance as per the Regional Ecosystem technical descriptions (refer **Table 32**).



Table 32: Swift Parrot Potential Offset Site Tree Planting Rates Analysis

EMZ	Area (ha)	Status	Planting Rate	Total Plantings	Average Cover		Combined Proportion	EMZ Count	Total Count
					E. tereticornis	E. melliodora			
1	195.17	Open Paddock	1/10 m ²	195,170	0.09	0.10	0.19	36,478	42,072
2	147.61	Sparse Regrowth	1/50 m ²	29,522	0.09	0.10	0.19	5,594	

In summary, ecological restoration of the offset site targeting rehabilitation and re-establishment of inherent Regional Ecosystems will ably allow for the required number of offset plantings as set out in **Table 31** (at least 7,642).

Notably, in this analysis the anticipated plantings are derived from the expected coverage from the regional ecosystem technical descriptions. As the regional ecosystems provide suitable habitat for the Koala, the proposal to regenerate these Regional Ecosystems is considered amenable to both the Koala and Swift Parrot species.

Regent Honeyeater

Features-based Assessment – Foraging Trees

All foraging species were plotted throughout the offset area with 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 estimated in metres from ground;
- canopy spread estimated in metres from ground;
- health assessment (canopy, trunk); and
- habitat values (for example, presence and/or number of hollows, nests, termites, scratches and scats).

The intent for the features based uplift for Regent Honeyeater is to deliver at least 130% of the offset requirement across all three offset sites to allow a buffer of 30% for planting losses, which is well above the acceptable margin of 10% losses under the South East Queensland Ecological Restoration Framework. **Table 33** summarises the number of plantings required at the offset site to achieve this goal.

Table 33: Regent Honeyeater Features Summary

Impacted Features	Required Offset*	EMZ Areas** - Montauban (ha)	EMZ Areas – All Sites (ha)	Montauban Area Proportion	Offset Count – Montauban
1,570	10,147	339.19	830.34	0.41	4,145

*OAG required features to achieve 100% offset requirements plus 30% margin

**Refer Plan 14



In essence, from **Table 33** at least 4,145 *Eucalyptus melliodora* need to be planted at the Montauban offset site to achieve 130% of the OAG requirements for features factoring in all offset sites (refer **Appendix C** for OAG features reference showing 7,805 features achieves 100.03% of the offset requirement). Where *Eucalyptus melliodora* is utilised, it is as a replacement for *Corymbia citriodora* as a more suitable listed key foraging species reflecting pre-clear Regional Ecosystem predictions at the offset site

Further analysis shows that, when the offset site is broken into EMZs for rehabilitation (**Plan 14** and refer also **Action 5** for further details), 339.19 ha of the offset site is suitable for restoration works including plantings. Review of the Regional Ecosystem technical descriptions across EMZs suggests that on average 10% of plantings in EMZ1 and EMZ 2 will be *Eucalyptus melliodora*. If we again assume for the purpose of this analysis that for EMZ1 open paddock trees can be planted at a density of 1/10 m² and for EMZ2 sparse regrowth trees can be planted at a density of 1/50 m² as per the South East Queensland Ecological Restoration Framework, then it is anticipated an estimated 22,143 *E. melliodora* could be planted at the offset site to achieve expected tree species richness and relative abundance as per the Regional Ecosystem technical descriptions (refer **Table 34**).

Table 34: Regent Honeyeater Potential Offset Site Tree Planting Rates Analysis

EMZ	Area (ha)	Status	Planting Rate	Total Plantings	Average Cover E. melliodora	AU Count	Total Count
1	195.17	Open Paddock	1/10 m ²	195,170	0.10	19,199	22,143
2	147.61	Sparse Regrowth	1/50 m ²	29,522	0.10	2,944	

In summary, ecological restoration of the offset site targeting rehabilitation and re-establishment of inherent Regional Ecosystems will ably allow for the required number of offset plantings as set out in **Table 33** (at least 4,145).

Notably, in this analysis the anticipated plantings are derived from the expected coverage from the regional ecosystem technical descriptions. As the regional ecosystems provide suitable habitat for the Koala, the proposal to regenerate these Regional Ecosystems is considered amenable to both the Koala and Regent Honeyeater species.

BASELINE WEED MAPPING

The entirety of the Rosevale Offset Property was surveyed for weed presence with a focus on Weeds of National Significance (WONs) due to their known adverse impacts. Thirty-two (32) invasive species are identified by DCCEEW as weeds of national significance based on their invasiveness, potential for spread and identified socioeconomic and environmental impacts (Australian State of the Environment, 2021). Of the 32 WONs species, *Lantana camara* (Lantana), *Opuntia stricta* (Prickly Pear) and *Senecio madagascariensis* (Fireweed) were identified during assessment of the Rosevale Offset Property. No weed species on the National Environmental Alert list were identified, however, several species declared under the Scenic Rim Regional Council Planning Scheme were; *Sporobolus pyramidalis* (Giant Rat's Tail Grass), *Baccharis hamifolia* (Groundsel), *Senecio madagascariensis* (Fireweed), *Sporobolus africanus* (Parramatta Grass) and *Opuntia stricta* (Prickly Pear), as well as two (2) potentially adverse invasives; *Celtis sinensis* (Chines Celtis), *Lantana montevidensis* (Creeping Lantana) and *Lantana camara* (Lantana).



Although preliminary site surveys and observations over the Rosevale offset property recorded a number of weed species both federally and locally listed as well as general pastoral invasives, the most prevalent and potentially impactful to MNES is *Lantana camara* (Lantana). The Department of Agriculture and Fisheries (2023) indicates more than 1400 native species are negatively affected by Lantana invasion, including many endangered and threatened species. This largely occurs through the suppressive effect of Lantanas aggressive growth form, generally adversely impacting species richness and some soil faunal assemblages.

Lantana infestations suppress and inhibit the natural regeneration of regrowth vegetation on-site which directly limits the growth rates and regeneration of non-juvenile Koala habitat trees and other species who forage and inhabit these including Grey-headed Flying-fox, Greater Glider, Swift Parrot and Regent Honeyeater. Additionally, in areas blanket layers of *Lantana camara* form a barrier to terrestrial species, which would include limiting the Koalas ability to access areas containing habitat trees. Further, as Lantana is a woody shrub with thin, combustible canes, it has been observed to create hotter bushfires, which significantly alters native vegetation communities and pastures (DAF, 2023). It is noted that under the Conservation Advice for Koala, increased intensity/frequency of bushfire is a listed key threatening process. Although this largely refers to the impacts caused by Climate Change, the presence of Lantana within bushland can significantly increase the extremity of bushfire and thus the impact it has directly on Koala and other listed species habitat; GHFF, Greater Glider, Regent Honeyeater and Swift Parrot all rely on eucalypt bushland for foraging and breeding. For this reason, the Queensland Governments 'South East Queensland Koala Conservation Strategy 2022 – 2025' lists management of invasive weeds in both Action Area 1: Habitat Protection and Action Area 3: Threat Management (DES, 2020). Impact management of invasive flora, particularly Lantana, a Weed of National Significance (WoNS), is therefore considered a key direct action to addressing threats on Koala and other listed species that share the same habitat requirements.

Therefore, weed coverage assessments across the offset property focused on estimating the percentage of WONS with *Lantana camara* in particular due to the significant densities and known impacts to MNES.

Weed mapping assessments of the offset property were conducted across seven days with observed WONS and declared SRRC species estimated and categorised into percentages. The mapping was undertaken using GPS units with polygons or descriptive points taken to visually represent on-ground invasive values. On ground estimates assigned a percentage to the invasive species observed, with ranges including little to no weeds (0%), 0 – 20%, 20 – 40%, 40 – 60%, 60 – 80%, and 80 – 100% (refer **Plan 9**). At the end of the survey period the data were collated and broken into the Assessment Units (AU) for the offset property; non-remnant, high-value regrowth Hi and Low and remnant, therefore targeted management can occur based on the characteristics of each AU. The weed coverage and densities plan of the offset property will provide a guide to the areas requiring the most significant weed management.



9. Offset Site Assessment Units Weed Coverage



Montauban Environmental Offsets

1:18,000

0 100 200 300 400 m

Coordinate System: GDA2020 MGA Zone 56

References:
 © State of Queensland, 2022
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 27/10/2025

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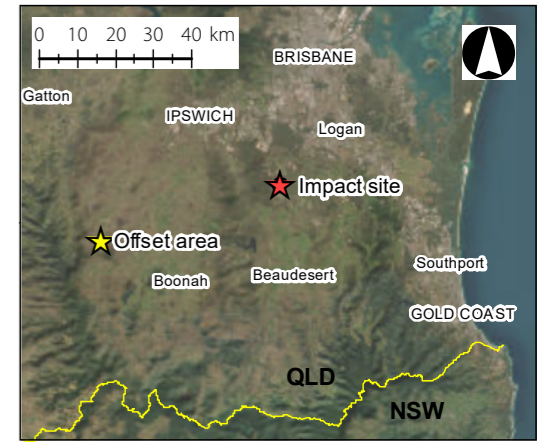
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Legend

- Proposed Poultry Shed, 100m buffer area & access tracks
- Offset area
- Habitat Quality Transects

Weed Coverage percentages

AU1 - Little to no weed coverage (25%)	AU2 Hi/Lo - Little to no weed coverage (22%)	AU3 - Little to no weed coverage (9%)
AU1 - 0-20% weed coverage (36%)	AU2 Hi/Lo - 0-20% weed coverage (9%)	AU3 - 0-20% weed coverage (3%)
AU1 - 20-40% weed coverage (3%)	AU2 Hi/Lo - 20-40% weed coverage (17%)	AU3 - 20-40% weed coverage (7%)
AU1 - 40-60% weed coverage (4%)	AU2 Hi/Lo - 40-60% weed coverage (14%)	AU3 - 40-60% weed coverage (20%)
AU1 - 60-80% weed coverage (14%)	AU2 Hi/Lo - 60-80% weed coverage (26%)	AU3 - 60-80% weed coverage (37%)
AU1 - 80-100% weed coverage (18%)	AU2 Hi/Lo - 80-100% weed coverage (12%)	AU3 - 80-100% weed coverage (24%)



PROJECT DESCRIPTION

The proponent seeks to develop a residential community on land located at Olson Road, New Beith, legally described as Lot 4 on RP45728. The proposed action includes mixed-density residential dwellings, open space for stormwater management, recreation and conservation, internal road network, and supporting infrastructure.

The referral area is located within Flagstone, Logan, Queensland approximately 40 kilometres south-west of Brisbane's CBD and situated within South East Queensland's (SEQ) south-west growth corridor. SEQ's south-west growth corridor is one of the largest job and industry growth areas in Australia and offers opportunities to accommodate significant levels of residential and employment growth. In 2009, Flagstone was identified as a Regional Development Area under the South East Queensland Regional Plan 2009 -2031 (SEQRP) by the State Government because of its potential to absorb a vast portion of the regional area's population over the subsequent three decades. The SEQRP 2017 (Shaping SEQ) recognises Flagstone as a large residential expansion area with an expected dwelling capacity of 19,000 by 2041 supported by existing and proposed infrastructure, which will strengthen economic and social connections within the sub-region and proximity to employment opportunities.

It is envisaged that the proposed action will provide approximately 2,257 residences for more than 5,400 people, and 1.609 ha of retail and commercial space servicing the growing Greater Flagstone community. The proposed action includes mixed-density residential dwellings, neighbourhood centre, internal road network and open space including a district sports park, local parks and conservation areas.

The site currently remains vacant, primarily vegetated land with a ridgeline of approximately 130 m in elevation in the south-west with drainage features falling away from the peak in all directions. Southern drainage features connect to Flagstone Creek which traverses referral area from the south-eastern boundary. Northern drainage features connect to Abrade Creek located to the north of the referral area.

Vegetation across the site is comprised of a mix of remnant and regrowth regional ecosystems. Overall, the referral area vegetative cover was found to be relatively intact, however, disturbed by historical clearing and land uses (logging, 4WD driving and motorbiking). Ecological values have been provided at all key design junctures in the development noting planning intent is as per the '*Greater Flagstone Priority Development Area Development Scheme*' ('Development Scheme').

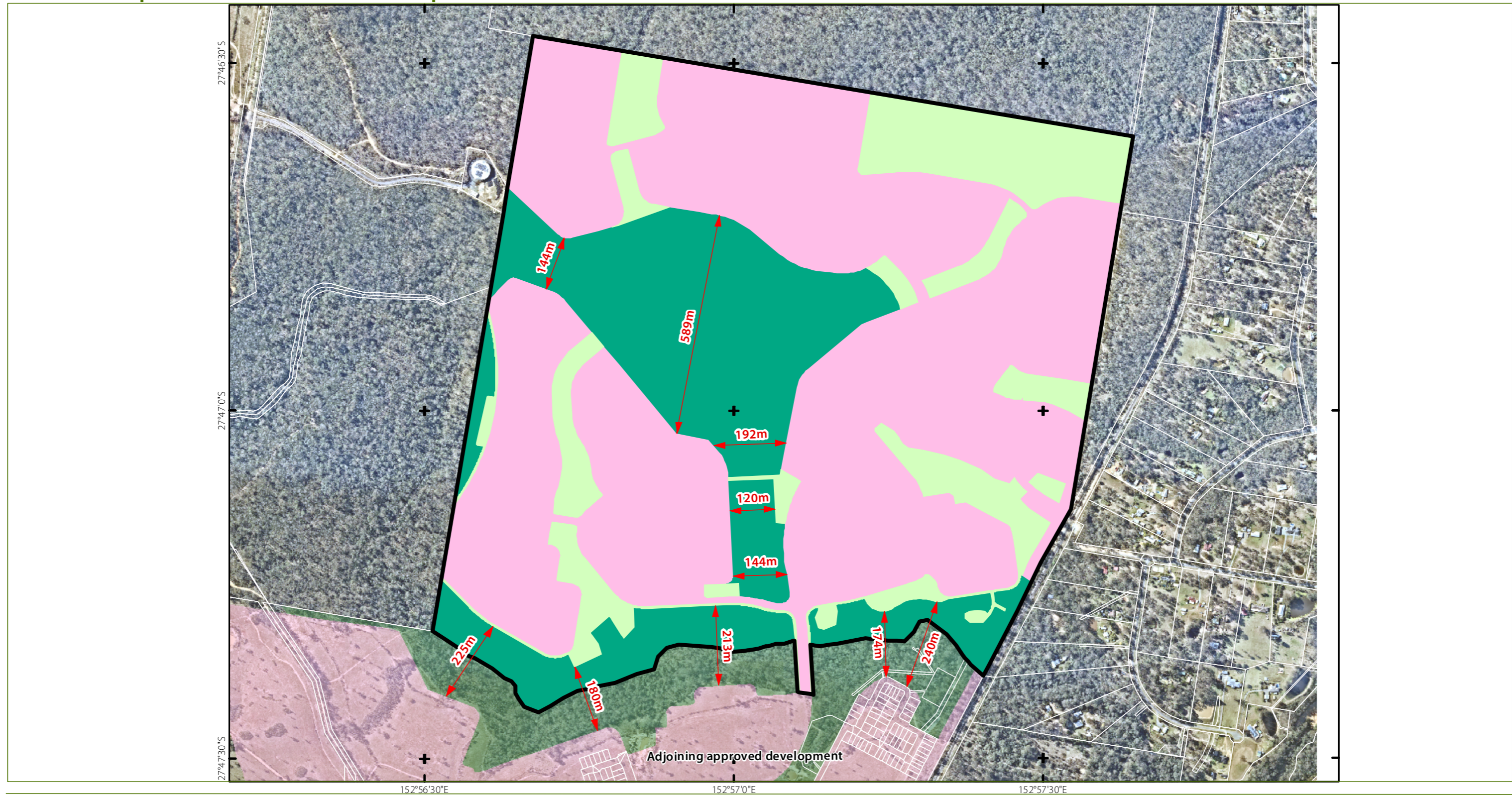
The vegetation communities can be broadly delineated into six assessment units, being:

- Assessment Unit 1 – Remnant RE12.3.11.12.3.7
- Assessment Unit 2 – Remnant RE12.9-10.2
- Assessment Unit 3 – Remnant RE12.9-10.7
- Assessment Unit 4 – Remnant RE12.9-10.3
- Assessment Unit 5 – Remnant RE12.9-10.2/12.9-10.7
- Assessment Unit 6 – Category X (Preclear RE12.9-10.2)

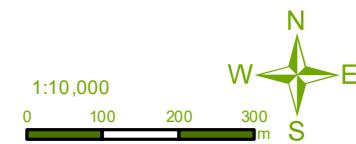
Refer to **Plan 10** for the impact summary. The proposed action will result in the direct clearing and functional loss of 187.09 ha of Koala habitat, 187.09 ha of potential GHFF foraging habitat, 246.8 ha of potential Greater Glider foraging habitat and 360 features (hollows), 2,894 Swift Parrot features (key foraging trees) and 1,570 Regent Honeyeater foraging habitat features (key foraging trees).



10. Proposed Action Impact Area



Montauban Environmental Offsets



Coordinate System: GDA2020 MGA Zone 56

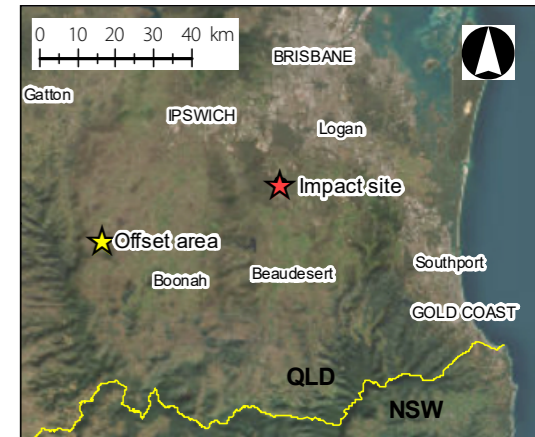
References:
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Date: 30/06/2025
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Legend

- Impact Area
- Development Zone [147.47 ha]
- Future open space (functionally lost) [37.39 ha]
- Vegetation Retention Zone [61.94 ha]
- Qld DCDB
- Vegetation Retention Zone Widths



BASELINE PEST SURVEYS

Generic Fauna surveys have been utilised throughout the offset site to determine the presence of species as well as understand the relative abundance of terrestrial fauna species, with a particular focus on Wild Dogs, which are identified as a key threatening process to Koala and potentially Greater Glider. Other notable pest species, such as European Fox and Feral Cat, were also a secondary focus due to their potential direct impact to MNES via opportunistic predation. Additionally, pests with indirect impacts to MNES due to habitat destruction, i.e. feral pigs, were also surveyed for throughout the ROA 2 offset. Motion sensor cameras were deployed across the entire proposed Rosevale Offset Property in order to provide baseline data. Focus was given to the eastern portion where existing chicken sheds are present as the Department has identified concerns with the presence of this practice, as well as adjacent to property boundaries and existing tracks where Wild Dogs are most often seen. The varying survey periods and camera deployment were to determine the baseline survey results with reference to the Terrestrial Vertebrate Fauna Survey Guidelines for Queensland June 2022 (V 4.0) for completing terrestrial fauna surveys.

Table 35: Infrared Camera Wild Dog Data

Number of Cameras Deployed	Camera Deployment	Camera Pick-up	Baits Utilised	Total Days Recording	Total Dogs Recorded	Total Fox Recorded
6	20 th April 2023	4 th May, 2023	Peanut butter & oats	15	4	2
4	15 th May, 2023	11 th August 2023	Chicken necks	89	0	0
4	11 th August, 2023	2 nd November, 2023	No-baits	83	5	0

As stated in Section 4.6 of Terrestrial Vertebrate Fauna Survey Guidelines for Queensland June 2022 (V 4.0), which focus on native species, the patterns of faunal activities and estimates of relative abundance, or presence-absence of species, varies temporally in response to the time of day (day versus night), seasonal changes (Spring versus winter) as well as between years (drought versus wet). It is noted that in South-east Queensland, the optimal time and conditions for native vertebrate surveys are in Spring (mid-September – mid-December) as temperatures begin to warm up and particularly after the first storms when animal activity peaks. The second most suitable survey period for native species is in Autumn (late February – April) when high summer temperatures begin to drop and before the onset of colder overnight temperatures. Cameras have been deployed generally in accordance with these guidelines, however, for significantly longer periods of time to optimise data collection and results, noting dog activity is not considered seasonal and monitoring is to occur for at least four weeks (NSW Department of Primary Industries). Notably, wild dog activity and sign increases leading into the breeding season in late autumn and early winter when camera traps were deployed at the offset site (Allen 2016).

Section 5.2 of Terrestrial Vertebrate Fauna Survey Guidelines for Queensland June 2022 (V 4.0) refers to bait type and the use of peanut butter and oats as a good general-purpose bait for the survey of small to medium sized mammals, although the use of other baits or additives can increase detection rates of some target species. It is also considered that habitat with dense vegetation may render some survey techniques, particularly those that rely on search effort, less effective due to reduced visibility. The site surveys utilised both bait balls and chicken necks in order to capture a variety of potential vertebrate species.



The guidelines for Generic Survey Methods for a Site (Section 8 of the Guidelines) recommend a minimum camera trapping is for one camera per site for four nights, particularly for recording presence / absence and relative abundance, partly for reptiles, and small terrestrial mammals and more suitable to medium to large terrestrial mammals. Since April 2023, data have been recording for a total of one hundred and eight-seven (187) nights, well above the minimum amount recommended.

Design and Procedure

- Cameras will not be placed on an animal trail if results are to be used to compare relative abundance, however, animal trails are a good place to site cameras for inventory surveys.
- Avoid heavily vegetated areas as vegetation can cause false triggering or obscure animals in images.
- Securely attach camera 30-50cm from the ground on a tree or post, directed downward towards the bait which will be 1.5 – 2m from the camera and in the centre of the camera frame.
- Camera traps will be deployed for as long as possible with a recommended minimum of four nights but ideally for longer than two weeks and up to five weeks.
- Ensure the camera programming is consistent across all cameras to be deployed.
- Cameras can be baited with vegetable based and/or meat-based baits depending on the target species and personal choice.
- For general monitoring purposes, cameras can be set up along cleared tracks, with or without bait.

Infrared Camera Trap Surveys

Fourteen camera traps were set up across three locations on the Rosevale Offset Property through 3 different survey periods – April to May, May to August and August to November. With a total of one hundred and eight-seven (187) survey nights through Autumn, Winter and Spring. The cameras were systematically located to capture a representative of the broader Offset Property. Cameras were attached 30-100 cm from the ground on a tree or post and directed towards landscape features and baited in order to target evidence of wild dogs and other potential threats to known MNES in the broader area. Each trap site considered the pre-clear regional ecosystem communities as well as current on-site conditions, including density of vegetation and habitat features.

Refer **Plan 11** for fauna camera locations across the site.

Camera Deployment 1 – April to May

Six cameras were deployed across the offset property with all baited with non-meat-based baits including peanut butter and oats for generalist fauna results. Motion cameras were deployed between the 20th of April through to the 4th of May, 2023, totally fifteen (15) days of assessment. The results varied across the site with common species, including *Trichosurus vulpecula* (Common Brushtail Possum), *Phascogale tapoatafa* (Brush-tailed Phascogale), and *Macropus rufogriseus* (Red-necked Wallaby) recorded in most of the results in each camera. Up to ten (10) *Sus scrofa* (Feral Pig) was also recorded at Camera 3, which was deployed adjacent to an existing dam. Four (4) wild dogs have been detected on Camera 4 (named Eel) and two (2) European foxes were recorded during this survey period.

- Camera 1 (Named Camel) was deployed in Lot 1 on CC3571 within Category C vegetation mapped as containing a composite Least Concern Regional Ecosystem community containing 80% RE12.8.17 and 20% RE12.8.14.
- Camera 2 (Named Fly) was deployed along the northern boundary of Lot 103 on CH311018 on the edge of Remnant Least Concern RE12.8.17 and High Value Regrowth also containing Least Concern RE12.8.17.



- Camera 3 (Named Possum) was deployed in Lot 24 on CH312265 adjacent to an existing dam. Vegetation is currently mapped as containing High Value Regrowth containing a composite Of Concern Regional Ecosystem community containing 45% RE12.8.16, 30% RE12.8.17, and 25% RE12.8.14.
- Camera 4 (named Eel) was deployed on the western boundary of Lot 71 on CH311061. The vegetation directly west is mapped as a composite Of Concern Regional Ecosystem community containing 45% Of Concern RE12.8.16, 30% Least Concern RE12.8.17 and 25% Least Concern RE12.8.14. A cleared dirt track occurs along the property boundary which was utilised for the camera deployment.
- Camera 5 (named Daisy) was deployed in the southern portion of Lot 211 on CH3114636 and is located in Category C High Value Regrowth vegetation containing a composite Of Concern Regional Ecosystem community containing 45% Of Concern RE12.8.16, 30% Least Concern RE12.8.17 and 25% Least Concern RE12.8.14.
- Camera 6 (named Wombat) was deployed adjacent to an existing dam in Lot 115 on SP167206 within an approved offset area. The vegetation is mapped as Endangered Remnant Regional Ecosystem containing 90% Endangered RE12.3.3 and 10% Least Concern RE12.3.7.

Camera Deployment 2 – May to August

Four camera traps were deployed within the approved Barrams Road Project (EPBC referral 2021/9005) offset area within part of Lot 115 on SP167206. Each trap site considered the pre-clear regional ecosystem communities as well as current on-site conditions, including density of vegetation and habitat features. All cameras were deployed from the 15th of May, 2023 through to 11th August, 2023 (total eighty-nine days). All cameras throughout the initial deployment survey period were baited with meat-based bait (chicken necks). These have been placed in cleared areas adjacent to slashed vehicle tracks to detect any movement of wild dogs and increase the general detection of fauna movement and abundance. The placement of cameras throughout the second deployment has also considered site conditions including habitat features, proximity to water, density of vegetation and opportunity for fauna movement. No wild dogs were recorded throughout this survey period.

- Camera 1 (named Prawn) was deployed in the western portion of the offset area within an area previously mapped as containing Least Concern RE12.8.17. This area has historically been managed as forestry, including plantings of *Eucalyptus saligna* (Sydney Blue Gum) however due to site conditions has not been successful. The area contains some scattered remains of the forestry planting amongst a ground layer dominated by both native and exotic pastoral grasses and scattered patches of *Lantana camara* (Lantana). Woody debris is high within the area due to the failed forestry plantings.
- Camera 2 (named Duck) was deployed within an area previously mapped as containing a composite Regional Ecosystem community mapped as containing 90% Endangered RE12.3.3 and 10% Least Concern RE12.3.7. This camera was placed offset to the existing dam amongst regrowth vegetation representing the pre-clear regional ecosystem community. It is noted that a slashed vehicle track surrounds the dam which is considered as a high use area for vertebrate fauna, including increasing recordings of wild dogs.
- Camera 3 (named Gecko) was deployed towards the northeast corner of the approved offset area near the boundary between the mapped Endangered RE and the Of Concern RE. Although the location of the camera is shown in the composite Endangered RE (Camera 2), site conditions suggest that the camera is within the Of Concern Composite RE containing 45% Of Concern RE12.8.16, 30% Least Concern RE12.8.17 and 25% Least Concern RE12.8.14. This area has historically been managed as forestry plantings however contains some regrowth species consistent with the pre-clear regional ecosystem communities. The camera has been placed offset to the property boundary which contains a slashed vehicle track for maintenance purposes. It is noted that the adjacent property is mostly cleared and is managed for cattle grazing.



- Camera 4 (named Squid) was also deployed with vegetation like Camera 2 including within an area previously containing a composite Regional Ecosystem community mapped as containing 90% Endangered RE12.3.3 and 10% Least Concern RE12.3.7.

Camera Deployment 3 – August to November

Four camera traps were deployed within the approved offset area within part of Lot 115 on SP167206, Montauban Offset. Each trap site considered the pre-clear regional ecosystem communities as well as current on-site conditions, including density of vegetation and habitat features. No bait was used at the motion camera sites. All cameras were deployed from the 15th of May 2023 through to 11th August 2023 (total eighty-nine days). Cameras were then moved to areas surrounding the Approved Offset area, south and east of the existing poultry shed from the 11th of August, 2023 through to 2nd November, 2023 (Eighty-three days). Five dogs were observed through this survey period.

- Camera 1 (named Prawn) is in the Southeast corner of Lot 116 on SP167206 adjacent to an existing track and vegetation associated with a mapped waterway. The camera is in non-remnant vegetation.
- Camera 2 (named Gecko) is located on the northern property boundary of Lot 71 on CH311061 adjacent to an existing dam. The vegetation is mapped as Category C High Value Regrowth containing a Of Concern composited regional ecosystem community containing 45% Of Concern RE12.8.16, 30% Least Concern RE12.8.17 and 25% Least Concern RE12.8.14. Vegetation within this portion of the site contains established Eucalyptus moluccana (Gum Topped Box) with a relatively open understorey and shrub layer. The paddock appears to be regularly grazing from cattle.
- Camera 3 (named Duck) occurs on the northeast corner of Lot 24 on CH312265 within Least Concern Remnant vegetation containing 85% Least Concern RE12.8.17 and 25% Least Concern RE12.8.14.
- Camera 4 (named Squid) is located on the boundary of Lot 24 on CH312265 on the edge of Remnant vegetation containing 85% Least Concern RE12.8.17 and 25% Least Concern RE12.8.14 and Category C High Value Regrowth. The camera is set up along an existing track.

Relative Abundance Index

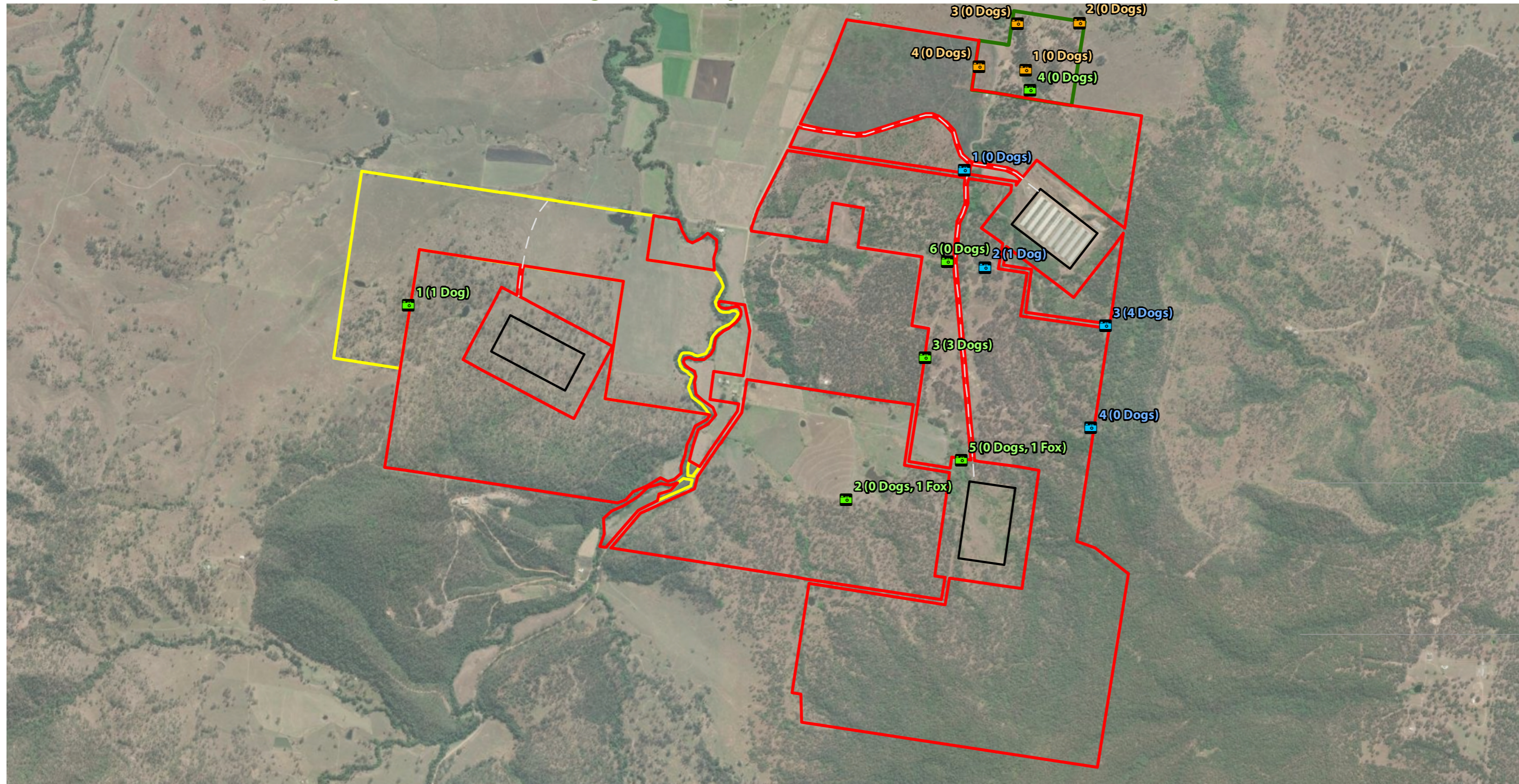
A motion sensor camera detection survey (recorded number of occurrences over days of camera deployment) was utilised to provide relative abundance over the Offset Area, reducing bias and increasing repeatability.

A relative abundance index (RAI) is then calculated for feral animal abundance, using the formula $RAI = \frac{D}{TN} \times 100$, 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 area and are repeatable for future monitoring requirements.






Based on the total survey period nine (9) dogs have been detected via motion camera at various locations throughout the site. A total of fourteen (14) cameras have been deployed throughout this period which equates to a total of seven hundred and seventy-eight (778) camera nights. The total abundance of wild dogs on site is therefore 1.16.






11. Offset Property Baseline Dog Surveys

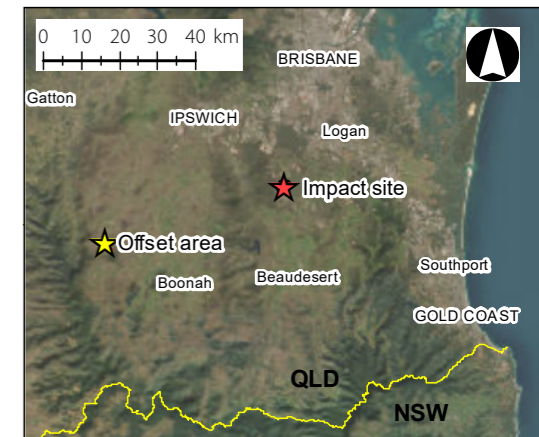


Legend

-  Approved Offset Boundary
-  Future Offset Boundary
-  Offset Area
-  Proposed Chicken sheds
-  Poultry shed access track

Camera Locations (Bait)

-  April-May 2023 Deployment (Peanut Butter & Oats)
-  May-August 2023 Deployment (Chicken Necks)
-  August-November 2023 Deployment (No Bait)



OFFSET PROPERTY RURAL LAND USE MANAGEMENT

Current Management Arrangements

Presently, the Rosevale offset property is utilised for poultry farming, hardwood plantation, cattle grazing and cropping. A description of the current management arrangements is included below.

Refer to **Plan 12** which identifies the location of the current management arrangements.

Hardwood Plantation

The offset property contains approximately 110 ha of land which has historically been utilised for hardwood plantation. The hardwood plantation consisted of native eucalypt species, which were planted in 2009, and then harvested and sold for commercial uses. The hardwood plantation management arrangement is a popular use in the surrounding area. The most recent hardwood plantation was impacted during a property maintenance burn which damaged the plantation stock, and it was unable to be harvested for commercial purposes. The financial incentive of hardwood plantation surrounding the poultry farming operations deems this a viable land management arrangement.

Refer to **Plan 12** for the hardwood plantation management area.

Cattle Grazing

The rural designation, undulating landscape and historically cleared open paddocks of the offset property provide for suitable cattle grazing practices. The offset property has cattle carrying capacity of approximately 300 head of cattle. The cattle grazing management arrangement compliments the poultry farming and hardwood plantation land uses, with no loss in cattle grazing capacity. The cattle grazing management practices occurs over the entirety of the Rosevale offset property.

Cropping

The western offset property parcel (Lot 1 / CC3571) which is bound by the Bremer River on the eastern property boundary contains suitable land type and topography to facilitate agricultural cropping. Given the accessibility to water (Bremer River) and compatibility for cropping uses, the flat land on Lot 1 / CC 3571 is suitable for an intensive management action, which compliments other compatible land uses on the offset property. The ability to undertake agricultural cropping on the offset property allows the landholder to provide feed for or fatten the cattle on-site. Cropping activities which overlap with the ROA 3 offset will be discontinued once approved and management activities begin.

Refer to **Plan 12** for the location of the cropping use on the offset property.

Poultry Farming

Presently, the Rosevale Offset Property retains existing poultry farming operations which have been occurring on the offset property since 2018. The poultry farming operations consist of 8 commercial broiler sheds with a capacity of approximately 360,00 birds and are 1.6 km north-east of the proposed ROA 2 offset. Furthermore, a Development Application has been approved for an additional 8 sheds (360,00 birds) which will be constructed



in the next 2 years, one of which is planned to the east of ROA 2. For the existing poultry farm access roads are currently present and future proposed access is proposed to the approved poultry farms. These are considered a part of current management actions due to the increase of anthropogenic activity and vehicle movement within these areas. This current management arrangement results in an intensive agricultural function on a large portion of land, which is retained and utilised for other compatible uses.

Under the Department of Fisheries Development of Meat Chicken Farms in Queensland 2016, “fixed setback distances” are established and maintained between the meat chicken farm and sensitive land uses. However, sensitive land uses referred to in this act are defined as community facilities, accommodation and dwellings, not environmental areas (Queensland Planning Provision version 4.0 July 2014). This DAF document also indicates that these “are included largely to permit a simple, conservative evaluation of required buffer distances” and highlights the need for site-specific evaluation of setbacks in relation to sensitive land uses. Site-specific separation distances are heavily based on the dispersion of odours from their source. Regardless, a 100 m buffer area from the poultry farms to the offset site is provided to minimise the impacts of human activity, odour, dust, noise and light on intended offset areas conservation values.

The current Rosevale Property Offset Site land holdings contain an existing operational poultry farm with 2 additional facilities approved and proposed over the area. Refer to Plan 12 for the location of the poultry farming operations on the offset property. Despite already approving environmental offsets for Matters of National Environmental Significance (MNES – Koala) at the Rosevale Offset Site on the 2nd of November 2022 (EPBC 2021-9005) and an another offset for Koala, GHFF and Greater Glider in 2022, 2.6 km south of the Rosevale Offset property (EPBC 2018/8340), the Department has subsequently raised concerns around the potential incompatible dual use of the land holding for a poultry operation and environmental offsets.

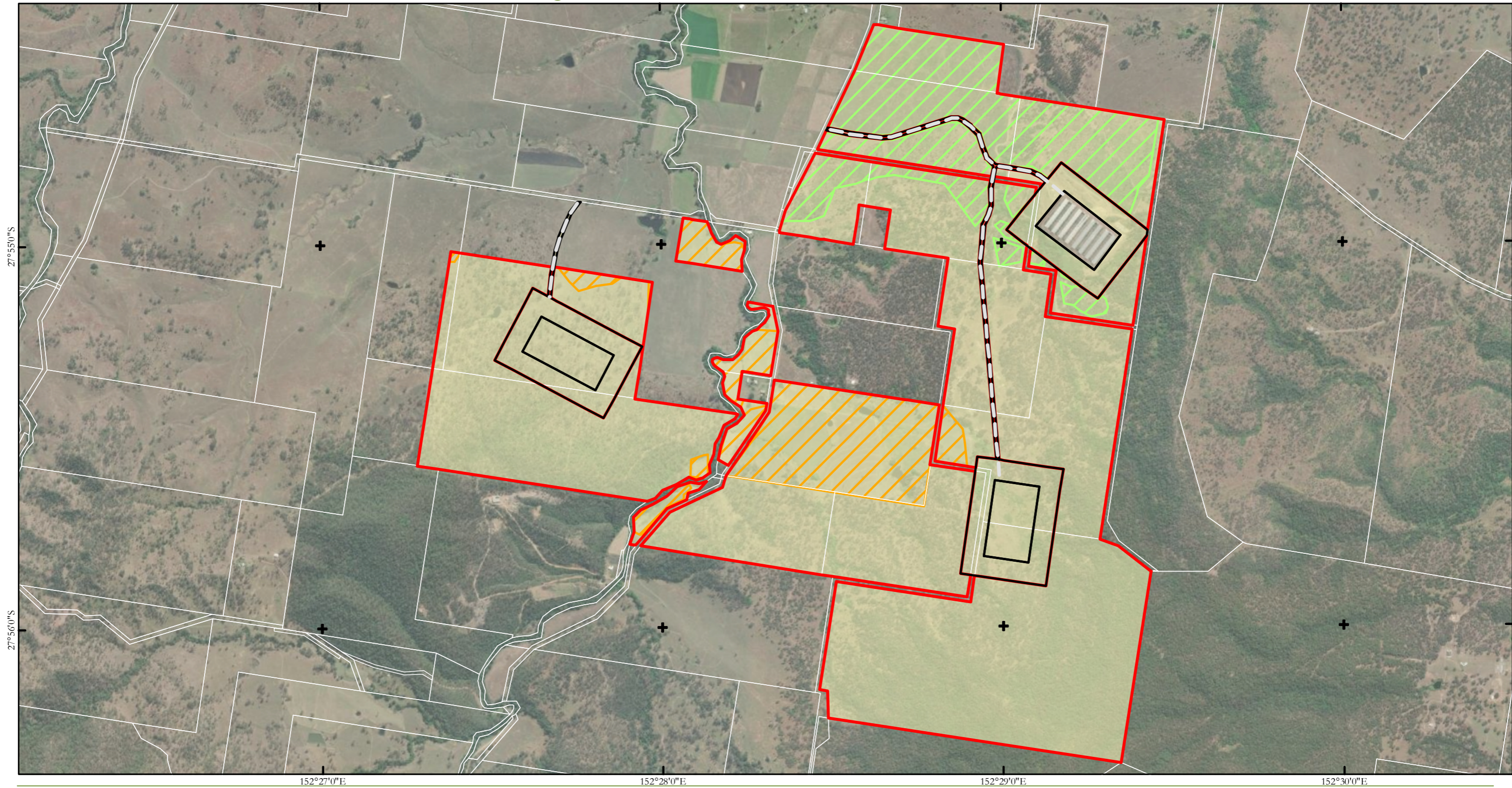
No detailed commentary has been provided to support the specific incompatibility concerns, however, based on the information collected and considered in this OMP, no overt conflicts or impacts have been identified which outweigh or impair the conservation gain opportunities the property provides. Currently the 541.45 ha of ROA 2 contains in places very limited canopy coverage and therefore safe fauna movement is largely absent where Koala would likely have to traverse the ground to move between foraging. With the implementation of the management actions in this Offset Management Plan, safe fauna movement would be reinstated across these areas which limits the threats from Wild Dogs as Koala could move throughout the trees.

Importantly it is noted that at no stage were offsets proposed over any areas with existing or proposed infrastructure supporting the poultry operation. The Rosevale Offset land holdings covers approximately 800ha of land spread over 16 registered allotments. From the northern boundary to the southern boundary the land covers 3.5 km and measures 3.6 km east to west. The existing poultry farm infrastructure at the site, including sheds, tanks, office, storage, access tracks, diversion swales and basins covers a maximum area of 8.75 ha or a little over 1% of the site. Allowing for the remaining facilities to be completed and including existing farmhouses, pump stations, cattle yards and sheds the total portion of the land utilised by infrastructure would be less than 27 ha, or approximately 3.7% of the total land area. None of this land has been proposed for use within any approved or lodge offset proposal.

The balance of the land is currently used for cropping on the flat lightly undulating creek plain zones and cattle grazing throughout (**Plan 12**). Both of these uses will cease with approval and commencement of offset actions where they overlap with the proposed offset area.



12. Offset Area Current Management Activities



Montauban Environmental Offsets

1:18,000

0 100 200 300 400 m

Coordinate System: GDA2020 MGA Zone 56

References:
 © State of Queensland, 2022
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

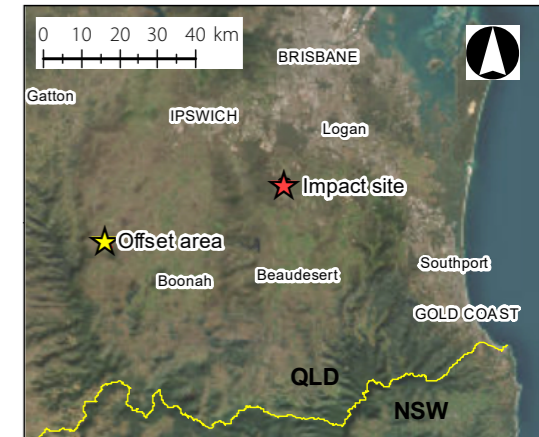
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Legend

- Qld DCDB
- Proposed Poultry Shed, 100m buffer area & access tracks
- Poultry shed access track
- Offset area
- Cattle Grazing
- Historical Hardwood Plantation Area
- Historical Cropping Area



POULTRY FARM MITIGATION OF POTENTIAL IMPACTS

During office and onsite discussions concerns raised by the Department around incompatible land uses focused more on potential indirect impacts of poultry farm operations, relating to:

1. Access and Traffic and Machinery Management
2. Noise
3. Light
4. Surface & Stormwater Management
5. Odour

The Poultry Industry and any approved facilities are extensively regulated by the National Environmental Management System for the Meat Chicken Industry – Version 2, in relation to legal requirements, natural resources and amenity, operation, design and management and monitoring, recording and reviewing. The Processors Grower’s Manual, the RSPCA Meat Chicken Farming Scheme Standard and the RSPCA Operation Manual which these facilities adhere to, outline standard operational procedures that drive the necessary completion of a Site Based Environmental Management Plan (SBEMP), which covers the above potential impacts and management in detail.

Each of these potential indirect threats or incompatible land use activity are discussed in relation to impacts on MNES within this section of the OMP along with a number of other offset design amendments.

It is noted that in South East Queensland the poultry operations are specifically considered as a preferred land use for the preservation of biodiversity values because of the small footprint of the activity. One of the original Queensland Government Koala protection legislation tools – State Planning Policy 1/97 – Conservation of Koalas in the Koala Coast states the following under compatible land uses:

Compatible development

5.7 Development proposals would be compatible with conserving koala habitat values if all the following criteria are met:

little or no clearing of habitat would be required;

for sites in the Koala Conservation Area, minimal additional night-time traffic movements would be generated on the road network in the Koala Conservation Area;

any impedance or threats to the movement of koalas through or across the site would be minimised;

there would be no other significant detrimental environmental impacts on the koala habitat values in the surrounding area; and

koala habitat values would be substantially maintained or enhanced.

5.8 The Koala Coast’s proximity to a large urban population and major tourist destinations should provide opportunities for a range of activities that can be designed in ways that are consistent with the above criteria and conserve the environmental qualities of the area. Some examples are small-scale individual manufacturing, distribution or storage enterprises; home-based businesses; and ‘nature-based’ recreation/tourism facilities and activities (including those enabling people to experience koalas in their natural habitat). Intensive poultry farming is an example of agricultural development which, if properly planned and managed, is able to meet these criteria. Similar agri-businesses might also be appropriate.



(SPP 1/97 – Page 6 – Underlining added)

The result of State Planning policy 1/97 sees large clusters of poultry operations located amongst core koala habitat in the Redlands and Logan areas. No evidence or research has been documented that these areas have a higher degree of wild dog and fox populations due to these activities, however, Koala records have been observed to remain high at these locations.

Regarding the Greater Glider, the suitability of the offset site has been assessed by Dr David Sharpe who found site habitat, locality and connectivity to be suitable for the species including in regards to the poultry enterprises (refer **Appendix D** for detailed analysis).

OFFSET DESIGN CONSIDERATION AND AMENDMENTS

Despite concluding that conflicts or impairment of MNES habitat is unlikely to occur and that the outcomes committed to through the offset site management actions will not be defrayed by the adjoining poultry operations out of caution the offset design has been amended to exclude any land within 100m of any poultry farm use area from future offset usage. In some areas this offset zone already contains areas of MNES habitat and evidence of usage (Koala scat). The purpose and benefits of this design change are:

1. To create a clear and expanded area of delineation between uses through the 100 m setback.
2. Ameliorate any potential indirect outcomes of the poultry operation (light, noise, etc) through the separation
3. Avoid offset activities (new plantings, etc) occurring immediately adjacent to operational areas
4. Importantly, with approval the land allotments will be reconfigured to place the poultry facilities on their own separate title. The benefits of this are:
 - a. No confusion or overlap on what uses are permissible or prohibited on each land title.
 - b. Legally securing measures for offset areas can encumber the entire title on which offset are proposed.

Operational Management & Controls

1. Road, Traffic and Machinery Management

Potential activities associated with the poultry operation include:

- Staff access
- Truck access for bird change over / feed
- Access for maintenance
- Daily machinery activities (tractor / UTV) movements

Potential impacts associated with these activities if unregulated include:

- Animal vehicle conflict
- Noise
- Light
- Dust

The existing poultry facilities are accessed off Tarome Road, which is a rural road containing a mix of dirt and bitumen stretches along the farm boundary. A single gravel entry road accesses the shed area from Tarome Road and is controlled via a security gate to prevent unlawful access. Vehicles using the access track regularly are limited to staff with a daily role at the poultry operations. 2.5 people are employed on this basis and weekly access is limited to entry and exit to the worksite. Intermittently maintenance works, refuelling trucks etc. will



utilise the track. Larger trucks to load and transport market mature chickens occur in approximately 6 week cycles subject to conditions. There are typically two chicken transports cycles approximately targeting the 35th and 48th day.

The facility does not operate functionally at nighttime with hours of operation generally between 7am and 6pm. There is no permanent external lighting requirements at the facility. The Site Based Environmental Management Plan includes a raft of management protocols generally designed around safety and public nuisance, however, serve to provide additional management to any even low risk potential for MNES conflicts. Actions outlined in relation to this item include:

- Security to prevent unlawful access.
- Max speed limit on-site set to 20km (All vehicles at site observed as much slower than this limit)
- Truck exhaust brakes prohibited (Air brakes strictly prohibited)
- All farm machine fitted with Manufacturer specified exhaust equipment

The access track is a typical on farm gravel road, equivalent to most tracks on large scale rural properties, containing 3m of gravel and grass swale edges – refer Photo Plate 1. The track does not encumber movement by a Koala any more than an access track required to maintain offset activities. Any tracks providing access to the poultry operations are excluded to a width of 15 m from the offset calculations. The land will be encumbered by the legally securing mechanism to ensure future management control, however, as the tracks will not be planted with new habitat trees the land area is excluded from calculations.



Photo Plate 1: Current gravel farm tracks on-site reflecting proposal for future poultry farming access tracks

NOISE MANAGEMENT

For broiler facilities which utilise fully enclosed and sealed sheds noise is not a known impact as part of the operation as birds cannot be heard external to the facilities they are housed within. The performance, behaviour and growth of the birds is highly sensitive to noise and a number of mechanical inclusions and methods are deployed to muffle motors and fans, including the use of acoustic enclosures. Some noise would be expected during the construction of the remaining shed facilities, however, this is a quick and temporary process. Once



operational, remaining noise generating activities relate to vehicle movements, loading and unloading and maintenance of machinery, which are all very intermittent and not beyond those occurring on adjacent properties with cattle yards and transport. Intermittently, the low hum of the ventilation fans occurs in direct response to temperature conditions and can only be heard at or downwind of the fan locations when they are running.

Matters of National Environmental Significance and evidence of MNES usage has been consistently located on-site, specifically Koala scat recorded in vegetation adjacent to the existing shed facilities. Noise is not considered to impair offset use of the land, particularly with the inclusion of the 100m setback to offset activities.

LIGHT MANAGEMENT

The poultry farm, hours of operation are 7am until 6pm and the facility is not staffed overnight. No permanent external lighting occurs or is proposed. On remote occasions when there is an issue or staff commence early or work late vehicle lights will occur on the track, however this is rare and not considered additional to undertaking nighttime ecological surveys.

No aspects of the operations lighting will influence any outcomes or usage of the offset for MNES.

SURFACE AND STORMWATER MANAGEMENT

The risks associated with surface and stormwater for poultry operations links to nitrogen and phosphorus contamination directly for the shed pad moving to run off to sensitive environments. Although both of these chemicals occur naturally in vegetated areas and waterways excessive quantities can lead to impacts resulting in native plant dieback and algae populations in waterways.

Surface and Stormwater run off in the poultry industry is governed by the QLD Environmental Protection policy (Water and Wetland Biodiversity) 2019 which stipulates the following minimum parameters:

- No worsening of stormwater discharges into downstream properties
- No worsening of flood plain extents
- No increased risk of contamination of downstream receiving waters

Additionally, the Scenic Rim Regional Council Planning Scheme regulates the poultry use through the codes and policies. Both regulations result in a number of internal and external controls. Internal controls include:

- Concrete nib walls surrounding the base of the sheds to prevent run off entering the shed areas and to contain water within.
- Used bedding or litter is removed from the site
- During shed wash downs no water is discharged from the shed area – temperature controls and ventilation fans are used to evaporate the water.

Externally the shed areas are located away from waterways and contain permitter diversion drains to prevent run-off into the shed areas. Rainwater falling directly within the shed area is directed through a treatment drain made up of:

- Grassed swales in between each shed area, directed to:
- Vegetated filters strips at either end of the swale areas, discharging to
- Detention basins sized to capture retain and treat on-site run off



An extensive water quality monitoring program is mandated by the regulations to ensure not net increase in pollutants occurs beyond the detention basin system. All of these facilities occur immediately surround the shed infrastructure meaning a further 100 m set back is applied to any offset activities.

ODOUR MANAGEMENT

The poultry industry has long been associated as a major producer of odour pollution, primarily in connection with the impact this has on neighbouring homes, users and other sensitive receptors. Historically odour sources within the poultry industry was attributed to:

- Decomposition of manure often mixed with bedding and debris (usually occurs when wet)
- Poorly stored and spoiled feed supplies

Dead animal removal and storage

Significant advancement and controls now apply to major poultry operations which remove or minimise these odour producing activities. Poultry sheds located on the Rosevale site are fully insulated, temperature-controlled facilities. Every aspect of the operation is regulated.

Odour caused through the decomposition of manure mixed with bedding is created when water is added resulting in an ammonia smell (known as 'wet litter'). This outcome is neither good for surrounding nuisance odour levels nor healthy for the birds and thus a raft of innovations and management protocols exist to remove and limit this outcome, including:

- Sealed, controlled and ventilated sheds preclude impacts of rain or high moisture content increasing the humidity within the shed facility maintaining the optimal conditions to keep bedding areas dry.
- Daily inspections occur to ensure the temperature and humidity are maintained the bedding areas are tilled and replaced. Litter is maintained in a dry and friable condition.
- Spent litter is disposed off-site via covered trucks.
- Feed is stored directly within the sealed ventilation sheds.
- Dead birds are collected daily in all sheds. Dead birds must be removed and located in a cold room where they are stored in sealed containers prior to contractor off site removal (minimum twice weekly).

Of particular concern during discussions with the Department appeared to be the potential for the odour emanating from the poultry sheds to additionally attract wild dogs and foxes, known threats to MNES. This risk is noted for free range chickens which are directly exposed to the threat, however, there is not easily identifiable research linking evidence of this same threat occurring for insulated and contained broiler sheds.

ATTRACTION OF WILD DOGS

Wild dogs are known to the site and broader areas, like most rural locations in South-East Queensland. Wild dogs have been recorded at the offset property including over 3 km away from the existing shed facilities. They are also known to the Audale Offset site 2 km to the south and the Aroona Station Offset site 4.5km to the north-west. Based on preliminary assessment of Wild Dogs and other pest species within the Offset Property via infrared fauna cameras across 3 separate survey periods (April – May, May – August and August – November), only nine (9) Wild Dogs were recorded over 778 camera nights by a total of 14 cameras (refer **Table 40**). Based on the relative abundance index (RAI) the total abundance of wild dogs within the Rosevale Offset Property is 1.16. The relative number of sightings across the survey time is not considered to suggest there are significantly more Wild Dogs within the area as a result of poultry farming activity.



Poultry farm biosecurity measures and pest control are often based around disease control and controlling rodents with fencing and specialised shed design keeping out unwanted pest species. Much of the literature surrounding Wild Dogs refers to their impacts on sheep, cattle and goats rather than poultry farming as there is a lot more opportunity for predation on these animals than on chickens contained in sheds. Additionally, Wild dogs and European Fox are known throughout the region regardless of the presence of agricultural farming as they also predate on other invasive species; European Hare, Feral Pig as well as native mammals; Kangaroos, Wallabies, Bandicoots, etc. European Fox in particular are opportunistic feeders and therefore are not particular in the areas they choose to live. There are no known agency issued management plans for wild dogs specifically associated with poultry farming.

Both Foxes and Dogs are widely known to be a threat to livestock and native fauna, hence their inclusion in the Biosecurity Act 2014 and Scenic Rim Regional Council Declared Pest Animals or Weeds. In 2022 Scenic Rim Regional Council identified a spike in Wild Dog populations around national parks, particularly within the Canungra locality where large areas for breeding are present (Sheehan and Forbes, 2022). These areas are identified as being an epicentre for Wild Dog populations as there tends to be no formal control programs in place as these are often associated with agricultural activities. Cattle farming surrounding the proposed offset property, although not by law required to control Wild Dogs, European Fox, Feral Pigs, etc., outside of General Biosecurity Obligations outlined in the Biosecurity Act, likely undertake their own pest control procedures. Additionally in mid-April 2023, SRRC introduced the 1080 baiting programme to assist owners of larger land holdings in managing pest animals and guides landowners through the legislative requirements of baiting (SRRC, 2023). Although again not under law to do so, the programmes roll out will benefit those at the centre of agricultural production as they make easier to gain access to control methods and ultimately have been proposed to work best when neighbouring properties are in co-ordination. Therefore, the encouragement of agricultural landholders in the region to control pests benefits the Rosevale Offset Property and the proposed efforts associated with the ROA 2 offset.



OFFSET MANAGEMENT DETAILS

IMPACT ASSESSMENT TABLES

Koala

MHQA Final Weighting	Assessment Unit 1	Assessment Unit 2	Assessment Unit 3	Assessment Unit 4	Assessment Unit 5	Assessment Unit 6
Site Condition (/3)	1.68/3.00	2.28/3.00	1.85/3.00	1.82/3.00	1.89/3.00	1.71/3.00
Site Context (/3)	2.04/3.00	2.04/3.00	2.04/3.00	2.04/3.00	2.04/3.00	2.04/3.00
Species Stocking Rate (/4)	2.29/4.00	2.29/4.00	2.29/4.00	2.29/4.00	2.29/4.00	2.29/4.00
Assessment Unit Area (ha)	7.46	76.82	0.00	2.21	8.06	92.54
Total Impact Area (ha)	187.09	187.09	187.09	187.09	187.09	187.09
Size Weighting	0.04	0.411	0.00	0.01	0.04	0.49
AU Weighted Score	0.24	2.71	0.00	0.07	0.27	2.98
Total Weighted Score	6.27					



Grey-headed Flying-fox

MHQA Final Weighting	Assessment Unit 1	Assessment Unit 2	Assessment Unit 4	Assessment Unit 5	Assessment Unit 6
Site Condition (/4)	2.40/4.00	2.51/4.00	2.40/4.00	2.40/4.00	1.89/4.00
Site Context (/3)	2.05/3.00	2.05/3.00	2.05/3.00	2.05/3.00	2.05/3.00
Species Stocking Rate (/3)	1.20/3.00	1.80/3.00	1.20/3.00	1.80/3.00	1.80/3.00
Assessment Unit Area (ha)	7.46	76.82	2.21	8.06	92.54
Total Impact Area (ha)	187.09	187.09	187.09	187.09	187.09
Size Weighting	0.040	0.4011	0.012	0.043	0.495
AU Weighted Score	0.23	2.61	0.07	0.27	2.84
Total Weighted Score	6.01				



Greater Glider

MHQA Final Weighting	Assessment Unit 1	Assessment Unit 2	Assessment Unit 3	Assessment Unit 4	Assessment Unit 5	Assessment Unit 6
Site Condition (/3)	1.89/3.00	1.74/3.00	1.49/3.00	2.56/3.00	2.30/3.00	1.37/3.00
Site Context (/3)	1.88/3.00	1.88/3.00	1.88/3.00	1.88/3.00	1.88/3.00	1.88/3.00
Species Stocking Rate (/4)	0.57/4.00	0.57/4.00	0.57/4.00	0.57/4.00	0.57/4.00	0.57/4.00
Assessment Unit Area (ha)	14.42	110.08	3.37	3.51	8.06	107.36
Total Impact Area (ha)	246.80	246.80	246.80	246.80	246.80	246.80
Size Weighting	0.06	0.446	0.01	0.01	0.03	0.44
AU Weighted Score	0.25	1.87	0.05	0.07	0.15	1.66
Total Weighted Score	4.06					



OFFSET PROPERTY DESCRIPTION

The offset property, Rosevale, comprises of mixed vegetation values, ranging from cleared open paddocks and dead plantation trees, through to regrowth and remnant open eucalypt forest. The offset area for this project consists of majority of open paddocks and dead plantation trees. On-ground delineation of vegetation characteristics was able to categorise the offset area into three assessment units based on non-remnant (AU-1), regrowth higher value (AU-2 Hi), regrowth lower value (AU-2 Lo) and remnant (AU-3) vegetation (refer to **Plan 3** for the assessment units).

