ROSEVALE OFFSET MANAGEMENT PLAN

(EPBC2021/9005)

RESIDENTIAL DEVELOPMENT – BARRAMS ROAD, RIPLEY

DECEMBER 2024

[VERSION 4.2 - OMP]

Montauban Environmental Offsets

VERSION NUMBER AND DATE	PERSON RESPONSIBLE
VERSION 1.1 – OCTOBER 2021	CS & MG
VERSION 2.1 – MAY 2022 (OMP COVERSION)	GT / CS
VERSION 3.1 – JULY 2022 (OMP AMENDMENTS)	GT / CS
VERSION 4.1 – JANUARY 2024 (OMP AMENDMENTS)	MD / AW
VERSION 4.2 – DECEMBER 2024 (OMP AMENDMENTS)	AW

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ACRONYMS AND ABBREVIATIONS

ACR	Annual Compliance Report
AU	Assessment Unit
DAWE	(Former) Department of Agriculture, Water and the Environment (Commonwealth)
DCCEEW	Department of Climate Change, Energy and the environment and Water (Commonwealth)
DEHP	Department of Heritage and Protection (Qld)
DES	Department of Environment and Science (Qld)
DILGP	Department of Infrastructure, Local Government and Planning (Qld)
DoEE	(Former) Department of Environment and Energy (Commonwealth)
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
EDL	Ecologically Dominant Layer
EOP	EPBC Act Environmental Offset Policy (2012)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999* (Commonwealth)
ha	Hectare
KHA	Koala Habitat Area
km	Kilometres
LGA	Local Government Area
MEO	Montauban Environmental Offsets
m	Meter
mm	Millimetre
MNES	Matters of National Environmental Signficance
MSES	Matters of State Environmental Significance
NJKHT	Non-juvenile Koala Habitat Tree
OAAR	Offset Area Annual Report
OMP	Revised Offset Management Plan, version 4.2, dated December 2024
PA	*Planning Act 2016* (Qld)
PR	*Planning Regulation 2017* (Qld)
RAI	Relative Abundance Index
ROA 1	Rosevale Offset Area 1
RE	Regional Ecosystem
RVPDA	Ripley Valley Priority Development Area
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
V-DEC	Voluntary Declaration
VMA	*Vegetation Management Act 1999* (Qld)
WONS	Weeds of National Significance

INTRODUCTION

This document is the Offset Management Plan (OMP) for Montauban Environmental Offsets (MEO) Rosevale Offset Area 1 (ROA 1), located at Tarome Road, Tarome in South East Queensland. This version of the OMP has been specifically prepared to respond to the then Commonwealth Government's Department of Agriculture, Water and the Environment (DAWE) (now Department of Climate Change, Energy, the Environment and Water, DCCEEW) comments as schedule in the Preliminary Documentation package prepared for EPBC 2021/9005, located at Barrams Road, Ripley Valley Priority Development Area (Dept comments received January 27, 2022). The offset to be provided at ROA 1 is for impacts on habitat defined as critical for the koala species. As part of the Preliminary Documentation lodgement MEO provided an Offset Strategy for consideration and approval of the 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 proponent's approval conditions. This revised *Rosevale Offset Management Plan, version 4.2, dated December 2024* (OMP) is generally prepared in accordance with the *EPBC Act – Environmental Offset Policy* (October 2012).

The Department should 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 Matters of National Environmental Significance (MNES) offsets of which EPBC 2021/9005 will included 17 ha. The offset area utilised for EPBC2021/9005 is herein referred to as Rosevale Offset Area 1 (ROA 1). This small offset will combine with a number of other much larger proposals and benefit from the much larger raft of environmental protections and conservation initiatives proposed at the Rosevale site.

This revised *Rosevale Offset Management Plan, version 4.2, dated December 2024* outlines the existing site values for the 17 ha ROA 1. This OMP is provide 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 should be read in-conjunction with the Preliminary Documentation prepared by the Saunders Havill Group on behalf of APD Projects Pty Ltd.

PURPOSE OF THE MANAGEMENT PLAN

The Rosevale Offset Area 1 (ROA 1) has been selected and designed to compensate for 100% of the Barrams Road, Ripley Project's significant impact on Koala. The offset proposal is a direct land-based solution which consists entirely of establishment of new habitat.

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

- Provide details and timing on the legally binding mechanism to secure the ROA 1 values at the Offset property;
- Provide baseline values for a range of key habitat quality indicators, pest abundance and weed extent in the offset ROA 1 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 Koala 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).

OFFSET MANAGEMENT PLAN LIMITATIONS

This document is a revised 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. The assessment of values for Risk of Loss and Quality are included and justified within the technical information provided in the Preliminary Documentation prepared by Saunders Havill Group (2022). 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 the following entities retain key responsibilities for implementation of this OMP:

APD Projects (Project Proponent)

APD Projects Pty Ltd are the owner and operational developer of the Barrams Road 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 delivering of EPBC compliant offsets.
- Fund all management actions / tasks as listed in the approved OMP at the Rosevale offset property.
- Report on the EPBC approval in Annual Compliance Reports (ACRs) 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 to undertaken specified tasks within the ROA 1.
- Corrective actions for any non-compliance activities.
- Stakeholder relationships – Adjoining grazing operations and Scenic Rim Regional Council.
- Review, Amendment and Adaptive Management changes of the approved OMP over the life of the offset.
- Provision of Offset Area Annual Reports (OAARs) for inclusion in ACRs.

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 Zone(s). 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 (V-DEC) with the Queensland Government.
- Audit offset reports against approval conditions as part of the Barrams Road Project Annual Compliance Reports

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) Guy DOUGLAS

Organisation (please print) Montauban Environmental Offsets

Date 03 / 12 / 2024

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;

performing a duty or carrying out a function under this Act or the regulations; and

(c) 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 1 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 V-DEC 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.

CONDITIONS OF APPROVAL – BASELINE SURVEYS

As part of the conditions of approval for EPBC 2021/9005, baseline surveys to determine weed extent and feral animal abundance within the Rosevale Offset Area 1 are required in Year 1 as stated below:

> *Pest and Weed Management*
>
> *8. During **Year 1**, a **suitably qualified field ecologist** must complete baseline surveys of the **Rosevale Offset Area** in accordance with a scientifically valid, robust and repeatable methodology, to determine:*
>
> *a. the **extent of weed cover**, and*
> *b. the **seasonal** abundance of **feral animals**.*

*9. Within three months of completion of the baseline surveys required under condition 8, and in any case no later than 15 months after the date of this approval, the approval holder must submit to the **department** for the **Minister**'s approval a version of the **Rosevale Offset Management Plan**, revised to include at a minimum:*

a. the methods, dates and results of the baseline surveys required under condition 8,
b. details of how the outcomes specified under condition 8 will be achieved,
*c. a program of monitoring, and reporting progress against, performance and completion criteria in respect of achieving the ecological outcomes specified in the **Rosevale Offset Management Plan**, and*
*d. Measures to provide fire management regimes appropriate for the **Koala**.*

This report is the revised Rosevale Offset Management Plan which addresses conditions 8a, 8b and 9a through including the details and results of the baseline surveys for pest and weed management within the Rosevale Offset Area 1.

CONSERVATION BENEFITS OF THE ROSEVALE OFFSET PROPERTY

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 and 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 seed harvest and 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 uses. 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.

LANDSCAPE CONTEXT

The Rosevale offset property is located approximately 41km from the Barrams Road Project, occurring within the suburb of Ripley where MNES habitat impacts are occurring. Importantly both the impact and offset property occur within the same Interim Biogreographic Sub Region (SEQ 02 Moreton Basin Sub-region) as sought in draft Updated Offset Guideline material (**Plan 1.1**). The sites are also located within the same South East Queensland bioregion (SEQ Bioregion 12) established and mapped by the Queensland Government. Furthermore, both the impact and offset property are located within the same sub-region of Bioregion 12 mapped under the South East Queensland Biodiversity Planning documents (**Plan 1.2**). 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 with areas proposed for offset straddling a mapped Regionally Significant Riparian Corridor, centred on Bremer River (**Plan 1.3 & Plan 1.4**).

The southern allotments of the offset property falls 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)* (**Plan 1.5**). 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 Border Range National Park.

REGIONAL AND SITE CONTEXT

Locally the Rosevale offset property builds on a large cluster of vegetation mapped as 'Essential Habitat' for the Koala species by the Queensland Government (**Plan 2.1**). The mapping of vegetated strands and fragments within the Rosevale offset property and surrounding the offset property strongly indicates that protected and created habitat through this project will ultimately also from part of the essential habitat network for the koala species. Where vegetation does occur in on the offset property it is mapped as Core Koala Bushland under the Queensland Governments *South East Queensland Koala Conservation Strategy – 2020-2025* (DES, 2020) (**Plan 2.2**). The unique characteristics of soil, land zone, topography, elevation and geographical region show 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* (SRRC, 2015) the offset property contains a mix of areas mapped as 'Core Nodes' and 'Landscape Linkage' areas. The Rosevale offset property will help link key stepping-stone nodes to the very large Border Range National Park (**Plan 2.3**).

On the site, vegetated areas contain a dominant mix of locally important koala tree species as listed in Table 35 of the Australian National University *A review of Koala Habitat Assessment Criteria and Methods* (Youngentob et al. 2021) (8.17 South East QLD – Table 35 – Page 58). A combination of existing koala records shown in WildNet and the Atlas of Living Australia (**Plan 3.1 & Plan 3.2**), combined with consistent evidence of koala usage via SAT surveys and the actually recording of the species on trees at the offset property provide strong confidence towards the future role the offset will play for the Koala Species. Pre-clear mapping (**Plan 3.3**) and actual on-site vegetation communities show the Rosevale Offset contains a broad distribution of the following regional ecosystem types (Code plus Dominant Species):

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*

Plan 1.1 Interim Biographical Regionalisation of Australia (IBRA) -SEQ02 – Moreton Basin Sub-Region