Topography

The Rosevale offset property is characterised by a high point located in the south-eastern corner of the site (Lot 229/CH312601) which slopes to west, where the low point is associated with the Bremer River. The balance of the offset property is considered undulating, where there are timbered hills and cleared gully lines.

Water Resource(s)

The Rosevale offset property contains numerous manufactured farm dams which have been utilised for historic cropping and agricultural purposes. Natural water resources on-site are defined by the Bremer River which straddles the eastern boundary of the western parcels of the Rosevale offset property (Lot 230/CH312495 and Lot 1/CC3571). Additional to this major waterway, a network of mapped watercourses and drainage features as defined under the *Vegetation Management Act 1999* are observed throughout much of the Rosevale Offset Property. Refer to **Plan 13** for identification of the water resources on the offset property.

It is noted that in its current state the Bremer River runs adjacent to the boundary of the offset site, intersecting between two of the offset properties land parcels. The Rosevale offset property encompasses up to the low bank with the low-bank un-allocated state land which is not within the proposed offset area. In its current state much of the Bremer River's vegetation is in a modified state due to cattle grazing activities. Offset management actions adjacent the waterway will likely include weed management and rehabilitation plantings. Weed management adjacent aquatic systems will be conducted by certified rehabilitation specialists with management to reduce run-off of chemicals and the use of aquatic safe herbicides advised. Additionally, research indicates that vegetation surrounding waterways benefits the aquatic system by reducing water temperature and helping filter out sediment and nutrients before it enters the waterway (DNZ, 2023). In general, the replenishment of native canopy and ground cover vegetation as well as the removal of grazing cattle and management of feral animals which exacerbate erosion, will likely improve run off, water quality and stabilisation of banks.

Landscape Context Values

The offset property is located approximately 9 km north-west of Aratula and adjoins a large tract of remnant vegetation associated with Mount Fraser to the south and Main Range National Park to the west. The offset property and restoration efforts will improve and promote east-west connectivity into the National Park, providing critical habitat refugia for native fauna. Presently, the offset property forms part of a greater than 10,000 ha contiguous landscape of native regrowth and remnant. It has also been highlighted that the southern allotments of the offset site fall within the mapped extent of Regional Biodiversity Corridor 101 described as *Kangaroo Mountain to Rosewood Corridor: Extends from Kangaroo Mountain (Main Range National Park) through to Mt Walker and Rosewood Regional (5km)* (**Figure 6**). Similarly, Moorang Wildlife Corridor, south of the offset site, forms a direct connection to the vegetation within the offset site. Therefore, all habitat

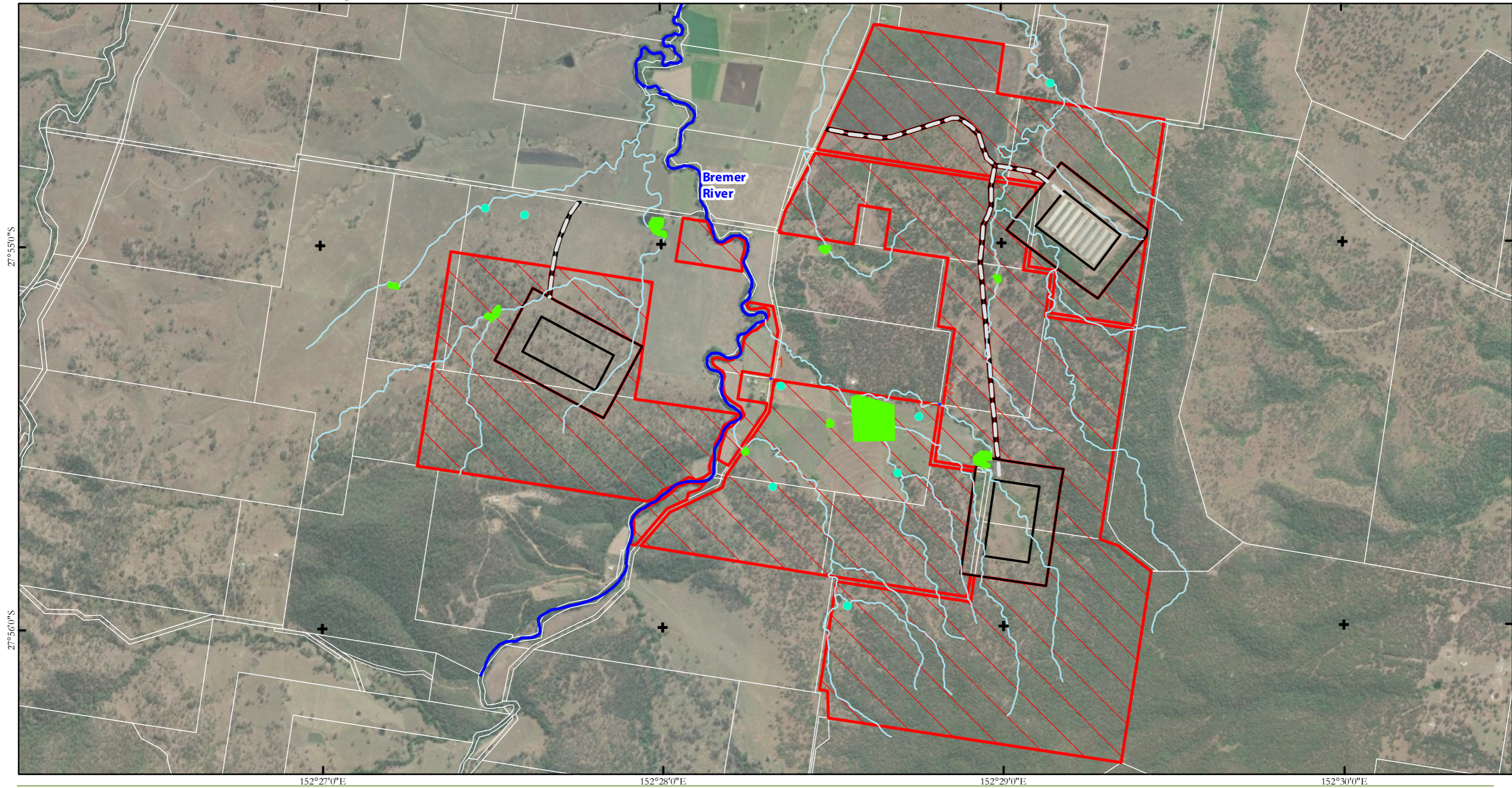


protection and habitat creation is supported by this strategic intent of the land. It is also importantly noted that the land is not located within an area at threat of new development expansion, road or rail upgrades or extractive resource uses.

Review of publicly available data (QLD BioMaps & Atlas of Living Australia) indicate that there are numerous historical and recent Koala and other MNES sightings surrounding the site (refer **Plan 4b, 5b, 6c, 7b, and 8b**). Of particular interest, Atlas of Living Australia (2021) identifies nine Koala sightings to the immediate west of the offset property associated with Parsons Gate Road, with seven of the sightings recorded in November and December 2019. These data indicate that the vegetation on and surrounding the offset property is suitable habitat for the Koala, and more importantly, the creation and enhancement of the east-west corridor connection to the Main Range National Park is an important outcome in achieving a positive conservation gain for the species and the genetic diversity of the Koala population in the Aratula and Scenic Rim locality. Assessments of surrounding habitat indicated that contextually the offset property is connected to approximately 44% of critical Koala habitat within 1 km of the site (refer **Plan 4a**). Koala are considered an umbrella species, meaning that in protecting their habitat, other threatened species with similar habitat requirements are also protected. Foraging habitat for GHFF, Greater Glider, Regent Honeyeater and Swift Parrot all has similar structure and species to that of Koala. Refer to the following plans for confirmed records of each of these species surrounding the site and the critical habitat context assessment of the offset site.



13. Offset Property Water Resources



Montauban Environmental Offsets

1:18,000

0 100 200 300 400 m

Coordinate System: GDA2020 MGA Zone 56

References:
 © State of Queensland, 2022
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

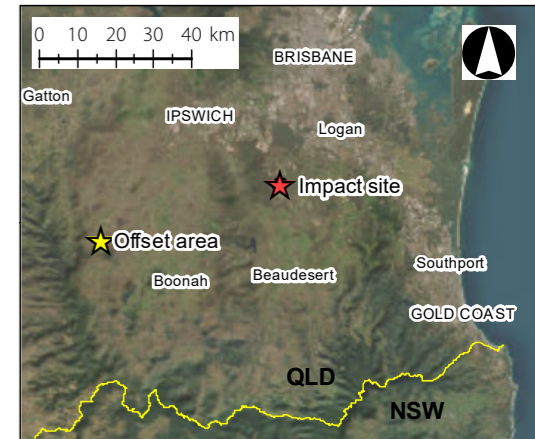
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Legend

- | | | |
|---------------------------|------------------------------|------------|
| Qld DCDB | Water Resources | Dams |
| Proposed Chicken sheds | Major Watercourse | Reservoirs |
| Poultry shed access track | Creeks and Drainage Features | |
| Offset Area | | |



Assessment Unit Descriptions

The Rosevale offset property is characterised by three distinct assessment units:

- Assessment Unit 1 – Historically cleared open paddocks and dead plantation trees;
- Assessment Unit 2 – Regrowth Eucalypt Forest (RE12.8.17)
- Assessment Unit 3 – Remnant Eucalypt Forest (RE12.8.17)

Refer to **Plan 3** for the assessment units on the offset property and the habitat quality transect locations.

Assessment Unit 1 – Historically cleared open paddocks and dead hardwood plantation trees

Assessment Unit (AU) 1 consists of historically cleared open paddocks and dead hardwood plantation trees. This AU is characterised by its lack of native tree, shrub and forb species, with only native grass species such as, *Heteropogon refractus*, *Imperata cylindrica* and *Themeda triandra* present (refer to **Photo Plate 1 – 4**). This AU contains heavy weed infestations, with *Lantana camara* infestations observed throughout the offset property. AU 1 contains no MNES habitat values for the koala or GHFF. This is further supported by the lack of koala evidence recorded during site surveys when implementing the SAT methodology.



Photo Plate 1: Dead hardwood plantation trees.





Photo Plate 2: Dead hardwood plantation trees, Lantana infestations and cleared open paddock.



Photo Plate 3: Historically cleared open paddock.





Photo Plate 4: Historically cleared open paddock adjoining regrowth vegetation.

Assessment Unit 2 – Regrowth Eucalypt Forest (RE12.8.17)

Assessment Unit (AU) 2 consists of regrowth eucalypt forest containing species which are representative of RE12.8.17. The canopy layer within AU 2 is dominated by *Eucalyptus crebra*, *Eucalyptus tereticornis* and *Corymbia tessellaris*. The sub-canopy layer consists of juvenile canopy tree species and scattered *Acacia spp.* and *Alphitonia excelsa*, with the shrub layer dominated by *Acacia spp.* specimens (refer to **Photo Plate 5 – 7**). AU 2 contains a heavily weed infested understorey, with *Lantana camara* infestations observed throughout. Evidence of koala was recorded during the site surveys utilising the SAT methodology (refer to **Photo Plate 8**).





Photo Plate 5: Heavily weed infested regrowth vegetation.



Photo Plate 6: Heavily weed infested regrowth vegetation with evidence of tordening.





Photo Plate 7: Heavily weed infested regrowth vegetation.



Photo Plate 8: Koala scat evidence observed during SAT surveys.



Assessment Unit 3 – Remnant Eucalypt Forest (RE12.8.17)

Assessment Unit (AU) 3 consists of remnant eucalypt forest containing species which are representative of RE12.8.17. The canopy layer is dominated by *Eucalyptus crebra*, with scattered *Corymbia citriodora*, *Corymbia intermedia*, *Corymbia tessellaris* and *Angophora leiocarpa* (refer to **Photo Plate 9 – 11**). The understorey of AU 1 consists predominantly of native shrub, grass and forb species, with isolated weed infestations observed during detailed site surveys. Where weed infestations were observed, the dominant weed species recorded was *Lantana camara*. Evidence of koala was recorded during the site surveys utilising the SAT methodology (refer to **Photo Plate 12**).



Photo Plate 9: Vegetation representative of Assessment Unit 3 – Remnant Eucalypt Forest.





Photo Plate 10: **Vegetation representative of Assessment Unit 3 – Remnant Eucalypt Forest.**



Photo Plate 11: **Vegetation representative of Assessment Unit 3 – Remnant Eucalypt Forest.**





Photo Plate 12: Koala scat evidence observed during SAT surveys.

Assessment Unit Habitat Quality

The three assessment units were assessed utilising the MHQA methods to determine the baseline habitat quality score. A summary of the habitat quality of the Rosevale offset area is included in **Table 36**.



Table 36: Offset property MHQA baseline summary

Koala				
Assessment Unit	Assessment Unit 1	Assessment Unit 2 Hi	Assessment Unit 2 Lo	Assessment Unit 3
Site Condition (/3)	0.57/3.00	1.56/3.00	1.37/3.00	1.76/3.00
Site Context (/3)	1.71/3.00	2.20/3.00	1.71/3.00	2.20/3.00
Species Stocking Rate (/4)	1.14/4.00	2.29/4.00	2.29/4.00	2.29/4.00
Total (/10)	3.43/10.00	6.04/10.00	5.37/10.00	6.24/10.00
Grey-headed Flying-fox				
Assessment Unit	Assessment Unit 1	Assessment Unit 2 Hi	Assessment Unit 2 Lo	Assessment Unit 3
Site Condition (/4)	1.06/4.00	1.72/4.00	1.49/4.00	2.20/4.00
Site Context (/3)	1.70/3.00	1.70/3.00	1.70/3.00	1.70/3.00
Species Stocking Rate (/3)	0.00/3.00	0.60/3.00	0.60/3.00	1.50/3.00
Total (/10)	2.76/10.00	4.02/10.00	3.79/10.00	5.40/10.00
Greater Glider				
Assessment Unit	Assessment Unit 1	Assessment Unit 2 Hi	Assessment Unit 2 Lo	Assessment Unit 3
Site Condition (/3)	0.44/3.00	1.29/3.00	0.71/3.00	1.45/3.00
Site Context (/3)	2.04/3.00	2.20/3.00	2.04/3.00	2.20/3.00
Species Stocking Rate (/4)	0.86/4.00	1.14/4.00	1.14/4.00	2.29/4.00
Total (/10)	3.33/10.00	4.63/10.00	3.89/10.00	5.93/10.00

OFFSET PROPERTY CURRENT THREATS

The offset property contains a variation in agricultural uses and land types from existing remnant vegetation through to open cropping land. Several flora and fauna species observed directly or indirectly (scats, prints, etc) within the Offset Property are listed under the Biosecurity Act 2014, Schedule 2 Part 2 as a restricted matter – invasive biosecurity matter as well as Scenic Rim Regional Council declared pest animals or weeds (**Table 37**). Several of the identified restricted species form the basis of management requirements due to their direct impact to MNES listed species or indirect impact to the habitat required to support these species.

The Scenic Rim Regional Council also lists Feral Goats (*Capra hircus*), and Fire Ants (*Solenopsis Invicta*) as declared pest animals, with neither of these identified as occurring on-site. Should their presence be detected in future surveys then they will be adopted into the pest management plan, which is designed with adaptive management measures for flexibility. Fire Ants in particular have strict biosecurity measures required to stop their spread, with sightings needing to be immediately reported to Biosecurity Queensland.



Table 37: Offset property restricted invasive matters identified as threats to MNES

<i>Biosecurity Act 2014</i> Restricted Matter	Direct / Indirect Impact	Restricted Category	SRRC Declared Pest Animals or Weeds
Lantana (<i>Lantana camara</i>)	Direct – limit Koala movement	3	Yes
Feral Cat (<i>Felis catus</i>)	Direct – opportunistic predators	3,4,6	Yes
Wild dogs (<i>Canis familiaris dingo</i> , <i>Canis familiaris dingo X Canis familiaris</i> , <i>Canis familiaris</i>)	Direct – Key threatening process to Koala	3,4,6	Yes
Feral Pig (<i>Sus scrofa</i>)	Indirect – habitat damage	3,4,6	Yes
European Fox (<i>Vulpes vulpes</i>)	Direct – opportunistic predators	3,4,5,6	Yes
Feral Rusa Deer (<i>Cervus timorensis</i>)	Indirect – habitat damage	3,4,6	Yes
European Rabbit (<i>Oryctilagus cuniculus</i>)	Indirect – habitat damage		Yes

Wild dogs (*Canis familiaris dingo*, *Canis familiaris dingo X Canis familiaris*, *Canis familiaris*) are considered direct threats to the MNES target species (**Table 38**). This conclusion is based on several federal government documents including:

- DCCEEW Conservation Advice for *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory
- National Wild Dog Action Plan 2020 – 2030

Medium priority threats to Koala, Grey-headed Flying-fox and Greater Glider include Feral Cat (*Felis catus*) and European Fox (*Vulpes vulpes*). These species are not listed as a key threatening process to the MNES species other than the greater Glider, however, both are known to be opportunistic predators with significant impacts to native species.

It is also acknowledged that although they are not listed as a direct threatening process to the target MNES species for the Project, Feral Pig (*Sus scrofa*) are opportunistic omnivores and will consume a wide range of animals including small mammals and birds. Feral Pigs are also widely known to cause significant environmental destruction to soil and vegetation via digging, spreading weeds and consumption, particularly surrounding waterbodies. Therefore, the presence of Feral Pigs within the offset site cause destruction of current habitat value and water resources, and indirectly impacting essential habitat areas for the listed MNES. This is similarly the case for Feral Rusa Deer (*Cervus timorensis*) which are known to damage native vegetation, spread weed seeds and foul water and European Rabbit (*Oryctilagus cuniculus*) which impact native vegetation.

Refer **Figure 12** for feral pest management prioritisation and justification.



Other identified specific threats within the Peninsula Offset area site include:

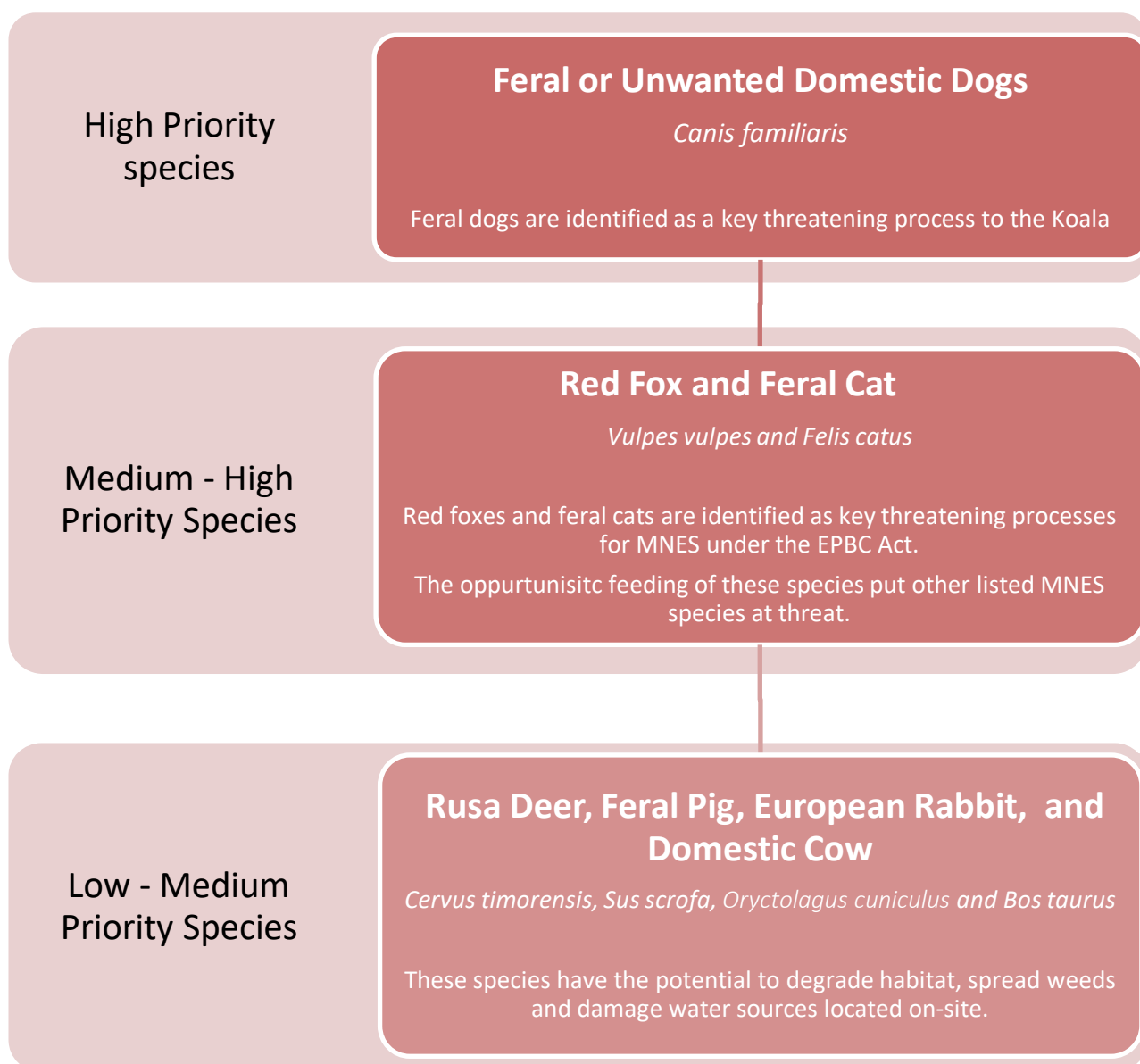
- Ploughing and re-harvesting the land for hay
- Cattle grazing
- Due to the use of the offset area as largely cropping land, it is not immediately impacted by significant weed infestations. Regardless, many invasive species, in particular *Lantana camara*, a declared restricted matter under the Biosecurity Act 2014 and SRRC, occur all around the offset area and more broadly over the Offset Property. Once the cropping use is completed and native vegetation is established across ROA 2, it is anticipated weed sources will be an ongoing challenge with the offset area. Therefore, weed management has been thoroughly addressed.

Table 38: Offset property major threats MNES species

MNES Offset Target Species	Major threats to MNES present within offset property
Greater Glider (<i>Petauroides volans</i>)	<ul style="list-style-type: none"> - Predation by feral cats (<i>Felis catus</i>) and European Fox (<i>Vulpes vulpes</i>) - Barbed wire fencing (entanglement)
Koala (<i>Phascolarctos cinereus</i>)	<ul style="list-style-type: none"> - Encounter mortality from dogs (<i>Canis familiaris dingo</i>, <i>Canis familiaris dingo X Canis familiaris</i>, <i>Canis familiaris</i>) - <i>Lantana camara</i> adversely affects the ability of Koalas to move between trees
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	<ul style="list-style-type: none"> - Barbed wire fencing (entanglement)
Swift Parrot (<i>Lathamus discolor</i>)	<ul style="list-style-type: none"> - Predation by feral cats (<i>Felis catus</i>) and European Fox (<i>Vulpes vulpes</i>)
Regent Honeyeater (<i>Anthochaera phrygia</i>)	<p>The primary threats to the regent honeyeater relate to the species' small population size, habitat loss and fragmentation, competition, and degradation of remnant habitat. However, given that feral cats are opportunistic hunters it is likely they are also a threat to Regent Honeyeater.</p>



Figure 12: Feral Animal Management Prioritisation



CURRENT MANAGEMENT OF THREATS

Presently, under the Biosecurity Act 2014, there is the ‘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 to determine if it is necessary to take reasonable and practical 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 formal 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).

Biosecurity control and pest management surrounding poultry production is generally focused on preventing or minimising the introduction and spread of an infectious disease and food safety pathogens. Biosecurity



management is conducted under a biosecurity or pest management plan. Pest animal control is often localised to prevention of feral animals entering the poultry sheds and coming in contact with the fowl, with localised baiting often utilised (Business Queensland, 2022). Much of the literature surrounding Wild Dogs refers to their impacts on sheep, cattle and goats rather than poultry farming as there is a lot more opportunity for predation on these animals than on chickens contained in sheds. Additionally, Wild dogs and European Fox are known throughout the region regardless of the presence of agricultural farming as they also predate on other invasive species; European Hare, Feral Pig as well as native mammals; Kangaroos, Wallabies, Bandicoots, etc.

No wider property management of pests is regulated or required under the current land uses.

Wild Dogs

The major and obvious threat to listed threatened species on the offset property is feral dogs. Department of Agriculture and Fisheries (DAF) lists feral dogs as abundant and widespread throughout the Scenic Rim region. The local council website also documents that the impact of wild dog activity has increased in the past 10 years due mainly to the increasing population in the region. Further, residents are increasingly engaged in raising livestock and free-range domestic poultry, resulting in a readily available food sources for wild dogs (SRRC 2021). The Scenic Rim Regional Council currently runs baiting, shooting and trapping programs throughout the region on Government owned land and in conjunction with partnering land holders.

Wild dogs have been recorded at the offset property including over 3 km away from the existing shed facilities. They are also known to the Audale Offset site 2 km to the south and the Aroona Station Offset site 4.5 km to the north-west. Based on preliminary assessment of Wild Dogs and other pest species within the Offset Property via infrared fauna cameras across 3 separate survey periods (April – May, May – August and August – November), only nine (9) Wild Dogs were recorded over 778 camera nights by a total of 14 (refer to Photo Plate 6 and Plan 8). It was also noted that, of the nine dogs recorded by the fauna cameras within the Rosevale Offset Property, there is a high chance that the same dog was recorded more than once. The abundance count was based on recordings of pest species, with a dog considered a “new” sighting if an hour had passed since the last recording. One of the dogs recorded has a darker coat and white markings on its chest and appeared on several cameras, making it easy to identify as the same individual. However, in the case of dogs without distinct markings, knowing if it is the same individual recorded several times via fauna camera is incredibly difficult.

Regardless, based on the relative abundance index (RAI) the total abundance of wild dogs within the Rosevale Offset Property is 1.16. The relative number of sightings across the survey time is not considered to suggest there are significantly more Wild Dogs within the area as a result of poultry farming activity. There is no evidence that the presence of the poultry farms has not increased wild dog presence. Similarly, 2 foxes were recorded within the Rosevale Offset Property during baseline surveys.

Wild Dog are widely known to be a threat to livestock and native fauna, hence their inclusion in the Biosecurity Act 2014 and Scenic Rim Regional Council Declared Pest Animals or Weeds. In 2022 Scenic Rim Regional Council identified a spike in Wild Dog populations around national parks, particularly within the Canungra locality where large areas for breeding are present (Sheehan and Forbes, 2022). These areas are identified as being an epicentre for Wild Dog populations as there tends to be no formal control programs in place as these are often associated with agricultural activities. Cattle farming surrounding the proposed offset property, although not by law required to control Wild Dogs, European Fox, Feral Pigs, etc., outside of General Biosecurity Obligations outlined in the Biosecurity Act, likely undertake their own pest control procedures. Additionally in mid-April 2023, SRRC introduced the 1080 baiting programme to assist owners of larger land holdings in managing pest animals and guides landowners through the legislative requirements of baiting



(SRRC, 2023). Although again not under law to do so, the programmes roll out will benefit those at the centre of agricultural production as they make easier to gain access to control methods and ultimately have been proposed to work best when neighbouring properties are in co-ordination. Therefore, the encouragement of agricultural landholders in the region to undertake their own pest management works in conjunction with the proposed efforts associated with the ROA 2 offset.



Photo Plate 6: Wild dog evidence recorded on the offset property.

Feral Cats

The Department of Climate Change, Energy, the Environment and Water (DCCEEW) state that feral cats pose a significant threat to many nationally listed threatened species. This species is known to predate on native species, spread diseases and reduce viable habitat for species most at risk. It is recorded that they are a threat to more than 120 nationally listed threatened species and have been implicated in 28 mammal extinctions (DCCEEW, 2023). For this reason, predation by feral cats has been listed as a Key Threatening Process (KTP) under the Environment Protection and Biodiversity Conservation Act 1999. Additionally, the impacts of unabated Feral Cat predation on threatened species have resulted in this pest species being a focus point of many



federal, state and local government programs, with a feral cat taskforce established by the Threatened Species Commissioner in 2015.

Scenic Rim Regional Council declare feral cats as a pest animal within the area with it noted that they are scattered throughout the region and trapping is an on-going activity. SRRC have declared a focus on enhancing biodiversity and improving threatened species habitats via their Environmental Grants Program in 2022-2023 which has funded 51 community projects and individual landholders who are actively working on enhancing the Scenic Rim’s natural environment. Included in this are groups that focus on feral animal control within the local region. Feral cats were not captured on the infrared cameras places on-site however scats have been recorded indicating it is likely this pest species is present within the area. Additionally, research from the National Land & Water Resources Audit, Canberra indicates that feral cat occurrence, abundance and distribution within south-east Queensland is “common/widespread” (refer **Figure 13**).

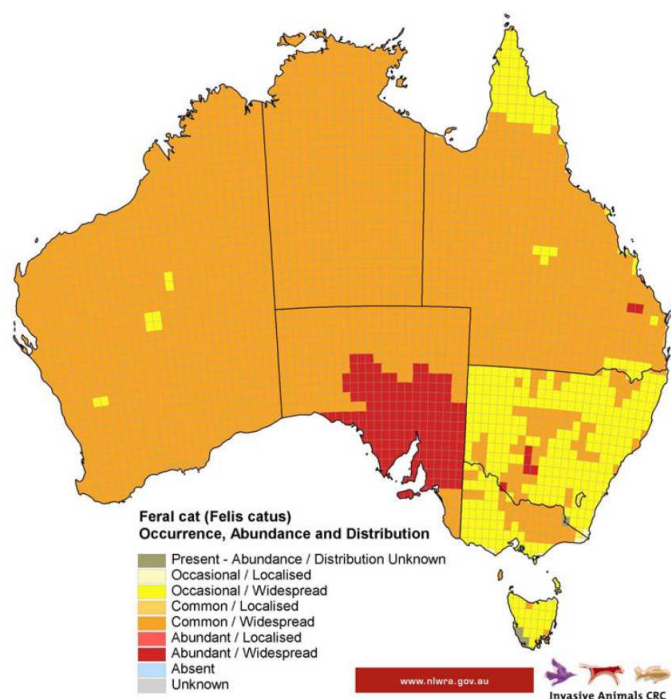


Figure 13: Feral Cat occurrence in Australia (From Assessing Invasive Animals in Australia (2008) National Land & Water Resources Audit, Canberra)

The Australian Governments 2022 – 2023 Threatened Species Action Plan identifies 22 targets within its action plan in order to help recover threatened species and ecological communities within Australia. Targets 8 and 9 of the action plan concerns ensuring the best practice management of feral cats and foxes across all important habitats for susceptible priority species. This action plan also highlights that in order to tackle the impacts of feral cats’ engagement and collaboration from the Australian Government with private and agricultural sectors is necessary. Therefore, the proposal to implement feral cat and fox management for this project, into a large area of potential threatened species habitat corresponds with both local and federal government objectives concerning the species. Feral Cat control tools currently available include shooting, trapping, fencing, baiting



and grooming traps. DCCEEW indicate that the most effective form of feral cat control over large areas is poison baiting.

European Fox

European Fox is listed as a major threat to the survival of several of the listed species Conservation Advice. Predation by the European red fox is listed as a key threatening process under the EPBC Act. Foxes are a confirmed or perceived threat to a large number of threatened species listed in the Threat Abatement Plan for the European Fox (DEWH, 2008), although impacts from fox predation are not restricted to these species. DAF lists foxes as being widespread across Australia due to being highly adaptable and opportunistic feeders consuming a wide variety of animal and plant material, such as rabbits, rodents, frogs, birds, insects and even fruit, vegetables and grain. Scenic Rim Regional Council also lists this species as being abundant throughout the region, with trapping programs widely conducted (SRRC 2023). As mentioned above, the Australian Governments 2022 – 2023 Threatened Species Action Plan includes targets to manage foxes in important habitats for threatened species. The Queensland Government sites several control methods for this species, including shooting, trapping, fencing, baiting, and livestock guardian dogs, combined with land management (Business Queensland, 2021).

Evidence of European Fox was recorded on the offset property (refer to Photo Plate 7). Under SRRCs Biodiversity Strategy 2015 – 2025 local council has set forth an objective to support land managers in the control of pest animals, including foxes and cats. Indicating the acknowledgement that these pest species are currently a problem in the region.

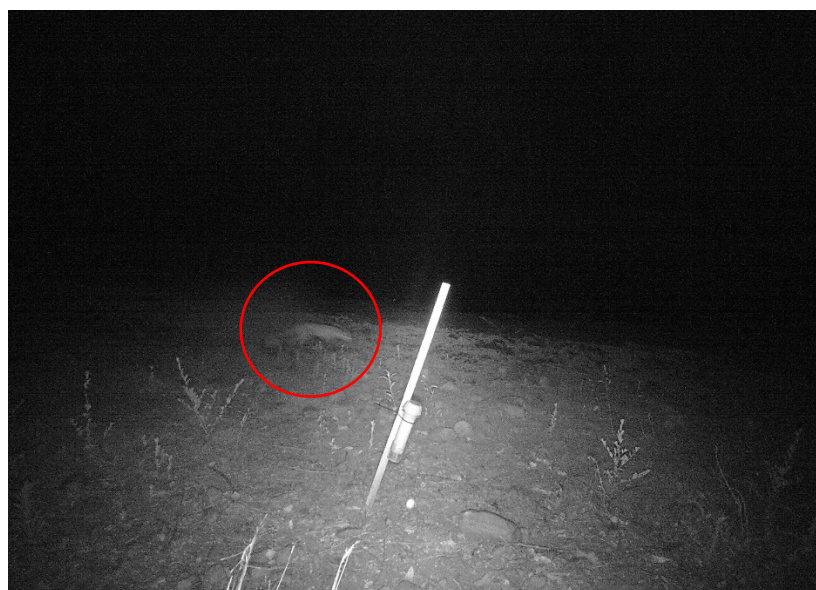


Photo Plate 1: European Fox evidence recorded on the offset property.

Lantana Infestations

Invasion, establishment and spread of Lantana is a key threatening process to many threatened flora species and has been acknowledged to adversely affect the ability of Koala to move between trees (NSW Scientific Committee, 2021). The Department of Agriculture and Fisheries (2023) indicates more than 1400 native species are negatively affected by lantana invasion, including many endangered and threatened species. Additionally, Lantana as a woody shrub with thin, combustible canes, has been observed to create hotter bushfires, which significantly alters native vegetation communities and pastures (DAF, 2023). It is noted that under the



Conservation Advice for Koala, increased intensity/frequency of bushfire is a listed key threatening process. Although this largely refers to the impacts caused by Climate Change, the presence of Lantana within bushland can significantly increase the extremity of bushfire and thus the impact it has directly on Koala and other listed species habitat; GHFF, Greater Glider, Regent Honeyeater and Swift Parrot all rely on Eucalypt bushland for foraging and breeding. For this reason, the Queensland Governments 'South East Queensland Koala Conservation Strategy 2022 – 2025' lists management of invasive weeds in both Action Area 1: Habitat Protection and Action Area 3: Threat Management (DES, 2020). Impact management of invasive flora, particularly Lantana, is therefore considered a key direct action to addressing threats on Koala and other listed species that share the same habitat requirements.

The wider Rosevale Offset Property is recorded to have a significant level of Lantana camara, particularly within gully lines and steep topographical areas where clearing and maintenance is less readily conducted. In order to gain a more complete view of weed coverage across the site and therefore provide a more succinct idea of weed management activities mapping of weeds on-ground was conducted. These results are presented in **Plan 9**. Weed coverage has been categorised into 6 categories, ranging from little to no weed coverage to 80 – 100% coverage. As is expected, non-remnant areas (AU1) contain lower percentages of weed (primarily Lantana) infestation than regrowth (AU2) or remnant (AU3) vegetation due to the on-going modification and maintenance of vegetation (**Plan 9**).

There is significant infestations along the Bremer River and scattered patches throughout the areas not managed for hay production (refer Photo Plate 8). Therefore, management of the offset area will relate to maintaining a low weed extent as the cropping use ceases and native revegetation occurs. Due to the heavy, often impenetrable, infestations of Lantana in and surrounding ROA 2, there is an increased risk of spread once cropping activities are ceased. Therefore Lantana, other identified WONs and general weed management will occur in order to prevent impacts to regenerating native flora.

As Lantana is a restricted species under the Biosecurity Act 2014 there is a General Biosecurity Obligation (GBO) to take all reasonable and practical steps to minimise the risks. The general biodiversity obligation states that reasonable and practical is dependent on the current land use practices undertaken by the landholder. The GBO is a risk ratings-based approach, where risks are managed appropriately based on their threat to the land use practices. Given that the site is currently used for cattle grazing, the risk of weed species such as Lantana to current land use practices is low, and therefore, under the GBO of the Biosecurity Act, these risks are managed in a low-risk way. As such, the proposed management actions are above and beyond what is currently completed on-site.





Photo Plate 2: Examples of significant Lantana invasion



ROSEVALE OFFSET AREA 2 MANAGEMENT ACTIONS

There are seven (7) management actions identified as relevant and necessary for the ROA 2 to achieve outcomes which will benefit the impacted MNES and/or their potential foraging habitat. The management actions focus on the recreation of habitat for the impacted protected matters, while also reducing threats. Although there may be overlap between some of the management actions, all management actions are considered to contribute to the improvement of MNES habitat on ROA 2.

Where logical, performance indicators have been transcribed from the Offset Assessment Chapter included in the Preliminary Documentation Submission (*Saunders Havill Group, 2022*). This includes the use of the *Modified Quality Habitat Assessment* (MQHA) and Foraging Habitat Assessment (FHA) methods to set benchmarks and targeted improvements within the ROA 2.

Management actions have been proposed with consideration of the National recovery plan for the Koala *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DAWE, 2022), National recovery plan for the Grey-headed Flying-fox *Pteropus poliocephalus* (DAWE, 2021), Conservation Advice for *Petauroides volans* (Greater Glider (southern and central)) (DCCEEW, 2022), National Recovery Plan for the Regent Honeyeater (*Anthochaera phrygia*) (DoE, 2016) and National Recovery Plan for the Swift Parrot *Lathamus discolor* (2024). Additionally, relevant threat abatement plans (for predation by European red fox and predation by feral cats), site-specific desktop and field assessments and numerous peer-reviewed papers and studies relevant to the relevant threatened species has been utilised to inform the proposed management actions.

Actions to be completed in accordance with this OMP include:

- **Management Action 1:** Feral Animal Control (primarily targeting wild dogs, feral cats and European foxes)
- **Management Action 2:** Weeds and Weeds of National Significance Control (reduction and management)
- **Management Action 3:** Livestock Control
- **Management Action 4:** Access and Trespass Management
- **Management Action 5:** MNES Habitat Restoration
- **Management Action 6:** MNES Habitat Assisted Rehabilitation
- **Management Action 7:** Hollow Monitoring and Management
- **Management Action 8:** Bushfire Management

The following detailed information is included in the following sections:

- Management action outcome;
- Management action location;
- Management action tasks and completion criteria;
- Management action risk reduction measures;



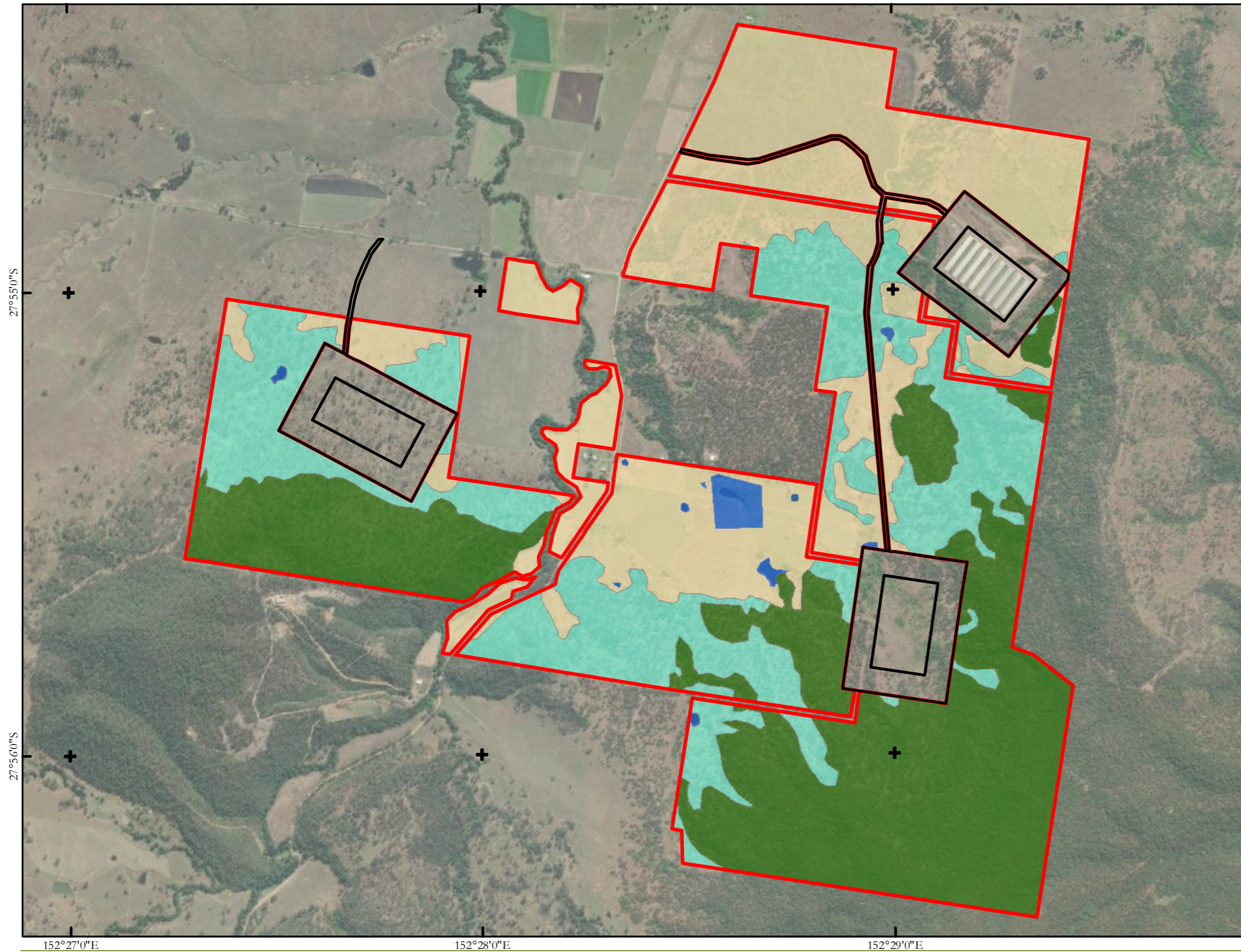
- Management action timing and preliminary completion criteria;
- Management action responsibility;
- Management action monitoring; and
- Management action risks and adaptive management.

Several proposed management activities relevant to habitat improvement will be undertaken across the entire proposed offset site including feral animal control, weed management and land use management; whilst some more targeted actions will focus on specific areas within the proposed offset site (refer **Plan 14**). For instance, general weed management is intended in relation to all rehabilitation areas across the offset site, but significant targeted actions will occur within the areas identified to contain moderate to high infestations (as seen in **Plan 9**). Similarly, feral animal control will occur across the site as deemed appropriate within the future Pest Management Plan however focus would be around points of interest, such as water sources (**Plan 13**).

A description of each of these proposed management measures and how they benefit MNES species is provided in **Table 39**.



14. Offset Site Rehabilitation Plan - Environmental Management Zones



Environmental Management Zones (EMZ)

EMZ 1 (Open paddocks) – Predominantly Restoration Planting

Existing native trees, shrubs and groundcovers to be protected and retained.

Appropriate (sensitive) weed management methodology within this zone initially to encourage natural regeneration, minimise damage to existing native vegetation, stabilise soil and minimise impacts to aquatic / semi-aquatic fauna.

Entire zone to be reconstructed through full restoration planting of a mixture of trees, shrubs and groundcovers, following weed management works at densities appropriate for providing foraging habitat for koala, grey-headed flying-fox, regent honeyeater and swift parrot. Any planting on creek bank to comply with 'Categories of channel vegetation'. Where possible, species to be of local provenance and consistent with native species occurring naturally on site and/or EMZ's Preclear regional ecosystems.

EMZ 2 (Sparse Vegetation & Regrowth Areas) – Mixture of Infill Planting & Weed Management

Existing native trees, shrubs and groundcovers to be protected and retained.

Appropriate (sensitive) weed management methodology within this zone initially to encourage natural regeneration, minimise damage to existing native vegetation, stabilise soil and minimise impacts to aquatic / semi-aquatic fauna.

Existing paddock and areas disturbed from weed management works are to be infill planted with a mixture of trees, shrubs and groundcovers at densities appropriate for providing foraging habitat for koala, grey-headed flying-fox, regent honeyeater and swift parrot. Any planting on creek bank to comply with 'Categories of channel vegetation'. Where possible, species to be of local provenance and consistent with native species occurring naturally on site and/or EMZ's Preclear regional ecosystems.

EMZ 3 (Remnant Vegetation)- Weed Management

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, stabilise soil and minimise impacts to aquatic / semi-aquatic fauna.

Infill planting only within areas heavily disturbed from weed management and where natural regen is not possible. Infill planting is to occur utilising seedling trees, shrubs and groundcovers where required to supplement density of foraging tree species for koala, grey-headed flying-fox, regent honeyeater and swift parrot. Trees to be planted at locations >3m from existing tree trunks. Where possible, species to be of local provenance and consistent with native species occurring naturally on site and/or EMZ's Preclear regional ecosystems.

Montauban Environmental Offsets

1:18,000

0 100 200 300 400 m

Coordinate System: GDA2020 MGA Zone 56

References:
 © State of Queensland, 2022
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 26/11/2025
 10559 E 14 OMP NB Rehab B

DISCLAIMER:
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Legend

- Proposed Poultry Shed, 100m buffer area & access tracks
- Offset area
- Dam [5.19 ha]
- EMZ 1 Open paddocks [191.99 ha]
- EMZ 2 Sparse vegetation & regrowth areas [147.20 ha]
- EMZ 3 Remnant areas [197.07 ha]

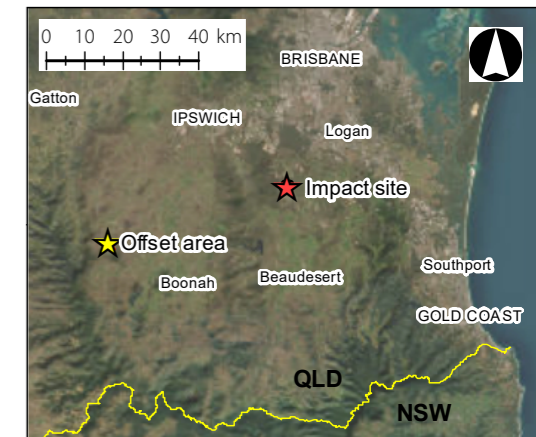


Table 39: Proposed Management and mitigation measures for the relevant MNES

Justification	Proposed Action
<p>Management Action 1 – Feral Animal Management</p> <p>Wild dogs, Feral Cats, and European Fox are considered direct threats to the MNES target species. This conclusion is based on several federal government documents including:</p> <ul style="list-style-type: none"> - DCCEEW Conservation Advice for <i>Petauroides volans</i> (greater glider (southern and central)), - DCCEEW Conservation Advice for <i>Phascolarctos cinereus</i> (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory - Threatened Species Scientific Committee Conservation Advice for Swift Parrot (<i>Lathamus discolor</i>) and; - Department of Environment Threat Abatement Plans for Predation by Feral Cats, European Foxes and Feral Pigs. <p>Koala</p> <p>Feral animals including the wild dog are common in the proposed offset area and have the potential to impose negative pressures on the koala, with dogs representing a key mortality threat to koalas.</p> <p>Greater Glider</p> <p>Remains of greater gliders have been found in the stomachs of feral cats and the stomachs and scats of foxes. Predation from both these pests are therefore listed as key threats.</p> <p>Swift Parrot</p> <p>Predation of native wildlife by cats on the Swift Parrot is a listed threatening process under federal and state (NSW and Vic) legislation.</p>	<p>Baseline pest monitoring has been undertaken and monitoring will continue in order to identify evidence of feral or unwanted pest with periodical surveys and monitoring of feral animal populations, locations and dispersal patterns within the Offset property. Survey methods to identify species presence will include direct observation, remote sensor camera and sand traps for print record. These surveys will develop a baseline of feral animal populations, identify ‘hot spots’, and key activity periods (e.g., dusk).</p> <p>A purpose-built offset property Pest Management Action Plan will be developed specifying techniques to be utilised (trapping, shooting, baiting). Best-fit methods for control and monitoring of management programs will be guided by relevant threat abatement plan and recommended DAF Monitoring Techniques for Vertebrate Pests (Wild Dogs, Feral Cats and Foxes). In order to work effectively this approach will involve adaptive management to pest management, which considers each method relative to the base line data collected to determine the most effective pest management measures for the offset property.</p> <p>Where practical and appropriate; participate in pest management planning and stakeholder engagement with immediate land holders to foster joint sub regional scale action plan and ensure effective pest management in the locality of the offset area.</p> <p>Key targets for this management action include:</p> <ul style="list-style-type: none"> • Controlling the occurrence of feral animal species (namely wild dogs, foxes and feral cats) immediately on the commencement of the action. • Maintain the removal of feral animal species within the ROA 2 for the life of the approval; and • Ensure no MNES injury or mortality occurs within the ROA 2 for the life of the approval.



Justification	Proposed Action
<p>Presence of foxes, wild dogs, and feral cats is an impact to all targeted MNES, with particular impact of wild dog on Koala, and feral cat and fox on Greater Glider and Swift Parrot.</p>	
<p>Management Action 2 – Weeds including Weeds of National Significance Control (reduction and management)</p>	
<p>The Department of Agriculture and Fisheries (2023) indicates more than 1400 native species are negatively affected by lantana invasion, including many endangered and threatened species. This largely occurs through the suppressive effect of Lantanas aggressive growth form, generally adversely impacting species richness and some soil faunal assemblages. Additionally, in areas blanket layers of Lantana camara form a barrier to terrestrial species, which would include limiting the Koalas ability to access areas containing and over-canopy of NJKHTs. Further, as Lantana is a woody shrub with thin, combustible canes, it has been observed to create hotter bushfires, which significantly alters native vegetation communities and pastures (DAF, 2023).</p> <p>It is noted that under the Conservation Advice for Koala, increased intensity/frequency of bushfire is a listed key threatening process. Although this largely refers to the impacts caused by Climate Change, the presence of Lantana within bushland can significantly increase the extremity of bushfire and thus the impact it has directly on Koala and other listed species habitat; GHFF, Greater Glider, Regent Honeyeater and Swift Parrot all rely on Eucalypt bushland for foraging and breeding. For this reason, the Queensland Governments ‘South East Queensland Koala Conservation Strategy 2022 – 2025’ lists management of invasive weeds in both Action Area 1: Habitat Protection and Action Area 3: Threat Management (DES, 2020). Impact management of invasive flora, particularly Lantana, a Weed of National Significance (WoNS), is therefore considered a key direct action to addressing threats on Koala and other listed species that share the same habitat requirements.</p> <p>Lantana camara occurs on the Rosevale offset property both in open paddock areas as isolated clusters and thickets, as the dominant understory amongst regrowth and remnant vegetation and as a prolific shrub in gully lines. Within open areas existing</p>	<p>Baseline weed monitoring utilising an Antenna based GPS system was conducted mapping the full extent (as description polygons) of all Weeds including Weeds of National Significance, predominantly <i>Lantana camara</i>, areas within the ROA 2 (achieving a total percentage of extent per AU of weed infestations / occurrences within the ROA 2). This data will form the basis for targeted weed management activities across the site.</p> <p>Specific weed management actions will first begin with excluding stock (cattle) access from identified significant <i>Lantana camara</i> and other WONS infestation within the ROA 2. This is crucial as it is known that grazing cattle provide the most continuous source of weed spread (Year 1). Additionally, prior to any use of mechanical clearing, proposed treatment sites will be examined, and desirable trees and regrowth clearly marked with pink flagging tape to help reduce native vegetation.</p> <p>Following the exclusion of cattle detailed weed management control activities within the ROA 2 will occur with the following methods to be deployed (Year 2 – 5):</p> <ul style="list-style-type: none"> • Stick rake, grubbing, ploughing or slashing major accessible areas of Lantana where not on a slope greater than 15% or where no existing native values occur. • Apply broadscale herbicide and spot spray during high germination summer periods (Nov-March). Utilize organic based Lantana targeted herbicides which minimize impacts on native vegetation regenerating within and surrounding Lantana patches. Control methods applied will be guided by methods outlined in the DAF guide to best management practices and as per Biosecurity Queensland recommendations. • Cautionary options to reduce run off or contamination from herbicides will be utilized within proximity to the Bremer River. Spot spraying of



Justification	Proposed Action
<p>farm practices result in periodical pesticide application limiting spread, however, this does not occur to the extent of entire eradication as the costs of treatment to result in an economical return for the grazing benefit are non-existent. Baseline weed data indicates that the most significant infestations of Lantana occur within remnant vegetation on-site, 62% containing an upper-moderate to high density (60 – 100 %) infestation (Plan 9). Regrowth vegetation also contains a higher percentage of moderate to high infestation of Lantana, particularly where it adjoins remnant vegetation. Therefore, this infers that the potential for these areas to provide optimal habitat to Koala, known to occur within the area, is impacted by weed infestation. The highly invasive and spreading nature of the species, coupled with the in-active management in areas would result in progressive increases particularly as local climatic events align with optimal germination and seeding periods.</p> <p>Presence of WoNs is an impact to all targeted MNES, particularly Koala.</p>	<p>Glyphosate will limit potential for impact as it is known to breakdown immediately on contact with soil and has no residual effect (DNRW, 2006). It is understood that permits from relevant state Environment Protection Authorities may be required if herbicides are to be sprayed on riverbanks. If seen fit, other forms of control, such as mechanical or fire management, may be utilized adjacent to Bremer River to reduce potential impacts to waterbodies.</p> <p>Post major weed removal operations, periodical weed maintenance rotations for removal / suppression of Lantana regeneration will occur, with the same environmental considerations as the wholesale removing of weeds applied.</p> <p>As is the case with feral animal management plans, weed suppression activities will incorporate adaptive management principles into weed management methods to streamline overall management to the most effective control types.</p>
Management Action 3 – Livestock Control	
<p>Livestock grazing is known to reduce the densities and biodiversity of flora species within a region, therefore reducing potential habitat for a wide range of fauna species. Although, there is some limited research that intensive cattle grazing can result in some positive biodiversity outcomes in regard to control of invasive species. However, for these conservation outcomes to be met it has been noted that a number of circumstances need to occur. For instance, stock must be controlled to graze areas needing treatment and excluded from sensitive wet areas where soil is most vulnerable to trampling. Stock must also be assured to be consuming the desired weed species and not native plant species intended for regeneration (Charles Sturt University, 2012). In general, clear treatment goals, control areas and monitoring programs need to be implemented for this system to work and the cost and benefits considered when compared to other weed treatments, such as slashing or burning. Overall, it is generally agreed that cattle farming has higher adverse effects to conservation rather than benefits due to re-engineering the landscape, removing potential for native species regrowth and ultimately supports predator species.</p>	<p>Cattle densities will be reduced from the offset area and fauna-fencing will be secured where required to prevent cattle entering the ROA 2. Areas with observed high localized grazing impacts, largely the non-remnant regions, will be rehabilitated to re-establish native foraging and habitat trees for Koala, GHFF, Greater Glider, Regent Honeyeater and Swift Parrot. Reinstatement of native vegetation layers will require a holistic management approach combining management of weeds and existing vegetation.</p> <p>Key management actions to reduce the risk of livestock control and access and trespass management impacts on the Rosevale offset property include:</p> <ul style="list-style-type: none"> • Ownership of the land by the offset provider and therefore any residual grazing activities will be secondary land uses to the approved offset outcomes. • Implementation of a legally binding mechanism (Voluntary Declaration under the Vegetation Management Act 1999 and covenant under the Land Act 1994) which provides protection of existing and created habitat values.