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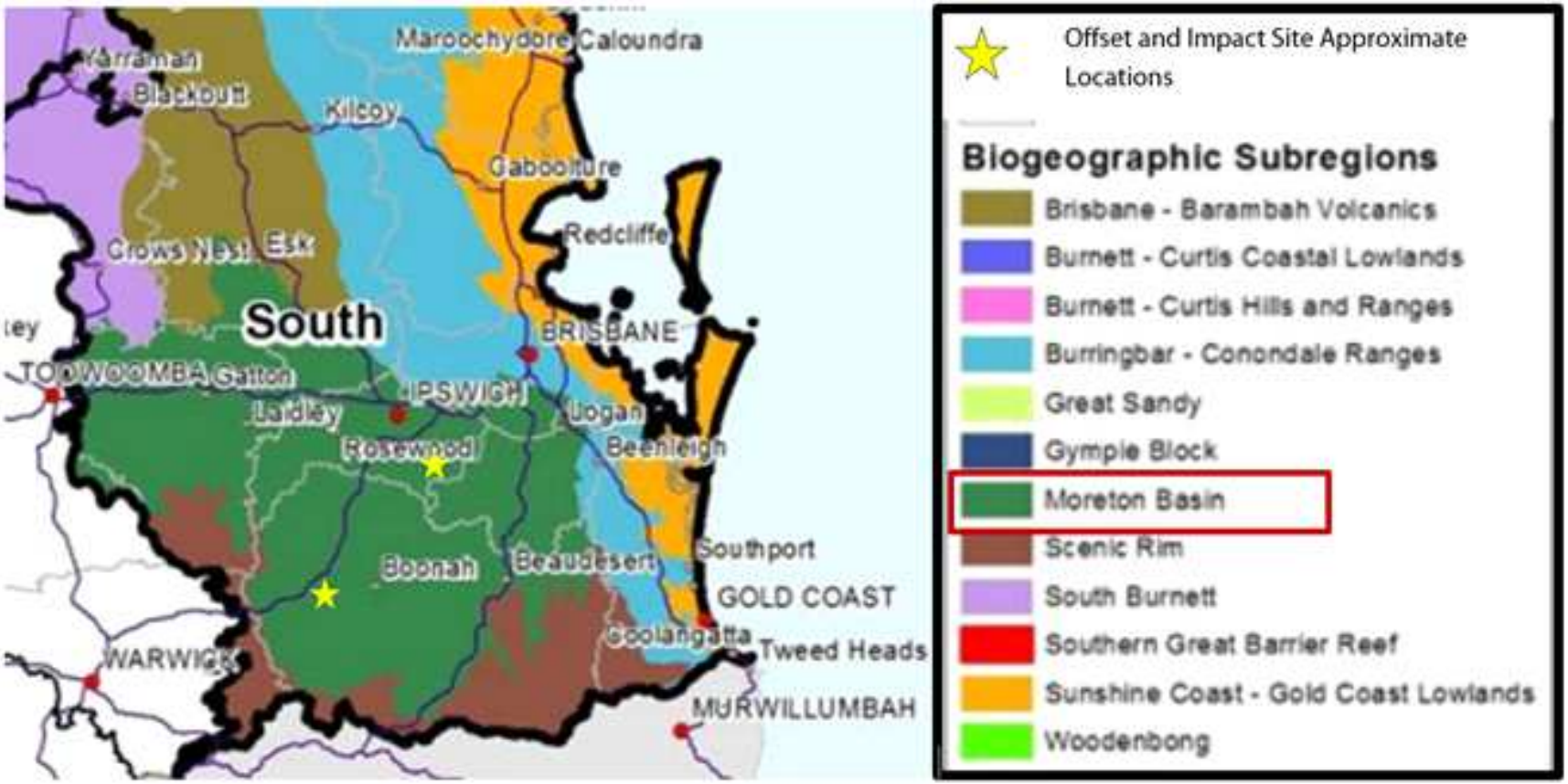
Plan 1.2 SEQ Bioregion 12 - Biographic Subregions



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Plan 1.3 South East Queensland Bioregional Planning Assessment – Corridor Mapping (Landscape Context)

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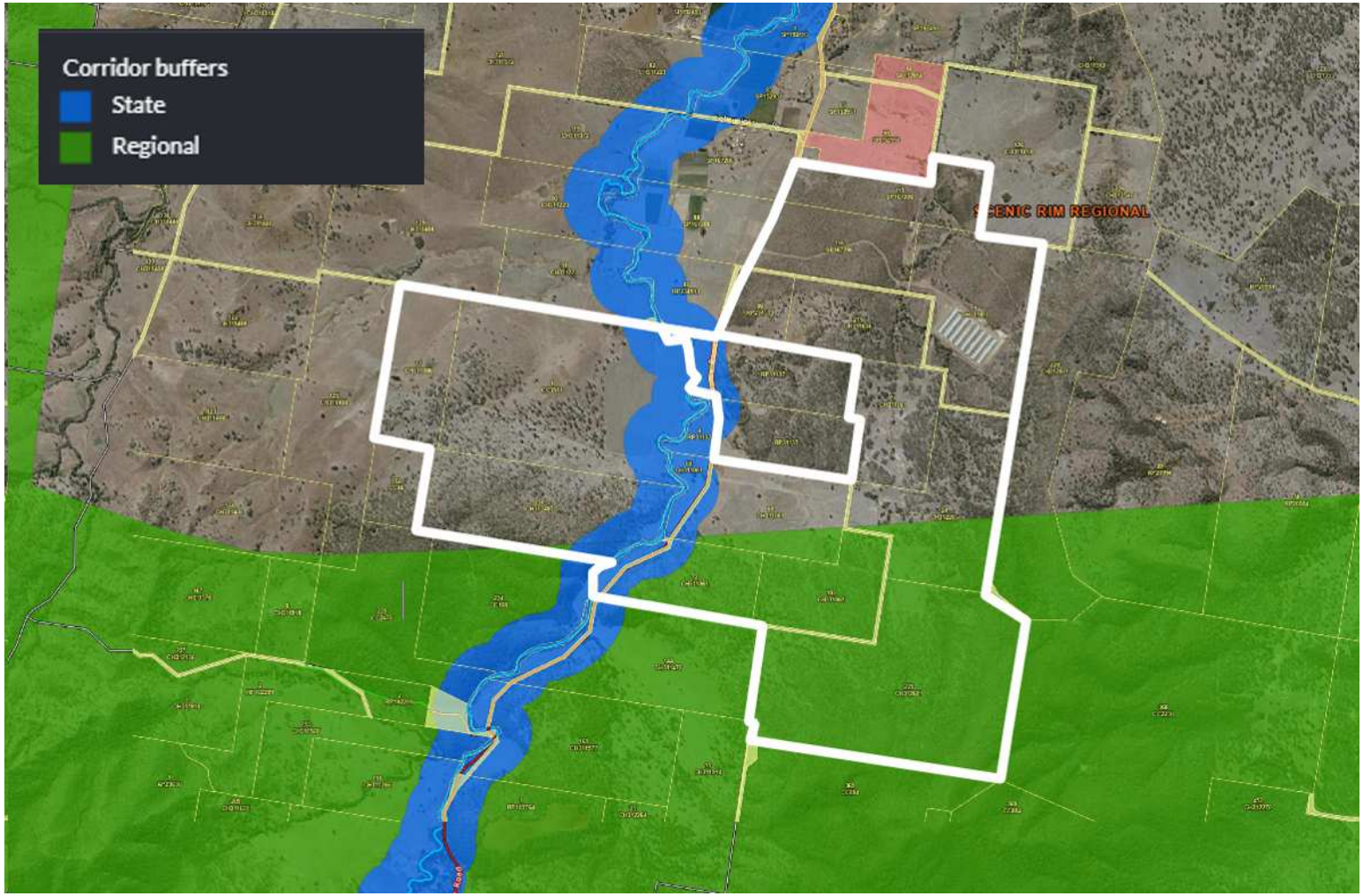
Plan 1.4 South East Queensland Bioregional Planning Assessment – Corridor Mapping (Site Context)



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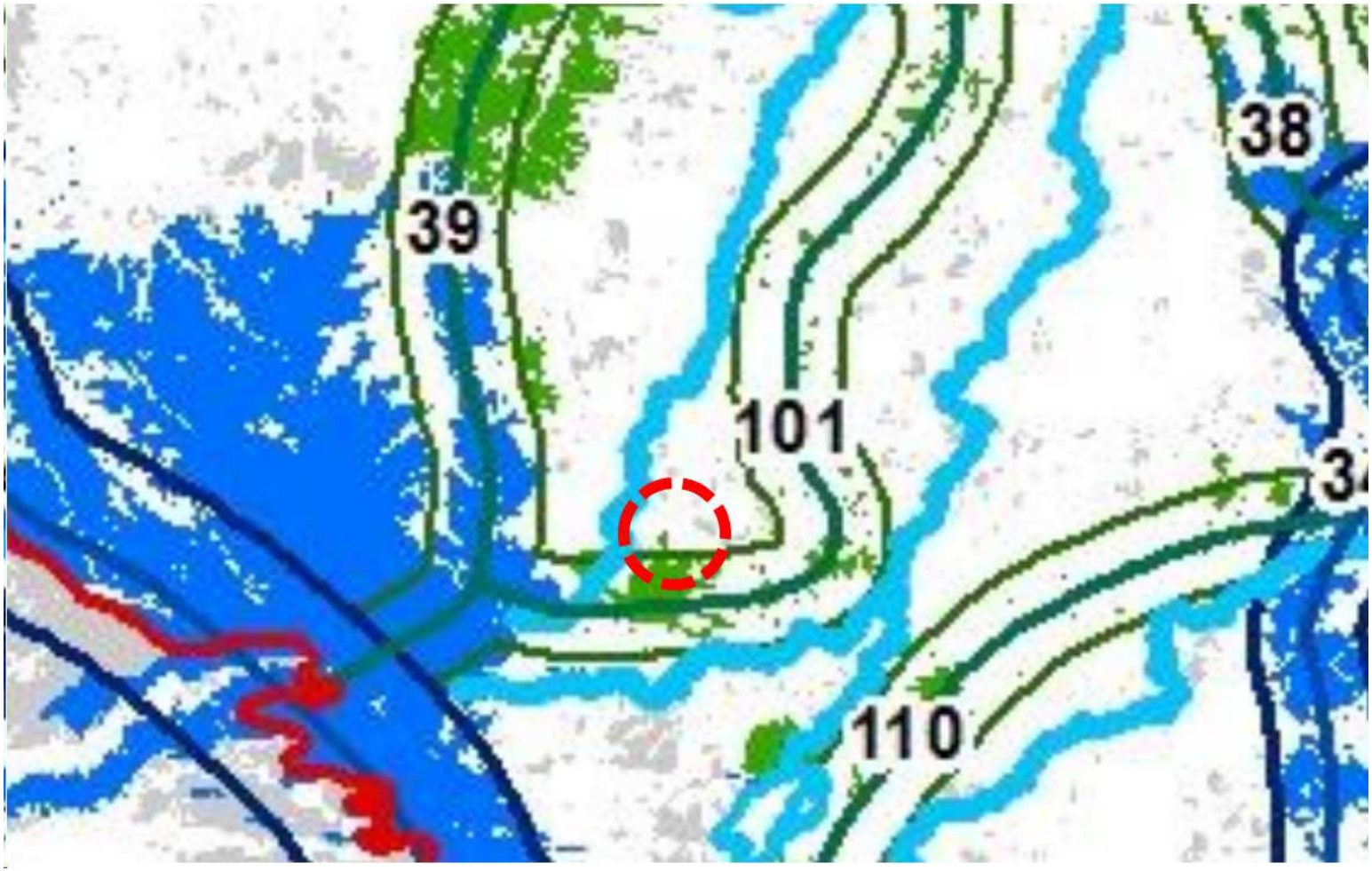
Plan 1.5 South East Queensland Bioregional Planning Assessment – Corridor Mapping (Corridor Descriptions)