Justification	Proposed Action
<p>The offset area has been subject to varying levels of cattle grazing. This has degraded vegetation with native regrowth inhibited by trampling and feeding, therefore reducing the extent, connectivity and quality of foraging and breeding habitat for the targeted MNES within the offset area.</p> <p>Reduction of cattle densities, removal of fencing with a risk of entanglement to native fauna and replenishment of native species will increase habitat availability for Koala, Regent Honeyeater, Swift Parrot, GHFF and Greater Glider.</p> <p>Cattle grazing is an impact to habitat for all targeted MNES.</p>	<p>The Voluntary Declaration applies the regulations of the Vegetation Management Act 1999 to the land title which remains regardless of the transfer of ownership or sale of the land; and</p> <ul style="list-style-type: none"> • Fauna friendly livestock exclusion fencing around the perimeter of the ROA 2. • Reduction of barbwire fencing within ROA 2 in order to manage risk of native fauna entanglement.
Management Action 4 – Access and Trespass Management	
<p>Unlawful access and trespassing can lead to impacts to native flora including trampling, compacting, and weed spread which ultimately leads to suppressing of native regrowth and potential habitat or connectivity vegetation for native species. Furthermore, trespassing often results in fence destruction, which allows for free movement of cattle, further impacting potential habitat for threatened species.</p> <p>Access and trespassing have potential to impact habitat for all targeted MNES.</p>	<p>The Rosevale offset property is surrounded to the north, east and west by large cattle grazing operations. The impacts of unlawful access and trespassing mimic those listed in the ‘Livestock Control’ management action above (trampling, compacting, weed spread, fence destruction). Without a system for identifying and preventing or controlling access and trespassing the actions established for on-site stock management will be undermined.</p>
Management Action 5 – MNES Habitat Restoration	
<p>According to the relative statutory documents (i.e., conservation advice and national recovery plans), all 5 of the targeted MNES species referred to in this OMP are significantly impacted by habitat clearing and fragmentation.</p> <p>In its current state the Rosevale offset area comprises of mixed vegetation values, ranging from cleared open paddocks, through to regrowth and remnant open eucalypt forest. On-ground delineation of vegetation characteristics was able to categorize the</p>	<p>MNES habitat restoration will occur through the transitioning of grassed grazing areas into vegetated ecosystems supporting habitat for MNES within AU1 and AU2. This will increase foraging and dispersal habitat for Koala, GHFF, Greater Glider and Swift Parrot within 20 years via planting non-remnant areas with non-juvenile Koala habitat trees and allowing regrowth to naturally regenerate. The rehabilitation program will be undertaken by suitably qualified personnel and will include measures</p>



Justification	Proposed Action
<p>offset area into three assessment units based on non-remnant (AU-1), regrowth (AU-2 Hi and Lo) and remnant (AU-3) vegetation (Plan 3). Non-remnant vegetation is the largest assessment unit on-site, at 224.41 ha, consisting largely of open paddocks and dead plantation trees. In its current state these areas offer little in the way of direct foraging or breeding habitat for the 5 MNES species nor is vegetation great enough to provide significant steppingstone habitat. Therefore, rehabilitation and restoration of these areas will provide a significant area of new habitat for these species and improve safe movement opportunities for fauna. Rehabilitation activity on-site will contribute to functional ecological habitat and corridors due to the surrounding landscape containing known and potential habitat for all 5 species (refer to Plan Sets 6 through 9 for context assessments and species records).</p> <p>Koala</p> <p>The Koala has a specialist diet, feeding on the leaves of select species of <i>Eucalyptus</i>, <i>Lophostemon</i>, <i>Corymbia</i>, <i>Angophora</i> and occasionally <i>Melaleuca</i> and <i>Leptospermum</i>. Consequently, koalas are reliant on access to stands of forest and woodland that support those key food-tree species.</p> <p>Habitat protection and habitat restoration are Action Areas 1 and 2 respectively within the South East Queensland Koala Conservation Strategy 2020 – 2025. Rehabilitation therefore a key action that will improve koala habitat values within the offset area. Specifically, reinstating the natural RE communities has the potential to increase habitat connectivity and increase the availability of key resources including food and shelter trees for the koala.</p> <p>Grey-headed Flying-Fox</p> <p>Grey-headed Flying-fox requires foraging resources and roosting sites to persist. The species is known to feed primarily on the nectar and pollen in eucalypt flowers and fleshy subtropical rainforest fruits, and around 100 species of plant have been recorded in their diet.</p>	<p>to ensure the maintenance and survival of new breeding and foraging trees in the offset areas.</p> <p>Restoration is a high cost and high labor-intensive task from preparation to commencement through to the first 3 years of establishment. All rehabilitation plantings are to be completed by the end of Year 3. This staged process of rehabilitation is recommended under the <i>SEQ Restoration Framework Manual</i> (Chenoweth EPLA, 2012) and <i>SER Australasia National Restoration Standards</i> (SERA, 2017). Under these guidelines it is suggested that larger sites be broken into a number of different management zones with progress occurring at different stages within each zone. Therefore, allowing for each zone to get the same amount of care and management practices. As these zones move to maintenance and the time required for each zone is reduced these can be consolidated.</p> <p>Additionally, the Victorian Government Department of Sustainability and Environment <i>Native Vegetation Revegetation Planting Standards</i> (DSE, 2006) indicates that staged or successive plantings which result in more than one age class allows for better natural recruitment, higher vegetation complexity and easier adaptive management.</p> <p>Benchmarks for rehabilitation efforts are derived from the definition of remnant vegetation under the <i>Vegetation Management Act 1999</i>. Vegetation can be mapped as remnant vegetation and associated essential habitat for Koalas if the canopy is 70% of the height, 50% of the cover and similar species composition of the appropriate pre-clearing RE (Queensland Government 2015). Therefore, the final benchmark at 20 years for rehabilitation is 70% of the reference benchmark cover (for canopy, shrub and ground-layer) and 50% of the reference benchmark height (for canopy and shrub layer) of the appropriate RE.</p> <p>On-site regional ecosystem vegetation communities show the Rosevale Offset contains a broad distribution of the following regional ecosystem type (Code plus Dominant Species):</p>



Justification	Proposed Action
<p>Under the National Recovery Plan for GHFF, recovery objective 1 lists enhancing and rehabilitating native vegetation on public and private lands as a way to increase foraging habitat critical to the species survival. Rehabilitation is therefore a key action that will improve GHFF foraging values within the offset area.</p> <p>Greater Glider</p> <p>The Greater Glider subsists almost entirely on the young leaves and flower buds of select eucalypt species, especially including <i>Corymbia citriodora</i> (Spotted Gum), <i>Eucalyptus tereticornis</i> (Forest Red Gum), <i>E. acmenoides</i> (White Mahogany) and <i>C. intermedia</i> (Pink Bloodwood) (Eyre 2006; Eyre et al. 2022).</p> <p>Under the Conservation Advice for Greater Glider restoring habitat and connectivity is listed as a conservation and management priority, particularly where habitat has been substantially fragmented, disturbed or modified. Although hollow-bearing trees can take 100 years to form, consideration to the surrounding contiguous bushland areas, where Greater Glider has previously been recorded (Plan 6c) and intent to protect the land as an offset in perpetuity rehabilitation efforts on-site will contribute to long-term protected habitat for the species. Additionally, the implementation of native vegetation within a currently highly disturbed area will provide a larger area of foraging habitat for the species, connected to the areas of remnant vegetation on-site and adjacent which is more likely to contain hollow-bearing trees.</p> <p>Regent Honeyeater</p> <p>The Regent Honeyeaters diet primarily consists of nectar, but also includes invertebrates (mostly insects) and their exudates (e.g., lerps and honeydew), and occasionally fruit. Nectar is obtained chiefly from eucalypts and mistletoe, and regent honeyeaters appear reliant on select species which provide reliable nectar flows.</p> <p>Strategy 1 of the National Recovery Plan for Regent Honeyeater is focused on improving the extent and quality of habitat for this species. Rehabilitation of degraded areas where foraging habitat was once present and likely formally used by Regent</p>	<p>12.8.17 – <i>Eucalyptus melanophloia</i>, <i>Eucalyptus crebra</i>, <i>Eucalyptus tereticornis</i>, <i>Corymbia intermedia</i></p> <p>Within particularly disturbed areas of non-remnant vegetation, the objectives of this plan are long term and may take longer than 15 years after commencement of implementation, particularly as the Queensland Herbarium quotes that in general it takes 30 years for a disturbed site to regain remnant status without intervention. However, the goal of regeneration actions is often to re-establish an ecosystem that is self-regenerating and self-sustaining and therefore will persist against disturbance (SEQ Restoration Framework, 2012). The SEQ Restoration Framework indicates that in order to achieve the self-sustaining ecosystem at least 2 – 5 years of implementation and maintenance needs to occur. Thus, the offset project provides a sufficient maintenance and implementation period which sets the revegetation areas towards remnant status following the completion of maintenance. Interim benchmarks via MHQA transects are to be conducted at regular intervals which will inform the progress of the rehabilitation/revegetation efforts towards achieving this plan’s outcomes. Given this, adaptive management approaches can also be employed to redirect restoration approaches, if interim benchmarks are not being met.</p> <p>The goal to plant vegetation completed between Year 1 to 3 is not thought to impact the conservation benefits or outcomes of the restoration efforts by Year 20. Several studies on the benefits of revegetation, including one from La Trobe University in association with the Victorian State Governments Department of Energy, Environment and Climate Action (DEECA), have indicated that the benefits of revegetation are realized within the first 15 years of planting, particularly for bird and nectar foraging species (DEECA, 2020). This study in particular accredits the success of revegetation to a well-thought-out monitoring program and species selection, which is intended for ROA 2.</p> <p>Although it is noted hollows will not form within revegetation plantings within a 20-year period, the improvement of the non-remnant, remnant and regrowth vegetation</p>



Justification	Proposed Action
<p>Honeyeater, as indicated by surrounding habitat and pre-clear vegetation, is therefore a key action that will improve Regent Honeyeater foraging values within the offset area.</p> <p>Swift Parrot</p> <p>Swift Parrots breed in Tasmania and then move to mainland Australia in Autumn for the non-breeding season. They feed preferentially in the largest trees available (Kennedy and Overs, 2001) and on psyllid lerps, seeds and fruit (Kennedy and Tzaros, 2005). Favored feed trees include winter flowering species such as Swamp Mahogany (<i>Eucalyptus robusta</i>), Spotted Gum (<i>Corymbia citriodora</i>), Red Bloodwood (<i>C. gummifera</i>), Forest Red Gum (<i>E. tereticornis</i>), Mugga Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>).</p> <p>Swift Parrots are known to utilise similar foraging habitat vegetation to GHFF (Birds Australia, 2011), therefore providing new habitat for GHFF also benefits Swift Parrots.</p> <p>Restoration efforts will provide foraging and dispersal habitat for all MNES species.</p>	<p>present on-site via in-fill plantings, feral animal management and weed control will ultimately restore the habitat value of this area which already contains suitable large trees (> 300 mm DBH) and hollow-bearing trees likely to support gliders. Trees with a DBH of 300 mm or above are indicators of potential foraging and dispersal trees for Greater Glider (Eyre et al. 2015). Rehabilitation efforts on-site will contribute to long-term protected habitat for threatened species including Greater Glider due to the intent to protect the land as an offset in perpetuity. Therefore, revegetation of non-remnant areas will contribute initially as foraging and dispersal areas for Greater Glider and breeding and denning habitat eventually due to the protection of the area which is highly connected to current potential Greater Glider habitat and records of Glider (within Main Range NP) and the installation of artificial hollows.</p> <p>The rehabilitation planting will reflect the mapped regional ecosystem on-site RE 12.8.17 via incorporating the following species into revegetation:</p> <ul style="list-style-type: none"> • <i>Angophora subvelutina</i> (Rough-barked Apple) • <i>Eucalyptus crebra</i> (Narrow-leaved Ironbark) • <i>Eucalyptus melliodora</i> (Yellow-box Gum) • <i>Eucalyptus tereticornis</i> (Queensland Blue Gum) • <i>Eucalyptus melanophloia</i> (Silver-leaved Ironbark) • <i>Corymbia intermedia</i> (Pink Bloodwood) • <i>Corymbia citriodora</i> (Spotted Gum) <p>Assessment Unit 1 (AU 1) and portions of Assessment Unit 2 (AU 2) of ROA 2 is to consist of MNES habitat restoration activities. The MNES habitat restoration is to:</p> <ul style="list-style-type: none"> • Be in accordance with the pre-clear regional ecosystem(s), being, RE12.8.17; • Expand the available MNES foraging and dispersal habitat through infill planting of broad hectare cleared land; • Expand the available habitat for MNES by adjoining other EPBC offsets; and • Provide new connectivity with surrounding habitat for the protected matters and adjoins the bioregional conservation corridor.



Justification	Proposed Action
	<p>Where vegetation does occur within AU 1 and AU 2 of ROA 2, transects have been completed in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology and to establish a base score. As areas are restored, new transect locations will be established for future monitoring, however in years 1-3 for revegetation areas transect surveys will be replaced by a mix of photo monitoring / stem count / mortality rate and Projective Foliage Cover.</p> <p>After 3 years of established and maintained growth habitat quality transects will be re-introduced as part of survey and monitoring. These will allow benchmarks to be checked at regular intervals which will inform the progress of the rehabilitation/revegetation efforts towards achieving this plan's outcomes. Given this, adaptive management approaches can also be employed to redirect restoration approaches, if interim benchmarks are not being met.</p>
<p>Management Action 6 – MNES Habitat Assisted Rehabilitation</p>	
<p>According to the relative statutory documents (i.e., conservation advice and national recovery plans), all 5 of the targeted MNES species referred to in this OMP are significantly impacted by habitat clearing and fragmentation.</p> <p>In its current state the Rosevale offset area comprises of mixed vegetation values, ranging from cleared open paddocks, through to regrowth and remnant open eucalypt forest. On-ground delineation of vegetation characteristics was able to categorize the offset area into three assessment units based on non-remnant (AU-1), regrowth (AU-2) and remnant (AU-3) vegetation (Plan 3). Remnant vegetation is the second largest assessment unit on-site, at 179.29 ha and regrowth vegetation at 137.75 ha.</p>	<p>Objectives of this management action will be to ensure that native regrowth and remnant vegetation contained within the offset area are enhanced and preserved over the life of the offset by managing and maintaining a ground layer, understory and canopy that is consistent with the nominated regional ecosystem classifications. The rehabilitation program will be undertaken by suitably qualified personnel and will include measures to ensure the maintenance and survival of new breeding and foraging trees in the offset areas.</p> <p>Within mapped regrowth and remnant areas, natural regeneration is preferred to the reconstruction of the vegetation community (i.e., soil improvements, infill planting and weed removal). Management of these areas will focus on controlling weeds and restricting access from vehicles or livestock, or other existing significant</p>



Justification	Proposed Action
<p>The remnant and regrowth vegetation areas on-site do provide foraging and habitat values in their current state, however are observed to contain significant infestation of weeds (namely <i>Lantana camara</i>) and cattle grazing impacts, therefore regeneration of native species for foraging is limited and safe fauna movement impacted. The rehabilitation of these areas will allow for the regeneration of native seedbank, increase habitat for the 5 target species and improve safe movement opportunities for fauna. Rehabilitation activity on-site will contribute to functional ecological habitat and corridors due to the surrounding landscape containing known and potential habitat for all 5 species (Plan Set 6 through 9 for context assessments and species records).</p> <p>Koala</p> <p>The Koala has a specialist diet, feeding on the leaves of select species of <i>Eucalyptus</i>, <i>Lophostemon</i>, <i>Corymbia</i>, <i>Angophora</i> and occasionally <i>Melaleuca</i> and <i>Leptospermum</i>. Consequently, koalas are reliant on access to stands of forest and woodland that support those key food-tree species.</p> <p>Habitat protection and habitat restoration are Action Areas 1 and 2 respectively within the South East Queensland Koala Conservation Strategy 2020 – 2025. Rehabilitation therefore a key action that will improve koala habitat values within the offset area. Specifically, reinstating the natural RE communities has the potential to increase habitat connectivity and increase the availability of key resources including food and shelter trees for the koala.</p> <p>Grey-headed Flying-Fox</p> <p>Grey-headed Flying-fox requires foraging resources and roosting sites to persist. The species is known to feed primarily on the nectar and pollen in eucalypt flowers and fleshy subtropical rainforest fruits, and around 100 species of plant have been recorded in their diet.</p>	<p>disturbances, in order to promote further growth. This will ultimately uplift the values of current potential and known habitat for Koala, GHFF, Greater Glider, Regent Honeyeater and Swift Parrot.</p> <p>Although it is noted hollows will not form within revegetation plantings within a 20-year period, the improvement of the remnant and regrowth vegetation present on-site via in-fill plantings, feral animal management and weed control will ultimately restore the habitat value of this area which already contains suitable large trees (> 300 mm DBH) and hollow-bearing trees likely to support gliders. Trees with a DBH of 300 mm or above are indicators of potential foraging and dispersal trees for Greater Glider (Eyre et al. 2015) and can be utilised for hollow installation. Rehabilitation efforts on-site will contribute to long-term protected habitat for threatened species including Greater Glider due to the intent to protect the land as an offset in perpetuity. Therefore, revegetation of non-remnant areas will contribute initially as foraging and dispersal areas for Greater Glider and breeding and denning habitat eventually due to the protection of the area which is highly connected to current potential Greater Glider habitat and records of Glider (within Main Range NP).</p> <p>MNES habitat assisted rehabilitation will occur through conditional improvement of habitat which primarily centers around weed removal (namely, Lantana). In total the ~317.46 ha of AU 2 and AU 3 is proposed for MNES habitat assisted rehabilitation. To achieve the scheduled improvements in the condition and health of the vegetation, the Offset Provider will utilise all four restoration approaches outlined in the South-East Queensland Ecological Restoration Framework – Guideline, being:</p> <ul style="list-style-type: none"> • Natural regeneration; • Assisted natural regeneration; • Reconstruction; and • Fabrication. <p>Assessment Unit 2 (AU 2) and Assessment Unit 3 (AU 3) of ROA 2 consists of MNES habitat assisted rehabilitation. The MNES assisted rehabilitation is to:</p> <ul style="list-style-type: none"> • Be in accordance with the pre-clear regional ecosystem(s), being, RE12.8.17;



Justification	Proposed Action
<p>Under the National Recovery Plan for GHFF, recovery objective 1 lists enhancing and rehabilitating native vegetation on public and private lands as a way to increase foraging habitat critical to the species survival. Rehabilitation therefore a key action that will improve GHFF foraging values within the offset area.</p> <p>Greater Glider</p> <p>The Greater Glider subsists almost entirely on the young leaves and flower buds of select eucalypt species, especially including <i>Corymbia citriodora</i> (Spotted Gum), <i>Eucalyptus tereticornis</i> (Forest Red Gum), <i>E. acmenoides</i> (White Mahogany) and <i>C. intermedia</i> (Pink Bloodwood) (Eyre 2006; Eyre et al. 2022).</p> <p>Under the Conservation Advice for Greater Glider restoring habitat and connectivity is listed as a conservation and management priority, particularly where habitat has been substantially fragmented, disturbed or modified. Greater Glider has previously been recorded in intact remnant vegetation connected to the vegetation on-site (refer Plan 6c) therefore improving the remnant and regrowth areas on-site will improve habitat for this species to move into. Additionally, the intent to protect the land as an offset in perpetuity rehabilitation efforts on-site will contribute to long-term protected habitat for the species.</p> <p>Regent Honeyeater</p> <p>The Regent Honeyeaters diet primarily consists of nectar, but also includes invertebrates (mostly insects) and their exudates (e.g., lerps and honeydew), and occasionally fruit. Nectar is obtained chiefly from eucalypts and mistletoe, and regent honeyeaters appear reliant on select species which provide reliable nectar flows.</p> <p>Strategy 1 of the National Recovery Plan for Regent Honeyeater is focused on improving the extent and quality of habitat for this species. Rehabilitation of degraded areas where foraging habitat was once present and likely formally used by Regent Honeyeater, as indicated by surrounding habitat and pre-clear vegetation, is therefore</p>	<ul style="list-style-type: none"> • Enhance the existing regrowth and remnant vegetation through weed removal, fixing the soil and seed bank, supporting the natural succession of native regrowth plants and spot and cluster infill planting; • Expand the available habitat for MNES by adjoining other EPBC offsets; and • Provide new connectivity with surrounding habitat for the protected matters and adjoins the bioregional conservation corridor.



Justification	Proposed Action
<p>a key action that will improve Regent Honeyeater foraging values within the offset area.</p> <p>Swift Parrot</p> <p>Swift Parrots breed in Tasmania and then move to mainland Australia in Autumn for the non-breeding season. They feed preferentially in the largest trees available (Kennedy and Overs, 2001) and on psyllid lerps, seeds and fruit (Kennedy and Tzaros, 2005). Favored feed trees include winter flowering species such as Swamp Mahogany (<i>Eucalyptus robusta</i>), Spotted Gum (<i>Corymbia citriodora</i>), Red Bloodwood (<i>C. gummifera</i>), Forest Red Gum (<i>E. tereticornis</i>), Mugga Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>).</p> <p>Swift Parrots are known to utilize similar foraging habitat vegetation to GHFF (Birds Australia, 2011), therefore providing new habitat for GHFF also benefits Swift Parrots.</p> <p>Restoration efforts will uplift current habitat for all MNES species.</p>	
<p>Management Action 7 – Hollow Monitoring and Management</p>	
<p>Natural tree hollows form an important part of many South East Queensland (SEQ) ecosystems, and are recognised as critical for Greater Glider denning habitat (Eyre et al. 2022). Natural hollows can take between 80 to 350+ years to develop and form a range of sizes and shapes over time that suit the requirements of different fauna species. In circumstances where clearing of hollow-bearing trees cannot be avoided, hollow carving or creation can provide a functional alternative to natural tree hollows.</p> <p>Hollow installation is highly specialised to suit individual fauna species requirements, and requires prior knowledge of hollow-dependent fauna at the development and receiving areas and hollow specifications for target fauna species. Ongoing monitoring and maintenance is also essential to ensure hollows are achieving beneficial outcomes for fauna, particularly threatened species such as the Greater Glider.</p>	<p>A Hollow Monitoring and Management Plan will be implemented in Year 1 of the offset to monitor the utility of existing site hollows and creation of new hollows via Arborist carving and nest box installation.</p> <p>Ample existing trees that are suitable for the creation of hollows have been identified (Plan 6a). Detailed mapping and monitoring of hollow features and the creation of additional features by carving and nest boxes where required ensures that enough features to acquit the OAG requirements under the features based assessment will be provided across the relevant assessment units.</p> <p>Following hollow carving and nest box installation, a single page memo or email outlining installed hollows, host tree particulars and location coordinates with supporting map is to be provided. This information will form part of the Annual</p>



Justification	Proposed Action
<p>There are currently no regulatory guidelines in Queensland for the implementation, monitoring and maintenance of hollows. The information is intended as a guide and is subject to alteration by the qualified hollow carver working on site.</p>	<p>Compliance Reporting. Monitoring is to be undertaken by a qualified Ecologist annually for the life of the approval. Inspections will identify the following:</p> <ul style="list-style-type: none"> • Fauna use including target and/or non-target species • Rectification procedures for introduced species. • Any damage or dieback, or risk to the nest box • Maintenance required. <p>A monitoring template will be completed during each inspection. Following each inspection, a report is to be prepared within 14 days by the Ecologist and issued to the Environmental Coordinator. This brief report will detail the results of the inspection and outline any further measures to improve beneficial outcomes of the strategy for fauna (e.g. removal of pest species, minor repairs or replacement).</p>
Management Action 8 – Bushfire Management	
<p>Uncontrolled wildfire is considered a key threat to MNES populations with impacts ranging from mortality and injury to loss or altered habitat resulting in a reduction in food source and in some cases increased exposure to predators. The purpose of management actions is centred on reducing the risk and severity of bushfires that may occur within the offset area to prevent immediate impacts on Koala and long-term through impacts to restoration activities.</p>	<p>Management actions to reduce the risk of bushfire impacts within ROA 1 include:</p> <ul style="list-style-type: none"> • Maintain existing bushfire breaks between adjacent landholders, in particular along the boundaries where the State Planning Policy bushfire hazard mapping indicates there is a ‘high’ or ‘very high’ risk of bushfire occurring; • Cooperate with the local Queensland rural fire service, Scenic Rim Regional Council and adjoining land owners to minimise bushfire risk at a regional scale; and • Undertake a feasibility assessment on insurance for plant stock replacement.



ACTION 1: FERAL ANIMAL MANAGEMENT

MANAGEMENT ACTION OUTCOME

A core role of management action 1 will be for the prolonged control and reduction in identified primary pest species known to be a direct threat to listed MNES, namely feral dogs, foxes and feral cats, over the Rosevale offset property for the offset period. Secondary pest species, which have indirect impacts on the ecosystems that support the five target MNES species, will be managed as seen fit in order to reduce their impact to rehabilitation efforts. This includes feral pig and feral rusa deer identified on-site which are known to damage native vegetation, spread weed seeds and fowl water.

Wild and Domestic Dogs

The Department of Agriculture and Fisheries (DAF) lists feral dogs as abundant and widespread throughout the Scenic Rim region. Wild dogs (*Canis familiaris dingo*, *Canis familiaris dingo X Canis familiaris*, *Canis familiaris*) are listed as declared pest animals by Scenic Rim Regional Council, with the local council website documenting that the impact of wild dog activity has increased in the past 10 years due mainly to the increasing population in the region. Further, residents are increasingly engaged in raising livestock and poultry, resulting in a readily available food source for wild dogs (SRRC 2021). The Scenic Rim Regional Council currently runs baiting, shooting and trapping programs throughout the region.

European Fox

European Fox is listed as a major threat to the survival of several of the listed species Conservation Advice. DAF lists foxes as being widespread across Australia due to being highly adaptable and opportunistic feeders. Scenic Rim Regional Council also lists this species as being abundant throughout the region, with trapping programs widely conducted (SRRC 2023). The Australian Government's 2022 – 2023 Threatened Species Action Plan includes targets to manage foxes in important habitats for threatened species. The Queensland Government sites several control methods for this species, including shooting, trapping, fencing, baiting, and livestock guardian dogs, combined with land management (Business Queensland, 2021) (refer **Table 40**). Evidence of European Fox was recorded on the offset property (refer to **Photo Plate 15**). Under SRRC's Biodiversity Strategy 2015 – 2025 local council has set forth an objective to support land managers in the control of pest animals, including foxes and cats. Indicating the acknowledgement that these pest species are currently a problem in the region.

Feral Cats

The Department of Climate Change, Energy, the Environment and Water (DCCEEW) state that feral cats pose a significant threat to many nationally listed threatened species. This species is known to predate on native species, spread diseases and reduce viable habitat for species most at risk. It is recorded that they are a threat to



more than 120 nationally listed threatened species, including Greater Glider and Swift Parrot, and have been implicated in 28 mammal extinctions (DCCEEW, 2023). For this reason, predation by feral cats has been listed as a Key Threatening Process (KTP) under the *Environment Protection and Biodiversity Conservation Act 1999*. Scenic Rim Regional Council declare feral cats as a pest animal within the area with it noted that they are scattered throughout the region and trapping is an on-going activity. Feral cats were not captured on the infrared cameras places on-site however scats have been recorded and the presence of the poultry farms indicate it is likely this pest species is present within the area. Additionally, research from the National Land & Water Resources Audit, Canberra indicates that feral cat occurrence, abundance and distribution within south-east Queensland is “common/widespread”.

The Australian Governments 2022 – 2023 *Threatened Species Action Plan* highlights that in order to tackle the impacts of feral cats’ engagement and collaboration from the Australian Government with private and agricultural sectors is necessary. Therefore, the proposal to implement feral cat and fox management for this project, into a large area of potential threatened species habitat corresponds with both local and federal government objectives concerning the species. Feral Cat control tools currently available include shooting, trapping, fencing, baiting and grooming traps (refer **Table 41**). DCCEEW indicate that the most effective form of feral cat control over large areas is poison baiting.

Table 40: Offset property recommended control methods for identified pests

Scientific Name	Common Name	Baiting	Fencing	Shooting	Trapping
<i>Canis familiaris</i>	Feral Dog	Y	Y	Y	Y
<i>Felis catus</i>	Feral Cat	Y	Y	Y	Y
<i>Vulpes vulpes</i>	Red Fox	Y	Y	Y	Y
<i>Sus scrofa</i>	Feral Pig	Y	Y	Y	Y
<i>Cervus timorensis</i>	Rusa Deer	N	Y	Y	Y
<i>Bos taurus</i>	Domestic Cow	N	Y	N	N

* Y indicates appropriate management action; N indicates inappropriate management action*

Table 41: Vertebrate Pest Management Control Methods and Techniques

Control method	Process	Advantages	Disadvantages
Baiting	It is important that when the baits are placed on-site that they reduce the likelihood of non-target species ingesting the bait. There are distance requirements and exclusions zones when using 1080 poison. Baits are not to be laid: - Within 5m of fenced boundary; - Within 20m of permanent or flowing water bodies; - Within 50m of the centreline of a	Cost effective, effective in reducing dog numbers and for use over large areas for feral cat control.	Can affect non-target species, requires qualified, trained officer to deploy and manage program onsite, primary threat to spot-tailed quoll.



Control method	Process	Advantages	Disadvantages
	declared road; - Within 150m of a dwelling.		
Fencing	Fencing of areas of habitat where target pest species can be excluded effectively from an area.	Highly effective where fully fenced areas can be installed and maintained.	Labour-intensive and costly.
Trapping	Specialised traps are set in the evening and checked after dawn the following morning, with any target pest species trapped, subsequently destroyed.	Species specific, with traps specialised to target different species and animal sizes. Non-target animals can be subsequently released unharmed.	Labour-intensive and costly.
Shooting	Vertebrate pests are typically trapped and shot onsite, or in large or remote locations, aerial shooting techniques may be utilised.	Can be effective when used in conjunction with other trapping methods.	Health and safety concerns, highly trained and licensed officer required to conduct shooting program.

Current Biosecurity Obligations

Presently, under the *Biosecurity Act 2014*, there is the ‘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 to determine if it is necessary to take reasonable and practical 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).

Biosecurity control and pest management surrounding poultry production is generally focused on preventing or minimising the introduction and spread of an infectious disease and food safety pathogens. Biosecurity management is conducted under a biosecurity or pest management plan. Pest animal control is often localised to prevention of feral animals entering the poultry sheds and coming in contact with the fowl, with localised baiting often utilised (Business Queensland, 2022). Therefore, the control of pest species such as feral cat, dogs and foxes is likely not actively occurring if it is cheaper to provide preventative measures excluding their entry rather than active management (shooting, trapping, monitoring). Therefore, feral animals sighted throughout the offset property are likely not actively managed unless within proximity to the poultry sheds. It is therefore ultimately a requirement that pest management of wild dogs, feral foxes and feral cats occur across a wider area to abate and manage these species and prevent associated impacts to native fauna and flora. The implementation of a targeted Pest Management Plan for the offset site, which liaises with surrounding landholders, will provide certain, detailed, and active reduction of pest species in the local area.



MANAGEMENT ACTION LOCATION

- Feral animal control will be focussed within ROA 2;
- Incidental feral animal control will be extended to the entire Rosevale offset property if the feral animal control measures are not resulting in the desired results.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Control feral animal species (namely wild dogs, foxes, and feral cats) within the ROA 2 from the commencement of the action.
- Manage all domestic dogs on lead if they enter the property.
- Maintain no feral animal species within the ROA 2 for the life of the approval; and
- Ensure no MNES injury or mortality occurs within the ROA 2 for the life of the approval.

MANAGEMENT ACTION RISK REDUCTION MEASURES

Management actions to reduce the risk of feral animal predation impacts on the Rosevale offset property include:

- Continue pest monitoring to identify evidence of feral or unwanted pest with periodical surveys and monitoring of feral animal populations, locations and dispersal patterns within the Offset property. Survey methods to identify species presence will include direct observation, remote sensor camera and sand traps for print record. These surveys will develop a baseline of feral animal populations, identify 'hot spots' (e.g., dams), and key activity periods (e.g., dusk).
- A purpose-built offset property Pest Management Action Plan will be developed specifying techniques to be utilised (trapping, shooting, baiting). Best-fit methods for control and monitoring of management programs will be guided by relevant threat abatement plan and recommended DAF Monitoring Techniques for Vertebrate Pests (Wild Dogs, Feral Cats and Foxes). To work effectively this approach will involve adaptive management to pest management, which considers each method relative to the base line data collected to determine the most effective pest management measures for the offset property.
- Where practical and appropriate; participate in pest management planning and stakeholder engagement with immediate land holders to foster joint sub regional scale action plan and ensure effective pest management in the locality of the offset area.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria
Year 1 - 20	Continue seasonal feral animal survey(s) to monitor activity and estimate abundance
Year 1	Develop a targeted Pest Management Plan



MANAGEMENT ACTION RESPONSIBILITY

The Offset Provider will establish, resource and fund the pest management components of the Offset Management Plan. The following tasks will require specific expertise or appointed contractors where required to complete:

- Baseline and repeat surveys to be completed by a recognised dog control practitioner or 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;
- Deployment and use of suitable wild dog traps and euthanasia to be in accordance with Queensland *Biosecurity Act 2014*;
- Hunting / shooting program to occur in accordance with all relevant Queensland Government permits and regulations; and
- Best practice standard operating procedures for shooting and trapping of feral cats and foxes are adhered to as per the Australian Government, Centre for Invasive Species Solutions.

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.

MANAGEMENT ACTION MONITORING

Ongoing surveys and range estimate of feral animal populations, seasonal locations, dispersal patterns and hot spots, including sighting and incidence (MNES death / injury) data will be recorded. Survey methods and results will be incorporated in Annual Compliance Reports for the Approved Action.

To determine feral animal activity within the ROA 2, a non-invasive survey technique utilising baited camera traps will be implemented, as per the methodology in the following section.

Ongoing monitoring will demonstrate:

- Incidental sightings and records of feral animals on-site (at or below the baseline survey results);
- Feral animal scat / track or imprint evidence at targeted survey locations;
- Reduced site population census on infrared drone and baited remote sensor camera surveys;
- Reduced scalp collection or animal kills on diurnal hunting (Shooting) events;
- MNES injury and / or mortality records;
- Stock losses over the property; and
- Mitigation of injury or mortality of vertebrate pest species to onsite MNES populations.



Year 5, 10, 15 and 20 Offset Area Annual Report (OAAR) to include repeat survey methods, results data and comparative analysis demonstrating vertebrate pest management evidence and impacts. Report to include any adaptive management recommended changes to pest control and reduction methods to be deployed for following years. Details of surveys, results and alterations to management strategies to be provided to proponent in the Year 5, 10, 15 and 20 OAAR for issue to DCCEEW in the Year 5, 10, 15 and 20 Annual Compliance Reports for the Action.

When feral animals are recorded, then consultation with an expert in feral animal control is required to assist in adaptively managing the program and implementation to ensure control been achieved.

BAITED MOTION SENSOR CAMERA TRAP METHODOLOGY

Camera trapping involves setting up a fixed digital camera to capture images or video of animals which pass in front of a camera. It is a non-invasive technique designed to detect medium to large sized animals as they pass, although it is possible to detect smaller animals depending on the set-up. This set-up identifies fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts.

Infrared sensing cameras with an infrared flash are deployed, which use motion to trigger. Six (6) cameras will be set up within the ROA 2 on a 1 km grid (*NSW DPI 2018 Guide for camera trapping wild dogs, foxes and feral cats*). The cameras are to be systematically located to capture a representative of the ROA 2. The six cameras are to be deployed continuously. Cameras are to be attached 30-100 cm from the ground on a tree or post and directed towards landscape features. The cameras are to be left to record for a minimum of two weeks in each recording period. The cameras are to be baited in order to target evidence of wild dogs and other potential threats to known MNES in the broader area.

FERAL CAT MONITORING METHODOLOGY

Monitoring feral cats is known to be difficult due to the elusive and trap-shy nature of the pest. The NSW Department of Primary Industries “*Monitoring Techniques for Vertebrate Pests: Feral Cats*” advises several potential techniques for identifying feral cat presences and monitoring success of control programs; spotlighting, track counts and trapping. The Pest Management Program will consider whether one or a combination of these methods is best fit for the conservation outcomes and feral cat management within the monitoring area, with thought to the costs of proposed control, and size and accessibility of the offset site.

This guide also stresses that the success of a feral cat control program for native species protection needs to work in conjunction with wild dog and fox control. Therefore, the integrated pest management being proposed at offset site is considered the most appropriate to ensure conservation outcomes for the listed threatened species.



MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

Without intervention and active management, the risk of feral animal impacts on Koala, Greater Glider and GHFF are assessed as 'high' (refer to **Risk Management Section**). This is based on regional and local government data on feral animals combined with evidence of livestock predation recorded on-site and an abundance of research in the surrounding area indicating the prevalence of feral dogs, European fox and feral cats. The pest management strategies incorporate intensive implementation methods and three major data collection survey events for confirming base case and successful reduction of pest management impacts.

The repeat survey points are designed to deliver data on outcomes being achieved. If the surveys do not demonstrate the targeted effectiveness the implementation strategy will be adjusted to:

- Adopt new management techniques;
- Increase successful techniques and reduce less successful management methods;
- Increase intensity of implementation program;
- Change the timing or locality of proposed target treatment locations or events; and
- Allow the site strategy to assimilate into any new broader threat abatement programs.

The feral animal management implementation strategy will use the baseline data to build a calendar of annual activities based around varying control methods, seasons and species. The threat abatement actions and outcomes within any calendar year will be reported on within the OAAR and will provide a number of lead indicators towards management triggered by occurrence. Major survey and review periods for independent review of the OMP are set at year 5, 10, 15 and 20 to ensure the program achieves long term reduction and does not respond to specific stochastic events such a contextual fluctuation in pest populations such as feral dogs.



ACTION 2: WEEDS INCLUDING WEEDS OF NATIONAL SIGNIFICANCE MANAGEMENT

MANAGEMENT ACTION OUTCOME

Preliminary site surveys and observations over the Rosevale offset property recorded a number of weed species, both federally and locally listed as well as general pastoral invasive, with the most prevalent and inhibitive to Koala movement and habitat restoration being *Lantana camara*. The Department of Agriculture and Fisheries (2023) indicates more than 1400 native species are negatively affected by Lantana invasion, including many endangered and threatened species. This largely occurs through the suppressive effect of Lantanas aggressive growth form, generally adversely impacting species richness and some soil faunal assemblages.

Lantana and other weed infestations suppress and inhibit the natural regeneration of regrowth vegetation on-site which directly limits the growth rates and regeneration of non-juvenile koala habitat trees and other species who forage and inhabit these (GHFF, Greater Glider, Regent Honeyeater and Swift Parrot). Additionally, in areas blanket layers of *Lantana camara* form a barrier to terrestrial species, which would include limiting the Koalas ability to access areas containing an over-canopy of NJKHTs. Further, as Lantana is a woody shrub with thin, combustible canes, it has been observed to create hotter bushfires, which significantly alters native vegetation communities and pastures (DAF, 2023). It is noted that under the Conservation Advice for Koala, increased intensity/frequency of bushfire is a listed key threatening process. Although this largely refers to the impacts caused by Climate Change, the presence of Lantana within bushland can significantly increase the extremity of bushfire and thus the impact it has directly on Koala and other listed species habitat; GHFF, Greater Glider, Regent Honeyeater and Swift Parrot all rely on Eucalypt bushland for foraging and breeding. For this reason, the Queensland Governments 'South East Queensland Koala Conservation Strategy 2022 – 2025' lists management of invasive weeds in both Action Area 1: Habitat Protection and Action Area 3: Threat Management (DES, 2020). Impact management of invasive flora, particularly Lantana, a Weed of National Significance (WoNS), is therefore considered a key direct action to addressing threats on Koala and other listed species that share the same habitat requirements.

WONS, predominantly *Lantana camara*, occur on the Rosevale offset property both in open paddock areas as isolated clusters and thickets, as the dominant understorey amongst regrowth and remnant vegetation and as a prolific shrub in gully lines. Within open areas existing farm practices result in periodical pesticide application limiting spread, however, this does not occur to the extent of entire eradication as the costs of treatment to result in an economical return for the grazing benefit are non-existent. Baseline weed data indicates that the most significant infestations are mostly Lantana that occur within remnant vegetation on-site, 62% containing an upper-moderate to high density (60 – 100 %) infestation (**Plan 9**). Regrowth vegetation also contains a higher percentage of moderate to high infestation of Lantana, particularly where it adjoins remnant vegetation. Therefore, this infers that the potential for these areas to provide optimal habitat to Koala, known to occur within the area, is impacted by weed infestation. The highly invasive and spreading nature of the species, coupled with the in-active management in areas would result in progressive increases particularly as local climatic events align with optimal germination and seeding periods.



The Scenic Rim Regional Council Biosecurity Plan aims to control declared pest plants within the region. This plan includes information and strategies for landholders to effectively manage pest species. *Lantana camara* is listed as a declared pest plant within the Scenic Rim region and restricted invasive species under the *Biosecurity Act 2014*. Under the Queensland *Biosecurity Act 2014* it requires everyone to take all reasonable and practical steps to minimise the risks associated with invasive plants and animals under their control, this is called the General Biosecurity Obligation (GBO). The GBO states that reasonable and practical is dependent on the current land use practices undertaken by the landholder. The GBO is a risk ratings-based approach, where risks are managed appropriately based on their threat to the land use practices. Given that the site is currently used for cattle grazing, the risk of weed species such as *Lantana* to current land use practices is low, and therefore, under the GBO of the Biosecurity Act, these risks are managed in a low-risk way. As such, the proposed management actions are above and beyond what is currently completed on-site.

MANAGEMENT ACTION LOCATION

- Management of weeds of national significance (WONS) is to occur in the entire ROA 2, with a particular focus on *Lantana camara*.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Removal and control of all major weeds and WONS and predominantly *Lantana camara* infestations from within the ROA 2 using a variety of mechanical and herbicide methods. WONS and *Lantana camara* infestations are to be reduced to below 5 % of the ROA 2 area. Areas identified as containing higher infestations are to be targeted during weed removal events.
- Ongoing maintenance to ensure that weeds and *Lantana camara* extents within the ROA 2 are retained at or below the 5 % of the total area through weed management actions; and
- Prevent the further spread or establishing of new weeds and *Lantana camara* outbreaks within the ROA 2 by excluding cattle from the offset management zone.

MANAGEMENT ACTION RISK REDUCTION MEASURES

Baseline weed monitoring utilising an Antenna based GPS system was conducted mapping the full extent (as description polygons) of all Weeds of National Significance, predominantly *Lantana camara*, areas within the ROA 2 (achieving a total percentage of extent per AU of weed infestations / occurrences within the ROA 2). This data will form the basis for targeted weed management activities across the site.

Management actions to reduce the risk of weeds of national significant increased infestation impacts on the Rosevale offset property include:

- Exclude stock (cattle) access from WONS and *Lantana camara* infestation areas within the ROA 2 (grazing cattle provide the most continuous source of weed and *Lantana camara* spread);
- Prior to any use of mechanical clearing, proposed treatment sites will be examined, and desirable trees and regrowth clearly marked with pink flagging tape to help reduce native vegetation.
- Undertake detailed weed management control activities within the ROA 2. The following methods are to be deployed:



- Stick rake, grubbing, ploughing or slashing major accessible areas of Lantana where not on a slope greater than 15% or where no existing native values occur; and
 - Apply broadscale herbicide and spot spray during high germination summer periods (Nov-March). Utilise organic based Lantana targeted herbicides which minimise impacts on native vegetation regenerating within and surrounding Lantana patches.
 - Control methods applied will be guided by methods outlined in the DAFs guide to best management practices and as per Biosecurity Queensland recommendations.
 - Cautionary options to reduce run off or contamination from herbicides will be utilized within proximity to the Bremer River. Spot spraying of Glyphosate will limit potential for impact as it is known to breakdown immediately on contact with soil and has no residual effect (DNRW, 2006). It is understood that permits from relevant state Environment Protection Authorities may be required if herbicides are to be sprayed on riverbanks. If seen fit, other forms of control, such as mechanical or fire management, may be utilized adjacent to Bremer River to reduce potential impacts to waterbodies.
- Undertake periodical weed maintenance rotations for removal / suppression of Lantana regeneration with the same environmental considerations as the wholesale removing of weeds applied; and
 - Incorporate adaptive management principles into weed management methods to streamline overall management to the most effective control types.



MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria
Year 1	Augment baseline / weed extent survey utilising an antenna-based GPS system to map the full extent of all WONS and <i>Lantana camara</i> areas within the ROA 2. Results of baseline weed extent surveys to be included in year 1 Offset Area Annual Report for inclusion in the project ACR. These baseline surveys have been completed as of April 2023 with results provided in Plan 9 .
Year 1	Exclude cattle from within the ROA 2. By Year 2, the entire ROA 2 will retain cattle exclusion fencing (refer to Management Action 3)
Year 2 – 5	<p>Commence detailed weed management control activities within the ROA 2. Methods deployed are to be based on extent of infestation, existing native vegetation values, topography and sensitive receiving environments. The following methods are to be deployed:</p> <ul style="list-style-type: none"> ○ Stick rake, grubbing, ploughing or slashing major accessible areas of Lantana where not on a slope greater than 15% or where no existing native values occur; and ○ Apply broadscale herbicide and spot spray during high germination summer periods (Nov-March). Utilize organic based Lantana targeted herbicides which minimize impacts on native vegetation regenerating within and surrounding Lantana patches. ○ Cautionary options to reduce run off or contamination from herbicides will be utilized within proximity to the Bremer River. Spot spraying of Glyphosate will limit potential for impact as it is known to breakdown immediately on contact with soil and has no residual effect. ○ If seen fit, other forms of control, such as mechanical or fire management, may be utilized adjacent to Bremer River to reduce potential impacts to waterbodies.
Year 2 – 5	Demonstrate a downward trend in the weed extent, vigor and health annually through years 2-5, achieving a significant reduction in WONS and <i>Lantana spp.</i> extent within the ROA 2 by year 5, with less than 10% of the ROA 2 area containing weed infestations. Actions and downward trend to be reported annually in the OAAR.
Year 5	Replicate detailed weed extent survey through the ROA 2 – Include plans and calculations in the Year 5 OAAR demonstrating less than 10% of the ROA 2 area to contains weed infestations.
Year 6 – 10	Continue to implement detailed weed management control methods – In accordance with any recommended adaptive management changes incorporated in response to Year 5 replicated baseline surveys as documented in the year 5 OAAR. Demonstrate a



	downward trend in the weed extent, vigor and health annually through years 6-10, achieving a further reduction in WONS and <i>Lantana spp.</i> extent within the ROA 2 by year 10, with less than 5% of the ROA 2 area to contains weed infestations. Actions and downward trend to be reported annually in the OAAR.
Year 10	Remobilise and replicate detailed weed extent survey through the ROA 2 – Compare and report on data in year 10 OAAR along with proposed amendments to the targeted pest management activities. Include plans and calculations in the Year 10 OAAR demonstrating less than 5% of the ROA 2 area to contains weed infestations.
Year 11 – 19	Continue to implement Detailed Weed Management Control Methods – In accordance with any recommended adaptive management changes incorporated in response to Year 10 replicated baseline surveys as documented in the year 10 OAAR.
Year 15 & Year 20	Repeat of baseline surveys to demonstrate a maintenance of Year 10 significant reductions to the extent of WONS and <i>Lantana spp.</i> below 5% of the ROA 2 area to contain weed infestations.

MANAGEMENT ACTION RESPONSIBILITY

The Offset Provider will establish, resource and fund all weed management components of the Offset Management Plan. The following tasks will require specific expertise or appointed contractors where necessary to complete:

- Baseline and repeat surveys to be completed by a senior tertiary trained ecologist or environmental scientist with a minimum of 5 years industry field experience; and
- Use of any herbicides to be undertaken by a licensed contractor or strictly in accordance with the *Agricultural Chemicals Distribution Control Act 1996* and or in accordance with manufactures recommendations or label instructions.

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.

MANAGEMENT ACTION MONITORING

Baseline weed and Lantana surveys have been completed, providing an actual mapped extent of infestations and occurrences to be used as the benchmark for measuring improvement. Survey methods and results are to be replicated and provided in Year 1 Offset Area Annual Report (And incorporated in Year 1 Annual Compliance Report for the Approved Action).

Interim actions and results provided in Year 2-5 Offset Area Annual Report (published as conditioned in the relevant Annual Compliance Report for the Approved Action). Year 2 to 5 annual results are to demonstrate a downward trend in weed extent and outbreak to less than 10% of the ROA 2 area.



Replicate baseline surveys in year 5 to demonstrate less than 10% of the ROA 2 area to contains weed infestations.

Year 5 OAAR to include repeat survey methods, results data and comparative analysis demonstrating less than 10% ROA 2 area to contains weed infestations. Report to include any adaptive management recommended changes to weed control methods to be deployed for years 6-10. Details of surveys, results and alterations to management strategies to be provided to proponent in the Year 5 OAAR for issue to the Department in the Year 5 Annual Compliance Report for the Action.

Interim actions and results provided in Year 6-9 Offset Area Annual Report (provided as conditioned in the relevant Annual Compliance Report for the Approved Action)

Replicate of baseline surveys in year 10 to demonstrate a downward trend in the weed extent, vigour and health annually through years 6-10, achieving a further reduction in *Lantana camara* extent within the ROA 2 by year 10, with less than 5% of the ROA 2 area to contains weed infestations.

Year 10 OAAR to include repeat survey methods, results data and comparative analysis less than 5% of the ROA 2 area to contain weed infestations. Report to include any adaptive management recommended changes to weed control to be deployed for years 11-19. Details of surveys, results and alterations to management strategies to be provided to proponent in the Year 10 OAAR for issue to the Department in the Year 10 Annual Compliance Report for the Action.

Repeat of baseline surveys in year 15 and year 20 to demonstrate a maintenance of Year 10 significant reductions to the extent of WONS and *Lantana camara* below 5% of the ROA 2 area. Actions and results provided in Year 11 – 19 Offset Area Annual Reports of continuation of Year 10 adaptive management weed control measures and the demonstration that WONS and *Lantana camara* is maintained below 5% of the ROA 2 area to contain weed infestations as provided in the conditioned relevant Annual Compliance Report for the Approved Action.

MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

The primary weed issue through the ROA 2 is Lantana. Mapping of WONS and Lantana populations and areas is relatively simple enabling the tables in this management plan to set a number of weed reduction and management targets.

Periodical repeat survey points are designed to deliver data on outcomes being achieved. If the surveys do not demonstrate the targeted effectiveness the implementation strategy will be adjusted to:



- Adopt new management techniques
- Increase successful techniques and reduce less successful management methods
- Increase intensity of implementation program
- Change the timing or locality of proposed target treatment locations or events



ACTION 3: STOCK MANAGEMENT

MANAGEMENT ACTION OUTCOME

The Rosevale offset property has historically been utilised for agricultural uses, including, cattle grazing. The property has retained extensive pasture paddocks consisting of native grasses and artificially improved introduced pastures. Cattle grazing is consistently observed on the Rosevale offset property, with the intensity of grazing directly related to the density of pasture available (i.e., correlated with rainfall) and the beef market prices. Given the climatic season within recent years providing higher rainfall for vigorous pasture growth and increased beef prices, the head of cattle on the Rosevale offset property have likely increased.

It is observed that there is some limited research that intensive cattle grazing can result in some positive biodiversity outcomes, such as to control invasive species. Additionally for these conservation outcomes to be met it has been noted that a number of circumstances need to occur. For instance, stock must be controlled to graze areas needing treatment and excluded from sensitive wet areas where soil is most vulnerable to trampling. Stock must also be assured to be consuming the desired weed species and not native plant species intended for regeneration (Charles Sturt University, 2012). In general, clear treatment goals, control areas and monitoring programs need to be implemented for this system to work and the cost and benefits considered when compared to other weed treatments, such as slashing or burning. Overall, it is generally agreed that cattle farming has higher adverse effects to conservation rather than benefits due to re-engineering the landscape, removing potential for native species regrowth and ultimately supports predator species.

The risks of ongoing cattle grazing on the land could vary from low to medium to high subject to the future maintenance or expansion of the grazing use, which is driven by a number of economic factors, however primarily the rise and fall of the beef market. Regardless of the long term, the current highest and best use for the land is the continuation of cattle grazing. No reduction in risk or improvement in condition or value of the koala and Grey-headed Flying-fox habitat will occur without direct intervention and a change in use (such as this offset outcome).

Fauna friendly stock exclusion fencing, or removal of all livestock is the ultimate proposed solution for restricting stock from accessing the Offset Area (ROA 2).

MANAGEMENT ACTION LOCATION

- Livestock control is to focus on ROA 2. ROA 2 is to be fenced with fauna friendly livestock exclusion fencing OR removal of all livestock from the ROA 2.
- Removal of fencing with potential entanglement impact to fauna (i.e., barbwire) to occur within areas of ROA 2 where livestock has been excluded OR removed (refer **Appendix E** for fencing and signage plan).



MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Prevention and management of livestock from the ROA 2 utilising fauna friendly livestock exclusion fencing OR removal of all livestock from the ROA 2.
- Removal of fencing with potential entanglement impact to fauna (i.e., barbwire) in areas of ROA 2 where livestock has been excluded or removed.

MANAGEMENT ACTION RISK REDUCTION MEASURES

Management actions to reduce the risk of livestock control and access and trespass management impacts on the Rosevale offset property include:

- Ownership of the land by the offset provider and therefore any residual grazing activities will be secondary land uses to the approved offset outcomes.
- Implementation of a legally binding mechanism (Voluntary Declaration under the *Vegetation Management Act 1999* and covenant under the *Land Act 1994*) which provides protection of existing and created habitat values. The Voluntary Declaration applies the regulations of the *Vegetation Management Act 1999* to the land title which remains regardless of the transfer of ownership or sale of the land; and
- Fauna friendly livestock exclusion fencing around the perimeter of the ROA 2.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria
Year 1	Fencing of the ROA 2 (ROA 2) will commence immediately and will be completed by end of Year 2. Alternatively, removal of all livestock from within ROA 2.
Year 1 – 2	Removal of fauna fencing within the areas cattle have been excluded from which have potential for entanglement (i.e., barbwire).
Year 4	A status update on completed fencing locations will be provided in the Offset Area Annual Report (OAAR) for inclusion in the Annual Compliance Report (ACR).
Year 5 – 20	All fencing is to be inspected annually and reported on in the OAAR. OR Annual status update to confirm that livestock have continued to be excluded from ROA 2. This is to be reported on in the OOAR.



It should be noted that cattle exclusion fencing is proposed as a permanent outcome and thus, there is no currency on removal.

MANAGEMENT ACTION RESPONSIBILITY

The Offset Provider will establish, resource and fund the construction, monitoring, maintenance and reporting on all fencing (using fencing contractors were deemed appropriate) OR the Offset Provider will remove all livestock from ROA 2.

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.

MANAGEMENT ACTION MONITORING

- All fencing to be in place by Year 4 reporting.
- Nil stock breaches into ROA 2s from year 5-20 (post completion of all fencing);
- No reporting of stock impacts as justification for not achieving:
 - Habitat quality improvements; and
 - Weed spread targets.
- Annual documented evidence of fence monitoring and maintenance rectifications in each Offset Area Annual Reporting period from years 5-20.

MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

Providing the right type of fencing is installed in the correct location and monitored the risk of failure is extremely unlikely. Regardless any breach of cattle accessing the ROA 2 would be identified through the general course of offset establishment or maintenance or as part of the cattle operator's routine stock checks (typically daily). Damage as a result of a short-term breach is likely to be minimal and reversible through reinstatement works.



ACTION 4: ACCESS AND TRESPASS MANAGEMENT

MANAGEMENT ACTION OUTCOME

The Rosevale offset property is surrounded to the north, east and west by large cattle grazing operations. The impacts of unlawful access and trespassing mimic those listed in the 'Livestock Control' management action section of this management plan (trampling, compacting, weed spread, fence destruction). Without a system for identifying and preventing or controlling access and trespassing the actions established for on-site stock management will be undermined.

MANAGEMENT ACTION LOCATION

- The ROA 2 will be fenced and signage installed, however, the purpose of this management action is to target the boundary of the offset property which shares a common boundary with adjoining landholders (Appendix E).

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Prevention / control of unauthorised access and trespass through the ROA 2.

MANAGEMENT ACTION RISK REDUCTION MEASURES

Management actions to reduce the risk of livestock control and access and trespass management impacts on the Rosevale offset property include:

- Ownership of the land by the offset provider and therefore any adjoining residual grazing activities will be secondary land uses outside of the approved offset area and outcomes;
- Implementation of a legally binding mechanism (Voluntary Declaration under the *Vegetation Management Act 1999*) which provides protection of existing and created habitat values. The Voluntary Declaration applies the regulations of the *Vegetation Management Act 1999* to the land title which remains regardless of the transfer of ownership or sale of the land; and
- Fauna friendly livestock exclusion fencing around the perimeter of the ROA 2.



MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria
Year 1	Inspection and rectification of all external fence boundaries of ROA 2.
Year 1	Notification of ROA 2, purpose and outcomes to all adjoining land owners (where applicable)
Year 1 – 20	No new access tracks through ROA 2 unless to support offset outcomes

MANAGEMENT ACTION RESPONSIBILITY

The Offset Provider is responsible for funding and undertaking all actions relating to access and trespass management.

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.

MANAGEMENT ACTION MONITORING

- Evidence of erected fencing and notification to adjoining landowners (where applicable);
- Fence monitoring as per Management Action 3: Livestock Control; and
- No evidence of stock or illegal access influence in outcomes scheduled for the ROA 2 habitat improvement.

MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

Given there is no legal requirement for access through the land holding (e.g., no formal access easement) if necessary, enforcement options are available, however it is considered extremely unlikely this would be required provided alternative access points are established which do not conflict with the offset outcomes.



ACTION 5: REHABILITATION AND RESTORATION MANAGEMENT

MANAGEMENT ACTION OUTCOME

MNES habitat restoration will occur through the transitioning of grassed grazing areas into vegetated ecosystems supporting habitat for MNES. In total the 224.41 ha of AU 1 and bare portions of AU 2 are proposed for MNES habitat restoration. This will increase foraging and dispersal habitat for Koala, GHFF, Greater Glider, Swift Parrot and Regent Honeyeater within 20 years via planting non-remnant areas with suitable habitat trees and allowing regrowth to naturally regenerate. The rehabilitation program will be undertaken by suitably qualified personnel and will include measures to ensure the maintenance and survival of new breeding and foraging trees in the offset areas.

Restoration is a high cost and high labor-intensive task from preparation to commencement through to the first 3 years of establishment. All rehabilitation plantings are to be completed by the end of Year 3. This staged process of rehabilitation is recommended under the *SEQ Restoration Framework Manual* (Chenoweth EPLA, 2012) and *SER Australasia National Restoration Standards* (SERA, 2017). Under these guidelines it is suggested that larger sites be broken into a number of different management zones with progress occurring at different stages within each zone. Therefore, allowing for each zone to get the same amount of care and management practices. As these zones move to maintenance and the time required for each zone is reduced these can be consolidated.

Additionally, the Victorian Government Department of Sustainability and Environment *Native Vegetation Revegetation Planting Standards* (DSE, 2006) indicates that staged or successive plantings which result in more than one age class allows for better natural recruitment, higher vegetation complexity and easier adaptive management.

Benchmarks for rehabilitation efforts are derived from the definition of remnant vegetation under the *Vegetation Management Act 1999*. Vegetation can be mapped as remnant vegetation and associated essential habitat for Koalas if the canopy is 70% of the height, 50% of the cover and similar species composition of the appropriate pre-clearing RE (Queensland Government 2015). Therefore, the final benchmark at 20 years for rehabilitation is 70% of the reference benchmark cover (for canopy, shrub and ground-layer) and 50% of the reference benchmark height (for canopy and shrub layer) of the appropriate RE.

On-site regional ecosystem vegetation communities show the Rosevale Offset contains a broad distribution of the following regional ecosystem type (Code plus Dominant Species):

12.8.17 – *Eucalyptus melanophloia*, *Eucalyptus crebra*, *Eucalyptus tereticornis*, *Corymbia intermedia*



Under the Queensland Herbarium biocondition benchmarks for this regional ecosystem indicate remnant canopy tree height as 19 m and subcanopy 10 m, whilst the remnant tree canopy coverage is 48%, sub-canopy coverage 20% and shrub canopy coverage 5%. Therefore, once the AUI revegetation reaches 70% of these prescribed heights and 50% of these prescribed canopy coverages it can be considered remnant.

Within particularly disturbed areas of non-remnant vegetation, the objectives of this plan are long term and may take longer than 15 years after commencement of implementation, particularly as the Queensland Herbarium quotes that in general it takes 30 years for a disturbed site to regain remnant status without intervention. However, the goal of regeneration actions are often to re-establish an ecosystem that is self-regenerating and self-sustaining and therefore will persist against disturbance (SEQ Restoration Framework, 2012). The SEQ Restoration Framework indicates that in order to achieve the self-sustaining ecosystem at least 2 – 5 years of implementation and maintenance needs to occur. Thus, the offset project provides a sufficient maintenance and implementation period which sets the revegetation areas towards remnant status following the completion of maintenance. Interim benchmarks via MHQA transects are to be conducted at regular intervals which will inform the progress of the rehabilitation/revegetation efforts towards achieving this plan's outcomes. Given this, adaptive management approaches can also be employed to redirect restoration approaches, if interim benchmarks are not being met.

The goal to plant vegetation completed between Years 1 to 3 is not thought to impact the conservation benefits or outcomes of the restoration efforts by Year 20. Several studies on the benefits of revegetation, including one from La Trobe University in association with the Victorian State Governments Department of Energy, Environment and Climate Action (DEECA), have indicated that the benefits of revegetation are realized within the first 15 years of planting, particularly for bird and nectar foraging species (DEECA, 2020). This study in particular accredits the success of revegetation to a well-thought-out monitoring program and species selection, which is intended for ROA 2.