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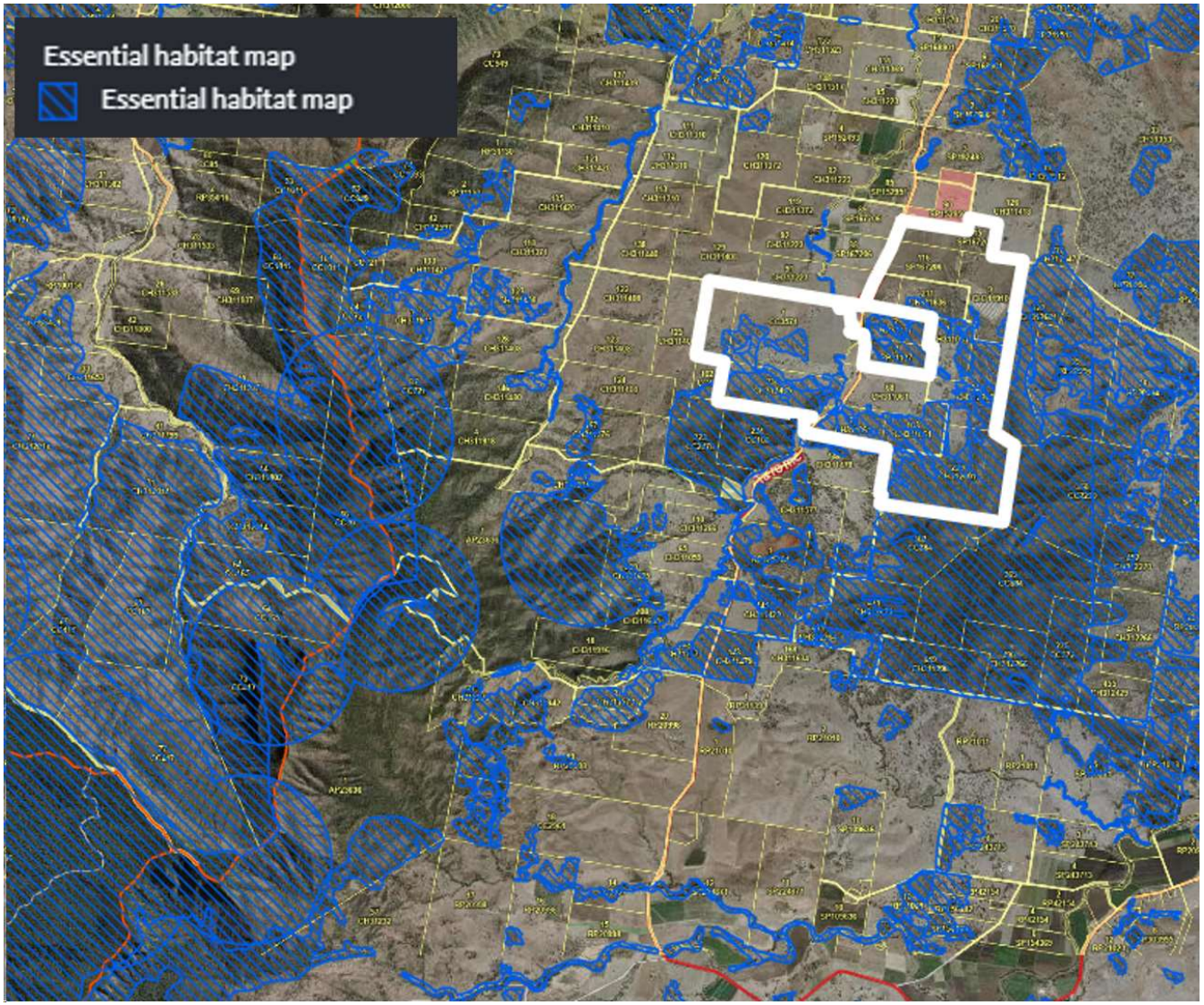
Rosevale Offset Site

Plan 2.1 Essential Habitat Mapping – Queensland Government



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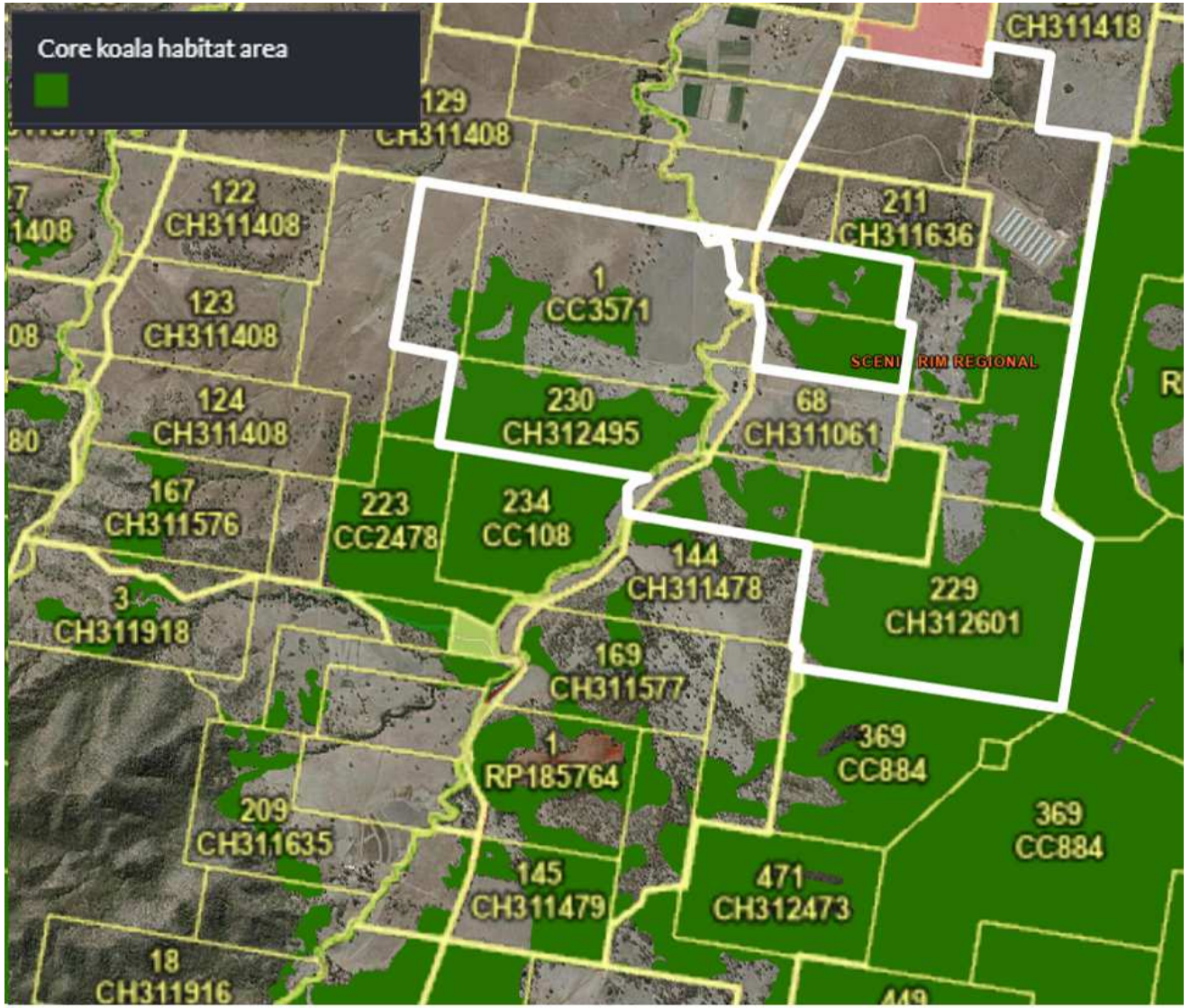
Plan 2.2 Core Koala Habitat Area – Queensland Governments SEQ Koala Conservation Strategy – 2020-2025