Although it is noted hollows will not form within revegetation plantings within a 20-year period, the improvement of the remnant and regrowth vegetation present on-site via in-fill plantings, feral animal management and weed control will ultimately restore the habitat value of this area which already contains suitable large trees (> 300 mm DBH) and hollow-bearing trees likely to support gliders. Trees with a DBH of 300 mm or above are indicators of potential foraging and dispersal trees for Greater Glider (Eyre et al. 2015). Rehabilitation efforts on-site will contribute to long-term protected habitat for threatened species including Greater Glider due to the intent to protect the land as an offset in perpetuity. Therefore, revegetation of non-remnant areas will contribute initially as foraging and dispersal areas for Greater Glider and breeding and denning habitat eventually due to the protection of the area which is highly connected to current potential Greater Glider habitat and records of Glider (on site and within Main Range NP). Restoration plantings in non-remnant and regrowth assessment units will also provide for reinstatement of key foraging species for the Swift Parrot and Regent Honeyeater.

The rehabilitation planting will reflect the mapped regional ecosystem on-site RE 12.8.17 via incorporating the following species into revegetation:

- *Angophora subvelutina* (Rough-barked Apple)



- *Eucalyptus crebra* (Narrow-leaved Ironbark)
- *Eucalyptus melliodora* (Yellow-box Gum)
- *Eucalyptus tereticornis* (Queensland Blue Gum)
- *Eucalyptus melanophloia* (Silver-leaved Ironbark)
- *Corymbia intermedia* (Pink Bloodwood)
- *Corymbia citriodora* (Spotted Gum)

The Assessment Unit 1 (AU 1) and Assessment Unit 2 (AU 2) of ROA 2 consist of MNES habitat restoration activities. The MNES habitat restoration is to:

- Be in accordance with the pre-clear regional ecosystem(s), being, RE12.8.17;
- Expand the available MNES foraging and dispersal habitat through infill planting of broad hectare cleared land;
- Expand the available habitat for MNES by adjoining other EPBC offsets; and
- Provide new connectivity with surrounding habitat for the protected matters and adjoins the bioregional conservation corridor.

Where vegetation does occur within AU 1 of ROA 2, transects have been completed in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology and to establish a base score. As areas are restored, new transect locations will be established for future monitoring, however in years 1-5 for revegetation areas transect surveys will be replaced by a mix of photo monitoring / stem count / mortality rate and Projective Foliage Cover.

After 5 years of established and maintained growth habitat quality transects will be re-introduced as part of survey and monitoring. These will allow benchmarks to be checked at regular intervals which will inform the progress of the rehabilitation/revegetation efforts towards achieving this plan's outcomes. Given this, adaptive management approaches can also be employed to redirect restoration approaches, if interim benchmarks are not being met.

MANAGEMENT ACTION LOCATION

- Assessment Unit 1 and bare portions of AU 2 of ROA 2 are to contain MNES habitat restoration.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Ceasing grazing activities within the ROA 2;
- Tilling / cultivating grazed grass areas for treatment of pasture grass seedbank in preparation for planting;



- Revegetation in accordance with the pre-clear regional ecosystem technical description. The canopy planting mix is to consist of MNES foraging tree species and non-juvenile Koala habitat tree species; and
- Monitoring and maintaining the MNES habitat restoration works until the ROA 2 is a self-sustaining regrowth vegetation community.

MANAGEMENT ACTION RISK REDUCTION MEASURES

Management actions to reduce the risk of plant stock failure impacts on the Rosevale offset property include:

- Undertake soil testing for both the modified planting soil and for the planting locations;
- Match species to pre-clear regional ecosystem vegetation communities based on geography, soil and region specifications;
- Undertake planting in manageable mosaic to ensure monitoring, watering etc can be implemented as required;
- Use experienced bushland regenerators or contractors where necessary to undertake all revegetation and rehabilitation works. Ensure selected contractors where required include relevant insurances and payment retentions for success rates from part of contract obligations;
- Over plant all revegetation areas by 10% on allocated numbers to cater for a natural 10% failure rate; and
- Undertake planting during warmer frost-free months.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria
Year 1	Undertake soil testing for both the modified planting soil and for the planting locations; Commence sequence and timing of MNES habitat restoration program; Cultivate and prepare Tranche 1 for year 1 planting; Create Tranche 1 water source for MNES habitat restoration activities (purpose located dam, temporary tank or slow-release gravity feed) (where necessary).
Year 2	Complete Tranche 1 MNES habitat restoration activities. Cultivate and prepare Tranche 2 for year 2 planting; Create Tranche 2 water source for MNES habitat restoration activities (purpose located dam, temporary tank or slow-release gravity feed) (where necessary).
Year 3	Complete Tranche 2 MNES habitat restoration activities. Cultivate and prepare Tranche 3 for year 3 planting;



	Create Tranche 3 water source for MNES habitat restoration activities (purpose located dam, temporary tank or slow-release gravity feed) (where necessary).
Year 4	Complete Tranche 3 MNES habitat restoration activities.
Year 5	<p>Complete transect surveys in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology tools within established MNES habitat restoration areas;</p> <p>Undertake Koala Spot Assessment Technique to derive koala occurrence category for MNES habitat restoration area; and</p> <p>Report on results of both surveys within the Year 5 Offset Area Annual Report inclusive of any adaptive management changes.</p>
Year 6 – 20	Monitor and maintain MNES habitat restoration areas inclusive of rectification and replacement works for failed area or plant dieback.
Year 10	<p>Complete transect surveys in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology tools within established MNES habitat restoration area (AU1 and AU2 of ROA 2);</p> <p>Undertake Koala Spot Assessment Technique to derive koala occurrence category for MNES habitat restoration area; and</p> <p>Report on results of both surveys within the Year 10 Offset Area Annual Report inclusive of any adaptive management changes.</p>
Year 15	<p>Complete transect surveys in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology tools within established MNES habitat restoration areas;</p> <p>Undertake Koala Spot Assessment Technique to derive koala occurrence category for MNES habitat restoration area; and</p> <p>Report on results of both surveys within the Year 15 Offset Area Annual Report inclusive of any adaptive management changes.</p>
Year 20	Complete transect surveys in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology tools within established MNES habitat restoration areas;



<p>Undertake Koala Spot Assessment Technique to derive koala occurrence category for MNES habitat restoration area; and</p> <p>Report on results of both surveys within the Year 20 Offset Area Annual Report inclusive of any adaptive management changes.</p>

MANAGEMENT ACTION RESPONSIBILITY

The Offset Provider is responsible for:

- Funding the trained and experienced bushland regenerators or revegetation contractors where required for the completion of all implementation works associated with revegetation areas (site preparation, planting, establishment and maintenance)
- Facilitating tertiary trained ecologists for the supervision or application of survey, monitoring and reporting of interim and milestone revegetation outcomes.

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.

MANAGEMENT ACTION MONITORING

Achievement of the results outlined in **Appendix F** from the replicated transect surveys completed in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology. Evidence through photo point monitoring of established habitat containing NJKHTs and MNES foraging trees. Plan of completed MNES habitat restoration extents in the Year 5 OAAR demonstrating the completion of all restoration works.

Spot Assessment Technique (SAT) surveys showing the establishment of koala usage within the ROA 2 will be undertaken every five years in accordance with milestone completion criteria.

Monitoring will also need to include specific transects targeting establishment of key foraging species for Swift Parrot and Regent Honeyeater in non-remnant and regrowth assessment units to ensure that target numbers are being achieved. This monitoring will occur quarterly for the first 12 months then annually for years 2 and 3 and then at years 5, 10, 15 and 20.

Reporting on MNES habitat restoration activities will occur with each 12 month Offset Area Annual Report with major surveys results and adaptive management changes documented at Year 5, 10, 15 & 20.



MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

The potential for large scale revegetation to fail can occur from controllable factors (poor soil preparation, planting stock or maintenance regime) or external events (extreme frost, pest invasion, drought, flood or major wind). Losses from these factors will be catered for in two ways:

- 1) Contractual obligations of revegetation contractors where utilised to ensure retention funds and minimum success rates (e.g. contractor responsible for replacement and re-establishing failed stock or areas); and
- 2) The Offset Provider will have regard to impacts from major external events with respect to the application of adaptive management strategies where required.

Criteria for successful offset outcomes for this zone are established in this management plan and the approval of the project. If revegetation fails, it will need to be replaced. If growth rates are below expectations the tenure of the offset period will increase until targeted outcomes have been demonstrated as achieved.



ACTION 6: MNES HABITAT ASSISTED REHABILITATION

MANAGEMENT ACTION OUTCOME

Objectives of this management action will be to ensure that native regrowth and remnant vegetation contained within the offset area are enhanced and preserved over the life of the offset by managing and maintaining a ground layer, understory and canopy that is consistent with the nominated regional ecosystem classifications. The rehabilitation program will be undertaken by suitably qualified personnel and will include measures to ensure the maintenance and survival of new breeding and foraging trees in the offset areas.

Within mapped regrowth and remnant areas, natural regeneration is preferred to the reconstruction of the vegetation community (i.e., soil improvements, infill planting and weed removal). Management of these areas will focus on controlling weeds and restricting access from vehicles or livestock, or other existing significant disturbances, in order to promote further growth. This will ultimately uplift the values of current potential and known habitat for Koala, GHFF, Greater Glider, Regent Honeyeater and Swift Parrot.

Although it is noted hollows will not form within revegetation plantings within a 20-year period, the improvement of the remnant and regrowth vegetation present on-site via in-fill plantings, feral animal management and weed control will ultimately restore the habitat value of this area which already contains suitable large trees (> 300 mm DBH) and hollow-bearing trees likely to support gliders. Trees with a DBH of 300 mm or above are indicators of potential foraging and dispersal trees for Greater Glider (Eyre et al. 2015) and can be utilised for hollow installation. Rehabilitation efforts on-site will contribute to long-term protected habitat for threatened species including Greater Glider due to the intent to protect the land as an offset in perpetuity. Therefore, revegetation of non-remnant areas will contribute initially as foraging and dispersal areas for Greater Glider and breeding and denning habitat eventually due to the protection of the area which is highly connected to current potential Greater Glider habitat and records of Glider (within Main Range NP).

MNES habitat assisted rehabilitation will occur through conditional improvement of habitat which primarily centers around weed removal (namely, Lantana). In total the ~317.46 ha of AU 2 and AU 3 is proposed for MNES habitat assisted rehabilitation. To achieve the scheduled improvements in the condition and health of the vegetation, the Offset Provider will utilise all four restoration approaches outlined in the South-East Queensland Ecological Restoration Framework – Guideline, being:

- Natural regeneration;
- Assisted natural regeneration;
- Reconstruction; and
- Fabrication.



Assessment Unit 2 (AU 2) and Assessment Unit 3 (AU 3) of ROA 2 consists of MNES habitat assisted rehabilitation. The MNES assisted rehabilitation is to:

- Be in accordance with the pre-clear regional ecosystem(s), being, RE12.8.17;
- Enhance the existing regrowth and remnant vegetation through weed removal, fixing the soil and seed bank, supporting the natural succession of native regrowth plants and spot and cluster infill planting;
- Expand the available habitat for MNES by adjoining other EPBC offsets; and

Provide new connectivity with surrounding habitat for the protected matters and adjoins the bioregional conservation corridor.

The baseline MHQA and GHFF FHA data is included in **Appendix F**. In addition to the baseline data, **Appendix F** also outlines the completion criteria to be achieved in Year 5, Year 10, Year 15 and Year 20.

MANAGEMENT ACTION LOCATION

- MNES Habitat Assisted Rehabilitation is to occur across the entirety of AU 2 and AU 3 where existing base values provide sufficient foundation characteristics to improve habitat quality.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Excluding ongoing disturbance uses (cattle grazing) from regeneration zones
- Minor scale weed removal in locations where existing values would be lost under a blanket control method.
- Fixing soil and seed bank issues post weed management.
- Supporting the natural succession of native regrowth plants.
- Spreading of seed rich organic leaf litter into exposed areas created through weed removal.
- Spot and cluster infill replanting.

MANAGEMENT ACTION RISK REDUCTION MEASURES

Management actions to reduce the risk of assisted rehabilitation failure impacts on the Rosevale offset property include:

- Undertake soil testing for rehabilitation areas;
- Assess pre-clear regional ecosystem vegetation communities based on geography, soil and region specifications;
- Undertake rehabilitation in manageable mosaic to ensure monitoring can be implemented as required;
- Use experienced bushland regenerators or contractors where necessary to undertake all revegetation and rehabilitation works. Ensure contractors where utilised include relevant insurances and payment retentions for success rates from part of contract obligations;
- Over plant all revegetation areas by 10% on allocated numbers to cater for a natural 10% failure rate where required; and
- Undertake planting during warmer frost-free months where required.



MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria
Year 1	<p>Undertake detailed rehabilitation management area planning by stratifying AU 2 and AU 3 into specific treatment zones (note, the Year 1 baseline weed mapping will dictate this stratification).</p> <p>Establish photo point monitoring and protocols.</p>
Year 2 – 5	<p>Complete treatment within AU 2 and AU 3 as per the detailed rehabilitation management area plan.</p> <p>Monitor and maintain the treated rehabilitation management areas on a bi-monthly basis.</p> <p>Report in each relevant Offset Area Annual Report the extent of rehabilitation management undertaken within the stratified treatment zones.</p>
Year 5	<p>Complete transect surveys in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology tools within MNES habitat assisted rehabilitation areas (AU 2 and AU 3 of ROA 2);</p> <p>Report on results/progress improvement in site condition within the Year 5 OAAR – include a detailed review of the effectiveness of restoration procedures applied and adaptive management changes for future implementation.</p>
Year 6 – 20	<p>Monitor and maintain the treated rehabilitation management areas on a bi-monthly basis.</p> <p>Report in each relevant Offset Area Annual Report the extent of rehabilitation management undertaken within the stratified treatment zones</p>
Year 10	<p>Complete transect surveys in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology tools within MNES habitat assisted rehabilitation areas (AU 2 and AU 3 of ROA 2);</p> <p>Report on results/progress improvement in site condition within the Year 10 OAAR – include a detailed review of the effectiveness of restoration procedures applied and adaptive management changes for future implementation.</p>
Year 15	<p>Complete transect surveys in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology tools within MNES habitat assisted rehabilitation areas (AU 2 and AU 3 of ROA 2);</p>



	Report on results/progress improvement in site condition within the Year 15 OAAR – include a detailed review of the effectiveness of restoration procedures applied and adaptive management changes for future implementation.
Year 20	<p>Complete transect surveys in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology tools within MNES habitat assisted rehabilitation areas (AU 2 and AU 3 of ROA 2);</p> <p>Report on results/progress improvement in site condition within the Year 20 OAAR – include a detailed review of the effectiveness of restoration procedures applied and adaptive management changes for future implementation.</p>

MANAGEMENT ACTION RESPONSIBILITY

The Offset Provider is responsible for:

- Funding the trained and experienced bushland regenerators or revegetation contractors where necessary for the completion of all implementation works associated with the detailed rehabilitation management area planning (site preparation, weed removal, planting, establishment and maintenance)
- Facilitating tertiary trained ecologists for the supervision or application of survey, monitoring, and reporting of interim and milestone assisted rehabilitation outcomes.

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.

MANAGEMENT ACTION MONITORING

Achievement of the results outlined in **Appendix F** from the replicated transect surveys completed in accordance with the Modified Habitat Quality Assessment methodology (Koala), Modified Habitat Quality Assessment methodology (Swift Parrot and Regent Honeyeater), Greater Glider Habitat Quality Assessment methodology and Grey-headed Flying-fox Foraging Habitat Assessment methodology. Evidence through photo point monitoring of assisted habitat rehabilitation containing NJKHTs and MNES foraging trees. Plan of completed MNES habitat assisted rehabilitation extents in the OAAR demonstrating the completion of assisted rehabilitation works.

Spot Assessment Technique (SAT) surveys showing the establishment of koala usage within the ROA 2 will be undertaken every five years in accordance with milestone completion criteria.

Reporting on MNES habitat restoration activities will occur with each 12 month Offset Area Annual Report with major surveys results and adaptive management changes documented at Year 5, 10, 15 & 20.



MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

The potential for large scale assisted rehabilitation to fail can occur from controllable factors (poor soil preparation, planting stock or maintenance regime) or external events (extreme frost, pest invasion, drought, flood or major wind). Losses from these factors will be catered for in two ways:

- 1) Contractual obligations of revegetation contractors where utilised to ensure retention funds and minimum success rates (e.g. contractor responsible for replacement and re-establishing rehabilitated areas); and
- 2) The Offset Provider will have regard to impacts from major external events with respect to the application of adaptive management strategies where required.

Criteria for successful offset outcomes for AU 2 and AU 3 are established in this management plan and the approval of the project. If rehabilitation fails, it will need to be redone. If growth rates are below expectations the tenure of the offset period will increase until targeted outcomes have been demonstrated as achieved.



ACTION 7: HOLLOW MONITORING AND MANAGEMENT

MANAGEMENT ACTION OUTCOME

Natural tree hollows form an important part of many South East Queensland (SEQ) ecosystems, and are recognised as critical for Greater Glider denning habitat (Eyre et al. 2022). Natural hollows can take between 80 to 350+ years to develop and form a range of sizes and shapes over time that suit the requirements of different fauna species. In circumstances where clearing of hollow-bearing trees cannot be avoided, hollow carving or creation can provide a functional alternative to natural tree hollows.

Hollow installation is highly specialised to suit individual fauna species requirements, and requires prior knowledge of hollow-dependent fauna at the development and receiving areas and hollow specifications for target fauna species. Ongoing monitoring and maintenance is also essential to ensure hollows are achieving beneficial outcomes for fauna, particularly threatened species such as the Greater Glider.

There are currently no regulatory guidelines in Queensland for the implementation, monitoring and maintenance of hollows. The information is intended as a guide and is subject to alteration by the qualified hollow carver working on site.

Notably, the suitability of site trees to host carved hollows is currently under assessment by Arborists.

MANAGEMENT ACTION LOCATION

- Hollow creation is to occur across the entirety of the offset site where hollow densities are below densities specified in the conservation advice, with the optimal target at least 1.5 hollows per hectare

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

A Hollow Monitoring and Management Plan will be implemented in Year 1 of the offset to monitor the utility of existing site hollows and creation of new hollows via Arborist carving in trees over 500 mm DBH and nest boxes where necessary for the Greater Glider over the 20 year management period (refer **Appendix G**).

Ample existing trees that are suitable for the creation of hollows have been identified (Plan 6a and **Appendix G**). Detailed mapping and monitoring of hollow features and the creation of additional features by carving or the installation of nest boxes where required will ensure that enough features to acquit the OAG requirements under the features based assessment will be provided across the relevant assessment units.

MANAGEMENT ACTION RISK REDUCTION MEASURES

Hollows and nest boxes are to be installed and monitored by suitably qualified professional (**Appendix G**).

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Hollows and nest boxes are to be installed in trees in existing areas with suitable tree sizes but not enough hollows.



MANAGEMENT ACTION RESPONSIBILITY

The Proponent is responsible for:

- Funding the appointment of trained and experienced hollow carvers and nest box installers for the completion of all implementation works associated with the nest box strategy.
- Commissioning and funding tertiary trained Ecologists for the survey, monitoring, and reporting of hollows and nest boxes.

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.

MANAGEMENT ACTION MONITORING

Following hollow carving and nest box installation (where required), a single page memo or email outlining installed hollows and nest boxes, host tree particulars and location coordinates with supporting map is to be provided. This information will form part of the Annual Compliance Reporting. Monitoring is to be undertaken by a qualified Ecologist quarterly in the first 12 months then annually for the life of the approval. Inspections will identify the following:

- Fauna use including target and/or non-target species
- Rectification procedures for introduced species.
- Any damage or dieback, or risk to the nest box
- Maintenance required.

A monitoring template will be completed during each inspection. Following each inspection, a report is to be prepared within 14 days by the Ecologist and issued to the Environmental Coordinator. This brief report will detail the results of the inspection and outline any further measures to improve beneficial outcomes of the strategy for fauna (e.g. removal of pest species, minor repairs or replacement).

MAINTENANCE

Damaged or lost hollows and nest boxes are to be repaired or replaced within three weeks of monitoring activities and details of all maintenance work will be submitted to the Environmental Coordinator. Hollows will be maintained for the life of the approval.



ACTION 8: BUSHFIRE MANAGEMENT

MANAGEMENT ACTION OUTCOME

Uncontrolled wildfire is considered a key threat to MNES populations with impacts ranging from mortality and injury to loss or altered habitat resulting in a reduction in food source and in some cases increased exposure to predators. The purpose of management actions is centred on reducing the risk and severity of bushfires that may occur within the offset area to prevent immediate impacts on Koala and long-term through impacts to restoration activities.

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 (DAWE, 2022) acknowledges the scope of impacts of prescribed burning on Koala population dynamics is not well understood. While the risk of bushfire can be reduced through prescribed burning regimes, it is acknowledged in the National Recovery Plan that the effectiveness of this is determined by the scale and severity of the bushfire, as exemplified in the 2019-2020 summer bushfires affecting areas that were considered low risk to bushfire.

The Rosevale offset is reflected as high and very high-risk fuel loads for wildfire in both State Government and Scenic Rim Regional Council mapping attributed to its historical use as a native plantation site. The last recorded bushfire within the vicinity of the offset property occurred in January 2022. The bushfire was contained by Queensland Fire and Emergency Services (QFES) with no recorded damage to people or property.

The Rosevale offset property 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 (refer **Plan 15**). This fire management system will be maintained as the offset property transitions from open pasture to MNES habitat restoration as specific offset activities are sequentially completed.

MANAGEMENT ACTION LOCATION

Management actions will occur across ROA 2 to monitor and manage fuel loads and along the boundaries of ROA 2 where firebreaks are required.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

Management action tasks are associated with risk reduction measures, addressed in the following section.



MANAGEMENT ACTION RISK REDUCTION MEASURES

Management actions to reduce the risk of bushfire impacts within ROA 1 to implement in the Bushfire Management Plan include:

- Maintain existing bushfire breaks between adjacent landholders, in particular along the boundaries where the State Planning Policy bushfire hazard mapping indicates there is a ‘high’ or ‘very high’ risk of bushfire occurring;
- Cooperate with the local Queensland rural fire service, Scenic Rim Regional Council and adjoining land owners to minimise bushfire risk at a regional scale; and
- Undertake a feasibility assessment on insurance for plant stock replacement.
- Map potential risk areas where fire may originate from outside the site and enter.
- Map potential sources where fire may originate from inside the site.
- Implement hazard reduction burns as per best practice.
- Fire management is to prioritise the offset for asset protection and prevention.
- Ensure the risks of fire damaging developing regeneration and rehabilitation are addressed.

The Bushfire Management Plan is to be compiled and implemented in accordance with:

- Queensland Fire and Emergency Services. (2020). Queensland Bushfire Plan.
- Queensland Parks and Wildlife Services (QPWS) Bioregional Planned Burn Guidelines
 - Queensland Parks and Wildlife Service. (2022). Planned Burn Guidelines: Introductory Volume.
 - Queensland Parks and Wildlife Service. (2022). Planned Burn Guidelines: Southeast Queensland Bioregion of Queensland.
 - Queensland Parks and Wildlife Service. (2012). Planned Burn Guidelines - How to Assess if Your Burn is Ready to Go. www.bom.gov.au
 - Queensland Parks and Wildlife Service. (2012). QPWS Planned Burn Fire Behaviour Tables.
- Queensland Fire and Emergency Services. (2019). Bushfire Resilient Communities (BRC) Technical Reference Guide for the State Planning Policy State Interest “Natural Hazards, Risk and Resilience Bushfire.
- Australasian Fire Authorities Council (AFAC) National Burning Project.

Fuel hazard monitoring will be used to identify triggers for implementing proposed fuel reduction measures. The Overall Fuel Hazard Assessment Guide (OFHAG) (Hines et al., 2010) provides a quick and representative estimate of fuel hazard on site that can be used for ongoing fuel hazard monitoring to inform management intervention. The OFHAG methodology is based on the structure and availability of fuels within various strata categories (bark, elevated, near surface and surface) and is widely used by land managers across southeast Queensland. The BMP will detail the proposed fuel management prescriptions and monitoring triggers for hazard reduction burns as per the OFHAG.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA



Timing	Preliminary Completion Criteria	Implementation Progress
Year 1	Check and maintain all necessary firebreaks within ROA 2	Completed – Firebreaks have been checked and maintained within ROA 2, displayed on Plan 15 .
Year 1 – 20	<ul style="list-style-type: none"> • Monitor and maintain fuel loads within ROA 2; and • Maintain firebreaks. 	Maintenance activities, fuel loads and bushfire risk to be reported in OAARs.

MANAGEMENT ACTION RESPONSIBILITY

The Offset Provider is responsible for:

- Liaison and coordination with Queensland rural fire service and SRRC to implement bushfire management measures; and
- Maintaining existing bushfire breaks; and
- Installing additional plantings required to account for losses as a result of uncontrolled bushfire.
- Compiling in Year 1 and implementing the BMP.

The Offset Provider is responsible for preparing and issuing Offset Area Annual Reports to the proponent within contracted timeframes for inclusion in the Approved Project Annual Compliance Report.

MANAGEMENT ACTION MONITORING

Fuel loads and bushfire breaks will be monitored annually by the Offset Provider as required depending on seasonal variation in fuel loads.

Additionally, an annual assessment of seasonal bushfire risk will be completed and provided in the OAARs to determine if adaptive management is required.

Monitoring of this management action will be implemented from Year 2 onwards.

MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

The overall assessment of bushfire risk is that their occurrence is **unlikely** within the life of the offset and consequences of such an event would be **moderate**. Without intervention and management, bushfire is evaluated as a **low risk** to this offset project. Refer to **Risk Management** section for more details.

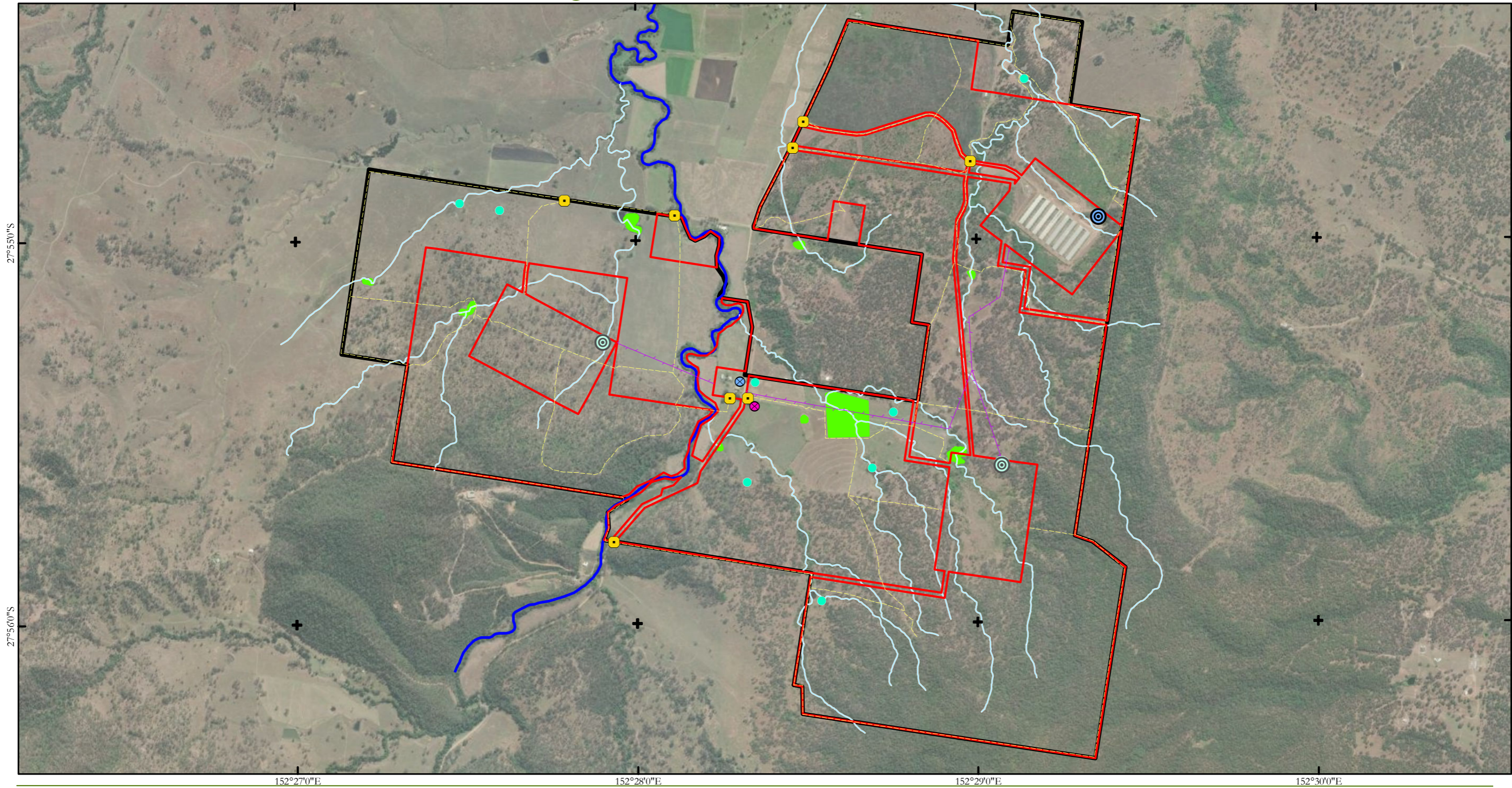
Notwithstanding, in the event a bushfire does occur within the ROA 2, adaptive management will involve:



- The provision of additional plantings where bushfire has occurred and damage or losses to plantings has resulted.
- Review of the adequacy of risk management measures to determine factors that may have resulted in the bushfire occurring and an assessment of any other management measures that could be implemented to reduce the risk further.



15. Offset Site Fire Trail Management Lines



Montauban Environmental Offsets

1:18,000

0 100 200 300 400 m

Coordinate System: GDA2020 MGA Zone 56

References:
 © State of Queensland, 2022
 Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

Date: 26/02/12
 10559 E 15 OMP_9383 NB Firetrails C

DISCLAIMER:
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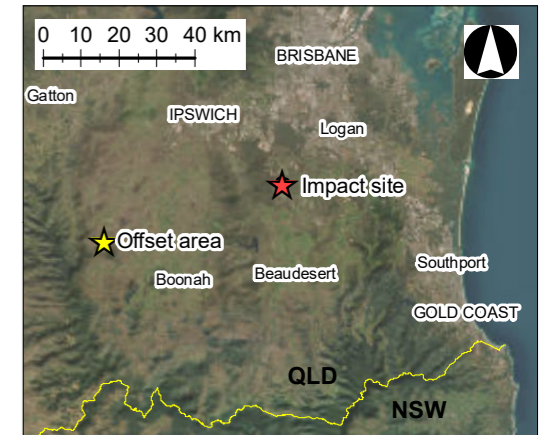
Legend

- Offset site boundary
- Offset area
- Offset area fire trail management lines
- Firetrail access points
- Power line infrastructure

Water Resources

- Major Watercourse
- Creeks and Drainage Features
- Dams
- Reservoirs

- Existing 3x360kL Water Tanks & Hydrants
- Bore/Hydrant
- Rural Fire Brigade Bore/Hydrant
- Future Water Tanks & Hydrant



SUMMARY OF MNES OFFSET COMPENSATION

Table 42 outlines a summary of the MNES offset compensation associated with the impacts at the New Beith Project site. The offset compensation for the impacts on MNES is derived from the EPBC offset calculator and habitat quality gains achieved from the successful implementation of the above mentioned management actions. Refer to **Appendix A** for the detailed EPBC offset calculator sheets and **Appendix F** for the detailed habitat quality milestone gain tables.

Table 42: Summary of MNES Offset Compensation

	Impact Site			Non-Remnant Offset Area			Regrowth Offset Area - Hi			Regrowth Offset Area - Lo			Remnant Offset Area			Total % of Impact Offset
	Impact	Impact Score	Quantum Impact Area	Habitat Quality Gain / Features	Offset Area / Gain	% of Impact Offset	Habitat Quality Gain / Features	Offset Area / Gain	% of Impact Offset	Habitat Quality Gain / Features	Offset Area / Gain	% of Impact Offset	Habitat Quality Gain / Features	Offset Area / Gain	% of Impact Offset	
Koala	187.09 ha	6/10	112.25 QI ha	3/10 to 7/10	224.41 ha	57.62 %	6/10 to 7/10	111.85 ha	8.14 %	5/10 to 7/10	25.90 ha	3.77 %	6/10 to 7/10	179.29 ha	13.04 %	82.47 %
Grey-headed Flying-fox	187.09 ha	6/10	112.25 QI ha	3/10 to 8/10	224.41 ha	72.03 %	4/10 to 8/10	111.85 ha	32.55 %	4/10 to 8/10	25.90 ha	7.54 %	5/10 to 8/10	179.29 ha	39.13 %	151.25 %
Greater Glider	246.8 ha	4/10	98.72 QI ha	3/10 to 7/10	224.41 ha	65.52 %	5/10 to 7/10	111.85 ha	18.51%	4/10 to 7/10	25.90 ha	6.43 %	6/10 to 7 [#] /10	179.29 ha	14.83 %	105.29 %
Greater Glider Features	360	NA	NA	31	337	61.25 %	137	168	7.03 %	10	39	6.58 %	185	269	19.06 %	93.92 %
Swift Parrot Features	2,894	NA	NA													130 %*
Regent Honeyeater Features	1,570	NA	NA													130 %*

*At least 30% more features than needed will be planted to account for potential 30% losses noting many more are anticipated to be actually planted on-ground to achieve regional ecosystem reconstruction

[#]While the MHQA analysis suggests a two point gain is plausible, a conservative one point gain has been applied



CORRECTIVE ACTIONS

Table 43 outlines a number of triggers and corrective actions which are to be implemented in instances of non-compliance or the lack of success toward the gradual achievement of the completion criteria identified during internal (annual) monitoring and major milestone monitoring events (every 5 years).

Table 43: Triggers and Corrective Actions (including timeframes)

Triggers	Corrective Actions	Timeframes for Corrective Actions
Trees and plantings showing signs of ill health, decline or death.	<ul style="list-style-type: none"> The bushland regenerator will engage a suitably qualified professional to identify the likely cause of health decline Apply recommended mitigation measure/s to improve growing conditions (as recommended by the suitably qualified professional) Remove ill or dead plantings, undertake any remediation works and re-establishment planting 	<ul style="list-style-type: none"> Engage the suitably qualified professional within three months of detection Implement recommended mitigation measures within six months of detection Remove ill or dead plantings and undertake remediation works within six months of detection*
Weed re-establishment	<ul style="list-style-type: none"> Immediately treat all WoNs, particularly <i>Lantana camara</i>, with delicate methods to avoid impacts to restoration works (mechanically or chemically dependent on circumstances) Undertake an investigation of the potential source point of seeding Additional treatment and removal works are to be followed up during the next potential growth period to avoid any regeneration and potential seeding events 	<ul style="list-style-type: none"> Within three months* of detection, noting that treatment during non-growth periods may be ineffective and are best targeted during growth periods for greater effectiveness. Within three months* of detection Within six months* of initial detection
Plant failure (>10% of stock) during the establishment period, including targeted assessment of key foraging species for Swift Parrot and Regent Honeyeater.	<ul style="list-style-type: none"> Supplementary planting will be undertaken Should the planting fail again, the bushland regenerator is to engage a suitably qualified professional to identify the likely cause of plant failure Apply recommended mitigation measure/s to improve growing 	<ul style="list-style-type: none"> Within six months or the next appropriate planting period (whichever comes first) of detection* Within 1 month of detection Apply in alignment with the recommendations made by



	conditions (as recommended by the suitably qualified professional)	the suitably qualified professional
Coarse woody debris is failing to become present naturally	<ul style="list-style-type: none"> The selective removal of limbs, shrubs, or trees (particularly from the shrub layer were forming dense thickets) Importation of felled native timber from known impact areas where it would ordinarily be mulched and sent to land fill 	<ul style="list-style-type: none"> At the 5, 10, 15 and 20 year monitoring events At the 5, 10, 15 and 20 year monitoring events
Growth rates not as expected	<ul style="list-style-type: none"> Engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions Undertake soil testing to determine what rate of soil ameliorants or fertilizers may be required to improve the chemical balance of the soils for improved plant growth Revise management actions for offset Discuss with the Department of Agriculture, Water and the Environment to negotiate changes to timeframes to meet the completion criteria Revise OMP and submit to Minister for the Environment for approval 	<ul style="list-style-type: none"> Within three months of detection Within three months of detection* Within 12 months of detection Within 24 months of detection if the corrective actions have not amended the slowing growth rates Within 24 months of detection if the corrective actions have not amended the slowing growth rates
Stochastic or nuisance events	<ul style="list-style-type: none"> While such events (e.g. 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 impacts and rectification measures are to be issued to the DCCEEW within three months 	<ul style="list-style-type: none"> Within six months of the event* Within three months of rectification*
Ongoing presence of pest fauna (e.g. Feral dogs)	<ul style="list-style-type: none"> Where recurrent pest animal species are detected, re- 	<ul style="list-style-type: none"> Immediately on presence identification



	<p>engagement with the surrounding landholders and SRRC to re-deploy management measures. Should recurrent pest fauna be observed going forward, revised management measures to include more site specific measures including targeted baiting and/or trapping</p>	
Hollow or nest box failure	<ul style="list-style-type: none"> • Where monitoring records hollow or nest box failure, corrective actions are to include repair or replacement as necessary 	<ul style="list-style-type: none"> • Within three months of detection*
Monitoring and reporting illustrates that KPIs are unlikely to be achieved at the end of the 20 year management timeframe and other corrective actions are failing to progress the achievement of the KPI	<ul style="list-style-type: none"> • Engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions • Undertake soil testing to determine what rate of soil ameliorants or fertilizers may be required to improve the chemical balance of the soils for improved plant growth • The proponent / approval holder will request an extension to the 20 year management timeframe from the Minister • Revise the management actions for the offset • Extend timeframes to meet completion criteria • Revise the OMP and submit to the Minister for the Environment for approval 	<ul style="list-style-type: none"> • Within three months of detection • Within three months of detection* • Within 24 months of detection if corrective actions have not amended the slowing growth rates • Within 24 months of detection if corrective actions have not amended the slowing growth rates • Within 24 months of detection if corrective actions have not amended the slowing growth rates • Within 24 months of detection if corrective actions have not amended the slowing growth rates

*Corrective action timeframes may be extended to the minimum amount possible where uncontrollable prevailing conditions (e.g. flood, drought, vandalism or fire) impede implementation.



RISK MANAGEMENT

A limited number of risks associated with climate change, pest control, large scale rehabilitation and grazing land uses are evaluated for the Offset property. Risks are generally described and assessed against the likelihood and consequence model outlined in the Commonwealth Government's Department of Environment – *Environmental Management Plan Guidelines* (2014). The following risk factors are considered in more detail in this OMP:

- Risk 1: Wildfire;
- Risk 2: Drought;
- Risk 3: Shifting habitat range;
- Risk 4: Plant stock failure;
- Risk 5: Feral animal control;
- Risk 6: Weeds of National Environmental Significance increased infestations; and
- Risk 7: Livestock control and access and trespass management.
- Risk 8: Hollow failure



Table 44: Risk Rating Table (DAWE, 2022)

RISK MATRIX						
Likelihood (L): A qualitative measure of likelihood how likely is it that this event/circumstances will occur both before and after management activities are 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					
Consequence (C): Qualitative measure of what will be the consequence/result if the issue does occur						
Minor	Minor incident of environmental damage that can be reversed <i>(e.g. short-term delays to achieving strategy objectives, implementing low-cost, well-characterised corrective actions)</i>					
Moderate	Isolated but substantial instances of environmental damage that could be reversed with intensive efforts <i>(e.g. short-term delays to achieving strategy objectives, implementing well-characterised, high cost/effort corrective actions)</i>					
High	Substantial instances of environmental damage that could be reversed with intensive efforts <i>(e.g. medium-long term delays to achieving objectives, implementing uncertain, high-cost/effort corrective actions)</i>					
Major	Major loss of environmental amenity and real danger of continuing <i>(e.g. strategy objectives are unlikely to be achieved, with significant legislative, technical, ecological and/or administrative barriers to attainment that have no evidenced mitigation strategies)</i>					
Critical	Severe widespread loss of environmental amenity and irrecoverable environmental damage <i>(e.g. strategy objectives are unable to be achieved, with no evidenced mitigation strategies)</i>					
Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High



RISK 1: BUSHFIRE

The Rosevale offset property retains some existing vegetation, however, given its historical use as a native plantation site, it is reflected as high and very high-risk fuel loads for wildfire in both State Government and Scenic Rim Regional Council mapping. The last recorded bushfire within the vicinity of the offset property occurred in January 2022. The bushfire was contained by Queensland Fire and Emergency Services (QFES) with no recorded damage to people or property. The ROA 2 was not impacted by this bushfire.

The Rosevale offset property 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 as the offset property transitions from open pasture, regrowth and forested areas to MNES habitat restoration as specific offset activities are sequentially completed.

The overall assessment of bushfire risk is that their occurrence is **unlikely** within the life of the offset and consequences of such an event would be **moderate**. Without intervention and management, bushfire is evaluated as a **low risk** to this offset project. Refer to **Table 45** for the initial risk rating calculation.

Table 45: Bushfire Risk Rating (Initial Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

Management actions to reduce the risk of bushfire impacts on the Rosevale offset property include:

- Maintain existing bushfire breaks between adjacent landholders, in particular along the boundaries where the State Planning Policy bushfire hazard mapping indicates there is a ‘high’ or ‘very high’ risk of bushfire occurring;
- Cooperate with the local Queensland rural fire service, Scenic Rim Regional Council and adjoining land owners to minimise bushfire risk at a regional scale; and
- Undertake a feasibility assessment on insurance for plant stock replacement.

Through the implementation of the management actions listed above and **Corrective Actions**, the residual risk rating for this offset project is that it is **rare** that it would occur within the life of the offset and the consequences of such an event would be **moderate**. With intervention and management, the residual risk of a bushfire is evaluated as a **low risk** to this offset project. Refer to **Table 46** for the residual risk rating calculation



Table 46: Bushfire Risk Rating (Residual Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

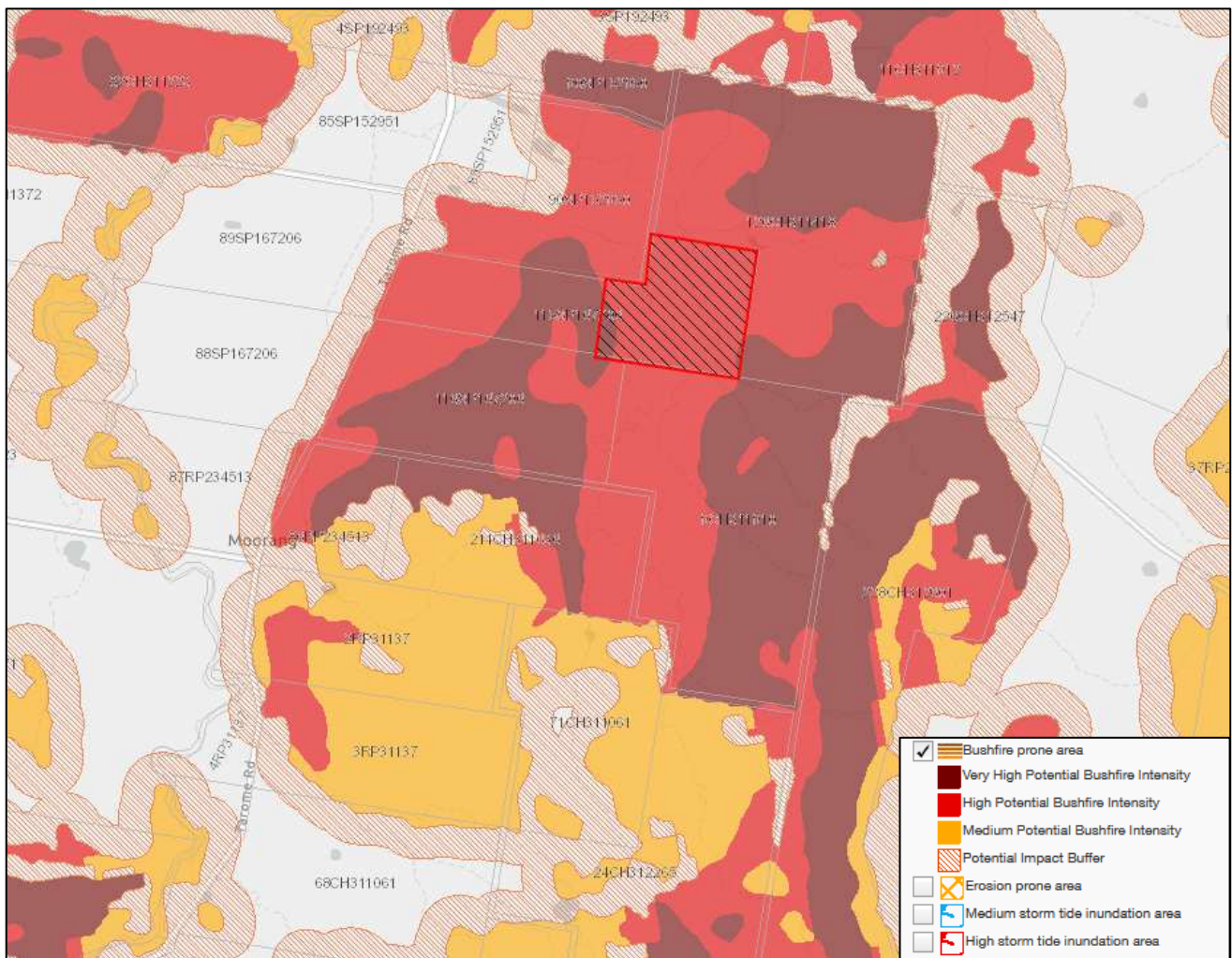


Figure 7: State Planning Policy bushfire hazard mapping (source: Queensland Government 2021)



RISK 2: DROUGHT

In May 2019 the Queensland Government declared the Scenic Rim Regional Council amongst a number of Local Government Areas as a drought area for the purposes of accessing funding and concessions for rural land holders. As of 1 December 2020, this declaration remains, despite several localised recent rain events. The total rainfall received in Boonah (nearest rain data collection centre) totalled 268.00 mm. This is 490.1 mm below the historical annual rainfall average for the local area. In contrast, the year of 2020 resulted in 741.00 mm of rain recorded, while 2021 resulted in 1,387.6 mm.

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 property maintains rainfall similar to the optimal range to support koala presences.

The overall assessment of drought risk is that its occurrence is **likely** within the life of the offset and consequences of such an event would be **moderate**. Without intervention and management, drought is evaluated as a **medium risk** to this offset project. Refer to **Table 47** for the initial risk rating calculation.

Table 47: Drought Risk Rating (Initial Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High
		Low	Low	Low	Low	Medium

Management actions to reduce the risk of drought impacts on the Rosevale offset property include:

- Ensure offset design includes restoration and connection to higher moisture content soils associated with gully lines;
- Maintain site dams and waterbodies for use in offset MNES habitat restoration activities and as water sources for native animals; and
- Consider small ‘turkey’ dams as part of upper ridge rehabilitation for the purposes of water access for fauna and the creation of patches of high moisture soils and vegetation.

Through the implementation of the management actions listed above and **Corrective Actions**, the residual risk rating for this offset project is that it is **likely** that it would occur within the life of the offset and the consequences



of such an event would be **moderate**. With intervention and management, the residual risk of a drought is evaluated as a **medium risk** to this offset project. Refer to **Table 48** for the residual risk rating calculation.

Table 48: Drought Risk Rating (Residual Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

RISK 3: 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-climatic related threats already well documented. More recently both species and their habitat have been affected nationally by the 2019-2020 bushfires. GHFF are also considered to be affected by climate change, however most studies relate to the increased temperatures at the camp and roosting sites, with less material available on their foraging range. The proposed offset provides foraging habitat and thus not directly influence temperatures at the roosting locations, which periodically shift for a range of factors.

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 Rosevale offset property average rainfall in 2019 was 268 mm down on the annual rainfall average of 741 mm, however these results have occurred while the LGA was declared in a drought situation, with this being the lowest ever annual rainfall recording for the local area (Kalbar rainfall data collection centre first recorded rainfall data in 1887). Additionally, the mean recorded minimum and maximum



temperatures for the region are 13.1°C to 27.1°C, thus even with predicted temperature increases the Rosevale offset property would remain around the noted 27°C mean maximum parameter of the study. 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).

At the site scale the offset design is founded in the re-establishment of connected koala habitat along gully lines and through higher moisture content soils. The design will connect existing low range and foothill habitat with gully lines and contiguous koala habitat within a known biodiversity corridor which contains all necessary habitat criteria.

The overall assessment of shifting habitat range risk is that its occurrence is **unlikely** within the life of the offset and consequences of such an event would be **high**. Without intervention and management, shifting habitat range is evaluated as a **low risk** to this offset project. Refer to **Table 50** for the initial risk rating calculation.

Table 49: Shifting Habitat Range Risk Rating (Initial Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

Management actions to minimise the risk of shifting habitat range on the Rosevale offset property include implementing the risk management actions outlined above.

Through the implementation of the management actions listed above and **Corrective Actions**, the residual risk rating for this offset project is that it is **unlikely** that it would occur within the life of the offset and the consequences of such an event would be **high**. With intervention and management, the residual risk of a shifting habitat range is evaluated as a **low risk** to this offset project. Refer to **Table 50** for the residual risk rating calculation.



Table 50: Shifting Habitat Range Risk Rating (Residual Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

RISK 4: PLANT STOCK FAILURE

The entirety of the ROA 2 requires significant MNES habitat restoration activities. In projects that include wholesale restorations works, the risk exists for planting stock to fail in large volumes due to:

- Poor soil quality or incompatible match of soils to replanted vegetation types;
- Weather related impacts – frost / prolonged dry periods, excessive heat or cool periods;
- Poor quality planting stock; and
- Lack of appropriate planting area preparation – weed removal / pasture seed removal / cultivation, etc.

The majority of these challenges are expected to be managed through the use of experienced bushland regeneration experts or contractors where necessary with relevant insurance and payment retentions. Failure of planting stock is primarily an economic impact for this project as the ROA 2 will not achieve committed condition improvement and habitat expansion targets without rectification of planting works.

The overall assessment of plant stock failure risk is that its occurrence is **possible** within the life of the offset and consequences of such an event would be **major**. Without intervention and management, plant stock failure is evaluated as a **high risk** to this offset project. Refer to **Table 51** for the calculation of risk rating.

Table 51: Plant Stock Failure Risk Rating (Initial Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High



Management actions that will be implemented to reduce the risk of plant stock failure impacts on the Rosevale offset property include:

- Undertake soil testing for both the modified planting soil and for the planting locations;
- Match species to pre-clear regional ecosystem vegetation communities based on geography, soil and region specifications;
- Undertake planting in manageable mosaic to ensure monitoring, watering etc can be implemented as required;
- Use experienced bushland regenerators or contractors where necessary to undertake all revegetation and rehabilitation works. Ensure selected contractors include relevant insurances and payment retentions for success rates from part of contract obligations;
- Over plant all revegetation areas by 10% on allocated numbers to cater for a natural 10% failure rate; and
- Undertake planting during warmer frost-free months.

Through the implementation of the management actions listed above and **Corrective Actions**, the residual risk rating for this offset project is that it is **unlikely** that it would occur within the life of the offset and the consequences of such an event would be **moderate**. With intervention and management, the residual risk of plant stock failure is evaluated as a **low risk** to this offset project. Refer to **Table 52** for the residual risk rating calculation.

Table 52: Plant Stock Failure Risk Rating (Residual Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

RISK 5: FERAL ANIMAL CONTROL

The Department of Agriculture and Fisheries (DAF) lists feral dogs as abundant and widespread throughout the Scenic Rim region. Wild dogs (*Canis familiaris dingo*, *Canis familiaris dingo X Canis familiaris*, *Canis familiaris*) are listed as declared pest animals by Scenic Rim Regional Council, with the local council website documenting that the impact of wild dog activity has increased in the past 10 years due mainly to the increasing population in the region. Further, residents are increasingly engaged in raising livestock and poultry, resulting in a readily available food sources for wild dogs (SRRC 2021). The Scenic Rim Regional Council currently runs



baiting, shooting and trapping programs throughout the region. Evidence of wild dog predation on livestock was recorded on the offset property. Research by Pest Animal Management QLD (2020) found that the Scenic Rim region contains an abundance of wild dogs, with evidence indicating that calf predation has increased significantly.

European Fox is listed as a major threat to the survival of several of the listed species Conservation Advice. DAF lists foxes as being widespread across Australia due to being highly adaptable and opportunistic feeders. Scenic Rim Regional Council also lists this species as being abundant throughout the region, with trapping programs widely conducted (SRRC 2023). The Australian Governments 2022 – 2023 Threatened Species Action Plan includes targets to manage foxes in important habitats for threatened species. The Queensland Government sites several control methods for this species, including shooting, trapping, fencing, baiting, and livestock guardian dogs, combined with land management (Business Queensland, 2021). Evidence of European Fox was recorded on the offset property (refer to Photo Plate 15). Under SRRCs Biodiversity Strategy 2015 – 2025 local council has set forth an objective to support land managers in the control of pest animals, including foxes and cats. Indicating the acknowledgement that these pest species are currently a problem in the region.

The Department of Climate Change, Energy, the Environment and Water (DCCEEW) state that feral cats pose a significant threat to many nationally listed threatened species. This species is known to predate on native species, spread diseases and reduce viable habitat for species most at risk. It is recorded that they are a threat to more than 120 nationally listed threatened species, including Greater Glider and Swift Parrot, and have been implicated in 28 mammal extinctions (DCCEEW, 2023). For this reason, predation by feral cats has been listed as a Key Threatening Process (KTP) under the *Environment Protection and Biodiversity Conservation Act 1999*. Scenic Rim Regional Council declare feral cats as a pest animal within the area with it noted that they are scattered throughout the region and trapping is an on-going activity. Feral cats were not captured on the infrared cameras places on-site however scats have been recorded and the presence of the poultry farms indicate it is likely this pest species is present within the area. Additionally, research from the National Land & Water Resources Audit, Canberra indicates that feral cat occurrence, abundance and distribution within south-east Queensland is “common/widespread”.

The Australian Governments 2022 – 2023 *Threatened Species Action Plan* highlights that in order to tackle the impacts of feral cats’ engagement and collaboration from the Australian Government with private and agricultural sectors is necessary. Therefore, the proposal to implement feral cat and fox management for this project, into a large area of potential threatened species habitat corresponds with both local and federal government objectives concerning the species. Feral Cat control tools currently available include shooting, trapping, fencing, baiting and grooming traps. DCCEEW indicate that the most effective form of feral cat control over large areas is poison baiting.

The overall assessment of feral animal control risk is that its occurrence is **possible** within the life of the offset and consequences of such an event would be **moderate**. Without intervention and management, feral animal control is evaluated as a **medium risk** to this offset project. Refer to **Table 53** for the calculation of risk rating.



Table 53: Feral Animal Control Risk Rating (Initial Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

Management actions to reduce the risk of feral animal predation impacts on the Rosevale offset property include:

- Undertake baseline and periodical surveys and monitoring of feral animal populations, locations and dispersal patterns within the Offset property (Survey methods to include – direct observation / remote sensor camera and sand traps for print record). Develop a base line of feral animal populations and ‘hot spots’ and key activity periods (e.g. dusk);
- Develop a purpose built offset property Pest Management Action Plan – method to include trapping, shooting, baiting. Develop an adaptive management approach to pest management which considers each method relative to the base line data collected to determine the most effective pest management measures for the offset property; and
- Undertake stakeholder engagement with immediate land holders to foster joint sub regional scale action plan.

Through the implementation of the management actions listed above and **Corrective Actions**, the residual risk rating for this offset project is that it is **possible** that it would occur within the life of the offset and the consequences of such an event would be **minor**. With intervention and management, the residual risk of feral animal control is evaluated as a **low risk** to this offset project. Refer to **Table 54** for the residual risk rating calculation.

Table 54: Feral Animal Control Risk Rating (Residual Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High



RISK 6: WEEDS OF NATIONAL SIGNIFICANCE INCREASED INFESTATIONS

Preliminary and baseline surveys and observations over the Rosevale offset property recorded a number of weed species, with the most prevalent and inhibitive to Koala movement and other threatened species habitat restoration being (Lantana) *Lantana camara*. Lantana is listed as a ‘weed of national significance’ under the EPBC Act. Further, in 2006, the NSW Government nominated *Lantana camara* as a key threatening process under the EPBC Act. The Scenic Rim Regional Council Biosecurity Plan aims to control declared pest plants within the region. This plan includes information and strategies for landholders to effectively manage pest species. *Lantana camara* is listed as a declared pest plant within the Scenic Rim region.

Lantana camara occurs on the Rosevale offset property both in open paddock areas as isolated clusters and thickets and as a dominant shrub in gully lines. Within open areas existing farm practices result in periodical pesticide application limiting spread, however, this does not occur to the extent of entire eradication as the costs of treatment to result in an economical return for the grazing benefit are non-existent. Weeds of national significance across the offset site have been quantified with the results split across the three Assessment Units. Remnant vegetation contains the highest density areas of invasive species with 62% of the site containing upper-moderate to high density (60 – 100%) weed coverage. Regrowth vegetation contains less high-density patches but 51% of regrowth vegetation contains moderate (40 – 80 %) weed coverage. Non-remnant vegetation contains an almost 50 – 50 low and high mix of WoNs due to maintenance and historical clearing in the area; with 49% of the area containing low to no (0 – 20%) weed coverage whilst 42% contains moderate to high (60 – 100%) weed coverage. The remaining 9% is low – moderate weeds. These percentages are reflective of the values within these areas. Remnant vegetation areas contain higher densities of weeds as the lack of on-going slashing, as is observed within the non-remnant, has allowed Lantana to flourish. Therefore, this infers that the potential for these areas to provide optimal habitat to Koala, known to occur within the area, is impacted by weed infestation. The highly invasive and spreading nature of the species, coupled with the in-active management in areas would result in progressive increases particularly as local climatic events align with optimal germination and seeding periods.

Lantana infestations suppress and inhibit the natural regeneration of regrowth vegetation on-site which directly limits the growth rates and regeneration of non-juvenile koala habitat trees and other species who forage and inhabit these (GHFF, Greater Glider, Regent Honeyeater and Swift Parrot). Additionally, in areas blanket layers of *Lantana camara* form a barrier to terrestrial species, which would include limiting the Koalas ability to access areas containing and over-canopy of NJKHTs. Further, as Lantana is a woody shrub with thin, combustible canes, it has been observed to create hotter bushfires, which significantly alters native vegetation communities and pastures (DAF, 2023). It is noted that under the Conservation Advice for Koala, increased intensity/frequency of bushfire is a listed key threatening process. Although this largely refers to the impacts caused by Climate Change, the presence of Lantana within bushland can significantly increase the extremity of bushfire and thus the impact it has directly on Koala and other listed species habitat; GHFF, Greater Glider, Regent Honeyeater and Swift Parrot all rely on Eucalypt bushland for foraging and breeding. For this reason, the Queensland Governments ‘South East Queensland Koala Conservation Strategy 2022 – 2025’ lists management of invasive weeds in both Action Area 1: Habitat Protection and Action Area 3: Threat Management (DES, 2020). Impact management of invasive flora, particularly Lantana, a Weed of National Significance (WoNS), is therefore considered a key direct action to addressing threats on Koala and other listed species that share the same habitat requirements.



The overall assessment of weeds of national significant increased infestation risk is that its occurrence is **highly likely** within the life of the offset and consequences of such an event would be **high**. Without intervention and management, WoNS increased infestations is evaluated as a **high risk** to this offset project. Refer to **Table 55** for the calculation of risk rating.