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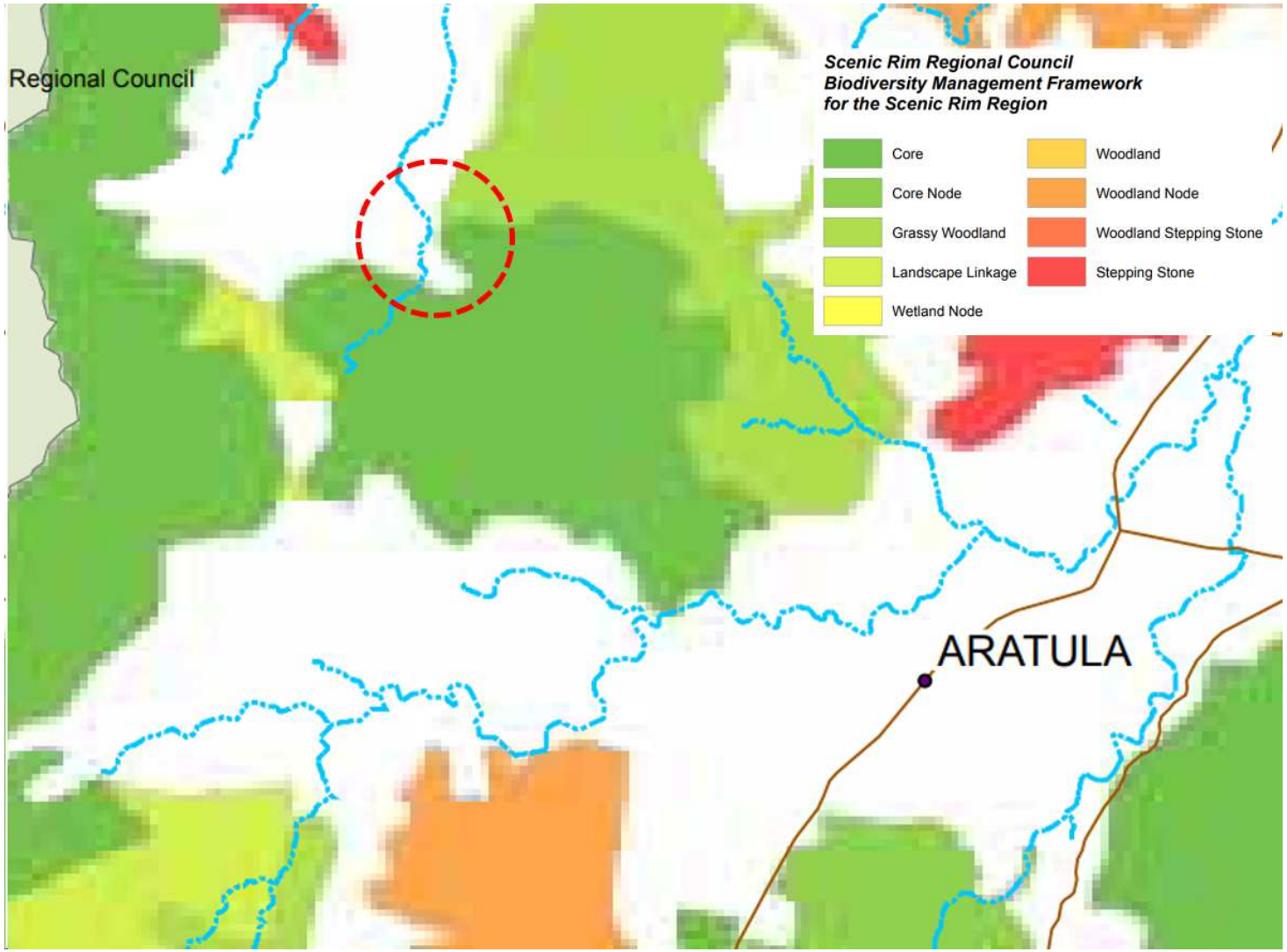
Plan 2.3 Scenic Rim Regional Council – Biodiversity Strategy



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Rosevale Offset Site

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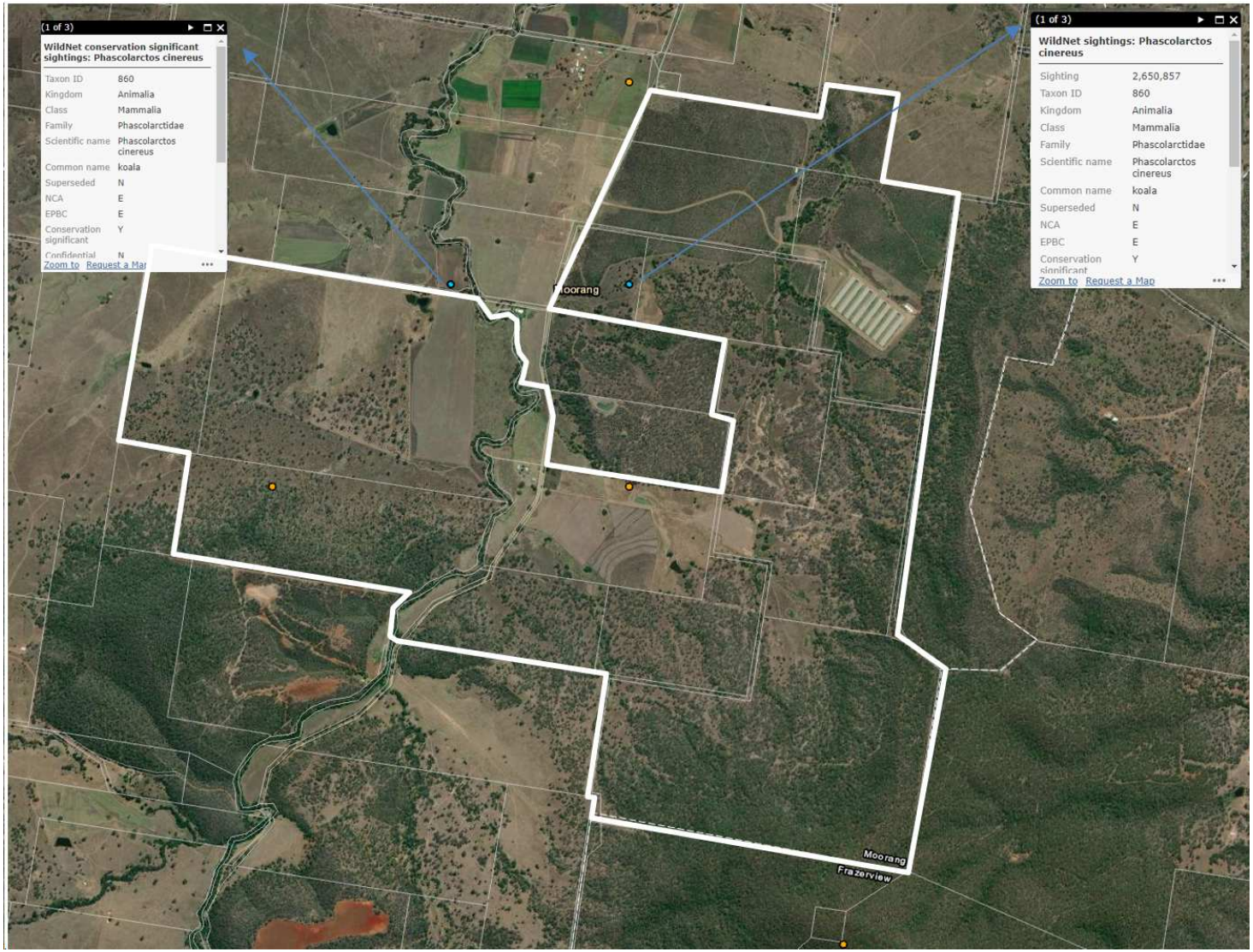
Plan 3.1 Wildnet Database Mapping Search – Prior Koala Records Highlighted