Table 55: Weeds of National Significance Increased Infestations Risk Rating (Initial Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

Management actions to reduce the risk of weeds of national significant increased infestation impacts on the Rosevale offset property include:

- Use an Antenna based GPS system to map the full extent (as description polygons) of all *Lantana camara* areas within the ROA 2 (achieve a total ha extent of weed infestations / occurrences within the ROA 2);
- Exclude stock (cattle) access from *Lantana camara* infestation areas within the ROA 2 (grazing cattle provide the most continuous source of *Lantana camara* spread);
- Undertake detailed weed management control activities within the ROA 2. The following methods are to be deployed:
 - Stick rake, grubbing, ploughing or slashing major accessible areas of Lantana where not on a slope greater than 15% or where no existing native values occur; and
 - Apply broadscale herbicide and spot spray during high germination summer periods (Nov-March). Utilise organic based Lantana targeted herbicides which minimise impacts on native vegetation regenerating within and surrounding Lantana patches.
- Undertake periodical weed maintenance rotations for removal / suppression of Lantana regeneration; and
- Incorporate adaptive management principles into weed management methods to streamline overall management to the most effective control types.

Through the implementation of the management actions listed above and the corrective actions listed in **Section 6**, the residual risk rating for this offset project is that it is **unlikely** that it would occur within the life of the offset and the consequences of such an event would be **minor**. With intervention and management, the residual risk of increased infestations of WoNS is evaluated as a **low risk** to this offset project. Refer to **Table 56** for the residual risk rating calculation.



Table 56: Weeds of National Significance Increased Infestations Risk Rating (Residual Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

RISK 7: LIVESTOCK CONTROL AND ACCESS AND TRESPASS MANAGEMENT

The Rosevale offset property has historically been utilised for agricultural uses, including, cattle grazing. The property has retained extensive pasture paddocks consisting of native grasses and artificially improved introduced pastures. Cattle grazing is consistently observed on the Rosevale offset property, with the intensity of grazing directly related to the density of pasture available (i.e., correlated with rainfall) and the beef market prices. Given the climatic season within recent years providing higher rainfall for vigorous pasture growth and increased beef prices, the head of cattle on the Rosevale offset property have likely increased.

It is observed that there is some limited research that intensive cattle grazing can result in some positive biodiversity outcomes, such as to control invasive species. Additionally for these conservation outcomes to be met it has been noted that a number of circumstances need to occur. For instance, stock must be controlled to graze areas needing treatment and excluded from sensitive wet areas where soil is most vulnerable to trampling. Stock must also be assured to be consuming the desired weed species and not native plant species intended for regeneration (Charles Sturt University, 2012). In general, clear treatment goals, control areas and monitoring programs need to be implemented for this system to work and the cost and benefits considered when compared to other weed treatments, such as slashing or burning. Overall, it is generally agreed that cattle farming has higher adverse effects to conservation rather than benefits due to re-engineering the landscape, removing potential for native species regrowth and ultimately supports predator species.

The risks of ongoing cattle grazing on the land could vary from low to medium to high subject to the future maintenance or expansion of the grazing use, which is driven by a number of economic factors, however primarily the rise and fall of the beef market. Regardless of the long term, the current highest and best use for the land is the continuation of cattle grazing. No reduction in risk or improvement in condition or value of the koala and Grey-headed Flying-fox habitat will occur without direct intervention and a change in use (such as this offset outcome).



Fauna friendly stock exclusion fencing, or removal of all livestock is the ultimate proposed solution for restricting stock from accessing the Offset Area (ROA 2).

The risks of ongoing cattle grazing on the land could vary from low to medium to high subject to the future maintenance or expansion of the grazing use, which is driven by a number of economic factors, however primarily the rise and fall of the beef market. Regardless of the long term and current highest and best use for the land is the continuation of cattle grazing. No reduction in risk or improvement in condition or value of the koala and Grey-headed Flying-fox habitat will occur without direct intervention and a change in use (such as this offset outcome). The impacts of unlawful access and trespassing mimic those listed in the ‘Livestock Control’ management action section of this management plan (trampling, compacting, weed spread, fence destruction). Without a system for identifying and preventing or controlling access and trespassing the actions established for on-site stock management will be undermined.

The overall assessment of livestock control and access and trespass management risk is that its occurrence is **possible** within the life of the offset and consequences of such an event would be **high**. Without intervention and management, livestock control and access and trespass management are evaluated as a **medium risk** to this offset project. Refer to **Table 57** for the calculation of risk rating.

Table 57: Livestock Control and Access and Trespass Management Risk Rating (Initial Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High
		Low	Low	Low	Medium	High

Management actions to reduce the risk of livestock control and access and trespass management impacts on the Rosevale offset property include:

- Ownership of the land by the offset provider and therefore any residual grazing activities will be secondary land uses to the approved offset outcomes;
- Implementation of a legally binding mechanism (Voluntary Declaration under the *Vegetation Management Act 1999*) which provides protection of existing and created habitat values. The Voluntary Declaration applies the regulations of the *Vegetation Management Act 1999* to the land title which remains regardless of the transfer of ownership or sale of the land; and
- Fauna friendly livestock exclusion fencing around the perimeter of the ROA 2.



Through the implementation of the management actions listed above and **Corrective Actions**, the residual risk rating for this offset project is that it is **unlikely** that it would occur within the life of the offset and the consequences of such an event would be **minor**. With intervention and management, the residual risk of unauthorised livestock control, access or trespass is evaluated as a **low risk** to this offset project. Refer to **Table 58** for the residual risk rating calculation.

Table 58: Livestock Control and Access and Trespass Management Risk Rating (Residual Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

RISK 8: HOLLOW FAILURE

The entirety of the ROA 2 requires hollow augmentation to meet the goal of minimum 1.5 hollows per hectare. There is some risk that created hollows fail due to:

- Poor selection of suitable installation site
- Limb loss
- Fire damage
- Dieback
- Fungal infestation and rot

The majority of these challenges are expected to be managed through the use of experienced hollow installers under the guidance of the Hollow Monitoring and Management Plan. Failure of hollows is primarily an economic impact for this project as the ROA 2 will not achieve committed shelter improvements and habitat expansion targets for Greater Glider without rectification.

The overall assessment of hollow failure risk is that its occurrence is **possible** within the life of the offset and consequences of such an event would be **minor**. Without intervention and management, hollow failure is evaluated as a **low risk** to this offset project. Refer to **Table 59** for the calculation of risk rating.

Table 59: Hollow Failure Risk Rating (Initial Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe



	Possible →	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

Management actions that will be implemented to reduce the risk of hollow failure impacts on the Rosevale offset property include:

- Monitoring of hollow stability and utilisation;
- Clearing of pest species infestations;
- Careful selection of site suitability under the Hollow Monitoring and Management Plan;
- Fore control regimes as implemented for the offset site.

Through the implementation of the management actions listed above and **Corrective Actions**, the residual risk rating for this offset project is that it is **unlikely** that it would occur within the life of the offset and the consequences of such an event would be **minor**. With intervention and management, the residual risk of plant stock failure is evaluated as a **low risk** to this offset project. Refer to **Table 60** for the residual risk rating calculation.

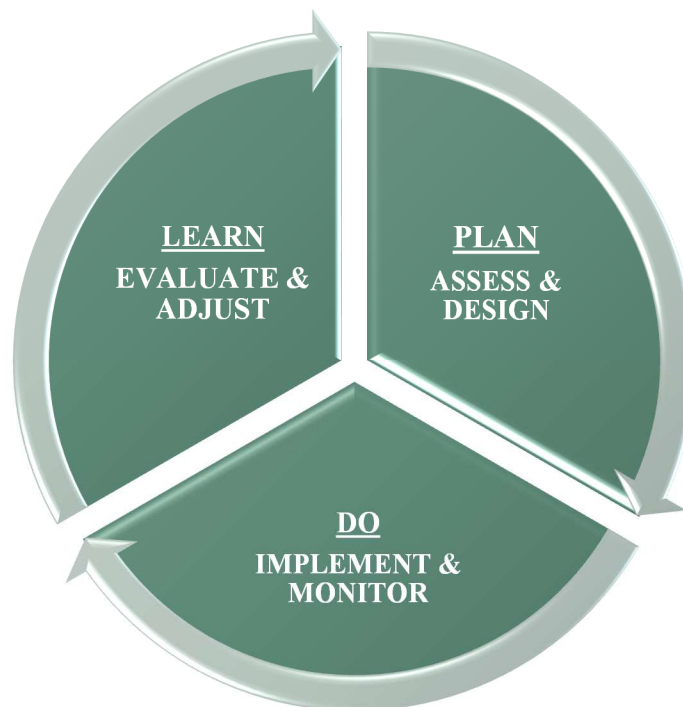
Table 60: Hollow Failure Risk Rating (Residual Risk Rating)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)						
		Consequence				
		Minor	Moderate	High	Major	Critical
Likelihood	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely →	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High



ADAPTIVE MANAGEMENT

This Offset Management Plan adopts a number of ‘adaptive management’ procedures both as a governing principle and within specific management activities. Most management activity table topics incorporate detailed baseline survey and data collection to be periodically repeated through the Offset Period and utilised for iterative changes to management implementation, particularly for stochastic habitat risks and threats. The primary purpose of adaptive management procedures for the Scenic Ridge ROA 2 is to allow on-ground monitoring and experiences on the most effective measures to feed into amendments to the OMP which focus on best return in MNES habitat outcomes for investment made.



OFFSET MANAGEMENT PLAN REPORTING STRUCTURE

As part of the commercial agreement between the Proponent and the Offset Provider all surveys, results, management activities statuses, alterations or amendments are recorded within an Offset Area Annual Report (OAAR). By executed contract each Offset Area Annual Report is to be completed by the Offset Provider and issued to the Proponent within 30 days of each 12 months anniversary of the documented commencement of the action. This commitment is purposely documented to ensure adequate time is provided to the proponent to evaluate and utilise the Offset Area Annual Report in preparing the Approved Action Annual Compliance Report. Although the reports precise inclusion in the ACR will be dictated by the Proponent.



Appendix A: EPBC Offset Calculator Sheets

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	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
<i>Ecological communities</i>						
Area of community	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species habitat</i>						
Area of habitat	Yes		Area	187.1	Hectares	
			Quality	6	Scale 0-10	
			Total quantum of impact	112.25	Adjusted hectares	
<i>Threatened species</i>						
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																					
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					
<i>Ecological Communities</i>																					
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset													
					Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0											
							Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)												
<i>Threatened species habitat</i>																					
Area of habitat	Yes	112.25	Adjusted hectares	ROA 2	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	224.41	Risk of loss (%) without offset	0%	Risk of loss (%) with offset	0%									
					Time until ecological benefit	20	Start quality (scale of 0-10)	3	Future area without offset (adjusted hectares)	224.4	Future area with offset (adjusted hectares)	224.4		0.00	95%	0.00	0.00	64.69	57.62%	No	
							Future quality without offset (scale of 0-10)	3	Future quality with offset (scale of 0-10)	7		4.00	75%	3.00	2.88						
<i>Threatened species</i>																					
Number of features e.g. Nest hollows, habitat trees	No																				
Condition of habitat Change in habitat condition, but no change in extent	No																				
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							
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	
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	112.254	64.69	57.62%	No	\$0.00	#DIV/0!	#DIV/0!
Area of community	0				\$0.00		\$0.00
					\$0.00	#DIV/0!	#DIV/0!

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2 October 2012

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Matter of National Environmental Significance	
Name	Koala
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator					
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
<i>Ecological communities</i>					
Area of community	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species habitat</i>					
Area of habitat	Yes		Area	187.1	Hectares
			Quality	6	Scale 0-10
			Total quantum of impact	112.25	Adjusted hectares
<i>Threatened species</i>					
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																		
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		
<i>Ecological Communities</i>																		
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset										
					Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0								
							Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)									
<i>Threatened species habitat</i>																		
Area of habitat	Yes	112.25	Adjusted hectares	ROA 2	Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset										
					Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	111.85	Future area with offset (adjusted hectares)	111.9	0.00	95%	0.00	0.00	9.13	8.14%	No	
							Future quality without offset (scale of 0-10)	6	Future quality with offset (scale of 0-10)	7	1.00	85%	0.85	0.82				
<i>Threatened species</i>																		
Number of features e.g. Nest hollows, habitat trees	No																	
Condition of habitat Change in habitat condition, but no change in extent	No																	
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							
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	
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	112.254	9.13	8.14%	No	\$0.00	#DIV/0!	
Area of community	0				\$0.00	\$0.00	
					\$0.00	#DIV/0!	

Offsets Assessment Guide

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Matter of National Environmental Significance	
Name	Koala
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator					
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
<i>Ecological communities</i>					
Area of community	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species habitat</i>					
Area of habitat	Yes		Area	187.1	Hectares
			Quality	6	Scale 0-10
			Total quantum of impact	112.25	Adjusted hectares
<i>Threatened species</i>					
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																		
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		
<i>Ecological Communities</i>																		
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% 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		
							0.0	0.0										
							Future area without offset (adjusted hectares)	Future area with offset (adjusted hectares)										
Area of habitat	Yes	112.25	Adjusted hectares	ROA 2	Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% 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		
							0%	0%										
							25.9	25.9										
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)	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							
20	5	5	7	2.00	85%	1.70	1.63	4.23	3.77%	No								
<i>Threatened species habitat</i>																		
Number of features e.g. Nest hollows, habitat trees	No																	
Condition of habitat Change in habitat condition, but no change in extent	No																	
<i>Threatened species</i>																		
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							
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	
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	112.254	4.23	3.77%	No	\$0.00	#DIV/0!	#DIV/0!
Area of community	0				\$0.00		\$0.00
					\$0.00	#DIV/0!	#DIV/0!

Offsets Assessment Guide

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Matter of National Environmental Significance	
Name	Koala
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator					
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
<i>Ecological communities</i>					
Area of community	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species habitat</i>					
Area of habitat	Yes		Area	187.1	Hectares
			Quality	6	Scale 0-10
			Total quantum of impact	112.25	Adjusted hectares
<i>Threatened species</i>					
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																														
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														
<i>Ecological Communities</i>																														
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset																						
					Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0																				
					Future quality without offset (scale of 0-10)	6	Future quality with offset (scale of 0-10)	7																						
<i>Threatened species habitat</i>																														
Area of habitat	Yes	112.25	Adjusted hectares	ROA 2	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	179.29	Risk of loss (%) without offset	0%	Risk of loss (%) with offset	0%	Raw gain	0.00	Confidence in result (%)	95%	Adjusted gain	0.00	Net present value	0.00	% of impact offset	14.64	13.04%	Minimum (90%) direct offset requirement met?	No	Cost (\$ total)		Information source		
					Time until ecological benefit	20	Start quality (scale of 0-10)	6	Future area without offset (adjusted hectares)	179.3	Future area with offset (adjusted hectares)	179.3	Raw gain	1.00	Confidence in result (%)	85%	Adjusted gain	0.85	Net present value	0.82										
					Future value without offset	6	Future value with offset	7																						
<i>Threatened species</i>																														
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							
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	
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	112.254	14.64	13.04%	No	\$0.00	#DIV/0!	#DIV/0!
Area of community	0				\$0.00		\$0.00
					\$0.00	#DIV/0!	#DIV/0!

Offsets Assessment Guide

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2 October 2012

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Matter of National Environmental Significance	
Name	GHFF
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator					
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
<i>Ecological communities</i>					
Area of community	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species habitat</i>					
Area of habitat	Yes		Area	187.1	Hectares
			Quality	6	Scale 0-10
			Total quantum of impact	112.25	Adjusted hectares
<i>Threatened species</i>					
<i>Threatened species</i>					
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																	
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	
<i>Ecological Communities</i>																	
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% 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	
							0.0	0.0									
							Future area without offset (adjusted hectares)	Future area with offset (adjusted hectares)									
Area of habitat	Yes	112.25	Adjusted hectares	ROA 2	Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% 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	
							0%	0%									
							224.4	224.4									
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)	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						
20	3	3	8	5.00	75%	3.75	3.60	80.86	72.03%	No							
<i>Threatened species habitat</i>																	
<i>Threatened species</i>																	
<i>Threatened species</i>																	
<i>Threatened species</i>																	
<i>Threatened species</i>																	
<i>Threatened species</i>																	

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	
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	112.254	80.86	72.03%	No	\$0.00	#DIV/0!	#DIV/0!
Area of community	0				\$0.00		\$0.00
					\$0.00	#DIV/0!	#DIV/0!

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Matter of National Environmental Significance	
Name	GHFF
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator					
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
<i>Ecological communities</i>					
Area of community	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species habitat</i>					
Area of habitat	Yes		Area	187.1	Hectares
			Quality	6	Scale 0-10
			Total quantum of impact	112.25	Adjusted hectares
<i>Threatened species</i>					
<i>Threatened species</i>					
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																	
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	
<i>Ecological Communities</i>																	
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% 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	
							0.0	0.0									
							Future area without offset (adjusted hectares)	Future area with offset (adjusted hectares)									
Area of habitat	Yes	112.25	Adjusted hectares	ROA 2	Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% 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	
							0%	0%									
							111.85	111.9									
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)	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						
20	4	4	8	4.00	85%	3.40	3.27	36.54	32.55%	No							
<i>Threatened species habitat</i>																	
<i>Threatened species</i>																	
<i>Threatened species</i>																	
<i>Threatened species</i>																	
<i>Threatened species</i>																	
<i>Threatened species</i>																	

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	112.254	36.54	32.55%	No	\$0.00	#DIV/0!	#DIV/0!
Area of community	0				\$0.00		\$0.00
					\$0.00	#DIV/0!	#DIV/0!

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Matter of National Environmental Significance	
Name	GHFF
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator					
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
<i>Ecological communities</i>					
Area of community	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species habitat</i>					
Area of habitat	Yes		Area	187.1	Hectares
			Quality	6	Scale 0-10
			Total quantum of impact	112.25	Adjusted hectares
<i>Threatened species</i>					
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																		
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		
<i>Ecological Communities</i>																		
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset										
					Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0								
							Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)									
<i>Threatened species habitat</i>																		
Area of habitat	Yes	112.25	Adjusted hectares	ROA 2	Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset										
					Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	25.9	Future area with offset (adjusted hectares)	25.9	0.00	95%	0.00	0.00	8.46	7.54%	No	
							Future quality without offset (scale of 0-10)	4	Future quality with offset (scale of 0-10)	8	4.00	85%	3.40	3.27				
<i>Threatened species</i>																		
Number of features e.g. Nest hollows, habitat trees	No																	
Condition of habitat Change in habitat condition, but no change in extent	No																	
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							
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	
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	112.254	8.46	7.54%	No	\$0.00	#DIV/0!	#DIV/0!
Area of community	0				\$0.00		\$0.00
					\$0.00	#DIV/0!	#DIV/0!

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	GHFF
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator							
Impact calculator	Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
	<i>Ecological communities</i>						
	Area of community	No		Area			
				Quality			
				Total quantum of impact	0.00		
	<i>Threatened species habitat</i>						
	Area of habitat	Yes		Area	187.1	Hectares	
				Quality	6	Scale 0-10	
				Total quantum of impact	112.25	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	No						
Condition of habitat Change in habitat condition, but no change in extent	No						
<i>Threatened species</i>							
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		
	<i>Ecological Communities</i>																		
	Area of community	No					Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) with offset									
							Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0							
									Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)								
	<i>Threatened species habitat</i>																		
	Area of habitat	Yes	112.25	Adjusted hectares	ROA 2	20	Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	0%	Risk of loss (%) with offset	0%							
							Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	179.3	Future area with offset (adjusted hectares)	179.3							
									Future quality without offset (scale of 0-10)	5	Future quality with offset (scale of 0-10)	8	3.00	85%	2.55	2.45	43.93	39.13%	No
	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																		
Condition of habitat Change in habitat condition, but no change in extent	No																		
<i>Threatened species</i>																			
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				No	\$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	112.254	43.93	39.13%	No		\$0.00	#DIV/0!
Area of community	0					\$0.00	\$0.00
						\$0.00	#DIV/0!

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	Greater Glider
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
<i>Ecological communities</i>						
Area of community	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species habitat</i>						
Area of habitat	Yes		Area	246.8	Hectares	
			Quality	4	Scale 0-10	
			Total quantum of impact	98.72	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	Hollows	360		Count	Field Survey
Condition of habitat Change in habitat condition, but no change in extent	No					
<i>Threatened species</i>						
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																	
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	
<i>Ecological Communities</i>																	
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) 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	
							0.0	0.0									
							Future area without offset (adjusted hectares)	Future area with offset (adjusted hectares)									
Area of habitat	Yes	98.72	Adjusted hectares	ROA 2	Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) 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	
							0%	0%									
							111.85	111.9									
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)	7	2.00	85%	1.70	1.63	18.27	18.51%	No						
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	Yes	360	Count		20	137	137	168	31	85%	26.35	25.32	7.03%	No			
Condition of habitat Change in habitat condition, but no change in extent	No																
<i>Threatened species</i>																	
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							
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	
Mortality rate	0			No	\$0.00	#DIV/0!	\$0.00
Number of individuals	0			No	\$0.00	#DIV/0!	\$0.00
Number of features	360	25.32	7.03%	No	\$0.00	#DIV/0!	#DIV/0!
Condition of habitat	0			No	\$0.00	#DIV/0!	\$0.00
Area of habitat	98.72	18.27	18.51%	No	\$0.00	#DIV/0!	#DIV/0!
Area of community	0			No	\$0.00	#DIV/0!	\$0.00
					\$0.00	#DIV/0!	#DIV/0!

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	Swift Parrot
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	6.8%

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	
	<i>Ecological communities</i>						
	Area of community	No		Area			
				Quality			
				Total quantum of impact	0.00		
	<i>Threatened species habitat</i>						
	Area of habitat	No		Area			
				Quality			
				Total quantum of impact	0.00		
	Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source	
Number of features e.g. Nest hollows, habitat trees	Yes	Foraging Trees	2894	Count	Tree Plot		
Condition of habitat Change in habitat condition, but no change in extent	No						
<i>Threatened species</i>							
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		
	<i>Ecological Communities</i>																		
	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)									
	<i>Threatened species habitat</i>																		
	Area of habitat	No					Time over which loss is averted (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)	0	0							
	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	Yes	2894	Count	ROA 2	20	0	0	7642	7642	75%	5731.50	1537.60	53.13%	No					
Condition of habitat Change in habitat condition, but no change in extent	No																		
<i>Threatened species</i>																			
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	2894	1537.60	53.13%	No	\$0.00	#DIV/0!	#DIV/0!
	Condition of habitat	0				\$0.00		\$0.00
	Area of habitat	0				\$0.00		\$0.00
	Area of community	0				\$0.00		\$0.00
						\$0.00	#DIV/0!	#DIV/0!

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	Regent Honeyeater
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	6.8%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator					
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
<i>Ecological communities</i>					
Area of community	No		Area		
			Quality		
			Total quantum of impact	0.00	
<i>Threatened species habitat</i>					
Area of habitat	No		Area		
			Quality		
			Total quantum of impact	0.00	
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source
Number of features e.g. Nest hollows, habitat trees	Yes	Foraging Trees	1570	Count	Tree Plot
Condition of habitat Change in habitat condition, but no change in extent	No				
<i>Threatened species</i>					
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																	
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	
<i>Ecological Communities</i>																	
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) 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	
							0.0	0.0									
							Future area without offset (adjusted hectares)	Future area with offset (adjusted hectares)									
Area of habitat	No				Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (%) without offset	Risk of loss (%) 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	
							0.0	0.0									
							Future area without offset (adjusted hectares)	Future area with offset (adjusted hectares)									
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	Yes	1570	Count	ROA 2	20	0	0	4145	4145	75%	3108.75	833.99	53.12%	No			
Condition of habitat Change in habitat condition, but no change in extent	No																
<i>Threatened species</i>																	
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							
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	1570	833.99	53.12%	No	\$0.00	#DIV/0!	#DIV/0!
Condition of habitat	0				\$0.00		\$0.00
Area of habitat	0				\$0.00		\$0.00
Area of community	0				\$0.00		\$0.00
					\$0.00	#DIV/0!	#DIV/0!

Appendix B: UAV Assessment Report

UAV Wildlife Survey

Moorang, Queensland

Our Reference: 9383

28 May 2025





We've been applying Know How in surveying, town planning, urban design, mapping, environmental management and landscape architecture to projects of all sizes for over forty years.

Our Know How defines us. It's what we bring to the table that no one else can. It allows us to deliver on-time, on budget and to exceed your expectations on every project we partner on.

There is simply no substitute for Know How.

Introduction

Saunders Havill Group were tasked with spotting Koala, Greater Glider and Wild Dog using RPA (remotely piloted aircraft) equipped with a thermal sensor. The following steps were undertaken in the preparation of this document

1. Flight Planning
2. Field Data Collection
3. Desktop Processing
4. Survey Results

Details of the methodology undertaken for each of these phases is provided below

1. Flight Planning and Approvals

A detailed site assessment was conducted across the project area to identify suitability for Koala and Glider thermal sensor spotting. Items included airspace, landfall and vegetation mass to determine suitability. Additional elements of influence regarding safe and successful flight also included risk management factors, CASA air laws and regulations and RPA standard operating procedures that may influence outcomes. The following stages were undertaken:

- CASA compliance
- Airspace validation
- Weather check
- Day time Site assessment
- Risk Assessment
- Flight approvals

2. Field data collection

2.1. Site information

Location	Tarome Road, Moorang, QLD 4340	
Local Government	Scenic Rim Region	
Topography	Undulating Terrain	
Land/Property Access	YES (Fraser's Property)	
Site Manager	Douglas Guy (Montauban Poultry)	
Site Stage	Investigation	
Area Total	613 ha	
Area Site Specific	Lot 1CC3571	122 ha
	Lot 230CH312495	64.8 ha
	Lot 68CH311061	49.2 ha
	Lot 72CH311061	33.2 ha
	Lot 229CH312601	129 ha
	Lot 24CH312265	58.7 ha
	Lot 71CH311061	32.4 ha
	Lot 9CH311910	58.2 ha
	Lot 211CH311636	32.4 ha
	Lot 116SP167206	32.7 ha



2.2. Flight information

The Flight Areas (fig.1) and Flight paths (fig. 2) were designed to follow the natural shape of this site due to topography and changes in elevations.

Consideration was given to hazards within and in close proximity to the survey area as well as availability of suitable launch sites.

Overlap between flight areas was increased in some areas to account for subject mobility during survey down time.

Site assessment was conducted prior to survey during daylight conditions to establish launch points and flight paths for RPA, assess terrain for obstacles and areas of possible interference.

Wildlife survey was conducted during night-time (7PM-3AM) to fully utilize the thermal sensor.

The weather conditions were scattered clouds, light wind and temperature range between 14-23° Celsius. With this method we were able to search areas otherwise obstructed by vegetation by targeting heat signatures.

A combination of autonomous flight and Manual RPA operation was used to undertake this survey.

A waypoint mission was planned within DJ Pilot 2 software integrated into DJI remote controller used to operate DJI M350RTK.

Continuous visual monitoring of screen displaying the thermal video feed from the sensor was used as a primary detection method.

When suspicious thermal signature was detected, the RPA was put into "hover mode" to maintain position without further outputs from the pilot.

Thermal and RGB still images were captured for further analysis during the desktop processing.

After confirming the features of the image to be wildlife, several still images were taken to capture the subject from different angles. Direct overhead still image was also captured to provide GPS location. The georeferenced location was also recorded within the Flight Hub 2 to assist with desktop analysis.

After performing the capture, the RPA resumed automated flight along the predetermined flight path.

Frequent stops were necessary to observe for suspicious thermal signatures (other than target species) and assess whether closer inspection was necessary. (ie. small heat signatures could be classified as bats, making a closer inspection unnecessary).

Each flight was limited by RPA battery power. After each landing to reload charged batteries, the RPA would autonomously return to the last break point in the flight and resume the survey.

Thermal and RGB video was also captured for each flight.

Flight line direction <i>(adjusted to site specifics)</i>	FA1 North-South FA2 North-South FA3 North-South FA4 North-South FA5 North-South FA6 North-South FA7 North-South
Flight line overlap (side)	40% (transect width +/- 25 meters)
Survey altitude (AGL)	40-65m AGL
Inspection altitude (AGL)	20-30m AGL
Detection method (a)	Hot spot visual detection
Detection method (b)	Shape detection
Detection method (c)	Characteristic trait
Detection method (d)	Visual inspection
Total flight area	622 ha
Initial site inspection	14 April 2025
Night Flights	15-16 April 2025 29 April – 1 May 2025
Total Flights	53

Fig. 1 Flight Areas



Fig 2. Flight Paths



2.3. Equipment information

RPA	DJI M350 RTK
Payload 1 Sensor	DJI H20T
Payload 2 Spotlight	GL60+
Software	DJI Pilot 2
RTK Connection	N-Trip

3. Desktop Processing

All captured survey data was recorded onto SD card that is inserted into the RPA's sensor.

Video evidence was reviewed and cross-referenced with thermal and RGB imagery.

Each image that was captured directly overhead of target species is geo-referenced and GPS coordinates from the image are used to create annotations for each finding.

A data set with all annotations is then exported as a KML file

4. Survey Results

This aerial survey located several wildlife species within the entire project area.

27 Koalas within the survey area

9 Koalas outside of site boundary

7 Glider

0 Wild dog

1 Fox

1 Wild Pig

1 Echidna

Subjects were confirmed whilst airborne using several techniques including visual inspection, statistical temperature evaluation/alert, characteristic behavioural traits and fauna type investigation methods. Whilst every effort is made to confirm species and location, it is noted that some subjects were difficult to identify due to position in vegetation and uncharacteristic behaviour.



Subject Koala 1
Location FA4 – Outside of Boundary
GPS Coordinates Long 152.489425659, Lat -27.929281235
Date 15-04-2025
Time 19:21:05



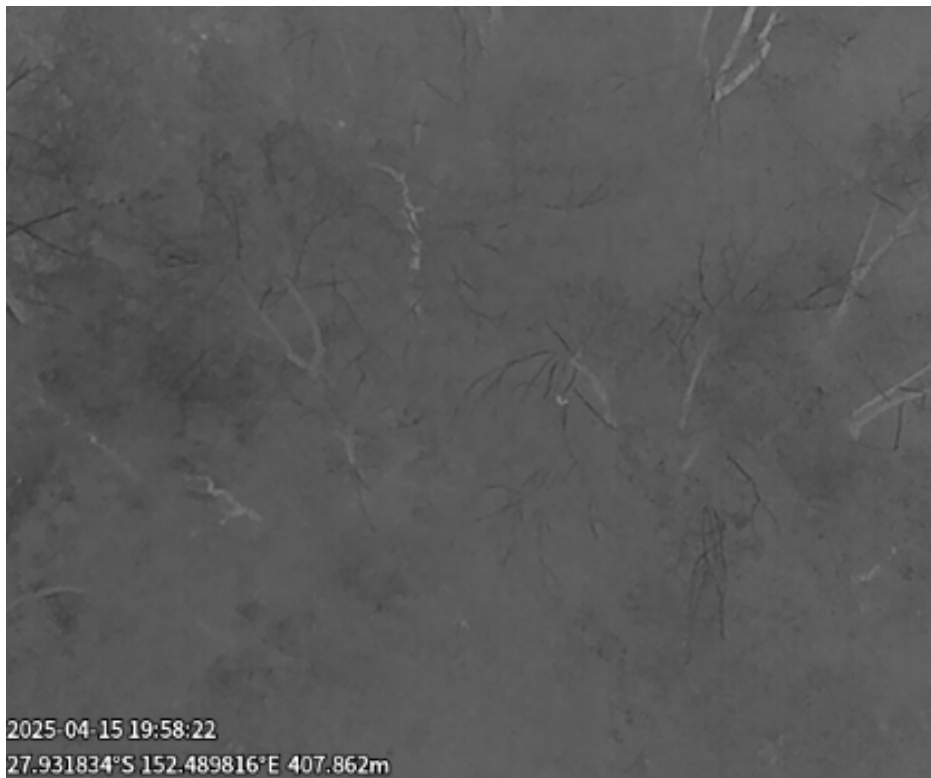
Subject Glider 1
Location FA4
GPS Coordinates Long 152.486709595, Lat -27.929485321
Date 15-04-2025
Time 19:46:12



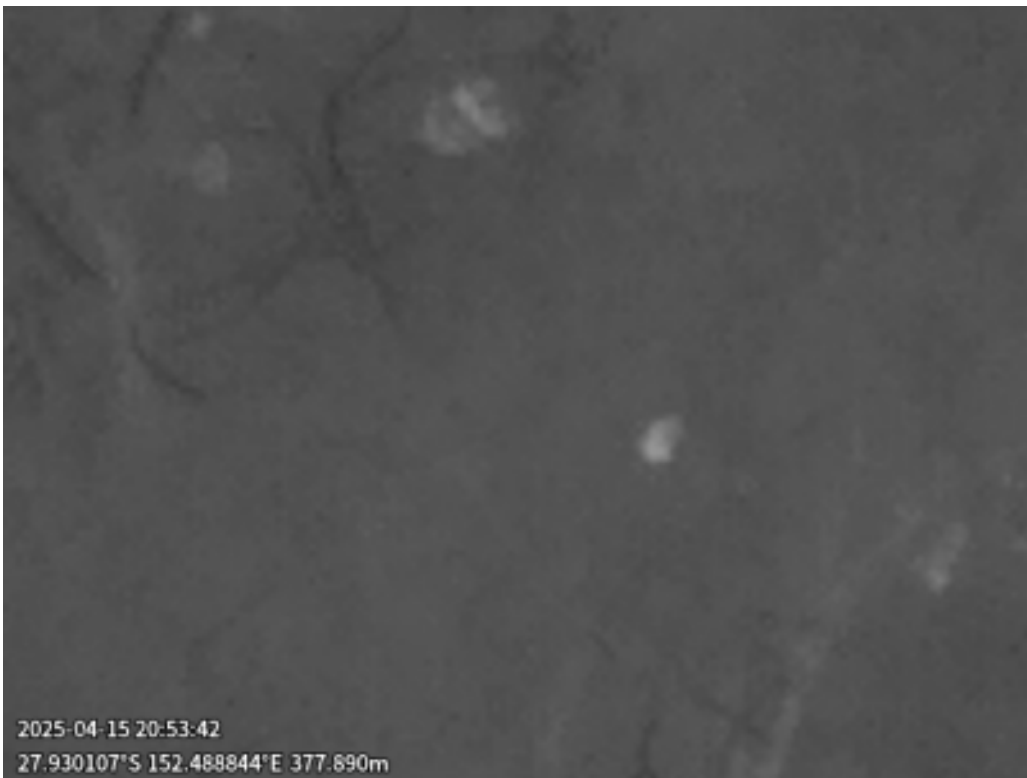
Subject Koala 2
Location FA4
GPS Coordinates Long 152.489486694, Lat -27.934663773
Date 15-04-2025
Time 19:51:59



Subject Koala 3
Location FA4
GPS Coordinates Long 152.489761353, Lat -27.931926727
Date 15-04-2025
Time 19:58:22



Subject Koala 4
Location FA4
GPS Coordinates Long 152.488723755, Lat -27.930368423
Date 15-04-2025
Time 20:53:42



Subject Koala 5A
Location FA4
GPS Coordinates Long 152.486816406, Lat -27.933166504
Date 15-04-2025
Time 21:24:23



Subject Koala 5B
Location FA4
GPS Coordinates Long 152.487640381, Lat -27.935119629
Date 15-04-2025
Time 21:26:47



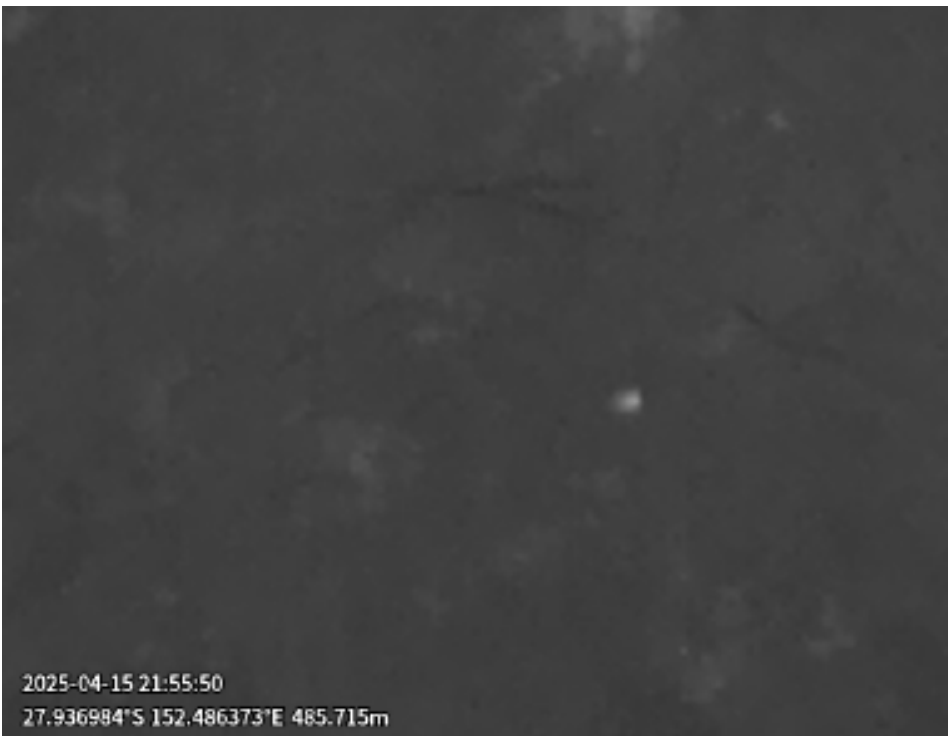
Subject Koala 6
Location FA4
GPS Coordinates Long 152.4871521, Lat -27.935758591
Date 15-04-2025
Time 21:39:28



Subject Koala 7
Location FA4
GPS Coordinates Long 152.486541748, Lat -27.936944962
Date 15-04-2025
Time 21:52:13



Subject Koala 8
Location FA4
GPS Coordinates Long 152.486358643, Lat -27.936975479
Date 15-04-2025
Time 21:55:51



Subject Glider 2
Location FA4
GPS Coordinates Long 152.485717773, Lat --27.936290741
Date 15-04-2025
Time 22:30:16



Subject Koala 9
Location FA4
GPS Coordinates Long 152.48550415, -27.934270859
Date 15-04-2025
Time 22:49:40



Subject Glider 3
Location FA4
GPS Coordinates Long 152.48538208, Lat -27.934213638
Date 15-04-2025
Time 22:51:43



Subject Koala 10
Location FA4
GPS Coordinates Long 152.48538208, Lat -27.937635422
Date 15-04-2025
Time 22:57:52



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Date 15-04-2025
Time 23:02:31



Subject Koala 12
Location FA4
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Date 15-04-2025
Time 23:30:25



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Location FA4
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Date 15-04-2025
Time 23:39:09



Subject Koala 14
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Time 00:24:33



Subject Koala 15
Location FA4
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Date 16-04-2025
Time 00:33:47



Subject Koala 16
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Date 16-04-2025
Time 00:44:25



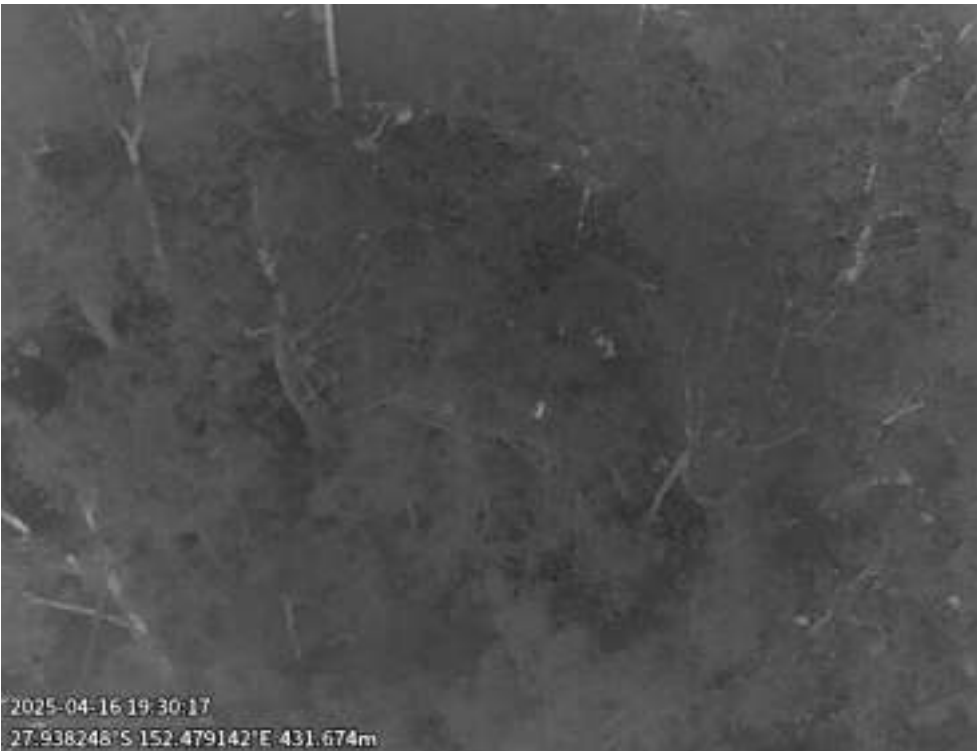
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Time 00:47:53



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Location FA5
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Date 16-04-2025
Time 19:18:48



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Date 16-04-2025
Time 19:30:17



Subject Fox 1-2
Location FA5
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Subject Koala 22-2
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Time 21:44:38



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Subject Koala 25-2
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Time 21:51:05



Subject Koala 26-2
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Date 16-04-2025
Time 21:57:16



Subject Echidna 1-3
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Time 19:16:21



Subject Koala 27-3
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Time 19:44:35



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Subject Koala 29-3
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Time 20:20:43



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Date 29-04-2025
Time 20:31:45



Subject Koala 31-3
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Date 29-04-2025
Time 20:46:58



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Date 09-04-2025
Time 21:59:42



Subject Koala 32-3
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Date 29-04-2025
Time 22:15:20



Subject Koala 33-3
Location FA1 – Outside of Boundary
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Date 29-04-2025
Time 22:18:16



Subject Glider 1-4
Location FA7
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Date 09-04-2025
Time 18:23:55



Subject Koala 1-4
Location FA7 – Outside of Boundary
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Date 30-04-2025
Time 20:30:00



Subject Koala 2-4
Location FA5
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Date 30-04-2025
Time 22:05:36



2025-04-30 22:05:36
27.9266777°S 152.4714813°E 248.015m
Meesung, QLD

Subject Glider 2-4
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Date 30-04-2025
Time 22:10:29



Subject Glider 3-4
Location FA5
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Date 30-04-2025
Time 22:13:29



Subject Boar 1-4
Location FA6
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Date 30-04-2025
Time 23:29:37



Table Summary

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Koala 2	FA4	152.489486694	-27.934663773	15-04-2025	19:51:59
Koala 3	FA4	152.489761353	-27.931926727	15-04-2025	19:58:22
Koala 4	FA2	152.488723755	-27.930368423	15-04-2025	20:53:42
Koala 5A	FA4	152.486816406	-27.933166504	15-04-2025	21:24:23
Koala 5B	FA4	152.487640381	-27.935119629	15-04-2025	21:26:47
Koala 6	FA4	152.4871521	-27.935758591	15-04-2025	21:39:28
Koala 7	FA4	152.486541748	-27.936944962	15-04-2025	21:52:13
Koala 8	FA4	152.486358643	-27.936975479	15-04-2025	21:55:51
Glider 2	FA4	152.485717773	-27.936290741	15-04-2025	22:30:16
Koala 9	FA4	152.48550415	-27.934270859	15-04-2025	22:49:40
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Koala 10	FA4	152.48538208	-27.937635422	15-04-2025	22:57:52
Koala 11	FA4	152.486221313	-27.93079567	15-04-2025	23:02:31
Koala 12	FA4	152.48399353	-27.93686676	15-04-2025	20:30:25
Koala 13	FA4	152.484130859	-27.937742233	15-04-2025	23:39:09
Koala 14	FA4	152.480758667	-27.936559677	16-04-2025	00:24:33
Koala 15	FA4	152.480102539	-27.937894821	16-04-2025	00:33:47
Koala 16	FA5	152.478652954	-27.937452316	16-04-2025	00:44:25
Koala 17	FA5	152.478668213	-27.936185837	16-04-2025	00:47:53
Koala 18-2	FA5	152.478744507	-27.93516922	16-04-2025	19:18:48
Koala 19-2	FA4*	152.479217529	-27.938369751	16-04-2025	19:30:17
Fox 1-2	FA5	152.478408813	-27.931970596	16-04-2025	19:54:49
Koala 20-2	FA5	152.473327637	-27.927598953	16-04-2025	20:53:35
Koala 21-2	FA3*	152.489440918	-27.923995972	16-04-2025	21:21:50
Koala 22-2	FA3*	152.489303589	-27.923339844	16-04-2025	21:24:23
Koala 23-2	FA3	152.48900	-27.923383713	16-04-2025	21:44:38

ID	Location	Longitude	Latitude	Date	Time
Koala 24-2	FA3*	152.490112305	-27.924224854	16-04-2025	21:46:45
Koala 25-2	FA3*	152.489822388	-27.927549362	16-04-2025	21:51:05
Koala 26-2	FA3	152.48828125	-27.923015594	16-04-2025	21:57:16
Echidna 1-3	FA2	152.48979187	-27.918779373	29-04-2025	16:16:21
Koala 27-3	FA3	152.487213135	-27.922132492	29-04-2025	19:44:35
Koala 28-3	FA2	152.485610962	-27.917516708	29-04-2025	20:05:07
Koala 29-3	FA2	152.48348999	-27.917047501	29-04-2025	20:20:43
Koala 30-3	FA2	152.482803345	-27.917858124	29-04-2025	20:31:45
Koala 31-3	FA3	152.481124878	-27.920772552	29-04-2025	20:46:58
Glider 5-3	FA1	152.481964111	-27.911506653	29-04-2025	21:59:42
Koala 32-3	FA1*	152.477264404	-27.917280197	29-04-2025	22:15:20
Koala 33-3	FA1*	152.47744751	-27.91768074	29-04-2025	22:18:16
Glider 1-4	FA7	152.465332031	-27.926391602	30-04-2025	18:23:55
Koala 1-4	FA7*	152.457290649	-27.922298431	30-04-2025	20:30:00
Koala 2-4	FA5	152.471481323	-27.926677704	30-04-2025	22:05:36
Glider 2-4	FA5	152.471664429	-27.927267075	30-04-2025	22:10:29
Glider 3-4	FA5	152.471618652	-27.927276611	30-04-2025	22:13:29
Boar 1-4	FA6	152.467819214	-27.925918579	30-04-2025	23:29:37

* Subject located outside of site boundary

END

Appendix C: OAG Reference Tables

Appendix D: Greater Glider Habitat Analysis



Our Ref: Document5

31 July 2024

Dr Andrew Davies
Manager Environmental Division / Associate Partner
Saunders Havill Group

E | andrewdavies@saundershavill.com

Dear Andrew

RE: Greater Glider assessment at the Montauban Offset Site

Work Undertaken

I undertook a Greater Glider (*Petauroides volans/amillatus*) survey and habitat assessment of the proposed Montauban Offset Site at Tarome Road (the site) on 11 and 12 of June 2024. The intent of this survey was to:

- Understand the presence and distribution of foraging trees and hollow-bearing trees on the site
- Assess the presence of the Greater Glider using known survey methods
- Assess the connectivity of the site to other potential habitat in the locality.

Queensland Regional Ecosystem (RE) mapping was used to determine polygons that were similar in floristic association and structural form (e.g. regrowth or remnant). This mapping was used to prioritise areas for spotlighting (i.e. a focus on remnant vegetation) and for habitat assessment purposes.

Habitat quality for the Greater Glider was described qualitatively (i.e. no quantitative vegetation plots were used). Random traverses of each RE were conducted and an overall description applying to that polygon was recorded. Trees were identified to species level, noting the species that are known foraging resources for the Greater Glider (e.g. Forest Red Gum (*Eucalyptus tereticornis*), Narrow-leaved Ironbark (*E. crebra*), Coastal Grey Box (*E. moluccana*), Pink Bloodwood (*Corymbia intermedia*)). The availability of hollow-bearing trees within each mapped unit was assessed as absent, rare, occasional, common. As Greater Gliders prefer live hollow-bearing trees in preference to dead ones, living and dead trees were assessed separately.

Greater Gliders are a sedentary species with a bright eyeshine. Accordingly, spotlighting is the most successful method for detecting this species. A total of five hours of spotlighting was conducted over two nights by two personnel, for a total of 10 person-hours of spotlighting. The intention was to target areas with the most

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mature vegetation, but the thick Lantana (*Lantana camara*) understorey prevented access to much of the site. As such, most spotlighting was conducted along existing, maintained tracks. Attempts to access the far south-east corner of the site were thwarted by the dense Lantana on steep terrain. Spotlighting tracks are shown in Figure 1.

Aerial imagery was reviewed to assess the connectivity of the site to known and/or potential habitat. This included a specific assessment of connectivity to Main Range National Park.

Results

No Greater Gliders were observed during spotlighting. Six Koalas (*Phascolarctos cinereus*), eight Common Brushtail Possums (*Trichosurus vulpecula*) and one Squirrel Glider (*Petaurus norfolcensis*) were recorded. The latter two species require tree hollows. It remains possible that the Greater Glider may occur in the far south-east corner of the site, which was not able to be accessed. The steep and difficult to access terrain in this area may have prevented the extent and intensity of previous clearing or logging typical of most of the site.

- There is a high number of potential foraging trees >30 cm DBH. Species known as forage species for the Greater Glider including Forest Red Gum, Narrow-leaved Ironbark, Pink Bloodwood and Grey Box.
- Hollow-bearing trees are currently infrequent, which may be currently limiting the presence of the Greater Glider on the site. However, the number of HBTs will increase over time (several decades) as many trees are currently >30 cm DBH with trees likely to be >50 cm DBH also present.
- The site has good connectivity to other areas of habitat in the locality, some of which contains a higher abundance of HBTs.
- Ultimately, connectivity extends to Main Range NP, about 2.5 km to the south-west. The nearest species record is in the NP about 8.5 km to the south-west.
- Potential habitat also occurs to the south of the site.

Greater Glider Habitat on the Site

Greater Glider foraging habitat, as defined by Eyre *et al.* (2022) is present on the site, i.e. trees >30 cm DBH of known foraging species. Common foraging species on the site are Forest Red Gum, Narrow-leaved Ironbark and Pink Bloodwood, while Grey Box was frequent in one area. Greater Gliders prefer to feed in large trees (Eyre *et al.* 2022), which are larger foraging patches, consistent with optimal foraging theory (Schoener 1971). As such, the quality of foraging habitat will improve as these trees mature.

Due to their narrow thermal tolerance (Smith and Smith 2018, 2020; Wagner *et al.* 2020), Greater Gliders prefer to den in deep hollows in ecologically mature living trees (Kavanagh and Wheeler 2004; Smith *et al.* 2007; Hofman *et al.* 2022). Suitable den trees are rare on the site and it is likely this is limiting occupation of the site by the Greater Glider.

Connectivity

The site has good connectivity to other areas of habitat in the locality, some of which contains a higher abundance of HBTs. The eastern part of the site has immediate connectivity to remnant forest around an unnamed peak to the south. This area has deep and south-facing gullies, which have a higher resilience to

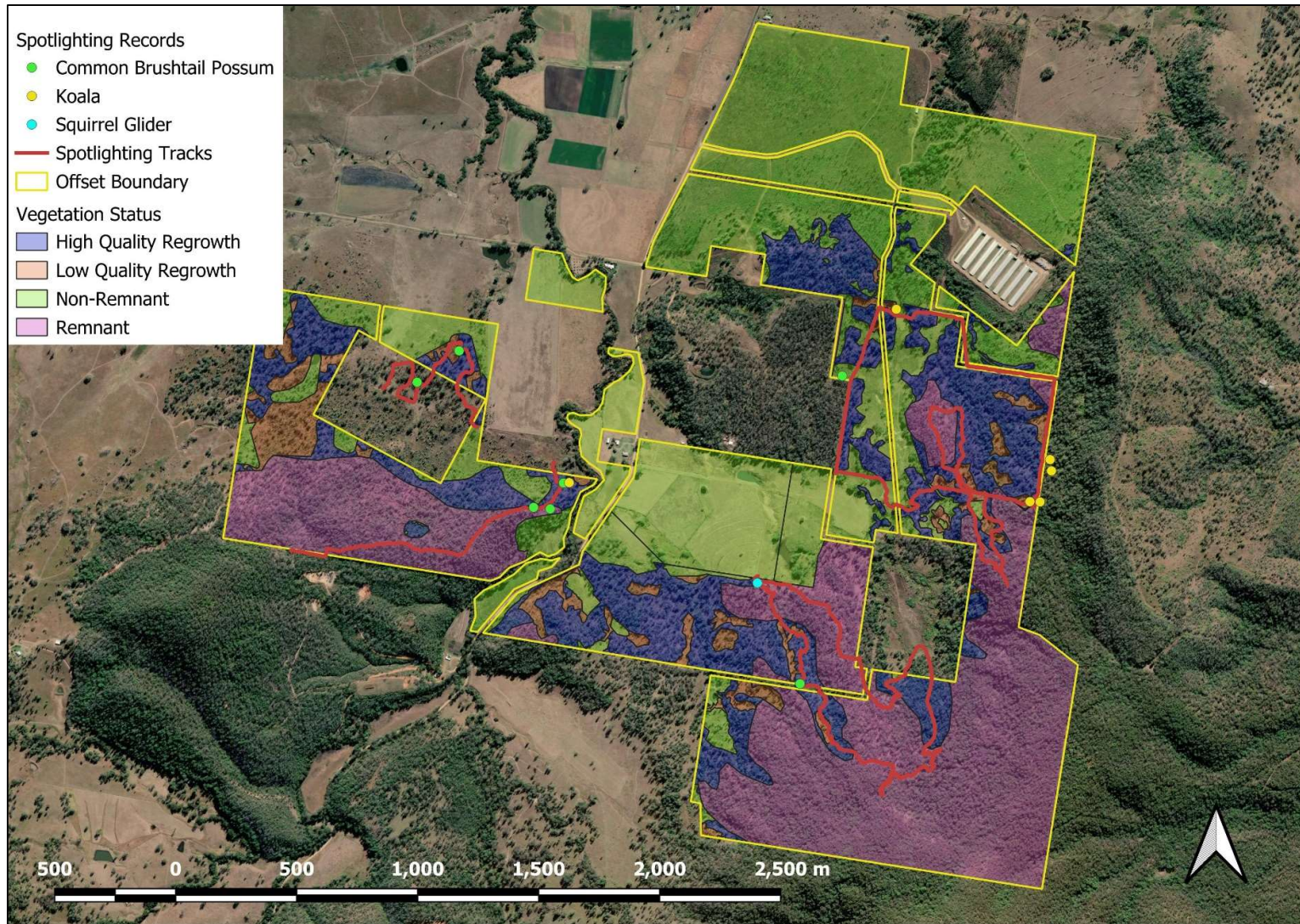


Figure 1: Spotlighting tracks and survey records in relation to State vegetation mapping.

fire and also provide climate refuge habitat. The western part of the site is connected to private land to the south. This habitat is also forested and includes south-facing slopes and a deep gully. The Bremer River dissects the site and provides a narrow corridor dominated by mature Forest Red Gums, with a high frequency of hollow-bearing trees.

Ultimately, connectivity to the extends to the south-west along the Bremer River and its tributaries to Main Range NP, about 2.5 km to the south-west of the site. The nearest species record is in the national park about 8.5 km to the south-west (Figure 2). Tree cover is continuous along the Bremer River and most of the adjacent rural land as some tree cover. The maximum distance of which riparian vegetation would provide the only connection is about 900 m.

Suitable of the Site as an Offset

The EPBC Conservation Advice for the Greater Glider defines habitat critical to the survival of the species as:

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

Habitat meeting any one of the criteria above is considered habitat critical to the survival of greater glider (southern and central), irrespective of the current abundance or density of greater gliders or the perceived quality of the site. Forest areas currently unoccupied by the greater glider (southern and central) may still represent habitat critical to survival, if the recruitment of hollow-bearing trees as the forest ages could allow the species to colonise these areas and ensure persistence of a subpopulation.

The Montauban Offset Site currently supports foraging habitat, but the availability of suitable tree hollows is currently limiting. The Greater Glider is not currently known to occur on the site. However, it may occur in remote south-east of the site. Dense Lantana on steep slopes preventing access to this area where it is possible that fewer trees were cleared due to site constraints.

Although the Greater Glider was not recorded on the site, the site still represents habitat critical to the survival of the Greater Glider as:

- The site is part of a large forest block
- Foraging habitat is present and will continue to improve in quality due to the increasing frequency of large trees
- Suitable hollow-bearing trees will develop over time, facilitating colonisation of the site

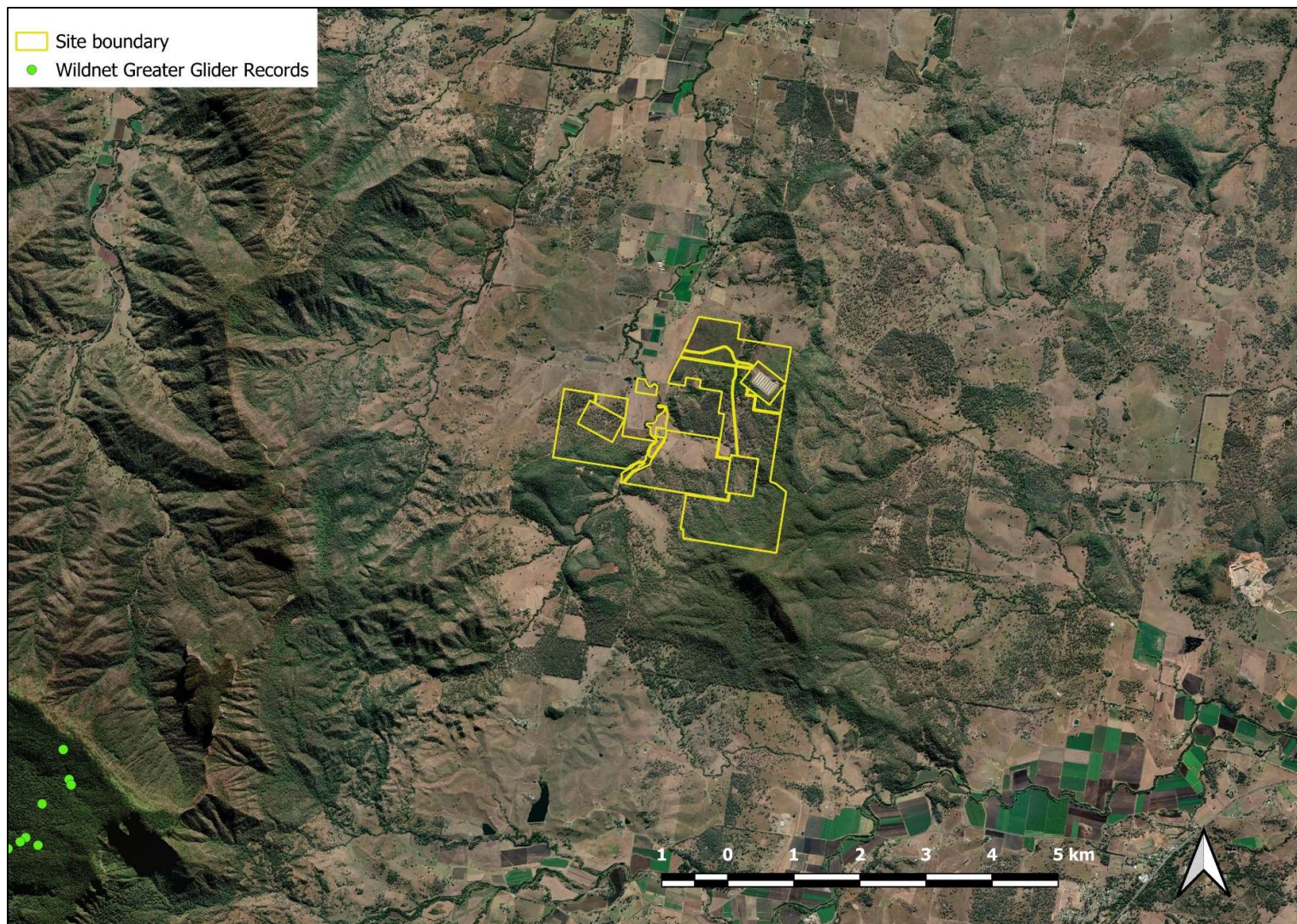


Figure 2: Site locality, showing Greater Glider records in Main Range National Park.

- The installation of artificial hollows (insulated nest boxes, excavated hollows) could be used to accelerate the availability of shelter sites (the use of artificial hollows by the Greater Glider is currently poorly known and this should be conducted with a robust experimental design)
- Cleared areas will be replanted with suitable foraging species, achieving a gain in Greater Glider habitat over time
- The site has a high level of connectivity to known and potential habitat, including to Main Range NP to the west
- Deep gullies that may provide a climate refuge
- Tarome Road provides an existing fire break, suggesting that the site may provide refugial habitat from fire (i.e. the east and west parts of the site may be semi-independent in fire risk).

As the site provides habitat critical to the survival of the Greater Glider, it is suitable for use as an offset site for this species. Habitat quality, particularly the provision of hollow-bearing trees, will improve over time and the site's suitability as living habitat will improve. The site has a high level of connectivity, which would enable future site colonisation to occur.

Impacts of Chicken Sheds on Greater Glider Habitat

One chicken shed currently occurs on the site and two more are proposed. A 100 m buffer between these sheds and the Greater Glider offset areas is currently required. The Greater Glider is active at night, when noise and activity levels around the sheds are likely to be low. It would be possible to minimise external lighting and any lighting installed could be narrowly directed to avoid light spill into adjacent habitat. This buffer area could be replanted as Greater Glider habitat, even if it is not part of the offset. Once revegetated it is likely that adequate mitigation of edge-related impacts would be achieved with a distance of less than 100 m. However, the Greater Glider's response to disturbance has not been adequately studied, making any conclusions equivocal.

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Eyre, T.J., Smith, G.C., Venz, M.F., Mathieson, M.T., Hogan, L.D., Starr, C., Winter, J. and McDonald, K. (2022) *Guide to Greater Glider Habitat in Queensland*. Department of Agriculture, Water and the Environment, Canberra. Department of Environment and Science, Queensland Government, Brisbane.

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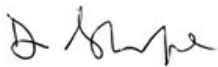
Smith, P. and Smith, J. (2018) Decline of the greater glider (*Petauroides volans*) in the lower Blue Mountains, New South Wales. *Australian Journal of Zoology* **66**, 103-14.

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Wagner, B., Baker, P.J., Stewart, S.B., Lumsden, L.F., Nelson, J.L., Cripps, J.K., Durkin, L.K., Scroggie, M.P. and Nitschke, C.R. (2020) Climate change drives habitat contraction of a nocturnal arboreal marsupial at its physiological limits. *Ecosphere* **11**, e03262.

We trust this information meets with your current requirements. Please do not hesitate to contact the undersigned on 1300 793 267 should you require clarification or further information.

Yours sincerely

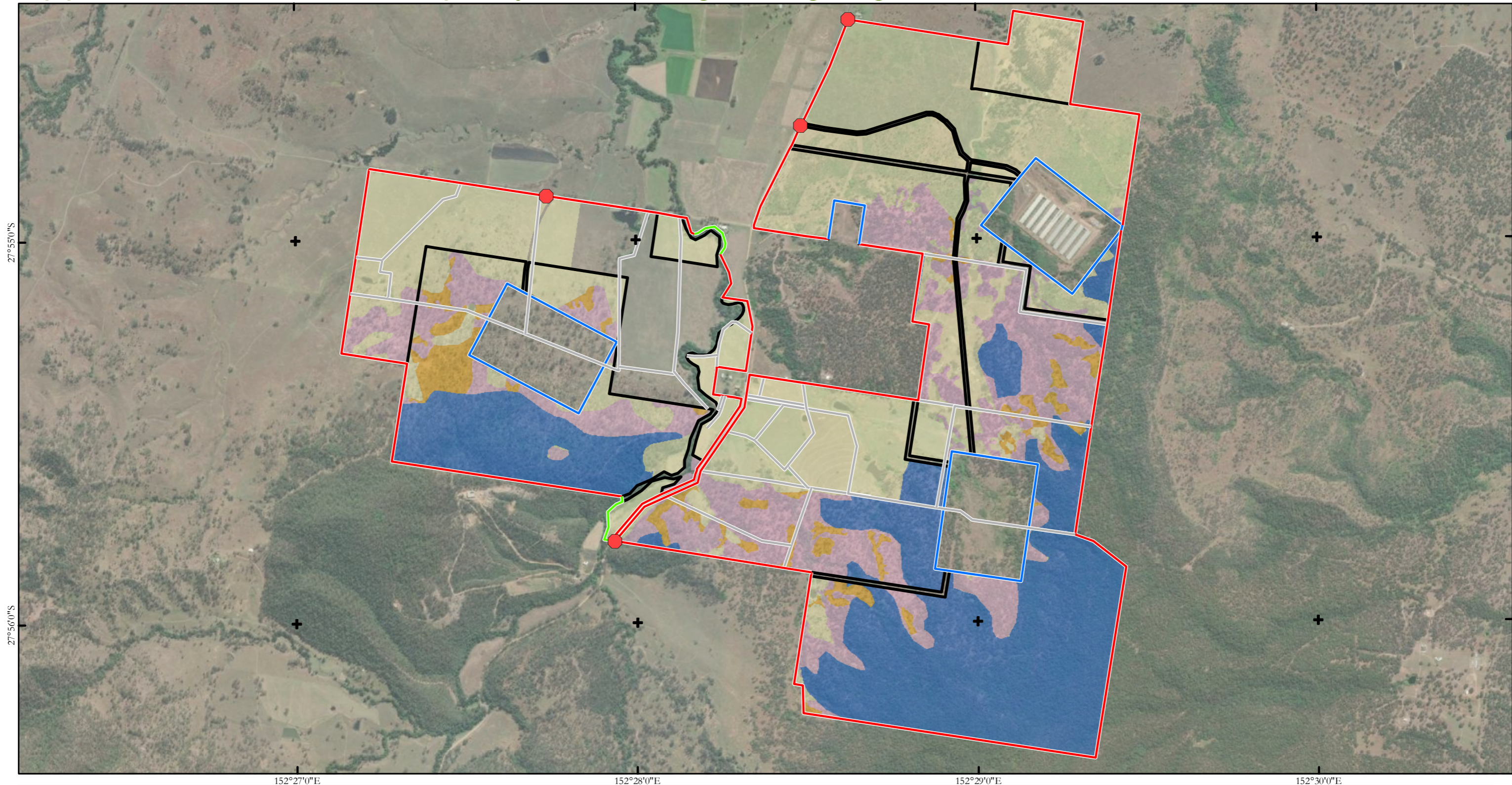
A handwritten signature in black ink, appearing to read 'D Sharpe'.

Dr David Sharpe
Principle Ecologist

E | dsharpe@umwelt.com.au
M | 0407 459 492

Appendix E: Fencing and Signage Plan

Appendix E - Offset Property - Fencing & Signage Plan



Montauban Environmental Offsets

1:18,000

0 100 200 300 400 m

Coordinate System: GDA2020 MGA Zone 56

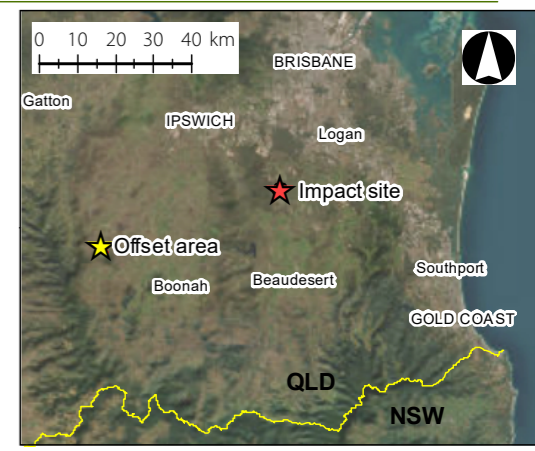
References:
 © State of Queensland, 2022
 Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Date: 27/10/2025
 10559 E OMP Appendix C Fencing Plan B

DISCLAIMER:
 THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT. RESPONSIBILITY FOR ANY USE OR RELIANCE UPON THE CONTENTS OF THESE DRAWING BY ANY THIRD PARTY CANNOT BE ACCEPTED.

Legend

- Offset Area
- Poultry shed access track
- Vegetation Assessment Units (whole of site)
 - AU-1: Non-Remnant Vegetation
 - AU-2: Hi Regrowth Vegetation
 - AU-2: Lo Regrowth Vegetation
 - AU-3: Remnant Vegetation
- Existing farm fence to remove
- Existing boundary fence to be retrofitted as fauna friendly
- New fauna friendly boundary fence
- New fauna exclusion fencing
- Signage locations



Appendix F: MNES Habitat Quality Gain Tables

Assessment Unit - Regional Ecosystem - Koala																	
AU1 - Cat 3 - Cleared areas with isolated trees (RE12.0.13)																	
RE12.0.13 Benchmark																	
SITE CONDITION	Transsect 1	Transsect 6	Transsect 9	Transsect 10	Average of Transsect(s)	% Benchmark	Score	Year 5	Year 5 Score Increase Justification	Year 10	Year 10 Score Increase Justification	Year 15	Year 15 Score Increase Justification	Year 20	Year 20 Score Increase Justification		
Recruitment of woody perennial species in EDL	100	0	0	0	0	0	0	0	0	3		3		5		0	
Native plant species richness - trees	7	1	0	1	1	0.75	10.71	0	2.5	5		5		5		0	
Native plant species richness - shrubs	5	0	2	0	1	0.75	15.00	0	2.5	5		5		5		0	
Native plant species richness - grasses	12	5	6	3	4	4.5	37.50	2.5	2.5	2.5		5		5		2.5	
Native plant species richness - forbs	27	3	2	5	2	3	11.11	0	2.5	2.5		5		5		0	
Tree canopy height (Canopy)*	19	0	0	8	8	4	21.05	0	3	3		3		5	Recruitment of a minimum of six tree species (>75% of the recruitment of woody perennial species in EDL benchmark)	0	
Tree canopy height (Sub-canopy)*	10	0	4	4	2	2.5	25.00	3	3	3	Establish a minimum of two tree species (28.5% of the tree species richness benchmark)	3	Recruitment of two koala food tree species (28.5% of the recruitment of woody perennial species in EDL benchmark)	3	Establish a minimum of 12 grass species (100% of the grass species richness benchmark)	5	Trees to be a minimum of 13.3m height (70% of the tree canopy height benchmark)
**Average tree canopy height								1.5	3	3	Establish a minimum of two shrub species (40% of the shrub species richness)	3	Establish a minimum of 90% of the benchmark for forbs	3	Tree canopy cover to be a minimum of 4.8m (10% of the tree canopy cover (canopy) benchmark)	5	Trees to be a minimum of 7m height (70% of the tree sub-canopy height benchmark)
Tree canopy cover (Canopy)**	48	0	0	0	0	0	0.00	0	0	0	Establish a minimum seven tree species (100% of the tree species richness benchmark)	0	Establish a minimum of five shrub species (100% of the shrub species richness benchmark)	2	Tree sub-canopy cover to be a minimum of 2.0m (10% of the tree canopy cover (sub-canopy) benchmark)	5	Tree canopy cover to be a minimum of 24m (50% of the tree canopy cover (canopy) benchmark)
Tree canopy cover (Sub-canopy)**	20	0	0	0	0	0	0.00	0	0	0	Tree canopy height to increase to 35% of benchmark	0	Weed coverage to be less than 5% of the entire offset area	0	Shrub canopy cover to be a minimum of 2.5m (50% of the tree canopy cover (sub-canopy) benchmark)	5	Tree sub-canopy cover to be a minimum of 10m (50% of the tree canopy cover (sub-canopy) benchmark)
**Average tree canopy cover								0	0	0	Shrub canopy cover to be a minimum of 2.5m (50% of the tree canopy cover benchmark)	0	Quality and availability of food and shelter to reach threshold for score of 5 (>33% of expected site condition score)	0	Record a minimum of 117m of coarse woody debris per hectare (50% of the coarse woody debris benchmark)	5	Organic Litter to be 10.5% of 1m X 1m quadrats (50% of organic litter benchmark)
Shrub canopy cover	5	0	0	0	0	0	0.00	0	3	3	Weed coverage to be less than 10% of the entire offset area	3	Shrub canopy cover to be a minimum of 2.5m (50% of the tree canopy cover benchmark)	2	Quality and availability of food and shelter to reach optimal remnant status score of 10	5	5
Native grass cover*	32	95	84	61	65	76.25	238.28	5	5	5		5		5		5	
Organic litter*	21	0	0	5	11	4	19.05	3	3	3		3		3		3	
Large trees (euc plus non-euc) (per ha)	24	0	0	0	0	0	0.00	0	0	0		0		0		0	
Coarse woody debris (per ha)	234	0	0	2135	990	781.25	333.87	2	2	2		2		2		2	
Non-native plant cover	0	5	10	90	50	38.75	38.75	3	5	10		10		10		3	
Quality and availability of food and foraging habitat	NA	1	1	1	1	1		1	1	5		5		5		1	
Quality and availability of shelter	NA	1	1	1	1	1		1	1	5		5		5		1	
Site Condition Score (/100)								19	33	54	66	85					
Overall Site Condition Score - out of 3								0.57	0.99	1.62	1.98	2.55					
SITE CONTEXT																	
Size of patch	10	10	10	10	10	10		10	10	10		10		10			
Connectedness	5	2	2	2	2	2		2	2	2		2		2			
Context	5	4	4	4	4	4		4	4	4		4		4			
Ecological Corridors	6	6	6	6	6	6		6	6	6	Threats removed from offset site and ongoing monitoring and control implemented	6	Threats removed from offset site and ongoing monitoring and control implemented	6	Threats removed from offset site and ongoing monitoring and control implemented		
Role of site location to species overall population in the state	5	5	5	5	5	5		5	5	5		5		5			
Threats to the species	15	1	1	1	1	1		1	1	1		1		1			
Species mobility capacity	10	4	4	4	4	4		4	4	4		4		4			
Site Context Score (/50)								32	32	32	35	35					
Overall Site Context Score - out of 3								1.71	1.71	1.71	1.88	1.88					
SPECIES STOCKING RATE																	
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	20	20	20	20	20		20	20	40	KOALA DETECTED ON-SITE = 10/10 KOALA FORAGING ON-SITE = 15/15 KOALA SAT SURVEY RESULTS (LOW) = 10/30	40	KOALA DETECTED ON-SITE = 10/10 KOALA FORAGING ON-SITE = 15/15 KOALA SAT SURVEY RESULTS (LOW) = 10/30	40	KOALA DETECTED ON-SITE = 10/10 KOALA FORAGING ON-SITE = 10515 KOALA SAT SURVEY RESULTS (LOW) = 10/30		
Species Stocking Rate Score (/70)								20.00	20	40	40	40					
Overall Species Stocking Rate Score - out of 4								1.14	1.14	2.29	2.29	2.29					
Overall Assessment Unit Score								3.43	3.85	5.62	6.14	6.71					

Species Stocking Rate (SSR)					
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10	
		No	Yes - adjacent	Yes - on site	
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15
		Not habitat	Dispersal	Foraging	Breeding
Approximate density (per ha)	Score	0	10	20	30
		0%	low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10	15
		0	5 - 15	20 - 35	40 - 45
Total SSR score (out of 70)					
SSR Score (out of 4) 0					

*SSR Supplementary Table			
*Key source population for breeding	Score	0	10
		No	Yes/ Possibly
*Key source population for dispersal	Score	0	5
		No	Yes/ Possibly
*Necessary for maintaining genetic diversity	Score	0	15
		No	Yes/ Possibly
*Near the limit of the species range	Score	0	15
		No	Yes

Assessment Unit - Regional Ecosystem - Koala										AU2 - Regrowth Vegetation (05/12/17)									
RE 12.8.17 Benchmark										RE 12.8.17									
SITE CONDITION										SITE CONTEXT									
Transsect 4	Transsect 5	Transsect 7	Transsect 11	Average of Transsect(s)	% Benchmark	Score	Year 5	Year 5 Score Increase Justification	Year 10	Year 10 Score Increase Justification	Year 15	Year 15 Score Increase Justification	Year 20	Year 20 Score Increase Justification					
100	100	100	100	100	100	100	5	5	5	5	5	5	5	5					
7	6	5	3	1	3.75	53.57	2.5	2.5	5	5	5	5	5	5					
5	5	6	0	0	2.75	55.00	2.5	2.5	5	5	5	5	5	5					
12	6	4	3	3	4	33.33	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5					
27	10	7	3	6	6.5	24.07	0	0	0	0	2.5	2.5	2.5	2.5					
19	12	11	13	13	12.25	64.47	3	3	5	5	5	5	5	5					
10	6	8	5	4	5.75	57.50	3	3	5	5	5	5	5	5					
*Average tree canopy height							3	3	5	5	5	5	5	5					
48	19	22.1	12	18.2	17.825	37.14	2	2	5	5	5	5	5	5					
20	33.7	35.4	7	22.6	24.675	123.38	5	5	5	5	5	5	5	5					
**Average tree canopy cover							3.5	3.5	5	5	5	5	5	5					
5	3.2	0	0	4.2	1.85	37.00	3	3	5	5	5	5	5	5					
32	19	63	58	66	51.5	160.94	5	5	5	5	5	5	5	5					
21	51	29	13	33	31.5	150.00	5	5	5	5	5	5	5	5					
24	0	3	2	0	1.25	5.21	5	5	5	5	5	5	5	5					
234	169	98	77	102	111.5	47.65	2	2	2	2	2	2	2	2					
0	90	5	5	30	32.5	32.50	3	3	10	10	10	10	10	10					
NA	5	5	5	5	5	5	5	5	5	5	5	5	5	5					
NA	5	5	5	5	5	5	5	5	5	5	5	5	5	5					
Site Condition Score (/100)							52	54	67.5	67.5	87.5	87.5	87.5	87.5					
Overall Site Condition Score - out of 3							1.56	1.62	2.03	2.03	2.63	2.63	2.63	2.63					
SITE CONTEXT										SITE CONTEXT									
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10					
5	2	2	2	2	2	2	2	2	2	2	2	2	2	2					
5	4	4	4	4	4	4	4	4	4	4	4	4	4	4					
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6					
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5					
15	7	7	7	7	7	7	7	7	7	7	7	7	7	7					
10	7	7	7	7	7	7	7	7	10	10	10	10	10	10					
Site Context Score (/50)							41	41	44	44	44	44	44	44					
Overall Site Context Score - out of 3							2.20	2.20	2.36	2.36	2.36	2.36	2.36	2.36					
SPECIES STOCKING RATE										SPECIES STOCKING RATE									
70	40	40	40	40	40	40	40	40	40	40	40	40	40	40					
Species Stocking Rate Score (/70)							40.00	40	40	40	40	40	40	40					
Overall Species Stocking Rate Score - out of 4							2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29					
Overall Assessment Unit Score							6.04	6.10	6.67	6.67	7.27	7.27	7.27	7.27					

Species Stocking Rate (SSR)					
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10	
		No	Yes - adjacent	Yes - on site	
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15
		Not habitat	Dispersal	Foraging	Breeding
Approximate density (per ha)	Score	0	10	20	30
		0%	low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10	15
		0	5 - 15	20 - 35	40 - 45
Total SRR score (out of 70)		0			
SRR Score (out of 4)		0			

*SSR Supplementary Table			
*Key source population for breeding	Score	0	10
		No	Yes/Possibly
*Key source population for dispersal	Score	0	5
		No	Yes/Possibly
*Necessary for maintaining genetic diversity	Score	0	15
		No	Yes/Possibly
*Near the limit of the species range	Score	0	15
		No	Yes

5
2.5
2.5
2.5
0
3
3.5
3
5
5
5
5
3
42
52.5
5
52

Assessment Unit - Regional Ecosystem - Koala							AU 2 - Regrowth Vegetation (R2.12.8.17)									
R2.12.8.17 Benchmark							Year 5	Year 5 Score Increase Justification	Year 10	Year 10 Score Increase Justification	Year 15	Year 15 Score Increase Justification	Year 20	Year 20 Score Increase Justification		
SITE CONDITION																
Recruitment of woody perennial species in EDL	100	100	100	100	100	100	5	5	5		5	5	5	5		
Native plant species richness - trees	7	2	6	4	57.14		2.5	2.5	5		5	5	5	2.5		
Native plant species richness - shrubs	5	2	2	2	40.00		2.5	2.5	5		5	5	5	2.5		
Native plant species richness - grasses	12	7	5	6	50.00		2.5	2.5	2.5		5	5	5	2.5		
Native plant species richness - forbs	27	3	4	3.5	12.96		0	0	0		2.5	2.5	2.5	0		
Tree canopy height (Canopy)*	19	8	14	11	57.89		3	3	5		5	5	5	5		
Tree canopy height (Sub-canopy)*	10	4	5	4.5	45.00		3	3	5		5	5	5	5		
*Average tree canopy height							3	3	5		5	5	5	3		
Tree canopy cover (Canopy)**	48	1.2	8.3	4.75	9.90		0	0	0		5	5	5	5		
Tree canopy cover (Sub-canopy)**	20	0	7.8	3.9	19.50		2	2	2		5	5	5	5		
**Average tree canopy cover							1	1	1		5	5	5	1		
Shrub canopy cover	5	0	3.1	1.55	31.00		3	3	3		5	5	5	3		
Native grass cover*	32	71	9	40	125.00		5	5	5		5	5	5	5		
Organic litter*	21	0	8	4	19.05		3	3	5		5	5	5	3		
Large trees (euc plus non-euc) (per ha)	24	2	2	2	8.33		5	5	5		5	5	5	5		
Coarse woody debris (per ha)	234	12	11	11.5	4.91		0	0	2		5	5	5	0		
Non-native plant cover	0	20	60	40	40.00		3	5	10		10	10	10	3 35.5		
Quality and availability of food and foraging habitat	NA	5	5	5	-		5	5	5		10	10	10	5 44.375		
Quality and availability of shelter	NA	5	5	5	-		5	5	5		10	10	10	5 45.5		
Site Condition Score (/100)							45.5	47.5	63.5	87.5	87.5	87.5	87.5	45.5		
Overall Site Condition Score - out of 3							1.37	1.43	1.91	2.63	2.63	2.63	2.63			
SITE CONTEXT																
Size of patch	10	10	10	10	10		10	10	10		10	10	10	10		
Connectedness	5	2	2	2	2		2	2	2		2	2	2	2		
Context	5	4	4	4	4		4	4	4		4	4	4	4		
Ecological Corridors	6	6	6	6	6		6	6	6		6	6	6	6		
Role of site location to species overall population in the state	5	5	5	5	5		5	5	5		5	5	5	5		
Threats to the species	15	1	1	1	1		1	1	1		1	1	1	1		
Species mobility capacity	10	4	4	4	4		4	4	7		10	10	10	10		
Site Context Score (/56)							32	32	35	38	38	38	38			
Overall Site Context Score - out of 3							1.71	1.71	1.88	2.04	2.04	2.04	2.04			
SPECIES STOCKING RATE																
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	40	40	40	40		40	40	40		40	40	40	40		
Species Stocking Rate Score (/70)							40.00	40	40	40	40	40	40			
Overall Species Stocking Rate Score - out of 4							2.29	2.29	2.29	2.29	2.29	2.29	2.29			
Overall Assessment Unit Score							5.37	5.43	6.07	6.95	6.95	6.95	6.95			

Species Stocking Rate (SSR)					
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10	
		No	Yes - adjacent	Yes - on site	
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15
		Not habitat	Dispersal	Foraging	Breeding
Approximate density (per ha)	Score	0	10	20	30
		0%	low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10	15
		0	5 - 15	20 - 35	40 - 45
Total SRR score (out of 70)					
SRR Score (out of 4) 0					

*SSR Supplementary Table			
*Key source population for breeding	Score	0	10
		No	Yes/ Possibly
*Key source population for dispersal	Score	0	5
		No	Yes/ Possibly
*Necessary for maintaining genetic diversity	Score	0	15
		No	Yes/ Possibly
*Near the limit of the species range	Score	0	15
		No	Yes

Assessment Unit - Regional Ecosystem - Koala										AU 3 - Remnant Vegetation (R12.8.17)									
R12.8.17 Benchmark										R12.8.17 Benchmark									
SITE CONDITION										SITE CONDITION									
	Transect 2	Transect 3	Transect 8	Transect 12	Average of Transect(s)	% Benchmark	Score	Year 5	Year 5 Score Increase Justification	Year 10	Year 10 Score Increase Justification	Year 15	Year 15 Score Increase Justification	Year 20	Year 20 Score Increase Justification				
Recruitment of woody perennial species in EDL	100	100	100	100	100	100	100	5	5	5	5	5	5	5	5				
Native plant species richness - trees	7	7	4	4	6	5.25	75.00	2.5	2.5	5	5	5	5	5	5				
Native plant species richness - shrubs	5	1	3	0	2	1.5	30.00	2.5	2.5	5	5	5	5	5	5				
Native plant species richness - grasses	12	4	6	4	3	4.25	35.42	2.5	2.5	5	5	5	5	5	5				
Native plant species richness - forbs	27	5	9	5	6	6.25	23.15	0	0	2.5	2.5	5	5	5	5				
Tree canopy height (Canopy)*	19	17	22	16	18	18.25	96.05	5	5	5	5	5	5	5	5				
Tree canopy height (Sub-canopy)*	10	8	12	8	9	9.25	92.50	5	5	5	5	5	5	5	5				
*Average tree canopy height								5	5	5	5	5	5	5	5				
Tree canopy cover (Canopy)**	48	80	57.2	19	42	49.55	103.23	5	5	5	5	5	5	5	5				
Tree canopy cover (Sub-canopy)**	20	0	33.7	27.3	22	20.75	103.75	5	5	5	5	5	5	5	5				
								3	5	5	5	5	5	5					
Shrub canopy cover	5	0	3.1	0	1.3	1.1	22.00	3	3	5	5	5	5	5	5				
Native grass cover*	32	8	78	65	88	59.75	186.72	5	5	5	5	5	5	5	5				
Organic litter*	21	56	4	9	4	18.25	86.90	5	5	5	5	5	5	5	5				
Large trees (euc plus non-euc) (per ha)	24	8	0	8	5	5.25	21.88	5	5	5	5	5	5	5	5				
Coarse woody debris (per ha)	234	213	506	292	222	308.25	131.73	5	5	5	5	5	5	5	5				
Non-native plant cover	0	70	10	5	90	43.75	43.75	3	5	10	10	10	10	10	10				
Quality and availability of food and foraging habitat	NA	5	5	5	5	5	5	5	5	10	10	10	10	10	10				
Quality and availability of shelter	NA	5	5	5	5	5	5	5	5	10	10	10	10	10	10				
Site Condition Score (/100)								58.5	60.5	87.5	87.5	90							
Overall Site Condition Score - out of 3								1.76	1.82	2.63	2.63	2.70							
SITE CONTEXT																			
Size of patch	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10				
Connectedness	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
Context	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
Ecological Corridors	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6				
Role of site location to species overall population in the state	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5				
Threats to the species	15	7	7	7	7	7	7	7	7	7	7	7	7	7	7				
Species mobility capacity	10	7	7	7	7	7	7	7	7	10	10	10	10	10	10				
Site Context Score (/56)								41	41	44	44	44							
Overall Site Context Score - out of 3								2.20	2.20	2.36	2.36	2.36							
SPECIES STOCKING RATE																			
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	40	40	40	40	40	40	40	40	40	40	40	40	40	40				
Species Stocking Rate Score (/70)								40.00	40	40	40	40							
Overall Species Stocking Rate Score - out of 4								2.29	2.29	2.29	2.29	2.29							
Overall Assessment Unit Score								6.24	6.30	7.27	7.27	7.34							

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
				Breeding
Approximate density (per ha)	Score	0	10	20
		0%	low	med
				high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
				40 - 45
Total SSR score (out of 70)				
SSR Score (out of 4) 0				

*SSR Supplementary Table		
*Key source population for breeding	Score	0
		No
		Yes/ Possibly
*Key source population for dispersal	Score	0
		No
		Yes/ Possibly
*Necessary for maintaining genetic diversity	Score	0
		No
		Yes/ Possibly
*Near the limit of the species range	Score	0
		No
		Yes

Assessment Unit - Regional Ecosystem - GHFF	AU 1 - Non-Remnant RE12.8.17										
Site Reference	Transect 1	Transect 6	Transect 9	Transect 10	Average Score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	OUT OF (X/X)
	Raw Data	Raw Data	Raw Data	Raw Data							
Vegetation Condition	cat X	cat X	cat X	cat X	5	5	5	5	10	10	20
Species Richness	1	0	1	1	0.75	5	5	10	20	20	20
Flower Score	0.4	0	0.625	0.625	0.41	5	8	8	8	8	10
Timing of Biological Shortages	Mating and conception Migration paths Fruit industries (6/10)	No biological shortages covered (0/10)	All biological shortages covered by the species on-site (10/10)	All biological shortages covered by the species on-site (10/10)	6.5	6.5	10	10	10	10	10
Quality of Foraging Habitat	0	0	0	0	0	0	10	10	20	20	20
Non-native Plant Cover	5%	55%	90%	30%	38.75%	5	10	20	20	20	20
Site Condition Score						26.5	48	63	88	88	X
MAX Site Condition Score						100	100	100	100	100	X
Site Condition Score - out of 4						1.06	1.92	2.52	3.52	3.52	X
Size of patch	Patch size is greater than 200ha	Patch size is greater than 200ha	Patch size is greater than 200ha	Patch size is greater than 200ha	10	10	10	10	10	10	10
Connectedness	1 active camps within 20km	1 active camps within 20km	1 active camps within 20km	1 active camps within 20km	3	3	3	3	3	3	10
Context	31-75%	31-75%	31-75%	31-75%	6	6	6	6	6	6	10
Ecological Corridors	Within an ecological corridor	Within an ecological corridor	Within an ecological corridor	Within an ecological corridor	10	10	10	10	10	10	10
Role of site location to species overall population in the state	0	0	0	0	0	0	0	0	0	0	10
Threats to the species	5	5	5	5	5	5	10	10	10	10	10
Site Context Score						34	39	39	39	39	X
MAX Site Context Score						60	60	60	60	60	X
Site Context Score - out of 3						1.70	1.95	1.95	1.95	1.95	X
GHFF Foraging Tree Density	0	0	0	0	0	0	4	6	8	10	10
Species Stocking Rate Score						0	4	6	8	10	X
MAX Species Stocking Rate Score						10	10	10	10	10	X
Species Stocking Rate Score - out of 3						0.00	1.20	1.80	2.40	3.00	X
Total						2.76	5.07	6.27	7.87	8.47	

Assessment Unit - Regional Ecosystem - GHFF	AU 2 - Regrowth RE12.8.17 Hi														
Site Reference	Transect 4		Transect 5		Transect 7		Transect 11		Average Score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	OUT OF (X/X)
	Raw Data		Raw Data		Raw Data		Raw Data								
Vegetation Condition	Cat C		Cat C		Cat C		Cat C		10	10	10	10	20	20	20
Species Richness	5		5		3		1		3.50	10	10	10	20	20	20
Flower Score	0.39		0.55		0.5		0.625		0.52	8	8	8	8	8	10
Timing of Biological Shortages	All biological shortages covered by the species on-site (10/10)		All biological shortages covered by the species on-site (10/10)		All biological shortages covered by the species on-site (10/10)		All biological shortages covered by the species on-site (10/10)		10	10	10	10	10	10	10
Quality of Foraging Habitat	0		1		0		0		0.25	0	10	10	20	20	20
Non-native Plant Cover	90%		5%		5%		30%		32.50%	5	10	20	20	20	20
Site Condition Score										43	58	68	98	98	X
MAX Site Condition Score										100	100	100	100	100	X
Site Condition Score - out of 4										1.72	2.32	2.72	3.92	3.92	X
Size of patch	Patch size is greater than 200ha		Patch size is greater than 200ha		Patch size is greater than 200ha		Patch size is greater than 200ha		10	10	10	10	10	10	10
Connectedness	1 active camps within 20km		1 active camps within 20km		1 active camps within 20km		1 active camps within 20km		3	3	3	3	3	3	10
Context	31-75%		31-75%		31-75%		31-75%		6	6	6	6	6	6	10
Ecological Corridors	Within an ecological corridor		Within an ecological corridor		Within an ecological corridor		Within an ecological corridor		10	10	10	10	10	10	10
Role of site location to species overall population in the state	0		0		0		0		0	0	0	0	0	0	10
Threats to the species	5		5		5		5		5	5	10	10	10	10	10
Site Context Score										34	39	39	39	39	X
MAX Site Context Score										60	60	60	60	60	X
Site Context Score - out of 3										1.70	1.95	1.95	1.95	1.95	X
GHFF Foraging Tree Density	165		85		60		110		105	2	4	6	8	8	10
Species Stocking Rate Score										2	4	6	8	8	X
MAX Species Stocking Rate Score										10	10	10	10	10	X
Species Stocking Rate Score - out of 3										0.60	1.20	1.80	2.40	2.40	X
Total										4.02	5.47	6.47	8.27	8.27	

Assessment Unit - Regional Ecosystem - GHFF	AU 2 - Regrowth RE12.8.17 Lo										
Site Reference	Transect 13		Transect 14		Average	Year 5	Year 10	Year 15	Year 20	OUT OF	
	Raw Data		Raw Data		Score	AU Score	Score	Score	Score	(X/X)	
Vegetation Condition	Cat C		Cat C		10	10	10	10	20	20	20
Species Richness	1		4		2.5	5	5	10	20	20	20
Flower Score	0.4		0.48		0.44	5	5	8	8	8	10
Timing of Biological Shortages	Mating and conception Lactation Fruit industries (4.5/10)		All biological shortages covered by the species on- site (10/10)		7.25	7.25	7.25	10	10	10	10
Quality of Foraging Habitat	0		2		1	5	5	10	20	20	20
Non-native Plant Cover	20%		60%		40	5	10	20	20	20	20
Site Condition Score						37.25	42.25	68	98	98	X
MAX Site Condition Score						100	100	100	100	100	X
Site Condition Score - out of 4						1.49	1.69	2.72	3.92	3.92	X
Size of patch	Patch size is greater than 200ha		Patch size is greater than 200ha		10	10	10	10	10	10	10
Connectedness	1 active camps within 20km		1 active camps within 20km		3	3	3	3	3	3	10
Context	31-75%		31-75%		6	6	6	6	6	6	10
Ecological Corridors	Within an ecological corridor		Within an ecological corridor		10	10	10	10	10	10	10
Role of site location to species overall population in the state	0		0		0	0	0	0	0	0	10
Threats to the species	5		5		5	5	10	10	10	10	10
Site Context Score						34	39	39	39	39	X
MAX Site Context Score						60	60	60	60	60	X
Site Context Score - out of 3						1.70	1.95	1.95	1.95	1.95	X
GHFF Foraging Tree Density	5		75		40	0	4	6	8	8	10
Species Stocking Rate Score						2	4	6	7	8	X
MAX Species Stocking Rate Score						10	10	10	10	10	X
Species Stocking Rate Score - out of 3						0.60	1.20	1.80	2.10	2.40	X
Total						3.79	4.84	6.47	7.97	8.27	

Assessment Unit - Regional Ecosystem - GHFF	AU 3 - Remnant RE12.8.17														
Site Reference	Transect 2		Transect 3		Transect 8		Transect 12		Average Score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	OUT OF (X/X)
	Raw Data		Raw Data		Raw Data		Raw Data								
Vegetation Condition	Cat B		Cat B		Cat B		Cat B		20	20	20	20	20	20	20
Species Richness	6		4		3		5		4.50	10	10	10	20	20	20
Flower Score	0.46		0.52		0.44		0.39		0.45	5	8	8	8	8	10
Timing of Biological Shortages	All biological shortages covered by the species on-site (10/10)		All biological shortages covered by the species on-site (10/10)		All biological shortages covered by the species on-site (10/10)		All biological shortages covered by the species on-site (10/10)		10	10	10	10	10	10	10
Quality of Foraging Habitat	2		1		1		0		1	5	10	10	20	20	20
Non-native Plant Cover	70%		10%		5%		90%		43.75%	5	10	20	20	20	20
Site Condition Score									55	68	78	98	98	X	
MAX Site Condition Score									100	100	100	100	100	X	
Site Condition Score - out of 4									2.20	2.72	3.12	3.92	3.92	X	
Size of patch	Patch size is greater than 200ha		Patch size is greater than 200ha		Patch size is greater than 200ha		Patch size is greater than 200ha		10	10	10	10	10	10	10
Connectedness	1 active camps within 20km		1 active camps within 20km		1 active camps within 20km		1 active camps within 20km		3	3	3	3	3	3	10
Context	31-75%		31-75%		31-75%		31-75%		6	6	6	6	6	6	10
Ecological Corridors	Within an ecological corridor		Within an ecological corridor		Within an ecological corridor		Within an ecological corridor		10	10	10	10	10	10	10
Role of site location to species overall population in the state	0		0		0		0		0	0	0	0	0	0	10
Threats to the species	5		5		5		5		5	5	10	10	10	10	10
Site Context Score									34	39	39	39	39	X	
MAX Site Context Score									60	60	60	60	60	X	
Site Context Score - out of 3									1.70	1.95	1.95	1.95	1.95	X	
GHFF Foraging Tree Density	290		270		75		240		218.75	5	5	6	8	8	10
Species Stocking Rate Score									5	5	6	8	8	X	
MAX Species Stocking Rate Score									10	10	10	10	10	X	
Species Stocking Rate Score - out of 3									1.50	1.50	1.80	2.40	2.40	X	
Total									5.40	6.17	6.87	8.27	8.27		

Assessment Unit - Regional Ecosystem - Greater Glider										M31 - Cat 3 - (Shared area with subunit from IM1 & 17)									
SITE CONDITION										SITE CONTEXT									
NET/EA 17 Benchmark	Transect 1	Transect 6	Transect 9	Transect 10	Average of Transects	% Benchmark	Score	Year 5	Year 5 Score Increase Justification	Year 10	Year 10 Score Increase Justification	Year 15	Year 15 Score Increase Justification	Year 20	Year 20 Score Increase Justification				
Recruitment of woody perennial species in EDL	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Native plant species richness - trees	7	1	0	1	1	0.75	10.71	0	2.5	5	5	5	5	5	5				
Native plant species richness - shrubs	5	0	2	0	1	0.75	15.00	0	2.5	5	5	5	5	5	5				
Native plant species richness - grasses	12	5	6	3	4	4.5	37.50	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5				
Native plant species richness - forbs	27	3	2	5	2	3	11.11	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5				
Tree canopy height (Canopy)*	19	0	0	8	8	4	21.05	0	3	3	3	3	3	3	3				
Tree canopy height (Sub-canopy)**	10	0	4	4	2	2.5	25.00	0	3	3	3	3	3	3	3				
*Average tree canopy height								1.5	3	3	3	3	3	3	3				
Tree canopy cover (Canopy)**	48	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0				
Tree canopy cover (Sub-canopy)**	20	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0				
**Average tree canopy cover								0	0	0	0	0	0	0	0				
Shrub canopy cover	5	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0				
Native grass cover*	32	95	84	61	65	76.25	238.28	5	5	5	5	5	5	5	5				
Organic litter*	21	0	0	5	11	4	19.05	3	3	3	3	3	3	3	3				
Large trees (euc plus non-euc) (per ha)	24	0	0	0	0	0	0.00	0	0	0	0	0	0	0	0				
Coarse woody debris (per ha)	234	0	0	2135	990	781.25	333.87	2	2	2	2	2	2	2	2				
Non-native plant cover	0	5	10	90	50	38.75	38.75	3	5	10	10	10	10	10	10				
Quality and availability of food and foraging habitat	NA	1	1	1	1	1	-	1	1	1	1	1	1	1	1				
Quality and availability of shelter	NA	1	1	1	1	1	-	1	1	1	1	1	1	1	1				
Site Condition Score (/100)								14.3	21.5	28.0	58.0	92.5							
Overall Site Condition Score - out of 3								0.44	0.65	0.84	1.74	2.78							
Size of patch								10	10	10	10	10							
Connectedness								2	2	2	2	2							
Context								4	4	4	4	4							
Ecological Corridors								6	6	6	6	6							
Role of site location to species overall population in the state								5	5	5	5	5							
Threats to the species								15	15	15	15	15							
Species mobility capacity								10	4	4	4	4							
Site Context Score (/56)								38	46	46	49	49							
Overall Site Context Score - out of 3								2.64	2.46	2.46	2.63	2.63							
SPECIES STOCKING RATE																			
Stocking Rate (utilising SSR & SSR Supplementary Table(s))								70	15	15	15	15	15	20					
Species Stocking Rate Score (/70)								15.00	15	15	15	20							
Overall Species Stocking Rate Score - out of 4								0.86	0.86	0.86	0.86	1.14							
Overall Assessment Unit Score								3.33	3.97	4.16	5.22	6.54							

0						
0						
0						
0						
2.5						
0						
1.5						
0						
0						
5						
0						
3	8.5	15.5	22	28	32.5	
1	0.00	2	2	2	10	20
1	0.14 h/ha	4	4	4	20	40
19	14.5	21.5	28	58	92.5	

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
Approximate density (per ha)	Score	0	10	20
		0%	low	med
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
Total SSR score (out of 70)		15		
SRR Score (out of 4)		0.857142857		

SSR Supplementary Table			
*Key source population for breeding	Score	0	10
		No	Yes/Possibly
*Key source population for dispersal	Score	0	5
		No	Yes/Possibly
*Necessary for maintaining genetic diversity	Score	0	15
		No	Yes/Possibly
*Near the limit of the species range	Score	0	15
		No	Yes

Assessment Unit - Regional Ecosystem - Greater Glider								M1 - Regrowth Vegetation (R21.6.1)									
SITE CONDITION		Transect 4	Transect 5	Transect 7	Transect 11	Average of Transects	% Benchmark	Score	Year 5	Year 5 Score Increase Justification	Year 10	Year 10 Score Increase Justification	Year 15	Year 15 Score Increase Justification	Year 20	Year 20 Score Increase Justification	
Recruitment of woody perennial species in EDL	100	100	100	100	100	100	100	100	5	5	5	5	5	5	5	5	
Native plant species richness - trees	7	6	5	3	1	3.75	53.57	2.5	2.5	5	5	5	5	5	5	5	
Native plant species richness - shrubs	5	5	6	0	0	2.75	55.00	2.5	2.5	5	5	5	5	5	5	5	
Native plant species richness - grasses	12	6	4	3	3	4	33.33	2.5	2.5	2.5	2.5	5	5	5	5	5	
Native plant species richness - forbs	27	10	7	3	6	6.5	24.07	0	0	0	0	2.5	2.5	2.5	2.5	0	
Tree canopy height (Canopy)*	19	12	11	13	13	12.25	64.47	3	3	5	5	5	5	5	5	5	
Tree canopy height (Sub-canopy)**	10	6	8	5	4	5.75	57.50	3	3	5	5	5	5	5	5	5	
*Average tree canopy height								3	3	5	5	5	5	5	5	5	
Tree canopy cover (Canopy)**	48	19	22.1	12	18.2	17.825	37.14	2	2	5	5	5	5	5	5	5	
Tree canopy cover (Sub-canopy)**	20	33.7	35.4	7	22.6	24.675	123.38	5	5	5	5	5	5	5	5	5	
**Average tree canopy cover								3.5	3.5	5	5	5	5	5	5		
Shrub canopy cover	5	3.2	0	0	4.2	1.85	37.00	3	3	5	5	5	5	5	5	5	
Native grass cover*	32	19	63	58	66	51.5	160.04	5	5	5	5	5	5	5	5	5	
Organic litter*	21	51	29	13	33	31.5	150.00	5	5	5	5	5	5	5	5	5	
Large trees (euc plus non-euc) (per ha)	24	0	3	2	0	1.25	5.21	5	5	5	5	5	5	5	5	5	
Coarse woody debris (per ha)	234	169	98	77	102	111.5	47.65	2	2	2	2	5	5	5	5	5	
Non-native plant cover	0	90	5	5	30	32.5	32.50	3	3	10	10	10	10	10	10	10	
Quality and availability of food and foraging habitat	NA	1	1	1	1	1	-	1	1	5	5	5	5	5	5	5	
Quality and availability of shelter	NA	5	5	5	5	5	-	5	5	5	5	5	5	5	5	5	
Site Condition Score (/100)								43.0	44.0	50.8	63.8	93.8					
Overall Site Condition Score - out of 3								1.29	1.32	1.52	1.91	2.81					
SITE CONTEXT																	
Size of patch	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Connectedness	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Context	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Ecological Corridors	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Role of site location to species overall population in the state	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Threats to the species	15	7	7	7	7	7	7	7	7	15	15	15	15	15	15	15	
Species mobility capacity	10	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Site Context Score (/56)								41	49	49	49	49					
Overall Site Context Score - out of 3								2.20	2.63	2.63	2.63	2.63					
SPECIES STOCKING RATE																	
Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
Species Stocking Rate Score (/70)								20.00	20	20	20	20					
Overall Species Stocking Rate Score - out of 4								1.14	1.14	1.14	1.14	1.14					
Overall Assessment Unit Score								4.61	5.09	5.29	5.68	6.58					

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3							
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5							
5							
5							
2							
3	21	22	28.75	33.75	33.75		
1	37.14	2	2	2	10	20	
5	1.22 h/ha	20	20	20	40	40	
48	43.0	44.0	50.8	63.8	93.8	93.8	

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
Approximate density (per ha)	Score	0	10	20
		0%	low	med
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
Total SSR score (out of 70)		20		
SRR Score (out of 4)		1.142857143		

SSR Supplementary Table		
*Key source population for breeding	Score	0
		No
*Key source population for dispersal	Score	0
		No
*Necessary for maintaining genetic diversity	Score	0
		No
*Near the limit of the species range	Score	0
		No

Assessment Unit - Regional Ecosystem - Greater Glider						AU 2 - Regrowth Vegetation (RE11.8.10)															
SITE CONDITION						Year 5		Year 5 Score Increase Justification		Year 10		Year 10 Score Increase Justification		Year 15		Year 15 Score Increase Justification		Year 20		Year 20 Score Increase Justification	
Recruitment of woody perennial species in EDL	100	100	100	100	100	5	5			5			5			5					
Native plant species richness - trees	7	2	6	4	57.14	2.5	2.5			5			5			5					
Native plant species richness - shrubs	5	2	2	2	40.00	2.5	2.5			5			5			5					
Native plant species richness - grasses	12	7	5	6	50.00	2.5	2.5			2.5			5			5					
Native plant species richness - forbs	27	3	4	3.5	12.96	0	0			0			2.5	Establish a minimum of 12 grass species (100% of the grass species richness benchmark)		2.5					
Tree canopy height (Canopy)*	19	8	14	11	57.89	3	3			5	Establish a minimum seven tree species (100% of the tree species richness benchmark)		5	Establish a minimum of seven forb species (25% of the forb species richness benchmark)		5					
Tree canopy height (Sub-canopy)*	10	4	5	4.5	45.00	3	3			5	Establish a minimum of five shrub species (100% of the shrub species richness benchmark)		5	Tree canopy cover to be a minimum of 24m (50% of the tree canopy cover (canopy) benchmark)		5					
*Average tree canopy height						3	3	Weed coverage to be less than 10% of the entire offset area		3			5			5					
Tree canopy cover (Canopy)**	48	1.2	8.3	4.75	9.90	0	0			0	Tree species to be a minimum of 13.3m height (70% of the tree canopy height benchmark)		5	Tree sub-canopy cover to be a minimum of 10m (50% of the tree canopy cover (sub-canopy) benchmark)		5					Quality and availability of food to reach optimal remnant status score of 10
Tree canopy cover (Sub-canopy)**	20	0	7.8	3.9	19.50	2	2			2	Tree species to be a minimum of 7m height (70% of the tree sub-canopy height benchmark)		5	Shrub canopy cover to be a minimum of 2.5m (50% of the shrub canopy cover benchmark)		5					Quality and availability of shelter to improve to a score of 10 with at least 2 hollows per hectare.
**Average tree canopy cover						1	1			1			5			5					
Shrub canopy cover	5	0	3.1	1.55	31.00	3	3			3	Organic litter to reach 50% of benchmark.		5	Record a minimum of 17m of coarse woody debris per hectare (50% of the coarse woody debris benchmark)		5					
Native grass cover*	32	71	9	40	125.00	5	5			5	Coarse woody debris to reach 10% of benchmark		5	Quality and availability of food to improve to a score of 5 with improved canopy cover.		5					
Organic litter*	21	0	8	4	19.05	3	3			5	Weed coverage to be less than 5% of the entire offset area		5	Quality and availability of shelter to improve to a score of 5 with at least 1 hollow per hectare.		5					
Large trees (euc plus non-euc) (per ha)	24	2	2	2	8.33	5	5			5			5			5					
Coarse woody debris (per ha)	234	12	11	11.5	4.91	0	0			2			5			5					
Non-native plant cover	0	20	60	40	40.00	3	5			10			10			10					
Quality and availability of food and foraging habitat	NA	1	1	1	-	1	1			1			5			10					
Quality and availability of shelter	NA	1	1	1	-	1	1			1			5			10					
Site Condition Score (/100)						23.8		24.8		32.8			63.8			93.8					
Overall Site Condition Score - out of 3						0.71		0.74		0.98			1.91			2.81					
SITE CONTEXT																					
Size of patch	10	10	10	10		10	10			10			10			10					
Connectedness	5	2	2	2		2	2			2			2			2					
Context	5	4	4	4		4	4			4	Threats removed from offset site and ongoing monitoring and control implemented		4	Threats removed from offset site and ongoing monitoring and control implemented		4					
Ecological Corridors	6	6	6	6		6	6			6	Threats removed from offset site and ongoing monitoring and control implemented		6	Mobility capacity further improved with establishment of habitat and removal of weeds		6					Threats removed from offset site and ongoing monitoring and control implemented
Role of site location to species overall population in the state	5	5	5	5		5	5			5			5			5					
Threats to the species	15	7	7	7		7	15			15			15			15					
Species mobility capacity	10	4	4	4		4	4			7			7			7					
Site Context Score (/50)						38		46		49			49			49					
Overall Site Context Score - out of 3						2.04		2.46		2.63			2.63			2.63					
SPECIES STOCKING RATE																					
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	20	20	20		20	20			20			20			20					
Species Stocking Rate Score (/70)						20.00		20		20			20			20					
Overall Species Stocking Rate Score - out of 4						1.14		1.14		1.14			1.14			1.14					
Overall Assessment Unit Score						3.89		4.35		4.75			5.68			6.58					

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0																					
3																					
1	9.90	2	2	2	10	20															
37.5	0.37 h/ha	4	4	4	20	40															
		23.8	24.8	32.8	63.8	93.8															

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
Approximate density (per ha)	Score	0	10	20
		0%	low	med
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
Total SRR score (out of 70)				
SRR Score (out of 4) 1.142857143				

*SSR Supplementary Table		
*Key source population for breeding	Score	0
		No
*Key source population for dispersal	Score	0
		No
*Necessary for maintaining genetic diversity	Score	0
		No
*Near the limit of the species range	Score	0
		No

Assessment Unit - Regional Ecosystem - Greater Glider								AU 3 - Remnant Vegetation (R2) 1.8.17							
SITE CONDITION								SITE CONTEXT							
NET 1.8.17 Benchmark	Transect 2	Transect 3	Transect 8	Transect 12	Average of Transects	% Benchmark	Score	Year 5	Year 5 Score Increase Justification	Year 10	Year 10 Score Increase Justification	Year 15	Year 15 Score Increase Justification	Year 20	Year 20 Score Increase Justification
Recruitment of woody perennial species in EDL	100	100	100	100	100	100	100	5	5	5	5	5	5	5	5
Native plant species richness - trees	7	7	4	4	6	5.25	75.00	2.5	2.5	5	5	5	5	5	5
Native plant species richness - shrubs	5	1	3	0	2	1.5	30.00	2.5	2.5	5	5	5	5	5	5
Native plant species richness - grasses	12	4	6	4	3	4.25	35.42	2.5	2.5	5	5	5	5	5	5
Native plant species richness - forbs	27	5	9	5	6	6.25	23.15	0	0	2.5	2.5	5	5	5	5
Tree canopy height (Canopy)*	19	17	22	16	18	18.25	96.05	5	5	5	5	5	5	5	5
Tree canopy height (Sub-canopy)**	10	8	12	8	9	9.25	92.50	5	5	5	5	5	5	5	5
*Average tree canopy height								5	5	5	5	5	5	5	5
Tree canopy cover (Canopy)**	48	80	57.2	19	42	49.55	103.23	5	5	5	5	5	5	5	5
Tree canopy cover (Sub-canopy)**	20	0	33.7	27.3	22	20.75	103.75	5	5	5	5	5	5	5	5
**Average tree canopy cover								5	5	5	5	5	5	5	5
Shrub canopy cover	5	0	3.1	0	1.3	1.1	22.00	3	3	5	5	5	5	5	5
Native grass cover*	32	8	78	65	88	59.75	186.72	5	5	5	5	5	5	5	5
Organic litter*	21	56	4	9	4	18.25	86.96	5	5	5	5	5	5	5	5
Large trees (euc plus non-euc) (per ha)	24	8	0	8	5	5.25	21.88	5	5	5	5	5	5	5	5
Coarse woody debris (per ha)	234	213	506	292	222	308.25	131.73	5	5	5	5	5	5	5	5
Non-native plant cover	0	70	10	5	90	43.75	43.75	3	5	10	10	10	10	10	10
Quality and availability of food and foraging habitat	NA	10	10	10	10	10	-	10	10	10	10	10	10	10	10
Quality and availability of shelter	NA	1	1	1	1	1	-	1	1	1	1	1	1	1	1
Site Condition Score (/100)								48.3	49.3	57.8	73.8	95.0			
Overall Site Condition Score - out of 3								1.45	1.48	1.73	2.21	2.85			
Size of patch								10	10	10	10	10			
Connectedness								5	2	2	2	2			
Context								5	4	4	4	4			
Ecological Corridors								6	6	6	6	6			
Role of site location to species overall population in the state								5	5	5	5	5			
Threats to the species								15	7	7	7	7			
Species mobility capacity								10	7	7	7	7			
Site Context Score (/56)								41	49	49	49	49			
Overall Site Context Score - out of 3								2.20	2.63	2.63	2.63	2.63			
SPECIES STOCKING RATE															
Stocking Rate (utilising SSR & SSR Supplementary Table(s))								70	40	40	40	40			
Species Stocking Rate Score (/70)								40.00	40	40	40	40			
Overall Species Stocking Rate Score - out of 4								2.29	2.29	2.29	2.29	2.29			
Overall Assessment Unit Score								5.93	6.39	6.64	7.12	7.76			

5															
2.5															
2.5															
2.5															
0															
5															
3															
5															
5															
5															
3															
10	103.23	20	20	20	20	20	20								
1	0.44 h/ha	4	4	4	4	4	4								
59.5		48.3	49.3	57.8	73.8	95.0	95.0								

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
Approximate density (per ha)	Score	0	10	20
		low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
Total SSR score (out of 70)				
SSR Score (out of 4) 2.285714286				

*SSR Supplementary Table		
*Key source population for breeding	Score	0
		No
*Key source population for dispersal	Score	0
		No
*Necessary for maintaining genetic diversity	Score	0
		No
*Near the limit of the species range	Score	0
		No

Swift Parrot Features													
Year 1	Justification / Actions	Year 2	Justification / Actions	Year 3	Justification / Actions	Year 5	Justification / Actions	Year 10	Justification / Actions	Year 15	Justification / Actions	Year 20	Justification / Actions
Plant at least 7,642 features (E. tereticornis and E. melliodora at proportions of 0.09 and 0.10 of total plantings, respectively) to achieve 130% of the OAG requirement.	Monitor quarterly for first 12 months to ensure a 90% survival rate (at least 6,878 stems surviving). If survival rate falls below 90% on a monitoring occasion, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 6,878 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 6,878 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 6,878 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of advanced stock within 3 months and manage as new plantings.	Monitor to ensure at least a 90% survival rate (at least 6,878 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of mature stock within 3 months and manage as new plantings.	Monitor to ensure at least an 90% survival rate (at least 6,878 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of large mature stock within 3 months and manage as new plantings.	Monitor to ensure at least an 90% survival rate (at least 6,878 stems surviving). NB: minimum OAG requirement on Montauban is 5,900 stems to achieve 100% offset acquittal.	If survival rate falls below 90% on monitoring, conduct remedial plantings of large mature stock within 3 months and manage as new plantings. Consider extending the management period to ensure OAG requirement is met.

Regent Honeyeater Features													
Year 1	Justification / Actions	Year 2	Justification / Actions	Year 3	Justification / Actions	Year 5	Justification / Actions	Year 10	Justification / Actions	Year 15	Justification / Actions	Year 20	Justification / Actions
Plant at least 4,145 features (E. melliodora at proportions of 0.10 of total plantings) to achieve 130% of the OAG requirement.	Monitor quarterly for first 12 months to ensure a 90% survival rate (at least 6,878 stems surviving). If survival rate falls below 90% on a monitoring occasion, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 3,731 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 3,731 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial tube stock plantings within 3 months and manage as new plantings.	Monitor to ensure a 90% survival rate (at least 3,731 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of advanced stock within 3 months and manage as new plantings.	Monitor to ensure at least a 90% survival rate (at least 3,731 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of mature stock within 3 months and manage as new plantings.	Monitor to ensure at least an 90% survival rate (at least 3,731 stems surviving).	If survival rate falls below 90% on monitoring, conduct remedial plantings of large mature stock within 3 months and manage as new plantings.	Monitor to ensure at least an 90% survival rate (at least 3,731 stems surviving). NB: minimum OAG requirement for Montauban is 3,200 stems to achieve 100% offset acquittal.	If survival rate falls below 90% on monitoring, conduct remedial plantings of large mature stock within 3 months and manage as new plantings. Consider extending the management period to ensure OAG requirement is met.

Appendix G: Hollow Monitoring and Management Plan

MONTAUBAN OFFSET SITE

Hollow Monitoring and Management Plan

DWG NO.	DRAWING TITLE	ISSUE	DATE
9383 E 01 Montauban HMMP	COVER SHEET	B	13/02/2026
9383 E 02 Montauban HMMP	INTRODUCTION AND NOTES	B	13/02/2026
9383 E 03 Montauban HMMP	OFFSET SITE ARTIFICIAL HOLLOW SUITABILITY	B	13/02/2026
9383 E 04 Montauban HMMP	MAINTENANCE AND MONITORING	B	13/02/2026
9383 E A01 Montauban HMMP	APPENDIX A - ARTIFICIAL HOLLOW OPPORTUNITY ASSESSMENT	B	13/02/2026



**Saunders
Havill**

PATHWAYS TO SUCCESS

MONTAUBAN OFFSET SITE

Hollow Monitoring and Management Plan - Introduction and Notes

INTRODUCTION & OBJECTIVES

This Hollow Monitoring and Management Plan (HMMP) has been prepared by **Saunders Havill (SH)** for **Frasers Property New Beith Pty Ltd** for the proposed Montauban Offset Site located at Moorang, parts of Lots 103CH311061, 115 and 116 on SP167206, 1CC3571, 211CH311636, 229CH312601, 230CH312495, 24CH312265, 4RP31137, 68, 71 & 72 on CH311061, 77CH311086, 86RP234513, and 9CH311910.

The primary objective of this HMMP is to monitor the utility of existing site hollows and outline creation of new hollows via Arborist carving in trees over 500 mm DBH for the Greater Glider over the 20 year management period.

Hollow creation is to occur at densities of at least 1.5 hollows per hectare to reflect the hollows removed at the impact site. Created hollows will be mapped and subsequently monitored and maintained over the 20 year management period.

BACKGROUND

Natural tree hollows form an important part of many South East Queensland (SEQ) ecosystems, and are recognised as critical for Greater Glider denning habitat. Natural hollows can take between 80 to 350+ years to develop and form a range of sizes and shapes over time that suit the requirements of different fauna species. In circumstances where clearing of hollow-bearing trees cannot be avoided, hollow carving or creation can provide a functional alternative to natural tree hollows.

Hollow installation is highly specialised to suit individual fauna species requirements, and requires prior knowledge of hollow-dependent fauna at the development and receiving areas and hollow specifications for target fauna species. Ongoing monitoring and maintenance is also essential to ensure hollows are achieving beneficial outcomes for fauna, particularly threatened species such as the Greater Glider.

There are currently no regulatory guidelines in Queensland for the implementation, monitoring and maintenance of hollows. The information is intended as a guide and is subject to alteration by the qualified hollow carver working on site. Notably, the suitability of site trees to host carved hollows is currently under assessment by Arborists.

METHODOLOGY – ARTIFICIAL HOLLOW CARVING

Hollows are to be installed and monitored by AQF Level 5 Arborist (or equivalent). There are five types of artificial hollow carving (summarised below) further details are provided in Appendix A.

Artificial Hollow Types	
Branch End Hollows	
Description	Branch End Hollows are carved at the end of a large branch, imitating where a branch has snapped off naturally. The entrance is often on the branch's cut or broken face, leading inward into a cavity denning chamber.
Suitable Trees	<ul style="list-style-type: none"> 900+mm DBH Mature Tree Wide spread crown
Branch Middle Hollows	
Description	Branch Middle Hollows are carved in the middle section of a branch, imitating hollows formed when decay enters through side cracks or wounds. The Entrance hole on the side of the branch.

Suitable Trees	<ul style="list-style-type: none"> 900+mm DBH Mature Trees Wide spread crown with large diameter (400+mm) lateral branches
Branch Stub Hollows	
Description	Branch Stub Hollows are carved where a branch has broken but left behind a short stub sticking out of the trunk, imitating hollows that form when fungi and decay invade at the break point. The entrance is often at the stub or broken branch entrance.
Suitable Trees	<ul style="list-style-type: none"> 600+mm DBH Early Mature Tree 400+mm branch diameter at or above minimum installation height
Trunk Middle Hollows	
Description	Trunk Middle Hollows are carved directly into the trunk of the tree, below the crown of the tree, imitating hollows formed when old wounds, lightning strikes, or decay in the trunk create cavities. The entrance hole is on the side of the trunk with the denning chamber below the entrance.
Suitable Trees	<ul style="list-style-type: none"> 600+mm DBH Early Mature Tree 400+mm branch diameter at or above minimum installation height
Trunk Top Hollows	
Description	Trunk Top Hollows are carved at the top of a trunk often just below the crown or where the main stem ends, imitating hollows with vertical shafts caused by crown failure. The entrance is downward facing, leading to a denning chamber directly below.
Suitable Trees	<ul style="list-style-type: none"> 600+mm DBH Early Mature Tree 300+mm branch diameter at minimum installation height

Arbor Australis Consulting was engaged to provide assessment and advice on the potential of artificial hollows for Greater Gliders on the offset site.

General guidelines for Greater Glider suitable Artificial Hollow Carving from Arbor Australis Consulting are summarised below. Installation is to follow the full specifications listed in Appendix A.

Greater Glider Artificial Hollow Requirements Summary	
Location in Tree	Branch-end hollows are preferred. Vertical trunk hollows and Branch stub hollows where installation opportunities are limited by tree size and form.
Orientation	North facing hollows are the most preferred. Followed by east, south, and west. Vertical hollows least are the least utilised.
Height Above Ground	Minimum of 8m. Hollows higher in the crown of show more use than lower ones.
Thermal Qualities	Dead trees (stags) are not to be used due to their limited thermal qualities. Seasonal variation may mean multiple hollows are used by Greater Gliders for thermoregulation.
Structure	For branch end hollows the denning chamber within the branch needs to be a minimum of 300mm in branch diameter where there is no load or branch weight beyond the Artificial Hollow site. For branch stub hollows the entrance chamber needs to be carved into the branch stub, requiring a minimum size of 180mm in diameter. Artificial hollows must not create structural weakness or excessive risk of tree failure.
Crown Pruning Limits	Pruning should not exceed 5% of live foliage by volume. Minimise loss of photosynthetic material; tree health/vigour must be considered before cutting.
Existing Hollow Modifications	Existing hollows can be adapted if undersized or too deep (e.g. installing a floor, enlarging). However the benefit must be weighed against current use by other species.
Risk & Safety	Hollows must not significantly compromise structural integrity. Minimum part sizes and chamber/entrance

	specifications (Appendix A) have been specified to ensure tree strength is retained.
--	--

The specific details of installation specifications for each type of artificial hollow including Hollow Location, Opening, Branch Size & Minimum Wall Thickness, Hollow Chamber Depth and Methodology are provided in Appendix A.

METHODOLOGY – HOLLOW CREATION TOTALS AND LOCATIONS

Arbor Australis Consulting was engaged to provide assessment and advice on the potential of artificial hollows for Greater Gliders on the offset site (Appendix A). It has been estimated that there are 579 suitable trees for greater glider artificial hollow carving alongside existing hollows (refer SHEET 03 and Appendix A for locations and details). Of the 579 trees 42% are suitable for Trunk Middle Hollows and 58% Branch Stub Hollows (refer Appendix A for full details).

In order to meet the optimal target at least 1.5 hollows per hectare a minimum of 554 hollows will need to be present across the 541.45ha Offset Site (alongside 256 existing hollows). Where Artificial Hollows are unable to be installed the arborist is to install nest boxes to make up the balance of hollows. Nest Boxes are to follow the specifications listed on this sheet to ensure they are both suitable for greater glider habitat and will act as a replacement until new hollows form within the offset site.

Hollows are to be installed so that there are a minimum of 1.5 hollows per hectare located across each Assessment Units (AUs) as per the table below, with 60 artificial hollows to be installed across 60 suitable trees in AU1, 31 artificial hollows to be installed across 284 suitable trees in AU2a, 17 artificial hollows to be installed across 17 suitable trees in AU2b and 189 artificial hollows to be installed across 218 suitable trees in AU3. If required, the qualified Artificial Hollow Installer is to assess the benefits and possibilities of both installing more than one hollow per suitable tree and the modification of existing hollows to meet Greater Glider requirements. Where this is not possible, additional nest boxes should be installed. Assessment unit locations are shown on SHEET 03.

Hollow Creation Totals per Assessment Unit (AU)					
	AU 1	AU 2a	AU2b	AU3	Total
Area (ha)	224.41	111.85	25.9	179.29	541.45
Number of Existing Hollows (including a +20% margin)	31	137	10	185	363
Existing Hollows per ha	0.14	1.22	0.39	1.03	0.67
Estimated Hollow Carving Opportunities	60	284	17	218	579
Hollow Carving Opportunities per ha	0.41	3.76	1.04	2.25	1.74
Proposed Artificial Hollow Carving	60	31	17	84	192
Proposed Nest Box Installation	246	0	12	0	257
Final Proposed Hollows per Hectare	1.5	1.5	1.5	1.5	1.5

METHODOLOGY – GREATER GLIDER NEST BOXES

Nest boxes are to be installed by a AQF Level 5 Arborist (or equivalent) or a suitably experienced nest box installer. The following specifications for design and installation are recommended for Greater Gliders:

Dimensions and Materials

Standard construction dimensions for nest boxes are H: 535mm, W: 360mm & L: 360mm. An entrance size of 130mm is recommended to reduce non-target intake (Gracanin et al. 2025). Other designs such as the 3 Unit Nest Box from *Habitat Innovation* and Cyplas® Greater Glider from *Hollow Log Homes* have seen success with Greater Glider intake.

Non-degradable plastic is recommended for nest box construction. Double-walled plastic boxes with timber inserts have shown to be effective in thermal buffering and will likely last longer than timber ones, allowing more time for additional natural hollows to form within the offset site during their lifespan (Callan, Johnson, and Watson 2023).

Insulation and Thermoregulation

Insulation such as 20-40mm foilboard wall insulation with air gaps has been shown to support thermoregulation (Howard et al. 2022). Absence of insulation on the wall side of the nest box that is in contact with the tree may help with heat dissipation (Gracanin et al. 2025). Reflective white, fire-retardant paint can be effective to reduce radiant heat absorption (Larson et al. 2018). Internal surfaces should not be painted. Any finishes used be free of Volatile organic compounds (VOCs).

Installation

Nest Boxes are to be installed in healthy trees with a minimum DBH of 300mm. The Height of boxes are best positioned as close to the tree canopy as possible, at a minimum of 8m from the ground. Where possible, place boxes in locations that are least vulnerable to branch fall. Boxes are to be firmly mounted, Franks (2006) recommend the Habisure system to mount boxes. South to Southeast orientation is recommended where possible to reduce solar exposure (Howard et al. 2022).

METHODOLOGY – TIMING OF INSTALLATION

Artificial hollow carving and nest box installation will be completed as soon as possible (anticipated within the first year) subject to site conditions. Where nest boxes are required in areas where habitat is still to be created, the timing of installation must be at the point where canopy approaches closing or at 15 years, whichever comes first.

REFERENCES

Callan, M. N., A. Johnson, and D. M. Watson. 2023. "Influence of Nest Box Design on Internal Microclimate: Comparisons of Plastic Prototypes." *Austral Ecology* 48: 374–387

Franks A & S 2006 'Nest boxes for wildlife: A practical guide' Gracanin, A., Hofman, M., Willson, S., Clough, J. B., Brown, T., and Mikac, K. M. (2025). Rapid Uptake of Nest Boxes by the Endangered Greater Glider (*Petauroides volans*). *Ecological Management & Restoration* 26(2)

Howard, I., J. C. H. Ridley, W. Blanchard, et al. 2022. "Helping Wildlife Beat the Heat: Testing Strategies to Improve the Thermal Performance of Nest Boxes." *Australian Zoologist* 42: 534–560

Larson, E.R., Eastwood, J.R., Buchanan, K.L., Bennett, A.T.D. and Berg, M.L. 2018. "Nest box design for a changing climate: The value of improved insulation". *Ecological Management & Restoration* 19: 39-48

DISCLAIMER

DESIGNS DOCUMENTED ON THIS DRAWING ARE THE PROPERTY OF SAUNDERS HAVILL AND ARE NOT FOR REPRODUCTION OR USE IN WHOLE OR PART WITHOUT WRITTEN PERMISSION THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT. SAUNDERS HAVILL DO NOT ACCEPT RESPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTEXTS OF THESE DRAWINGS BY ANY THIRD PARTY. CONFIRM ALL DIMENSIONS ON SITE AND CLARIFY ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

REFERENCES

Callan, M. N., A. Johnson, and D. M. Watson. 2023. "Influence of Nest Box Design on Internal Microclimate: Comparisons of Plastic Prototypes." *Austral Ecology* 48: 374–387

Franks A & S 2006 'Nest boxes for wildlife: A practical guide' Gracanin, A., Hofman, M., Willson, S., Clough, J. B., Brown, T., and Mikac, K. M. (2025). Rapid Uptake of Nest Boxes by the Endangered Greater Glider (*Petauroides volans*). *Ecological Management & Restoration* 26(2)

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Larson, E.R., Eastwood, J.R., Buchanan, K.L., Bennett, A.T.D. and Berg, M.L. 2018. "Nest box design for a changing climate: The value of improved insulation". *Ecological Management & Restoration* 19: 39-48

AMENDMENTS

ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
A	6/11/2025	CLIENT DRAFT	LS	AD
B	06/11/2025	RFI	LS	AD

CLIENT

FRASERS PROPERTY
NEW BEITH PTY LTD

PROJECT

MONTAUBAN
OFFSET SITE

DRAWING TITLE

HOLLOW MONITORING AND
MANAGEMENT PLAN

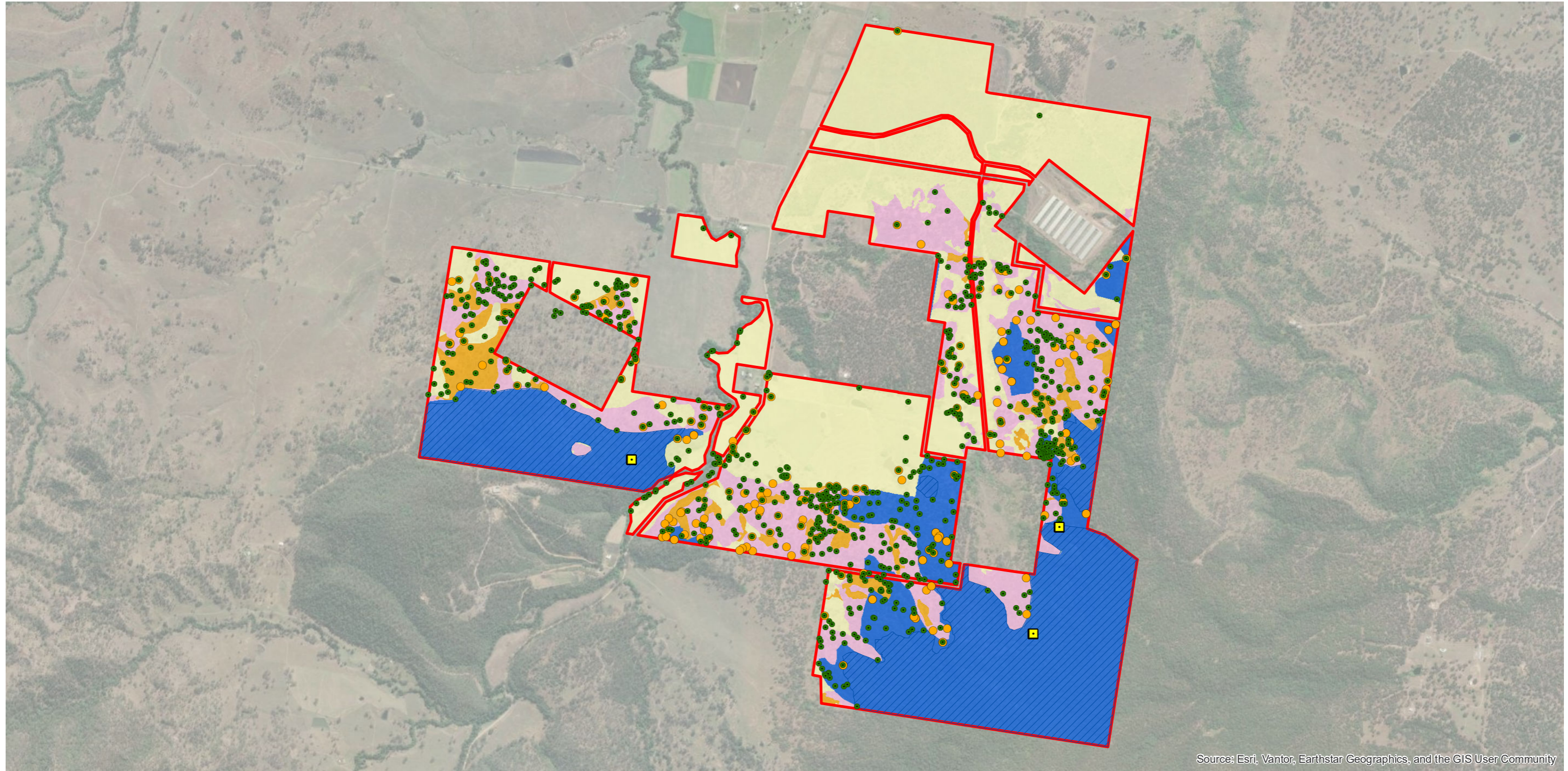
DRAWING NO.

9383 E 02 Montauban HMMP B



MONTAUBAN OFFSET SITE

Hollow Management Plan - Offset Site



Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

LEGEND

- Offset Area
- AU-1: Non-Remnant Vegetation [223.99 ha]
- AU-2a: Lo Regrowth Vegetation [25.90 ha]
- AU-2b: Hi Regrowth Vegetation [112.27 ha]
- AU-3: Remnant Vegetation [179.29 ha]
- AU-3 Remnant Vegetation with No Tree Plot [136.41 ha]
- Trees with DBH >= 500mm
- Trees with existing hollows
- Greater Glider sighting location





ARBOR AUSTRALIS
CONSULTING

Artificial Hollow Opportunity Assessment

Montauban

November 2025



4th November 2025

Attention: Andrew Davies
Manager Environmental Division

Saunders Havill Group
9 Thompson Street
Bowen Hills
QLD 4006

Dear Andrew,

Re: Artificial Hollow Opportunity Assessment for Montauban, Moorang

I am pleased to submit our assessment and advice on the potential of artificial hollows within the offset site. Hollows have been assessed to meet the requirements for *Petauroides spp.*, (Greater Gliders) within the offset site.

I trust that you find this assessment both satisfactory and helpful. Should you wish to discuss any of its recommendations or arrange for them to be implemented, please contact me on 07 3379 7793.

Yours sincerely,

Yours sincerely,

Jeremy Young
Principal Arboricultural Consultant
BSc (Hons) Arboriculture and Urban Forestry, First Class
Cert Arb (UK) | Adv Dip Hort (Arb) | Dip Arb
Certified Arborist AU-0011A
Industry License AL1204
QTRA 2061 | TRAQ | VALID



PO Box 568
Sherwood QLD 4075
Brisbane P 07 3379 7793
Sunshine Coast P 0438 007 761
trees@arboraustralis.com.au
www.arboraustralis.com.au

ABN 55 328 491 722

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Document Control

Document

Project Name: Montauban
Report Title: Artificial Hollow Opportunity Assessment
Report Name: 2025-054_AHOA_Montauban

Client

Company: Sanders Havill Group
Contact: Andrew Davis
Contact Position: Manager, Environmental Division

Site Owner

Company: Montauban Environmental Offsets

This document has been prepared by: Arbor Australis Consulting (AAC)

Contact: Jeremy Young
Principal Arboricultural Consultant
Telephone +61 7 3379 7793
jeremy.young@arboraustralis.com.au
www.arboraustralis.com.au

Revision History:

Version	Date	Details	Author	Reviewed	Authorised
Issue A	04/11/2025	2025-054_AHOA_Mountaben	Jeremy Young	CBY	JY

Author Qualification and Experience Summary:

Jeremy Young
BSc (Hons) Arboriculture and Urban Forestry (First Class)
AQF level 6 (Arboriculture).
More than 35 years of industry experience.
Arboriculture Australia, Approved Consultant.
Queensland Arboricultural Association, Approved Consultant.
Brisbane City Council, Panel of Providers, Arboricultural Consultant.

Arboricultural Impact Assessment. Experience in over 1400 projects in the past eight years, ranging from small developments to significant infrastructure development.

Artificial Hollow Opportunity Assessment– Montauban.

Scope:

Assessment of existing trees within the offset site to identify opportunities to develop or introduce habitat hollows artificially. The habitat hollows proposed will be a combination of chainsaw cut and Hollow Hog/Arborgrub carved hollows. The target fauna species for which the hollows are to be developed is the *Petauroides spp*, Greater Glider.

Offset Site Description: Montauban

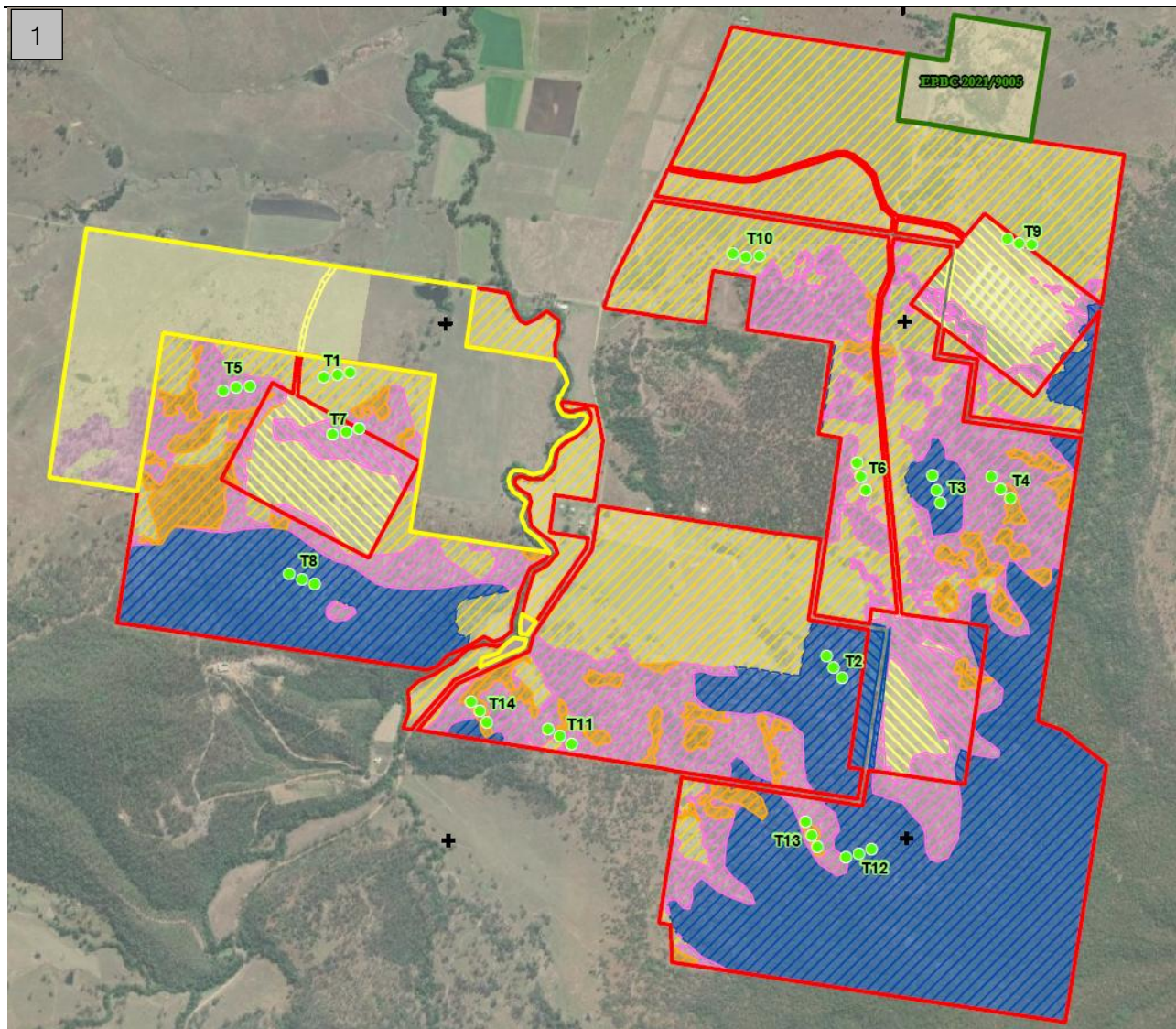


Image 1: The offset site is indicated approximately by the collection of shaded polygons.

It is highly likely that the area was previously partially cleared of most good timber trees as part of the immigrant settlement from the 1840's onward. The offset site is a mix of open woodland area and denser remnant vegetation that appears to have been grazed by cattle in the past. This grazing has impeded tree regrowth in the more open low areas of the site. The trees onsite are predominantly of semi-mature age, with a few mature trees.

The site is a mix of orientation and land forms. The current tree regrowth and vitality suggest growing conditions suitable for further tree establishment in the lower-lying areas, while the upper ridges indicate trees of slower growth and low vitality. Water availability will be the primary limiting factor in tree growth.

The young age of the current trees or the reduced growth in the remnant areas on sites is the reason for the limited number of natural hollows present, as documented in the base tree data provided by Saunders Havill Group (SHG), and this was confirmed during the review of Artificial Hollow (AH) suitability.

The site is suitable for AH development for Greater Glider habitat; however, the age of the trees limits the number that can currently be installed for the target species.



Image 2: Example of young semi-mature trees in the AU-2 High Regrowth. Trees are predominantly smaller with limited branch spread and insufficient size of parts above 8m. The area has a scattering of larger trees that can accommodate an Artificial Hollow Installation. Of the trees in the sample plots greater than 500mm DBH, 44% were found to be suitable for Artificial Hollow Installation. (Arbor Australis 2025)



Image 3: Example area of A3-Remnant vegetation. Although the trees are older, there is reduced suitability due to the low growth levels in areas with predominantly poor soil and limited water availability. (Arbor Australis, 2025) Of the trees in the sample plots greater than 500mm DBH, 29% were found to be suitable for Artificial Hollow Installation. (Arbor Australis 2025)

Methodology:

Following the initial request for an assessment and advice regarding the creation of artificial hollows to achieve denning opportunities for the Greater Glider species, a tree assessment and data collection were conducted. This assessment aimed to identify opportunities for creating new artificial habitats without compromising existing tree habitat features or tree structure.

Assessment has been carried out through a Random Sample technique, for each of the Vegetation Areas a

1 ha random plot was applied. Base tree data provided by SHG was sorted and imported into a GIS field system so as to display trees greater than 500mm DBH (trunk diameter). Each of these trees within each plot has been assessed onsite to determine the suitability for artificial hollows and to document the established hollow height, size and depth.

The probability of AH establishment has been determined by the percentage of suitable trees within each of the sample lots. The total number of trees greater than 500mm DBH was then multiplied by the percentage to provide an estimated AH opportunities for each vegetation area.

Where the tree plots data provided did not cover the entirety of the vegetation type (AU-2 High Regrowth & AU-3 Remnat) an average number of trees greater than 500mm DH was established, and this number was then multiplied by the percentage of AH suitable trees in the sample plots.

The electronic collection of data eliminates issues of transcribing errors and is set up to allow for and record the installation and subsequent inspection of the hollows into the future. This Data is available through the Konect App and can be viewed with a Konect User license. Alternatively, the data and photos can be exported to Excel at any stage, for ease of sharing information outside the app.

All measurements have been estimated, and the assessment of hollow opportunities has been conducted from the ground only. Tree location and numbering have been plotted using the GPS coordinates provided by SHG, and all tree numbering has been retained to ensure continuity between reports.

The requirements for the Greater Glider hollows have been based on our previous experience of assessing and implementing AH for Greater Gliders, along with a literature review of the subject.

There is no specific literature that documents the implementation of AH for this species. However, recent research studies have demonstrated positive results.

Due to the limited information available, this advice aims to propose selection criteria and considerations required to determine trees that may be suitable candidates for AH implementation.

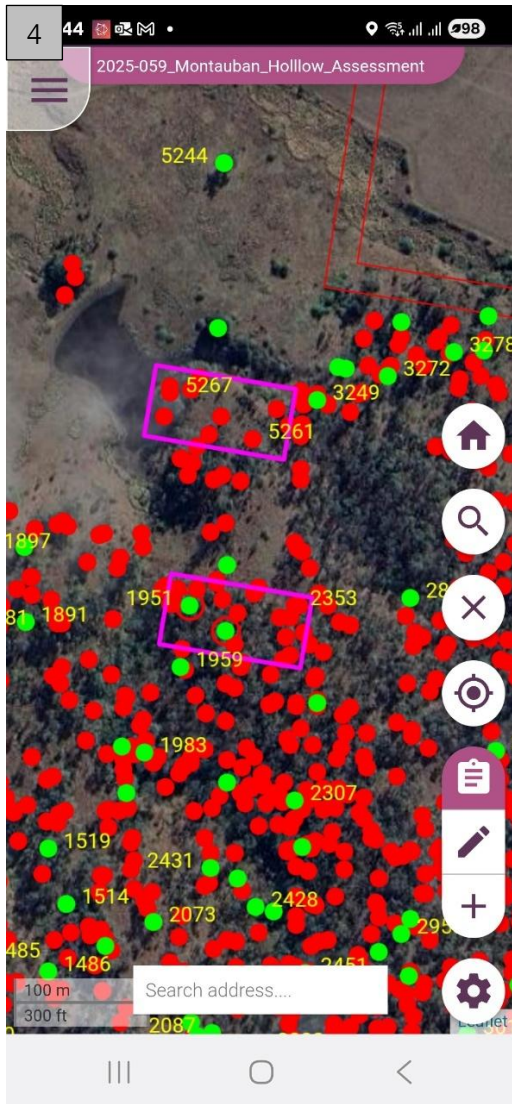


Image 4: Field map display used for site navigation. Trees that are green with circles are greater than 500mm DBH and are suitable for Artificial Hollow installation (Arbor Australis, 2025).

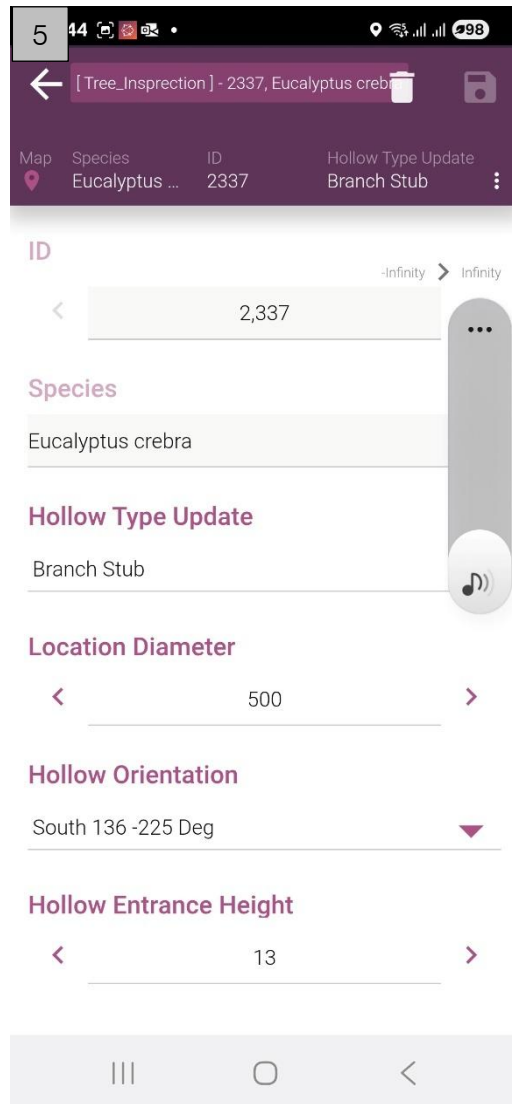


Image 5: The field form that is linked to each of the trees. Data collected in this manner removes the risk of transcription errors (Arbor Australis 2025).

Natural Hollow Development:

The tree life stage is an essential indicator of the likelihood of natural hollow development, with hollows typically not present until trees reach the late-mature to over-mature stages of life, which can be 100 years or more. Natural hollow development is usually associated with tree veteranisation. Early veteranisation of trees and natural hollow development can occur sooner than this, depending on the severity of previous storm events and tree exposure; however, typically these hollows are too small to support large fauna.

The development of natural hollows of a size suitable for the Greater Glider can take much longer and typically occurs only in trees that are in an over-mature stage with veteran characteristics. This typically refers to trees that are 200 years old or older (Warmington & Lamb, 1999).

An understanding of hollow development and the tree's natural response to wounding and decay is necessary to determine opportunities for imposing AH on trees. A comprehensive understanding of tree physiology and biological function must complement this understanding. Hollow specialisation development needs to ensure that the tree's structure is not compromised, along with maintaining sufficient biological function for carbohydrate production to sustain growth and natural decay defence.

Natural hollow development is primarily a result of heartwood decay in mature to over-mature trees that have experienced branch, branch union or stem failures, often (but not always) initiated as a result of failures in storm events.

These failures expose the dysfunctional heartwood to the air. Decay can enter the tree through fungal spores and microbes colonising the wound site; however, recent research indicates this is less likely or impactful, than latent decay fungi and microbes already present in the wood structure (Boddy & Rayner, 1983; Boddy, 2021). Wounding results in exposure to the air reducing the moisture content and increasing the exchange of gases in the cells, stimulating latent fungal propagules and microbial activity in the wood.

Decay progresses relatively slowly as fungal hyphae exude enzymes that break down cellulose and lignin. At the same time, the tree actively try to compartmentalise (resist) the decay fungi through chemical alteration of cells to create barrier zones. (Schwarze, *et.al.* 2013)

Compartmentalisation occurs in the living tissue of the trees sapwood (symplast), not the heartwood (apoplast). The basic principle of compartmentalisation is the forming of internal chemical walls or barriers, increasing in effectiveness from 1-4 : (Shigo, 1984)

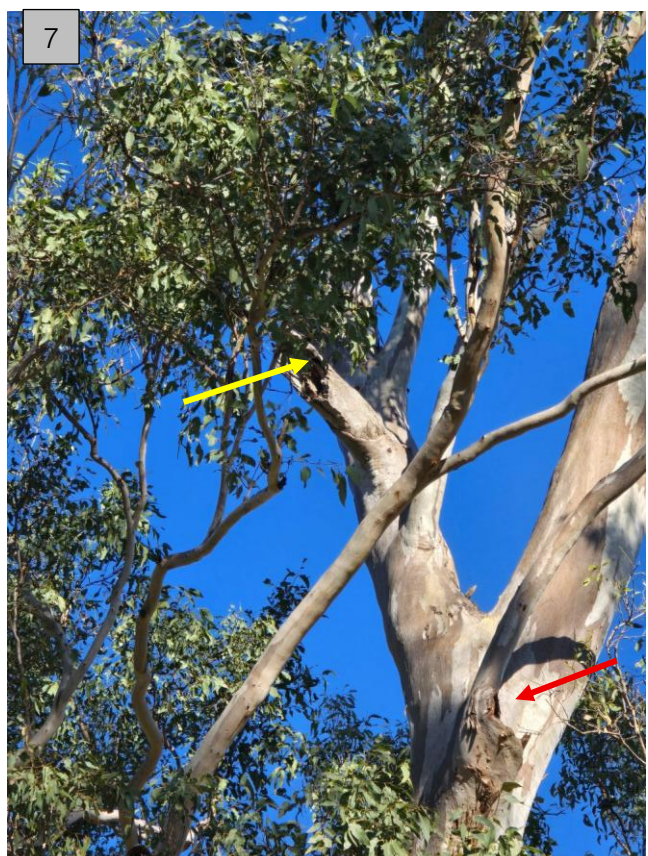
Barrier Zone 1 is the longitudinal zone parallel to tree growth, on a trunk, which is above and below the wounding site. At the time of wounding, the border pits are altered through a process called tylosis. Barrier zone 1 is the weakest of the barrier zones due to the large sap vessels, which limit passive defence and allow fungal hyphae to move.

Barrier Zone 2 is the marginal axial parenchyma (growth rings). At the time of wounding, the tree chemically alters the cells and creates a barrier at the current growth ring. The barrier resists the spread of decay inwards from the wounding site.

Barrier Zone 3 is the medullary or parenchyma rays, which radiate like spokes of a bike wheel from the trunk centre. This chemical barrier resists and limits the lateral spread of decay.

Barrier Zone 4 is laid down at the time of wounding by the area of the cambium that is still functioning at the edge of the wound site. This barrier resists the spread of decay into the new wound wood that develops around the wound site and is the most vigorous defence against decay.

The rate of decay and speed of hollow development is highly variable. Tree species, microbial populations, tree physiology, vigour¹, and vitality² all play significant roles in the rate of decay that results in hollow development.



Images 6 & 7: Examples of natural formed hollows indicated by the yellow and red arrows. (Arbor Australis, 2025)

Some examples of hollow development variations:

Growing Location, Trunk Size Variation:

A Queensland Blue Gum (*Eucalyptus tereticornis*) growing in an alluvial loam, close to a water supply is unlikely to reach over maturity or veteran status until the age of 250 years. It may be 1.5m+ in trunk diameter before hollows start to develop. Trees in this growing environment typically have higher vitality and energy reserves that can be utilised in defence against decay.

¹ Tree's genetic capacity to resist strain, vigour can not be increased

² Tree growth response to external stimuli in current climatic conditions

Whereas a Queensland Blue Gum (*Eucalyptus tereticornis*) growing in poor soil with limited water supply will age quicker and put on less annual incremental growth, so over-maturity or veteran status may be reached in 100 - 150 years. Trees in this growing environment have reduced vitality and, as a result, have less energy reserves that can be utilised for active defence against decay.

Species, Decay Rate Variation:

A Narrow-leaved Red Ironbark (*Eucalyptus crebra*) has a dense wood structure, a slow growth rate, and produces smaller wood cells with a high lignin content. This provides a physical barrier to the movement of fungal hyphae through the timber, impeding decay and slowing the development of hollows.

A Scribbly Gum (*Eucalyptus racemosa*) has a low timber durability rating due to its faster growth rate with larger wood cell structure and a lower lignin content in the heartwood. This species will typically begin to develop hollows within 30 years.

The examples above are only a snapshot of the variability of hollow development. The tree's trunk diameter/DBH (diameter at breast height) or the tree's height does not guarantee the presence or absence of hollows. The tree's life stage, because of its growing environment, is by far a better indicator (Wormington *et al.* 2003). Typically, we acknowledge that the larger the tree's trunk diameter the more likely the potential for the presence of hollows.



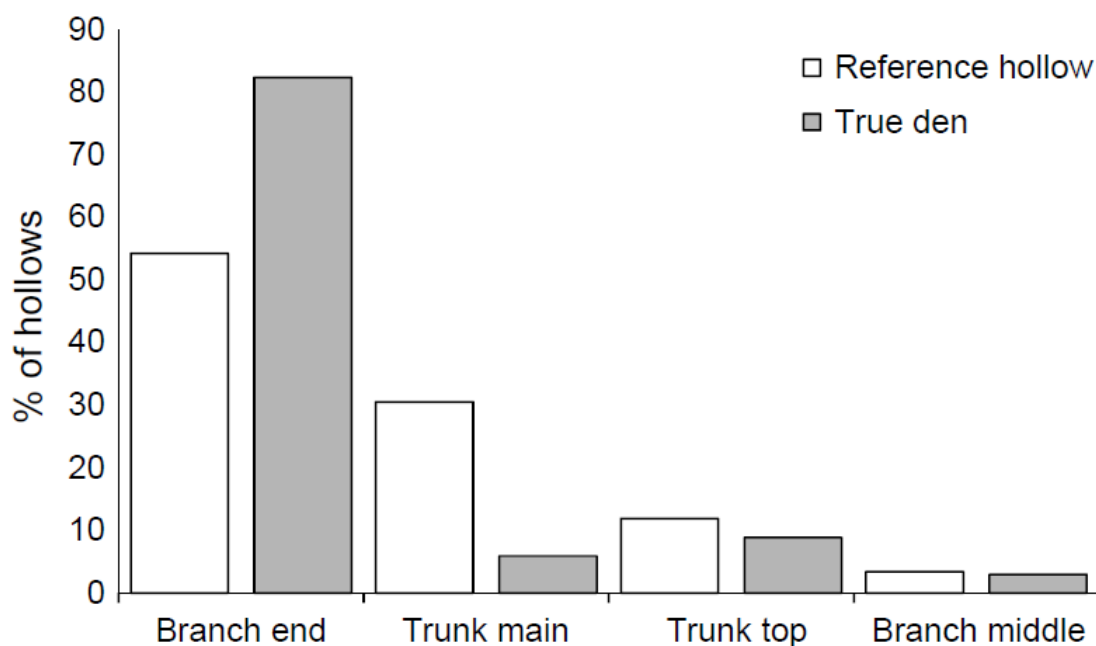
Image 8: Examples of over-mature trees that are beginning to develop veteran characteristics of hollow development. These trees were most likely spared from the original land clearing due to reduced wood quality. The tree on the right appears to be older, based on the larger hollows and trunk girth (Arbor Australis, 2025).

Greater Glider Hollow Requirements:

A review of the literature regarding the Greater Glider's denning and breeding hollow requirements revealed significant variation in the data. It is hypothesised that this variation in data is a result of the variation in climatic zones altering the use of hollows at the time data was collected. This information has been summarised below to inform the AH installation recommendations.

Most hollows occupied by the Greater Glider are typically found in branches, often with dead wood at the entrance (Goldingay 2011; Hofman *et al.* 2022). Past studies have shown the hollows are generally located in the crown at heights ranging from 6 – 56 m (Kehl and Borsboom 1984; Lindenmayer *et al.* 1991; Hofman *et al.* 2022).

Hoffman *et al.* (2022) identify that the most significant utilisation occurs in branch end hollows, with approximately 80% of utilisation in these types. Trunk hollows are utilised at a higher rate when positioned higher in the crown and trunk top; they are used at a considerably greater rate than those in the main stem, and comparable rates in terms of availability to branch middle hollows.



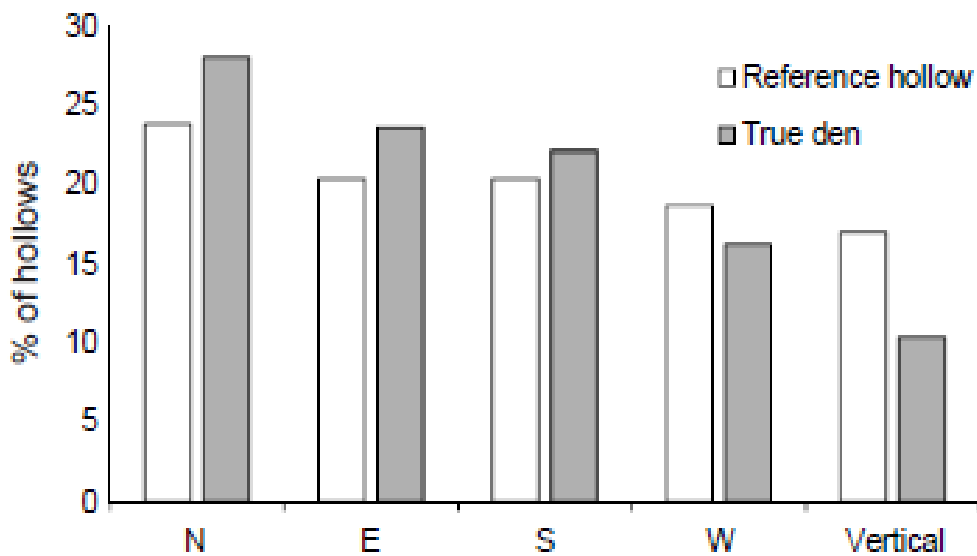
Graph 1: Extract from Hoffman et al (2022) showing utilisation of hollow type

Hollow Orientation

Hoffman *et al.* (2022) provide some analysis of hollow orientation. Utilisation was highest in hollows with a northerly aspect, followed by east, south, and west, with vertical hollows least utilised (*Extract 2*).

This research was conducted in southern coastal NSW, approximately 250 km south of Sydney (latitude: 34° South). The climate is temperate, with cold, wet winters and warm, dry summers. The preference for entrances facing north may have been to take advantage of the thermal gain, warming aspects of such an orientation, which is likely more critical given the cooler climate of the locality. In the subtropics, a northerly aspect is presumed to be less critical due to higher ambient air temperatures and solar gain, which can lead to potential overheating of hollows.

Greater Glider has relatively narrow thermal tolerance, with temperatures above and below 20°C increasing basal metabolic rate (Rübsamen *et al.* 1984). The thermal properties of hollows are believed to be a significant influence on their selection. Moreover, the need to use different hollows in different seasons may be required for optimal thermoregulation (Hofman *et al.* 2022).



Graph 2: Proportional orientation of occupied hollows (Hofman *et al.*, 2022)

Artificial Hollows, Assessment and Guidelines

Based on this research and understanding of tree physiology and its response to wounding, along with experience in habitat hollow installation, a set of guidelines and specification sheets has been developed to guide the assessment and installation process.

While branch-end hollows are the preferred hollow type, the tree size is a significant limiting factor in achieving this hollow type. A hollow with the denning chamber within the branch needs to be a minimum of 300mm in branch diameter where there is no load or branch weight beyond the AH site. Typically this is an existing branch stub, broken or pruned branch.

Trees with suitable parts are often limited to being large, mature, or over-mature trees. They are not a common occurrence, and to be suitable, they must not require pruning that removes a significant portion of branch and crown foliage in order to create a hollow. Excessive pruning will have an adverse impact on tree health.

A Branch Stub Hollow has been described as an alternative to achieve the required hollow entrance through an existing branch end, as shown to be desirable in past studies. However, as the denning chamber is cut into the trunk of the tree rather than the branch, the size requirement for the branch is reduced. The entrance chamber needs to be carved into the branch stub, requiring a minimum size of 180mm in diameter.

The development of artificial hollows needs to consider the requirements of the fauna it is intended for, the tree structure, the presence of other habitat features, and the biological function of the tree. The following is a summary of conditions and criteria that collectively need to be met in order to create artificial habitat hollows for Greater Gliders (Best, et. Al. 2022)

Existing Hollows: Trees with existing hollows that do not meet the Greater Glider size criteria can, in some cases, be altered to be suitable for the Greater Glider. This can include installing a floor where hollows are too deep or increasing the size where hollows have started to develop but are not large enough for the Greater Glider.

Any alteration to an existing hollow will need to be weighed against the benefit they currently provide to other species.

Thermal Qualities: Dead trees (stags) have been excluded from the assessment due to their limited thermal qualities, as they are not suitable or preferred by the Greater Gliders. Mimicking natural hollows by carving them into living trees provides better thermal qualities. (Griffith, et al. 2018)

Hollow Location: Greater Gliders prefer branch-end hollows over vertical trunk hollows. The assessment has focused on the opportunity for branch-end hollow development; however, as described above the the opportunities are limited by the tree size and tree form. Opportunities for AH have also been listed where a good opportunity exists to position a habitat hollow in a tree trunk.

The installation height has been set as a minimum of 8m based a previous studies and the ovservaion made in these studies that the hollows higher in the crown are utilised more then the lower hollows.

Structure: Hollows should not create a significant structural weakness or significantly increase the probability of failure of a living tree part at the site of the artificial hollow.

Risk: In considering the Risk of Harm (RoH) artificial hollows may pose, the risk is acceptable for this site as there is a low probability of people (target) being present should a tree failure occur. However, maintaining acceptable levels of structure at the site of hollow generation is essential to avoid failures that would compromise the habitat created. For this reason, minimum part sizes have been specified for each of the hollow types. The required habitat chambers, hollow entrance point and the load above the AH site dictate this size.

Crown Pruning: While the removal of branch structure can provide an opportunity to install branch end hollows, there is an adverse impact on tree health with the removal of photosynthetic material. The pruning to remove a branch needs to be weighed against the tree's ability to tolerate this damage. Tree health, vigour and vitality will influence the pruning decisions. As such, a general guideline has been established that crown pruning should not exceed 5% of live foliage by volume.

General Artificial Hollow Guidelines:

The points below outline the general guidelines used to assess a tree for suitability to install AH. More specific guidelines for each hollow type are outlined in the Hollow Specification Sheets.

Opening

- Between 80mm and 350mm
- Opening Orientation is **east and south preferred** but not critical
- Only one entrance per hollow

Minimum Wall Thickness

- 50mm for thermal qualities. However, the wall thickness needs to consider the load beyond the hollow for the tree structure.

Hollow Chamber Depth (Bottom of hollow opening to bottom of chamber)

- Between 0.5m (500mm) and 5m (5000mm)

Hollow Entrance Height

- Minimum 8m above ground

Hollow Location

- Branch ends are preferred, but the opportunities will dictate what can be achieved
- Multiple hollows in one tree are acceptable, however diversity of hollow types is more desirable.
- Avoid situating hollows in positions above one another.

General Amended Hollow Guidelines:

The aim is to alter existing hollows to meet the parameters above. This may range from shortening the the hollow chamber depth through a false floor or reducing and reorientating the opening through the installation of a carved/hollow log. The amendment of smaller hollows to increase the entrance size to the chamber follows the same methodologies outlined in the specification sheets.

Where existing hollows are amended, it is desirable to retain the response wood growth as this provides increased structural load capacity around the existing hollow.

Artificial Hollow Types

According to the specification outlined above, five AH types have been documented. Each of these hollow types has a specification sheet in Appendix 1 that also provides installation notes for clarity.

Branch End Hollows:

Branch End Hollows are carved in a branch with the entrance through the end of the branch or a stub on the end of the branch and the denning chamber within the branch. Trees suitable for branch end hollows are typically greater than 900mm in trunk diameter, are mature and have a broad spreading crown. Where possible, existing large stubs from past branch failures are utilised. Pruning of live wood to create the branch end opportunity is acceptable in some situations (refer to installation notes).

Branch Middle Hollows:

Branch Middle Hollows are carved in a branch with the entrance through the side of the branch and the denning chamber within the branch. Trees suitable for Branch Middle Hollows are typically greater than 900mm in trunk diameter, are mature and have a broad spreading crown of lateral large diameter branches (refer to installation notes).

Branch Stub Hollows:

Branch Stub Hollows are carved in a branch stub close to the branch union with the entrance through the end of the cut or broken branch and the denning chamber within the trunk of the tree. Trees suitable for branch stub hollows are typically greater than 600mm in trunk diameter, are early mature, and have a stem diameter of 400mm or greater at or above the minimum installation height (refer to installation notes).

Trunk Middle Hollows:

Trunk Middle Hollows are carved in a vertical trunk with the denning chamber below the entrance in the trunk. Trees suitable for Trunk Middle Hollows are typically greater than 600mm in trunk diameter, are early mature, and have a stem diameter of 400mm or greater at or above the minimum installation height (refer to installation notes).

Trunk Top Hollows:

Trunk Top Hollows are carved in a vertical trunk with the denning chamber below the entrance in the trunk. Trees suitable for Trunk Top Hollows are typically greater than 600mm in trunk diameter and have a history of past crown failure. They are early mature and have a stem diameter of 300mm or greater at the minimum installation height (refer to installation notes).

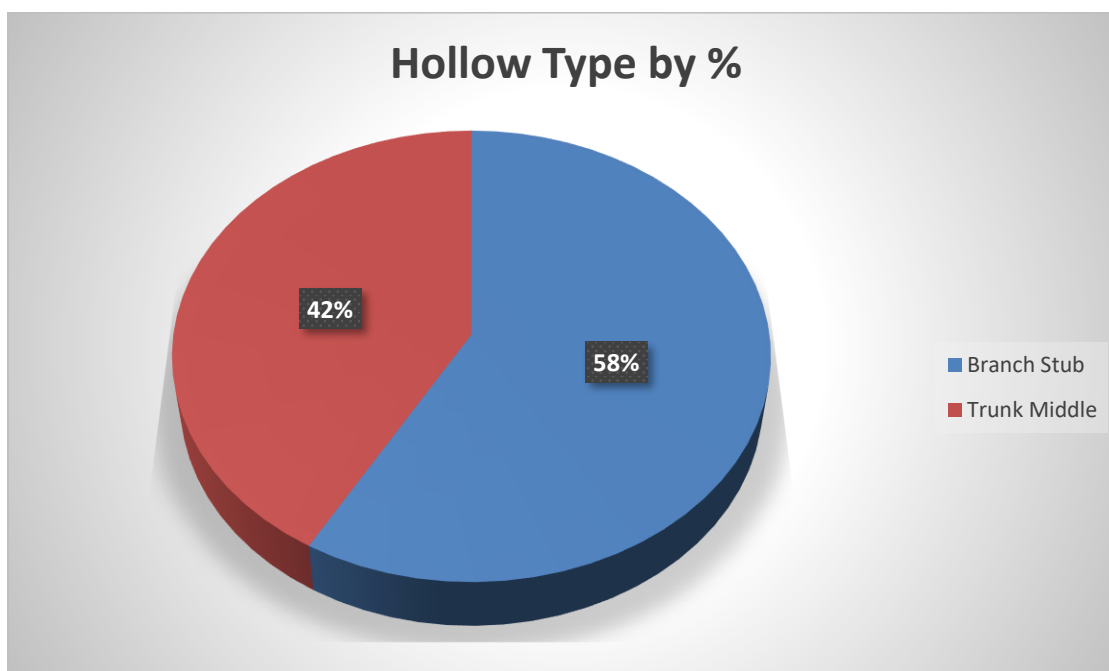
Artificial Hollow Opportunities at the Montauban site:

Artificial hollow opportunities across the entire site have been extrapolated from the sample plots collected. This has been achieved by determining the number of artificial hollows that can be created in trees greater than 500mm DBH in the sample plot of each vegetation group. This percentage is extrapolated across the site, with a size modifier for multiple hollows in larger trees to determine the total of AH opportunities.

Across the sample sites, only Branch Stub and Trunk Middle Hollows were identified. The limited variation could be associated with the trees in the sample area. However, a general review of both the data and the trees surrounding the sample plots indicated that the tree in the sample plots was a reasonable representation of the tree across the site.

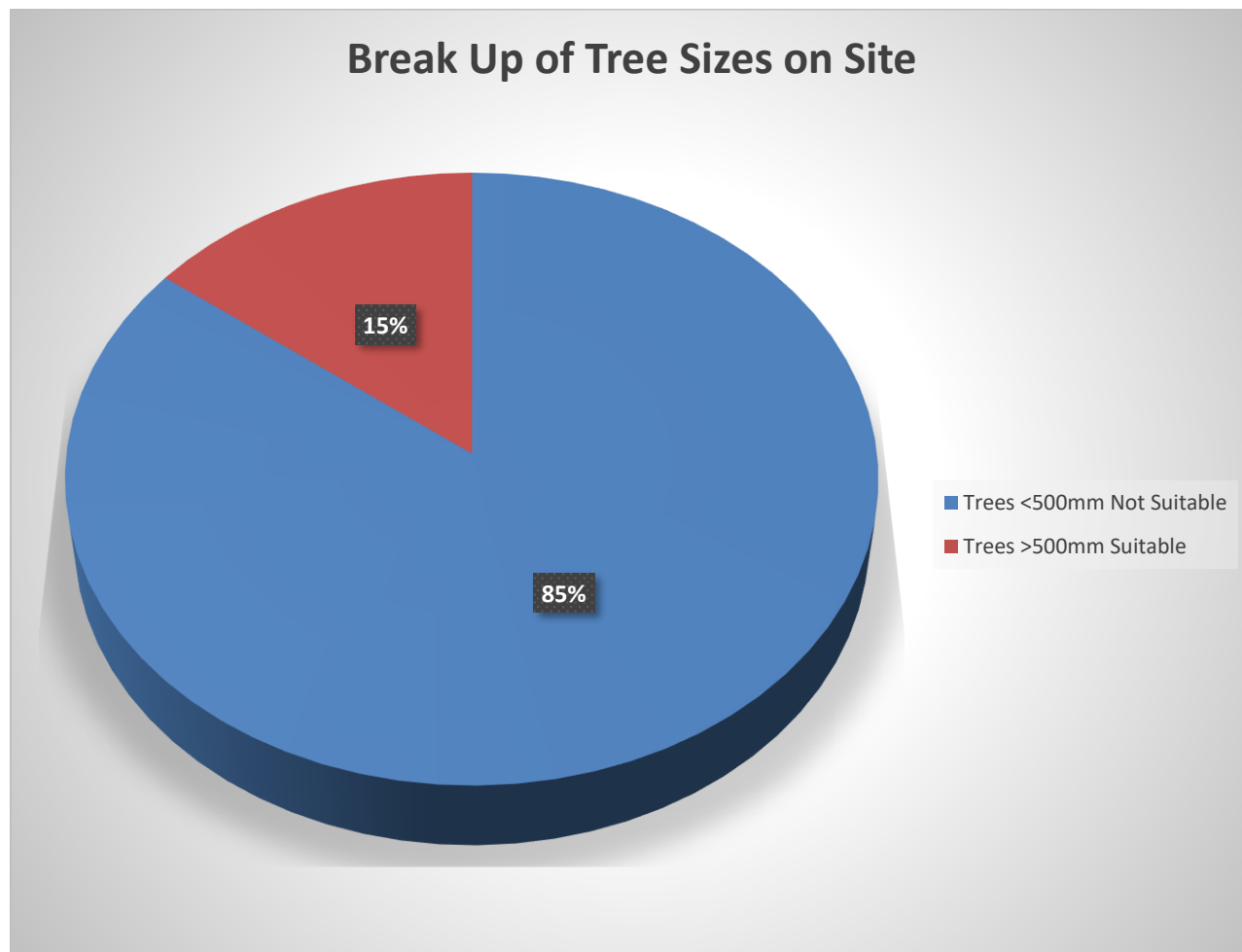
Hollow	Total Hollows	Hollow Type by %	Average Height (m)	Average Part Size (mm)	Average Hollow Depth (mm)	Average DBH (mm)	DBH 500 - 599mm	DBH 600 - 699mm	DBH 700 - 799mm	DBH 800 - 899mm	DBH >900mm
Branch End	0	0%	0.0	0	0	0	0	0	0	0	0
Branch Stub	7	58%	10.9	469	1143	603	2	5	0	0	0
Branch Middle	0	0%	0.0	0	0	0	0	0	0	0	0
Trunk Middle	5	42%	10.6	474	1020	652	1	2	2	0	0
Trunk Top	0	0%	0.0	0	0	0	0	0	0	0	0

Table 1: Summary of the Artificial Hollows opportunities confirmed within the sample plots and the suitable hollows in relation to the diameter of a tree with a 500mm Diameter at Breast Height.



Graph 3: Division, by percentage, of hollows by hollow type. This represents confirmed hollow opportunities within the sample plots.

Break Up of Tree Sizes on Site



Graph 3: Proportional suitability of trees onsite greater than 500mm DBH. Only 14% of the survey trees are considered to have the potential to accommodate Artificial Hollows.

Area Name	Number of Hollow Opportunities Found	Tree over 500mm in the Sample Area	Percentage Suitable	Total Tree of 500mm Mapped	Total Tree of >700mm Mapped	Total Tree of >900mm Mapped	Total Area (Ha)	Mapped Area (Ha)	Tree >500 DBH Per Ha	Tree >700 DBH Per Ha	Tree >900 DBH Per Ha	Extrapolated Hollow Opportunities
AU-1 Non Remnant	2	9	22%	117	31	12	224.41	224.41	0.52	0.14	0.05	60
AU-2 High Regrowth	4	9	44%	446	83	24	111.85	111.85	3.99	0.74	0.21	284
AU-2 Low Regrowth	1	3	33%	41	2	2	25.9	25.9	1.58	0.08	0.08	17
AU-3 Remnant	5	17	29%	158	16	3	179.29	42.88	3.68	0.37	0.07	218
	12	38		762			541					579

Table 2: Summary of the total number of trees on site and the suitable hollows in relation to the diameter of a tree with a 500mm Diameter at Breast Height and size modifier applied for trees greater than 700mm and 900mm DBH.

Applying the extrapolation of the AH opportunity to the sample plots to the total number of trees greater than 500mm in trunk diameter and of a suitable species in each Assessment Unit results in an estimated 579 Artificial Hollow Opportunities. In conducting the field assessments, the surrounding vegetation was considered to be consistent with the trees within the sample areas. Based on these observations, the extrapolated number can be considered a reasonable estimate of the number of hollows that can be achieved.

The primary reason for excluding trees from suitability is where the part above the minimum 8m height is insufficient to sustain a chamber meeting the requirements for Greater Gliders. However, in larger trees, multiple hollows can be achieved. A size modifier has been applied in Table 2 for trees greater than 700mm to achieve two hollows per tree and three hollows per tree for trees greater than 900mm DBH.

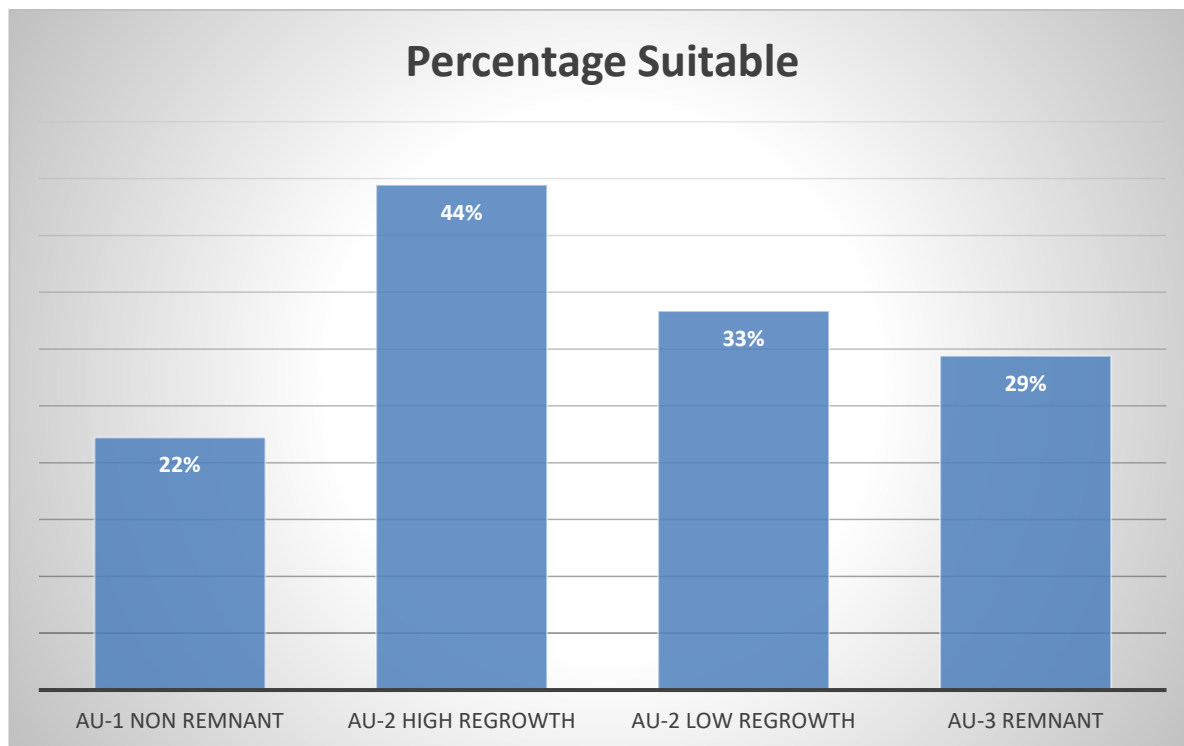
Extrapolated Hollow Opportunity Formula For AU-1, AU-2 Low Growth and High Growth:

$$(Total\ Tree\ >500mm\ DBH \times Percentage\ Suitable) + (Total\ Trees\ >699mm \times 80\%) + (Total\ Trees\ >899mm \times 80\%) = Extrapolated\ Hollow\ Opportunity$$

This formula takes into consideration the multiple hollows that can be achieved in larger trees and applies a 20% reduction as a confidence margin.

Extrapolated Hollow Opportunity Formula For AU-3:

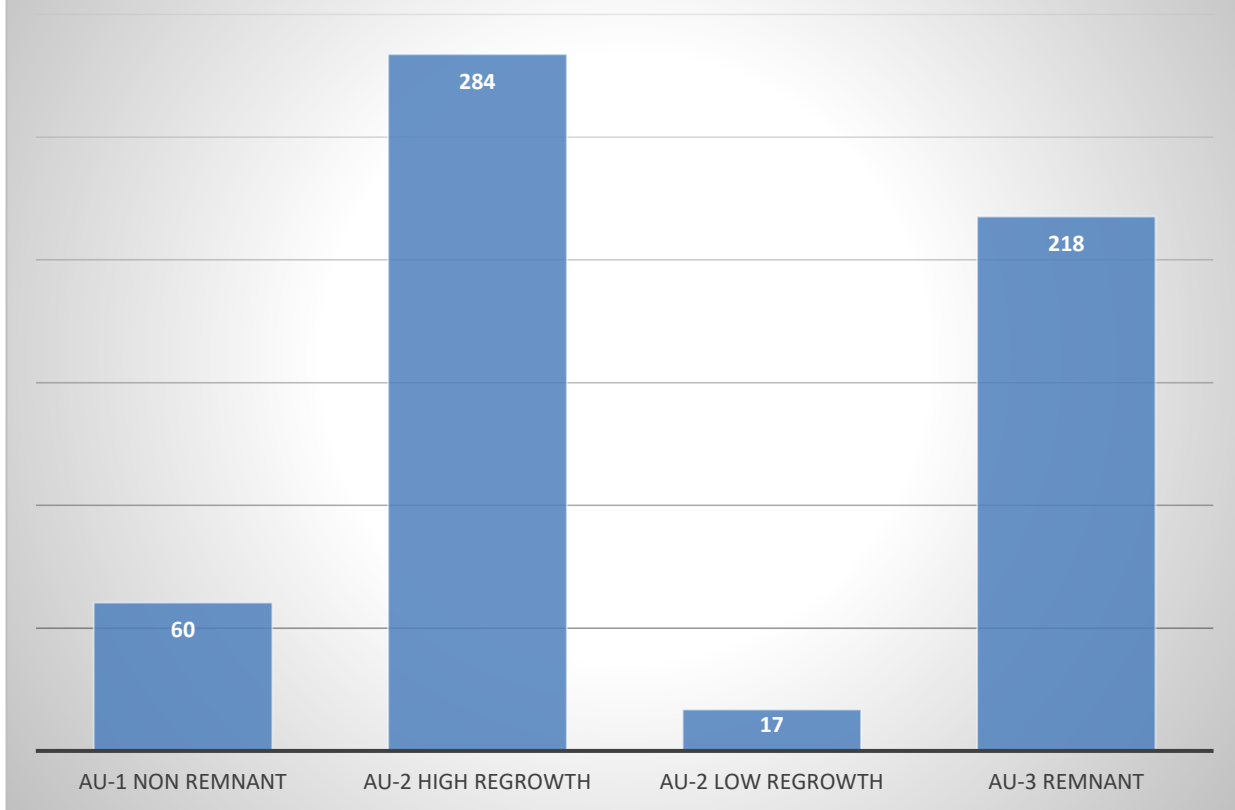
$$(Total\ Ha \times Trees\ >500mm\ DBH/Ha \times Percentage\ Suitable) + (Total\ Ha \times Trees\ >699mm\ DBH/Ha \times Percentage\ Suitable) + (Total\ Ha \times Trees\ >899mm\ DBH/Ha \times Percentage\ Suitable) = Extrapolated\ Hollow\ Opportunity^3$$



Graph 4: Artificial Hollow opportunities by percentage for each of the vegetation unit sample areas.

³ An alternative calculation was required for AU-3, as not all the trees we mapped. This removed the opportunity to apply the formula used in other assessment units.

Extrapolated Hollow Opportunities



Graph 5: Total extrapolated numbers of Artificial Hollows by vegetation units.

Conclusion:

The most significant opportunity for AH creation is in the AU-2 High Regrowth and the AU-3 Remnant vegetation areas. Within these areas, the vegetation contains the most significant number of larger trees. Relatively young and semi-mature trees populate the AU-1 and AU-2 Low Regrowth areas, and this age has a direct impact on the suitability of the trees for installing artificial hollows suitable for the Greater Glider.

Primarily, the size of the tree structure, at and above the minimum height of 8m from the ground, is not sufficient to achieve a chamber of the required specifications without compromising the tree structure or achieving the habitat thermal qualities required.

It is probable that, within 15–25 years, the number outlined in this report could be significantly increased as the current trees continue to grow and increase in size.

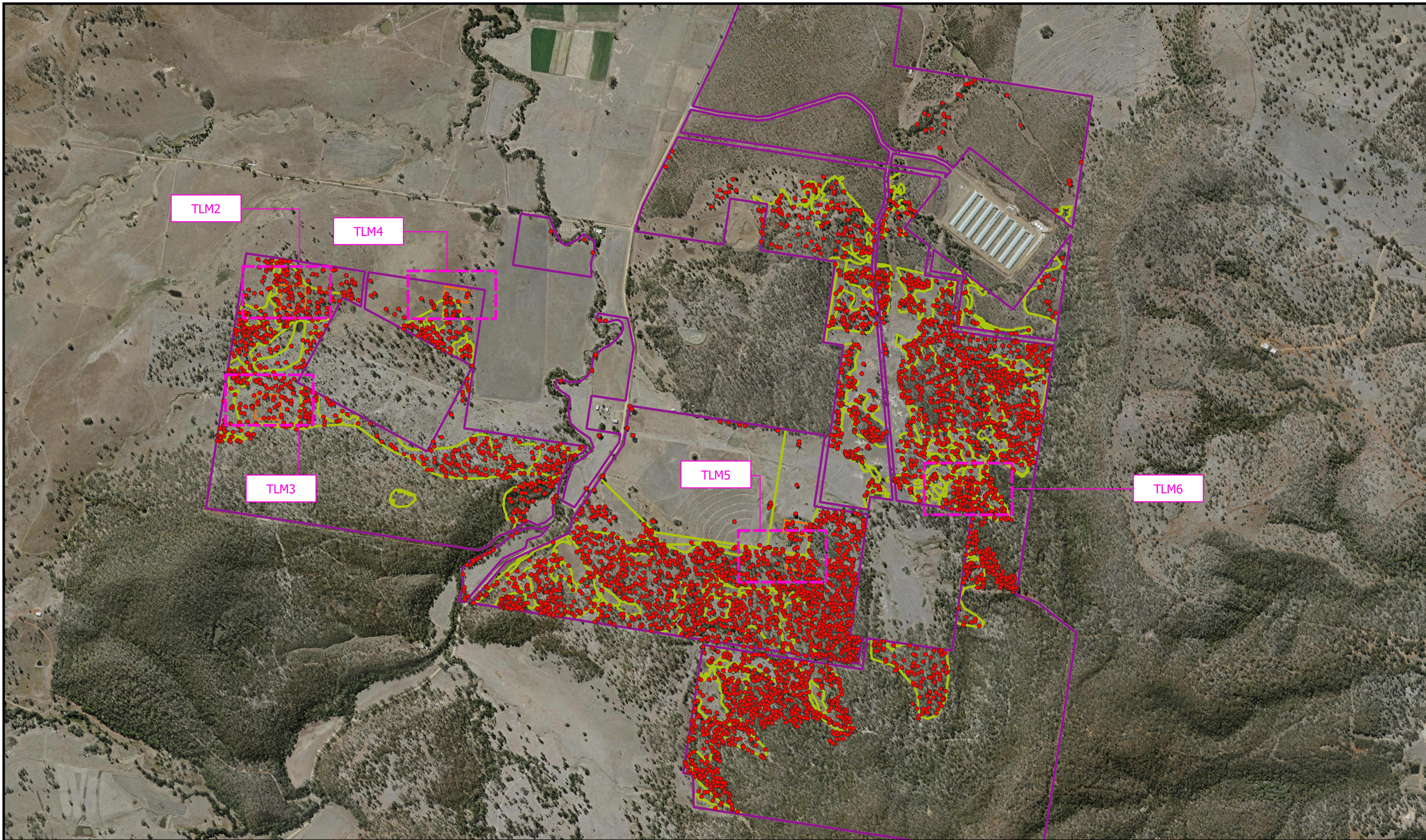


Appendix 1: Data Table – Artificial Hollow Opportunity



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Appendix 2: Tree Location Map



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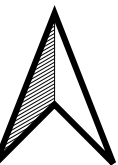
Arbor Australis Consulting
2/17 Bluestone Cct
Seventeen Mile Rocks
QLD 4073

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Background imagery is not to be used for measurements. It is for visualisation only.

TITLE
TREE LOCATION MAP
SITE:
MONTAUBAN
CLIENT:
SUDER HAVILL GROUP

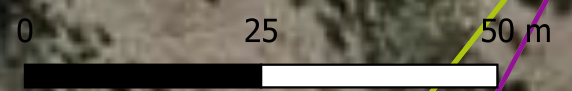
DATE:
OCTOBER 28, 2025
SHEET NUMBER:
TLM 1





LEGEND:

- TREES - GREATER THAN 500MM DBH
- HOLLOWES
- TREES
- 10559_New_Beith_Frasers_Offset_Boundary v G
- 10559_New_Beith_Frasers_Offset_AUs_v_G
- arborist sample sites frasers offset area



Arbor Australis Consulting
 2/17 Bluestone Cct
 Seventeen Mile Rocks
 QLD 4073

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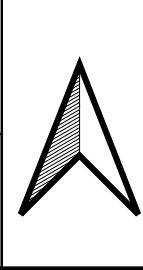
TITLE
TREE HOLLOWES LOCATION MAP 1

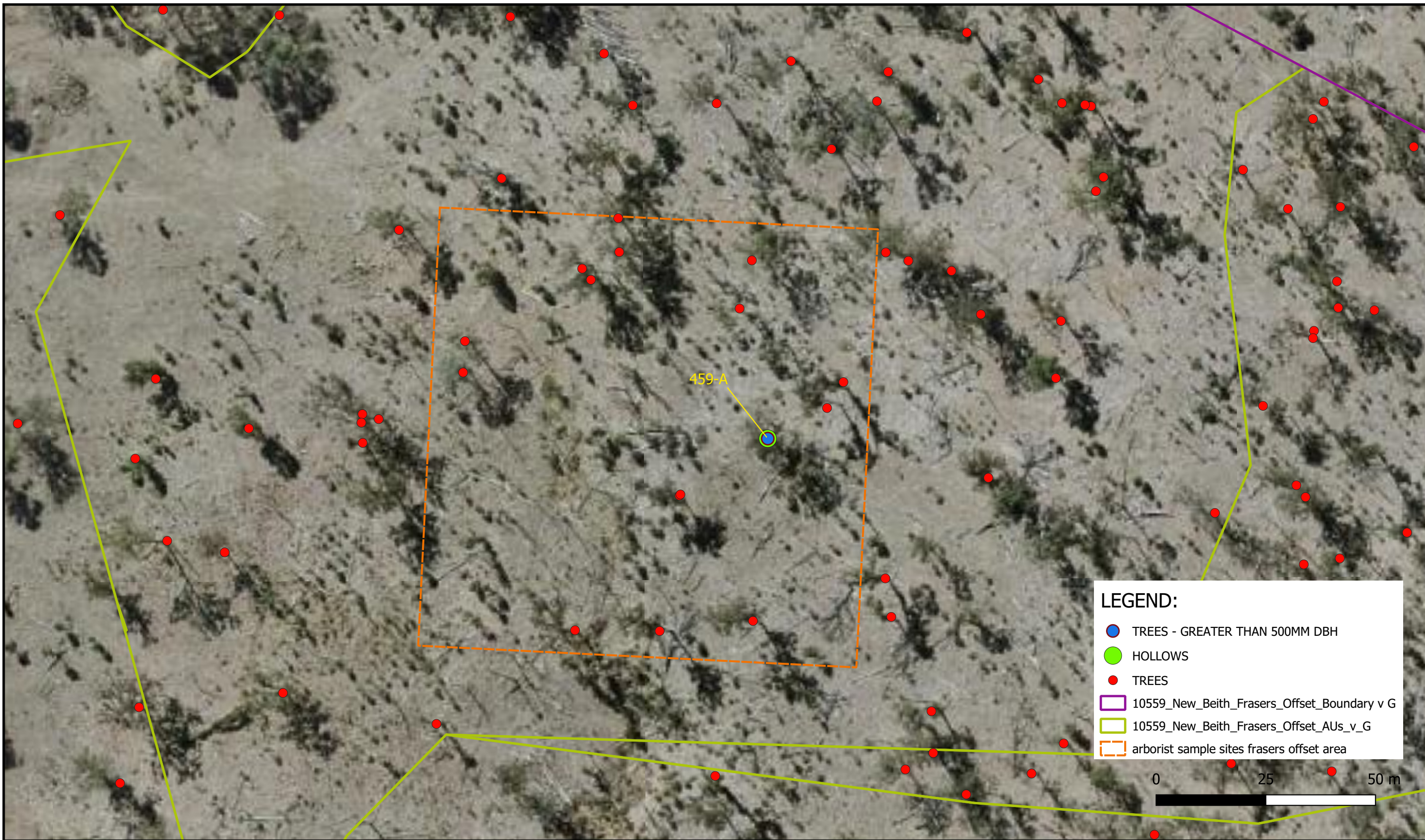
SITE:
MONTAUBAN

CLIENT:
SUDER HAVILL GROUP

DATE:
OCTOBER 29, 2025

SHEET NUMBER:
TLM 2





LEGEND:

- TREES - GREATER THAN 500MM DBH
- HOLLOWS
- TREES
- 10559_New_Beith_Frasers_Offset_Boundary v G
- 10559_New_Beith_Frasers_Offset_AUs_v_G
- arborist sample sites frasers offset area




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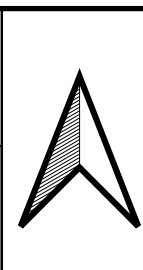
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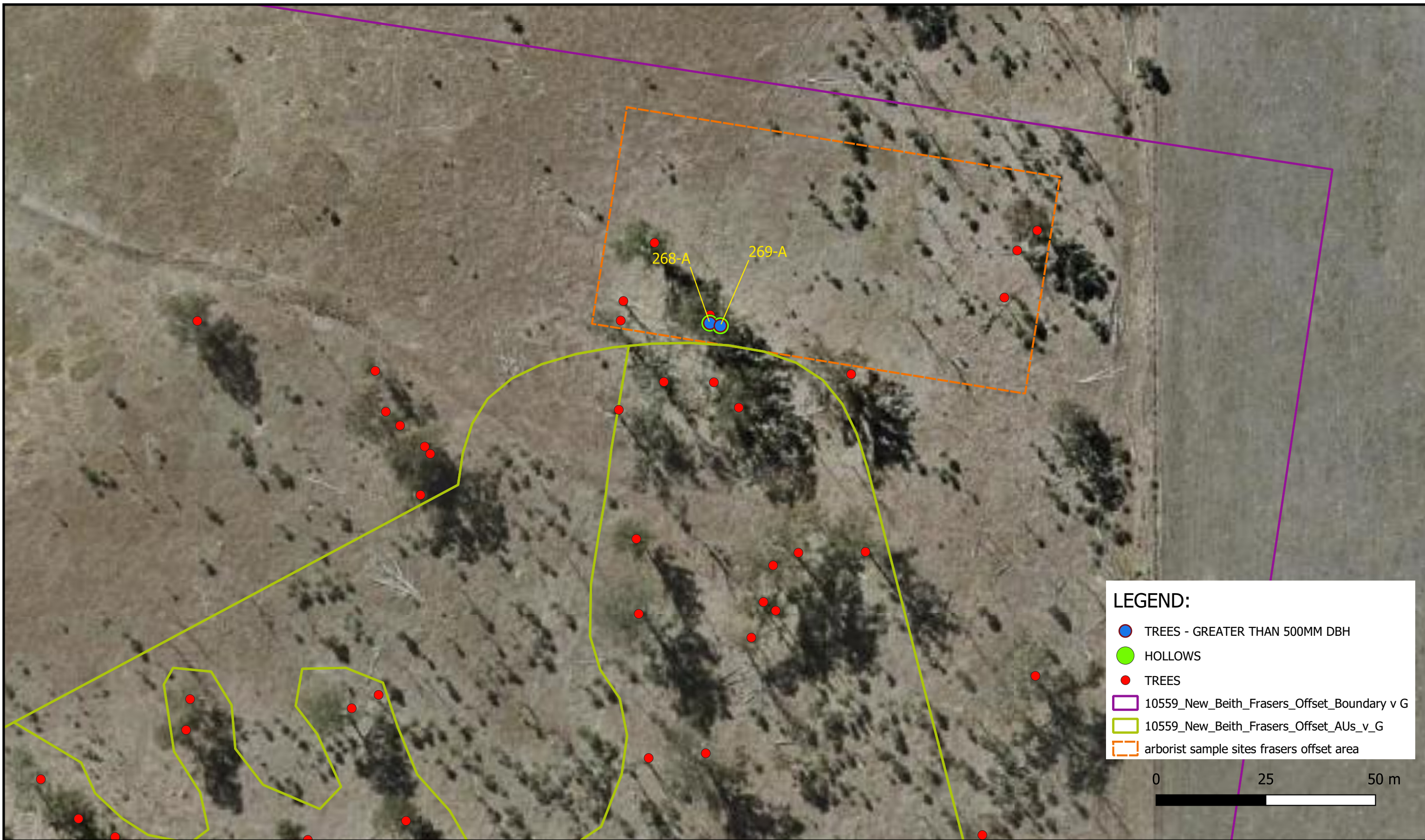
SITE:
MONTAUBAN

CLIENT:
SUDER HAVILL GROUP

DATE:
OCTOBER 29, 2025

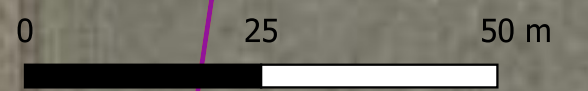
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TLM 3





LEGEND:

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- HOLLOWES
- TREES
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- 10559_New_Beith_Frasers_Offset_AUs_v_G
- arborist sample sites frasers offset area




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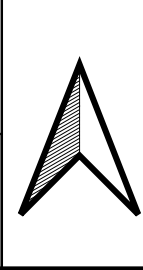
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SITE:
MONTAUBAN

CLIENT:
SUDER HAVILL GROUP

DATE:
OCTOBER 29, 2025

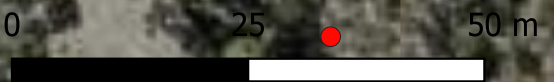
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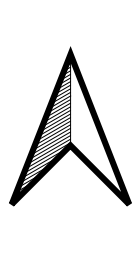
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SITE:
MONTAUBAN

CLIENT:
SUDER HAVILL GROUP

DATE:
OCTOBER 29, 2025

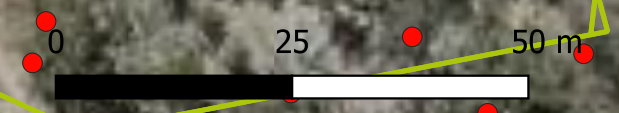
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LEGEND:

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- HOLLOWS
- TREES
- 10559_New_Beith_Frasers_Offset_Boundary v G
- 10559_New_Beith_Frasers_Offset_AUs_v_G
- arborist sample sites frasers offset area




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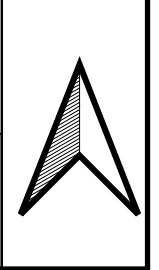
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SITE:
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CLIENT:
SUDER HAVILL GROUP

DATE:
OCTOBER 29, 2025

SHEET NUMBER:
TLM 6





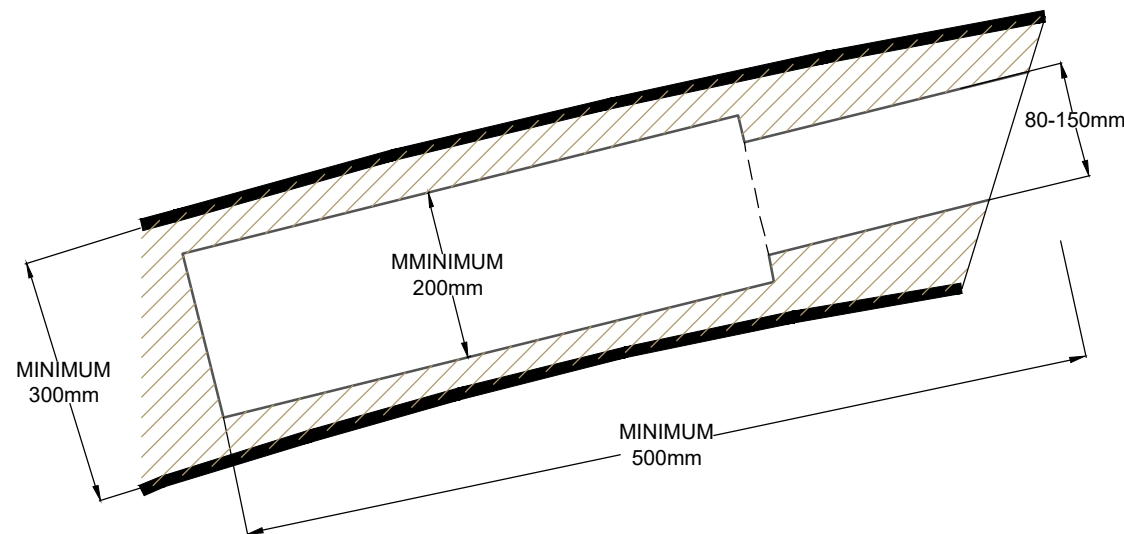
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Appendix 3: Artificial Hollow Specification Sheets

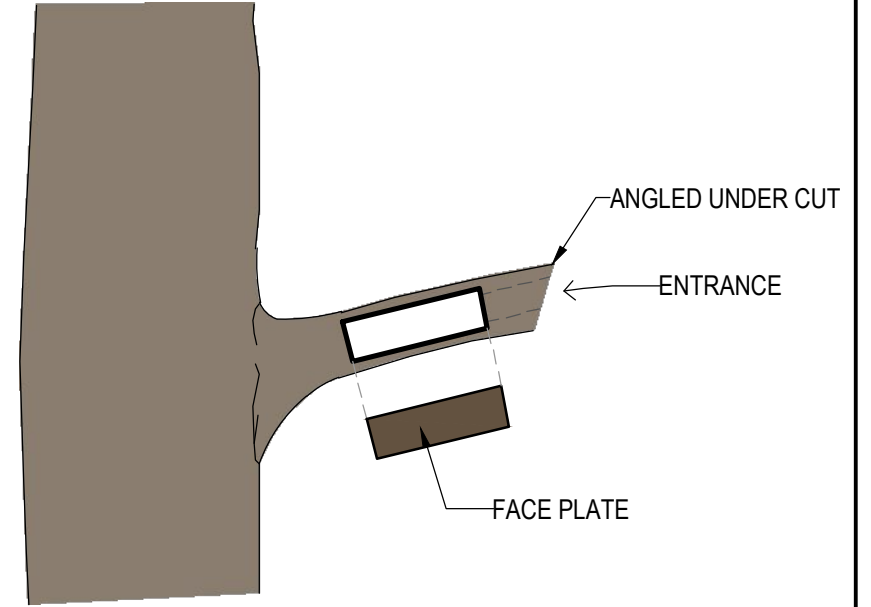
BRANCH END HOLLOW

DESCRIPTION

Branch End Hollows are carved in a branch with the entrance through the end of the branch or a stub extending outwards from the branch, and the denning chamber within the branch. Trees suitable for branch end hollows are typically greater than 900mm in trunk diameter, are mature and have a broad spreading crown. Where possible, existing large stubs from past branch failures are utilised. Pruning of live wood to create the branch end opportunity is acceptable in some situations (refer to installation notes).



BRANCH END SECTION



BLOW - UP ELEVATIONS

INSTALLATION NOTES

Hollow Location

- Minimum 8m above ground in a branch that is of greater pith angle than 45° from vertical.
- Old branch failure points to be utilised where possible.
- Pruning to generate a suitable branch end must not remove more than 5% of live crown foliage.

Opening

- Between 80mm and 150mm diameter when carved; however, if amending an existing hollow, the opening can be as large as 350mm diameter.
- Preferred hollow opening orientation is east and south.
- Hollow entrance should not face upward.
- Only one entrance per hollow.

Branch Size & Minimum Wall Thickness

- Minimum branch size should be 300mm diameter.
- Wood wall thickness of the hollow must not be less than by 50mm depth for thermal qualities. However, the wood wall thickness needs to consider the load above the hollow for the tree structure.
- The hollow creation should aim to remove no more than 55% of the sound wood structure in cross-section unless all load is removed from above the hollows.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)

- Between .5m (500mm) and 5m (5000mm)

Methodology

- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arbogrubb' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arbogrubb' to smooth out rough surfaces & shape hollow and entrance.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 50mm thick, and screw into place with stainless steel crews of sufficient securing length.

ISSUE	DESCRIPTION	DATE	DRAWN	AUTH.
A	HOLLOW SPECIFICATIONS	06/08/2025	DL	JY

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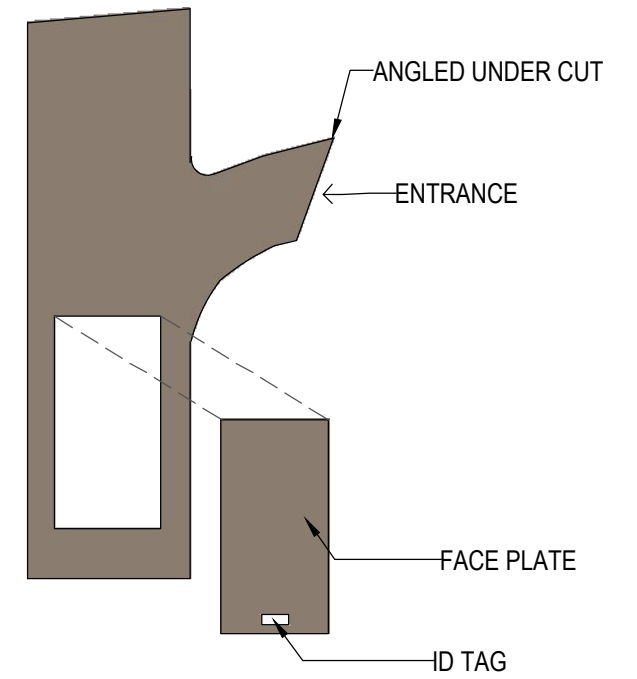
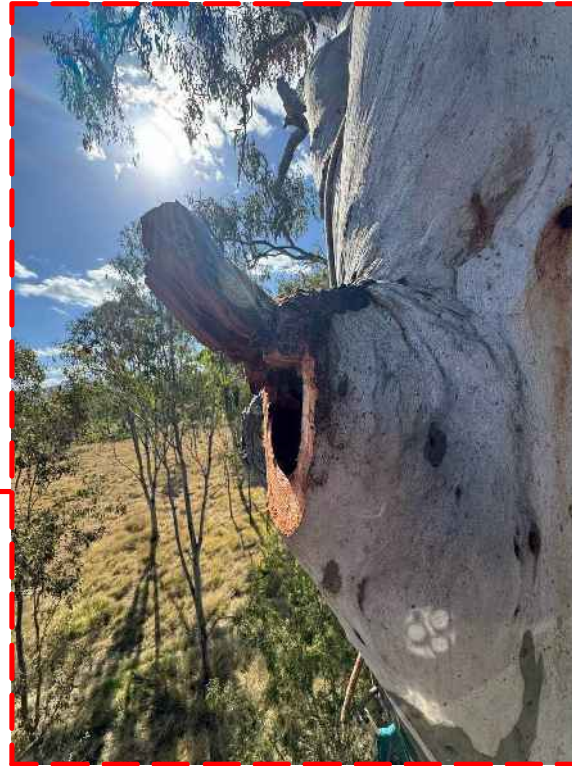
TITLE
BRANCH END HOLLOW

DRAWN DL	DATE 06/08/2025	AUTHORISED FOR ISSUE
DRAWING CHECK JY	DATE 06/08/2025	Jeremy Young
CLIENT SAUNDERS HAVILL GROUP	CONTACT	
ASSESSED BY JY	DATE AUG 2025	SCALE NTS
PROJECT NUMBER / SHEET 2025-059 SP1	ISSUE A	NTS A3

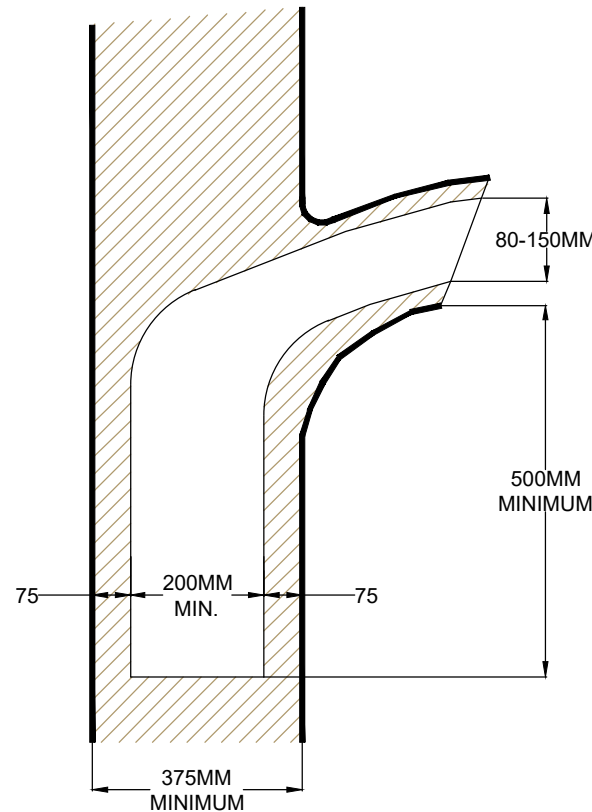
BRANCH STUB HOLLOW

DESCRIPTION

Branch Stub Hollows are carved in a branch stub close to the branch union with the entrance through the end of the cut or broken branch and the denning chamber within the trunk of the tree. Trees suitable for branch stub hollows are typically greater than 600mm in trunk diameter, are early mature, and have a stem diameter of 400mm or greater at or above the minimum installation height (refer to installation notes).



BLOW - UP ELEVATION



BRANCH STUB SECTION

INSTALLATION NOTES

Hollow Location

- Minimum 8m above ground in stub form of a first-order branch.
- Old branch failure points and existing deadwood branches of suitably sized diameter are to be utilised where possible.
- Pruning of live wood to generate a suitable branch end must not remove more than 5% of crown foliage.

Opening

- Between 80mm and 150mm diameter when carved; however, if improving an existing hollow, the opening can be as large as 350mm diameter.
- Preferred hollow opening orientation is east and south.
- Hollow entrance should not face upward.
- Only one entrance per hollow

Branch Size & Minimum Wall Thickness

- Minimum branch size should be 200mm diameter.
- Wood wall thickness must not be less than 50mm depth for thermal qualities. However, the wall thickness needs to consider the load above the hollow for the tree structure.
- The hollow creation should aim to remove no more than 55% of the sound wood structure in cross-section of the trunk.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)

- Between .5m (500mm) and 5m (5000mm)
- Hollow base plate floors may be required for existing internal cavities that are greater than 5m depth. Base plate floors must be secure and allow drainage.

Methodology

- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 50mm thick, and screw into place with stainless steel crews of sufficient securing length.

ISSUE	DESCRIPTION	DATE	DRAWN	AUTH.
A	HOLLOW SPECIFICATIONS	06/08/2025	DL	JY

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PROJECT	TITLE
MONTAUBAN 2025-059	BRANCH STUB HOLLOW

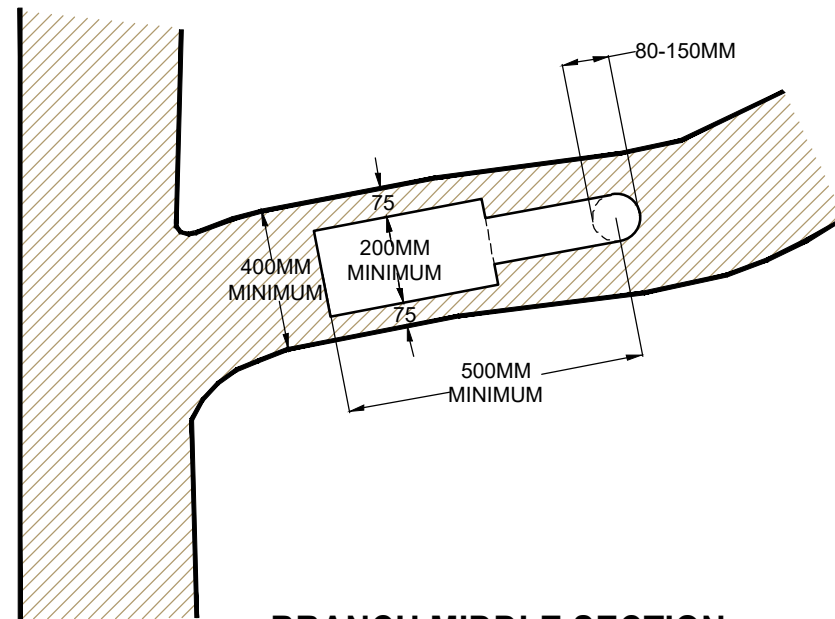
DRAWN	DATE	AUTHORISED FOR ISSUE
DL	06/08/2025	Jeremy Young
DRAWING CHECK	DATE	
JY	06/08/2025	
CLIENT	CONTACT	
SAUNDERS HAVILL GROUP		
ASSESSED BY	DATE	SCALE
JY	AUG 2025	NTS
PROJECT NUMBER / SHEET	ISSUE	
2025-059 SP2	A	

HOLLOW SPECIFICATION

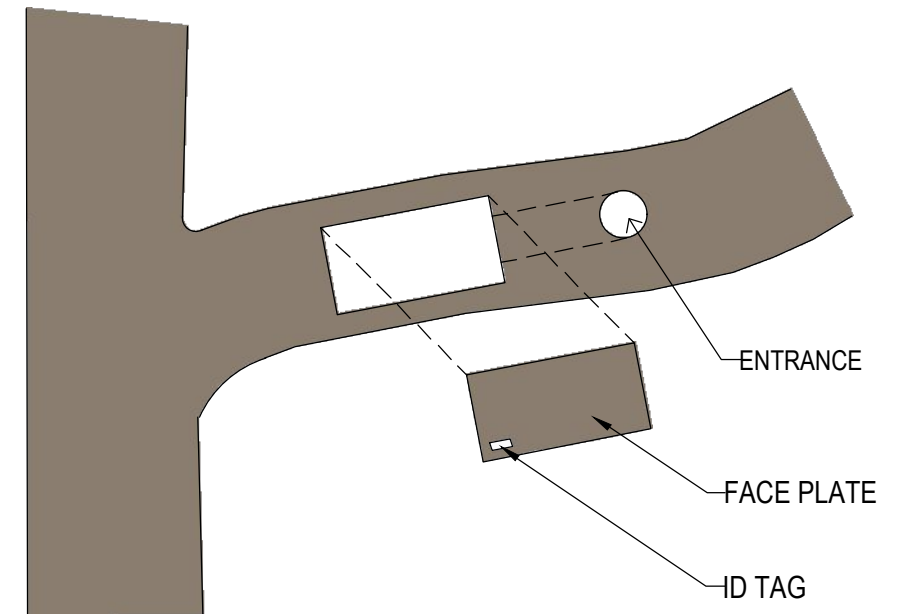
BRANCH MIDDLE HOLLOW

DESCRIPTION

Branch Middle Hollows are carved in a branch with the entrance through the side of the branch and the denning chamber within the branch. Trees suitable for Branch Middle Hollows are typically greater than 900mm in trunk diameter, are mature and have a broad spreading crown of lateral large diameter branches.



BRANCH MIDDLE SECTION



BLOW - UP ELEVATION

INSTALLATION NOTES

Hollow Location

- Minimum 8m above ground in a branch that is of greater pith angle than 45° from vertical.
- No pruning is required to carve a Branch Middle Hollow.

Opening

- Between 80mm and 150mm diameter when carved; however, if improving an existing hollow, the opening can be as large as 350mm diameter.
- Preferred hollow opening orientation is east and south on the horizontal plane.
- Hollow entrance should not face upward.
- Only one entrance per hollow.

Branch Size & Minimum Wall Thickness

- Minimum branch size should be 400mm diameter,
- Wood wall thickness must not be less than 50mm depth for thermal qualities. However, the wall thickness needs to consider the load above the hollow for the tree structure. Greater wood wall thickness is required on the upper side of the branch.
- The hollow creation should aim to remove no more than 55% of the sound wood structure in cross-section.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)

- Between .5m (500mm) and 5m (5000mm).

Methodology

- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 75mm thick, and screw into place with stainless steel crews of sufficient securing length.

ISSUE	DESCRIPTION	DATE	DRAWN	AUTH.
A	HOLLOW SPECIFICATIONS	06/08/2025	DL	JY

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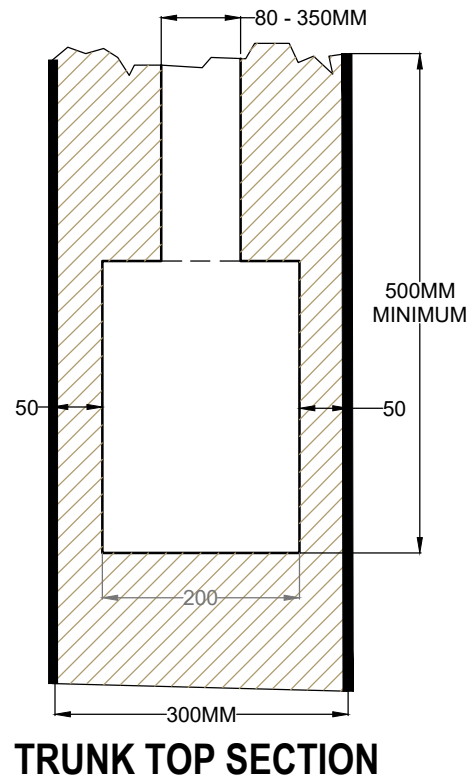
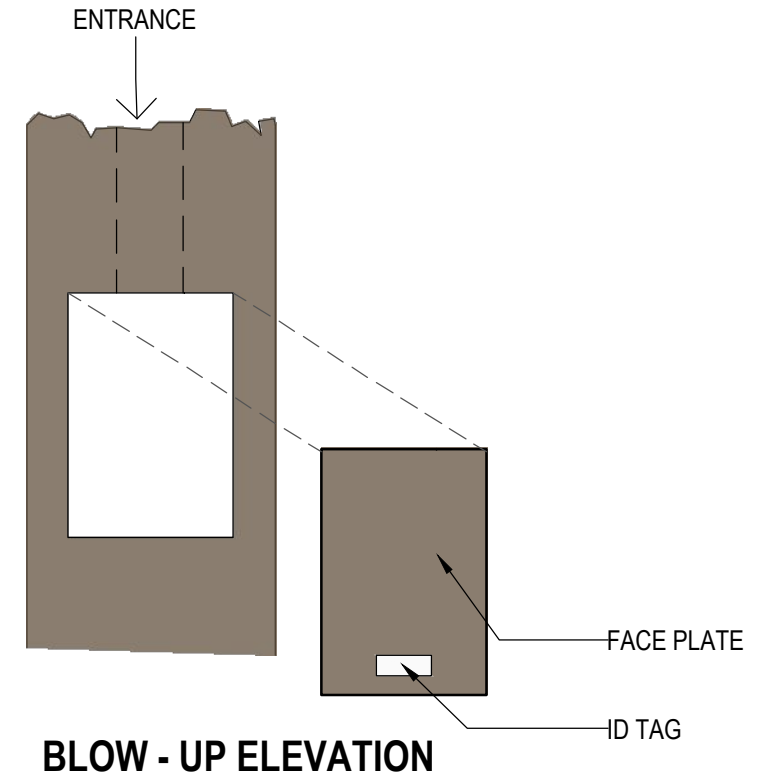
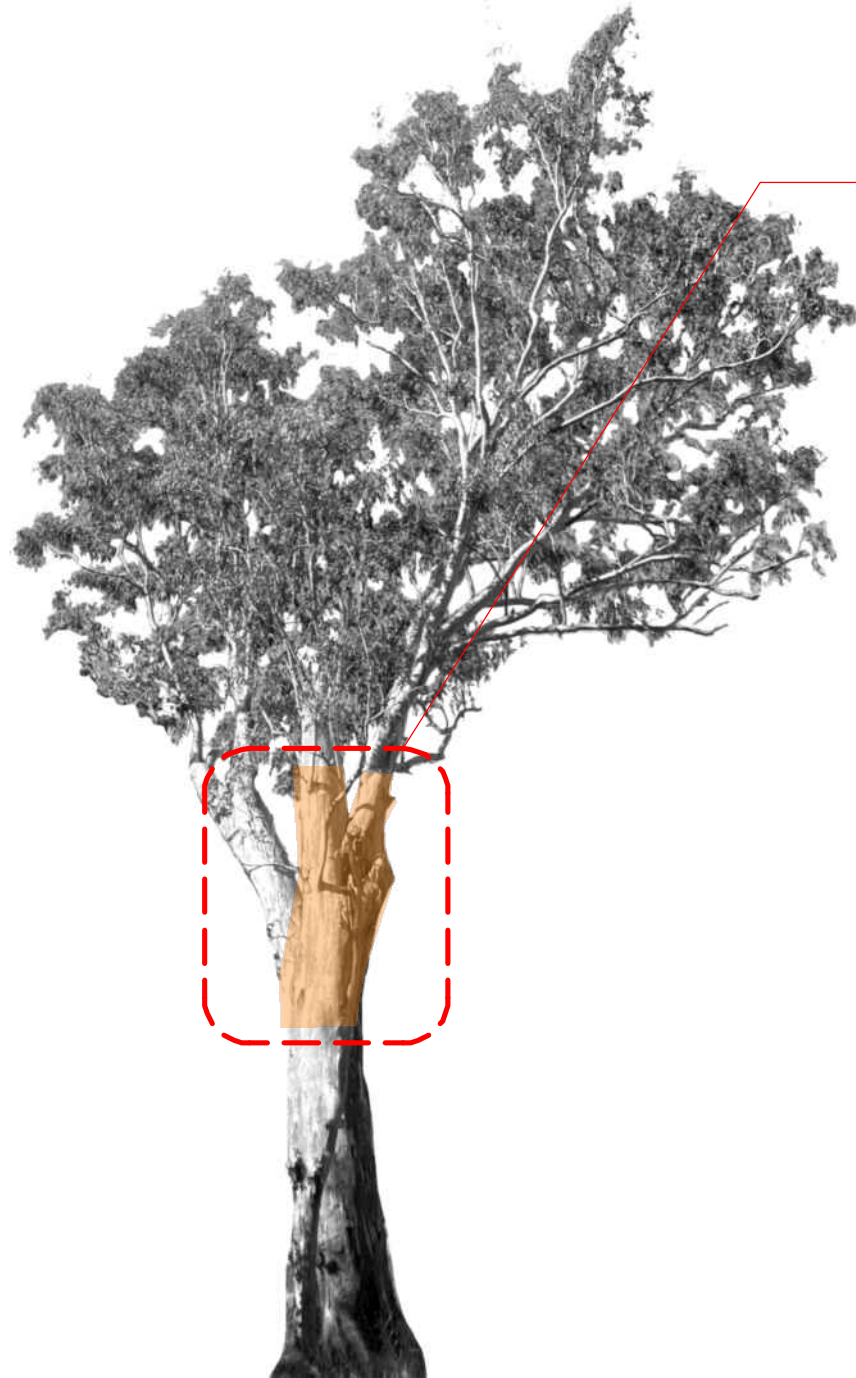
PROJECT	TITLE
MONTAUBAN 2025-059	BRANCH MIDDLE HOLLOW

DRAWN	DATE	AUTHORISED FOR ISSUE
DL	06/08/2025	Jeremy Young
DRAWING CHECK	DATE	
JY	06/08/2025	
CLIENT	CONTACT	
SAUNDERS HAVILL GROUP		
ASSESSED BY	DATE	SCALE
JY	AUG 2025	NTS
PROJECT NUMBER / SHEET	ISSUE	
2025-059 SP3	A	

TRUNK TOP HOLLOW

DESCRIPTION

Trunk Top Hollows are carved in a vertical trunk with the denning chamber below the entrance in the trunk. Trees suitable for Trunk Top Hollows are typically greater than 600mm in trunk diameter and have a history of past crown failure. They are early mature and have a stem diameter of 300mm or greater at or above the minimum installation height (refer to installation notes).



INSTALLATION NOTES

Hollow Location

- Minimum 8m above ground in a vertical trunk.
- Typically located where a past crown failure has occurred
- No crown pruning is required to carve a Trunk Top Hollow.

Opening

- Between 80mm and 150mm diameter when carved; however, if improving an existing hollow, the opening can be as large as 350mm diameter.
- Preferred hollow opening orientation is east and south.
- Only one entrance per hollow

Trunk Size & Minimum Wall Thickness

- Minimum truck size should be 300mm
- Wall thickness must be not less than 50mm for thermal qualities. Trunk Top Hollows do not need to consider the load above the hollow for the tree structure due to their position.
- The installation should aim to remove no more than 60% of the sound wood structure in cross-section.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)

- Between .5m (500mm) and 5m (5000mm)
- Hollow base plate floors may be required for existing internal cavities that are greater than 5m depth. Base plate floors must be secure and allow drainage.

Methodology

- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 50mm thick, and screw into place with stainless steel crews of sufficient securing length.

ISSUE A	DESCRIPTION HOLLOW SPECIFICATIONS	DATE 06/08/2025	DRAWN DL	AUTH. JY
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PROJECT MONTAUBAN 2025-059	TITLE TRUNK TOP HOLLOW
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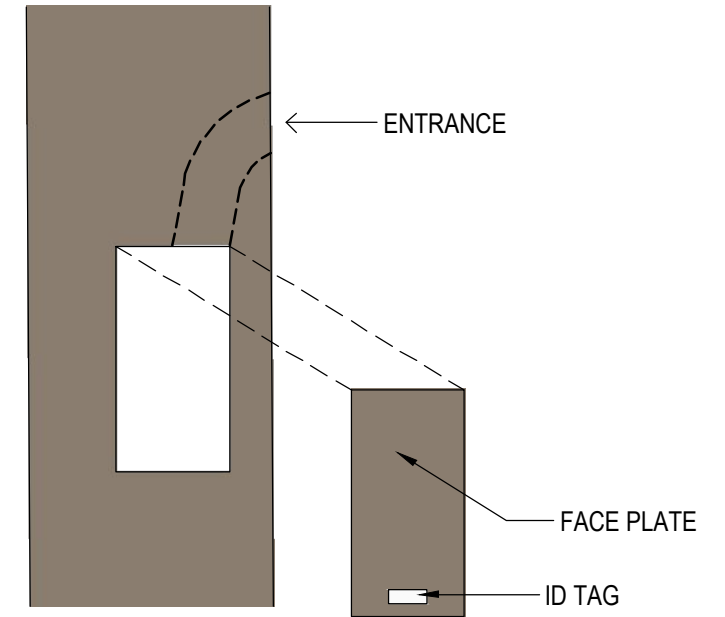
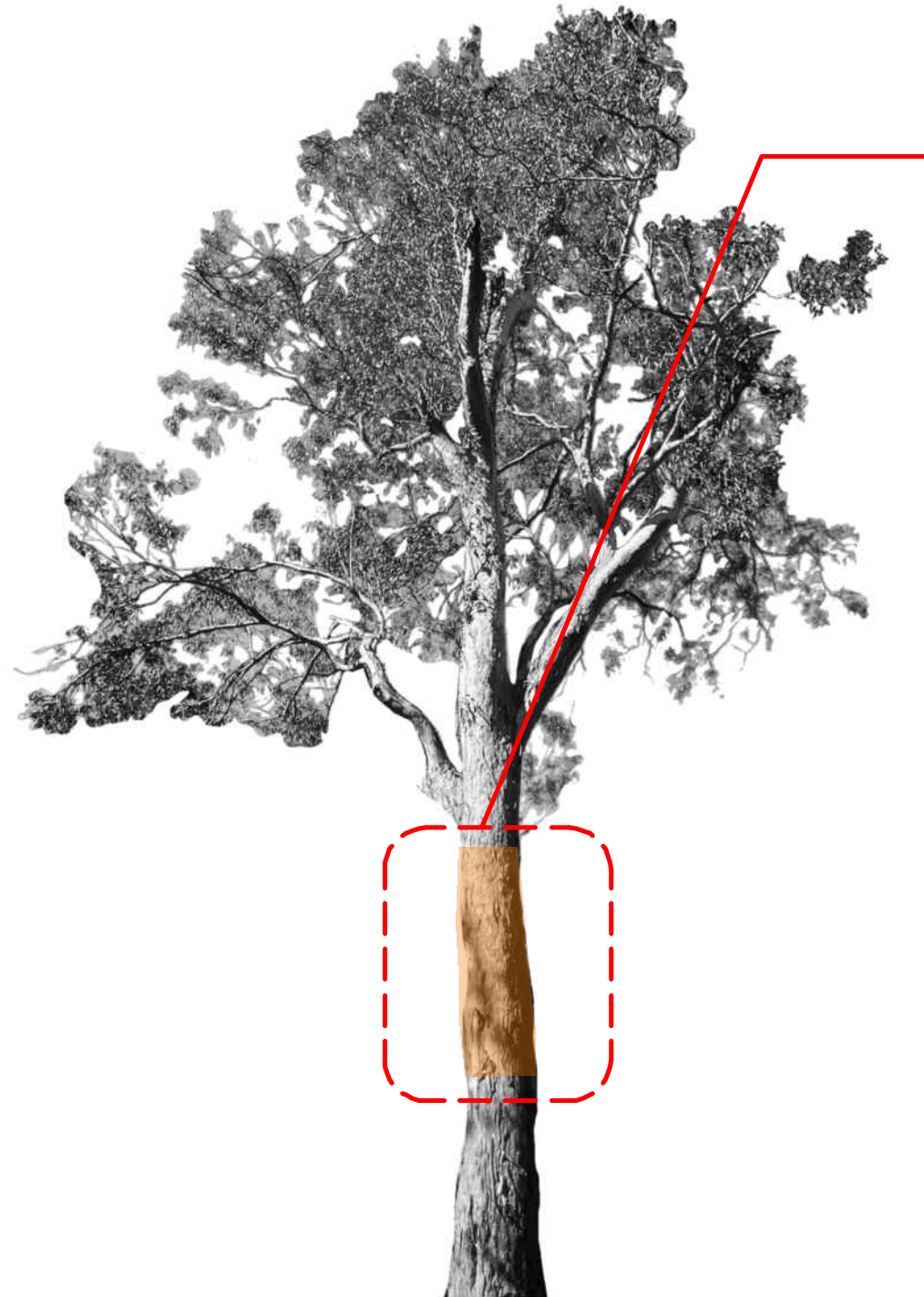
DRAWN DL	DATE 06/08/2025	AUTHORISED FOR ISSUE Jeremy Young
DRAWING CHECK JY	DATE 06/08/2025	
CLIENT SAUNDERS HAVILL GROUP	CONTACT	
ASSESSED BY JY	DATE AUG 2025	SCALE NTS
PROJECT NUMBER / SHEET 2025-059 SP4	ISSUE A	SCALE A3

HOLLOW SPECIFICATION

TRUNK MIDDLE HOLLOW

DESCRIPTION

Trunk Middle Hollows are carved in a vertical trunk with the denning chamber below the entrance in the trunk. Trees suitable for Trunk Middle Hollows are typically greater than 600mm in trunk diameter, are early mature, and have a stem diameter of 400mm or greater at or above the minimum installation height (refer to installation notes).



BLOW - UP ELEVATION

INSTALLATION NOTES

Hollow Location

- Minimum 8m above ground in a vertical trunk.
- No crown pruning is required to carve a Trunk Middle Hollow.

Opening

- Between 80mm and 150mm diameter when carved; however, if improving an existing hollow, the opening can be as large as 350mm diameter.
- Preferred hollow opening orientation is **east and south**.
- Only one entrance per hollow

Trunk Size & Minimum Wall Thickness

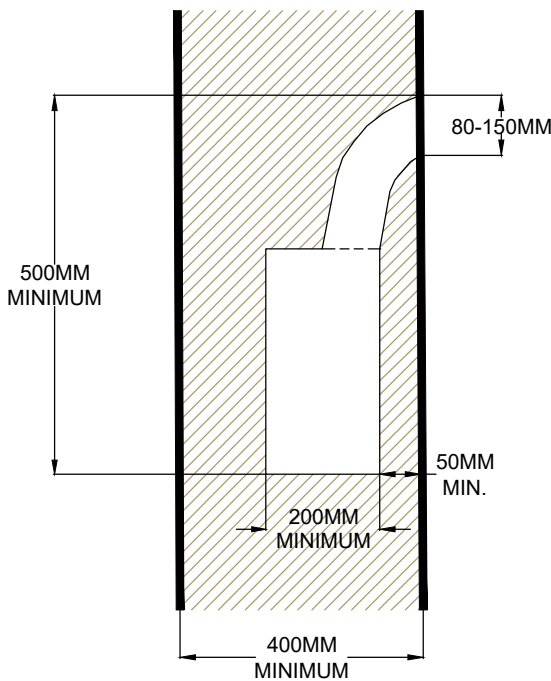
- Minimum trunk size should be 400mm diameter.
- Wood wall thickness must not be less than 50mm depth for thermal qualities. However, the wall thickness needs to consider the load above the hollow for the tree structure
- The installation should aim to remove no more than 55% of the sound wood structure in cross-section.

Hollow Chamber Depth (Bottom of the hollow opening to the bottom of the chamber)

- Between .5m (500mm) and 5m (5000mm)
- Hollow base plate floors may be required for existing internal cavities that are greater than 5m depth. Base plate floors must be secure and allow drainage.

Methodology

- To achieve the required hollow depths, surface face plates are to be cut out to provide access to internal wood for the creation of a suitable chamber. The face plate size is to be kept to a minimum.
- Chainsaw bore cuts are made and leveraged to fracture timber and remove bulk material.
- Bore and carve with a 'hollow hog/arborgrub' from the entrance points to form the denning chamber to achieve a connection of minimum suitable size.
- Use the 'hollow hog/arborgrub' to smooth out rough surfaces.
- Once the hollow dimension has been achieved, replace the face plate with a milled and seasoned hardwood board that is a minimum of 50mm thick, and screw into place with stainless steel crews of sufficient securing length.



TRUNK MIDDLE SECTION

ISSUE	DESCRIPTION	DATE	DRAWN	AUTH.
A	HOLLOW SPECIFICATIONS	06/08/2025	DL	JY

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PROJECT	TITLE
MONTAUBAN 2025-059	TRUNK MIDDLE HOLLOW

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JY	06/08/2025	
CLIENT	CONTACT	
SAUNDERS HAVILL GROUP		
ASSESSED BY	DATE	SCALE
JY	AUG 2025	NTS
PROJECT NUMBER / SHEET	ISSUE	
2025-059 SP5	A	

SCALE	NTS	DATE	ISSUE
			A

EXAMPLE ARTIFICIAL HOLLOW



ISSUE	DESCRIPTION	DATE	DRAWN	AUTH.
A	HOLLOW SPECIFICATIONS	06/08/2025	DL	JY

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**MONTAUBAN
2025-059**

TITLE
EXAMPLE ARTIFICIAL HOLLOW

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DL	06/08/2025	Jeremy Young <i>[Signature]</i>		
DRAWING CHECK	DATE	CONTACT		
JY	06/08/2025	SAUNDERS HAVILL GROUP		
ASSESSED BY	DATE	SCALE	NTS	ORIG. SIZE
JY	AUG 2025			A3
PROJECT NUMBER / SHEET	ISSUE			
2025-059 SP6	A			

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Author's Statement of Experience

Jeremy Young Principal Consulting Arborist

Experience

With 35+ years of experience in all aspects of the Arboricultural Industry, I can provide a well-rounded, experienced, and educated approach to arboricultural-related issues in most environments. A commitment to continual professional development has ensured I can provide up-to-date information that will add value and resolve tree issues for most sites.

Memberships

Arboriculture Australia (AA)	Approved Consultant
Arboricultural Association UK (AAUK)	Member
Queensland Arboricultural Association (QAA)	Approved Consultant
International Society of Arboriculture (ISA)	Member

Educational History:

2024 BSc. Hons. Arboriculture & Urban Forestry, First Class (AQF Level 8)
2014 Diploma Arboriculture Upgrade (AQF Level 5 ACH 50510)
2004 Certified Arborist AU 0011-A
2004 Diploma Horticulture (Arb) (AQF 5)
2004 Advanced Diploma of Horticulture (Arb) (AQF level 6)
2003 Timber Pest Certificate
2001 Certificate II Pest control
2001 Certificate IV Work Site Assessor
1992 Certificate of Arboriculture Merrist Wood UK
Various OH&S operational tickets
CPD: Ongoing attendance of National Arboricultural Conferences and training courses.

Licences and Certifications

Australian Arborist Industry Licence AL1204
ISA Certified Arborist AU-0011A
Quantified Tree Risk Assessment (QTRA)
Tree Risk Assessment Qualification (TRAQ)
Cert IV in Workplace Trainer
Timber Pest Inspector
Construction Safety Blue / White Card