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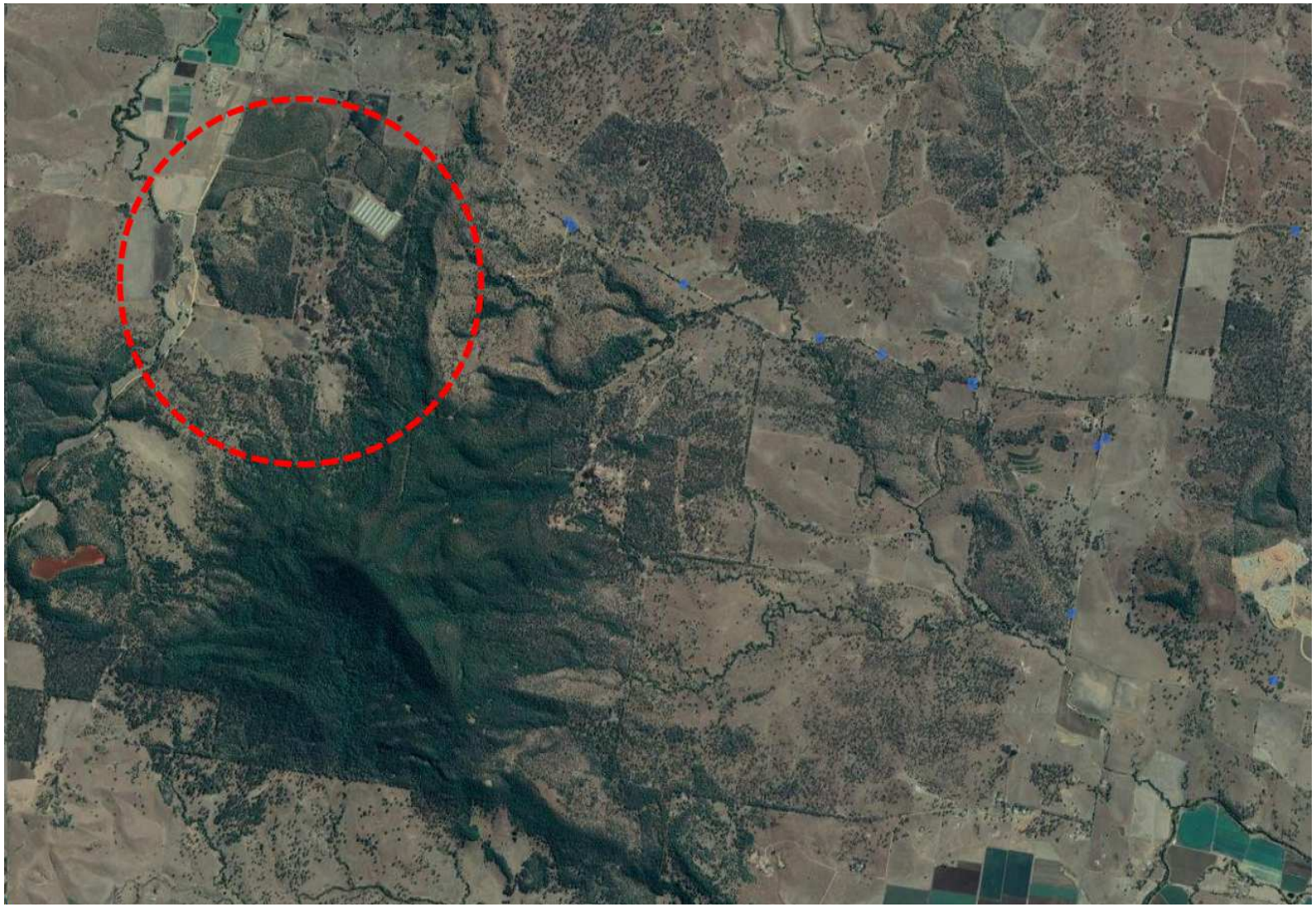
Plan 3.2 Atlas of Living Australia – Koala Records Near Rosevale Offset Site



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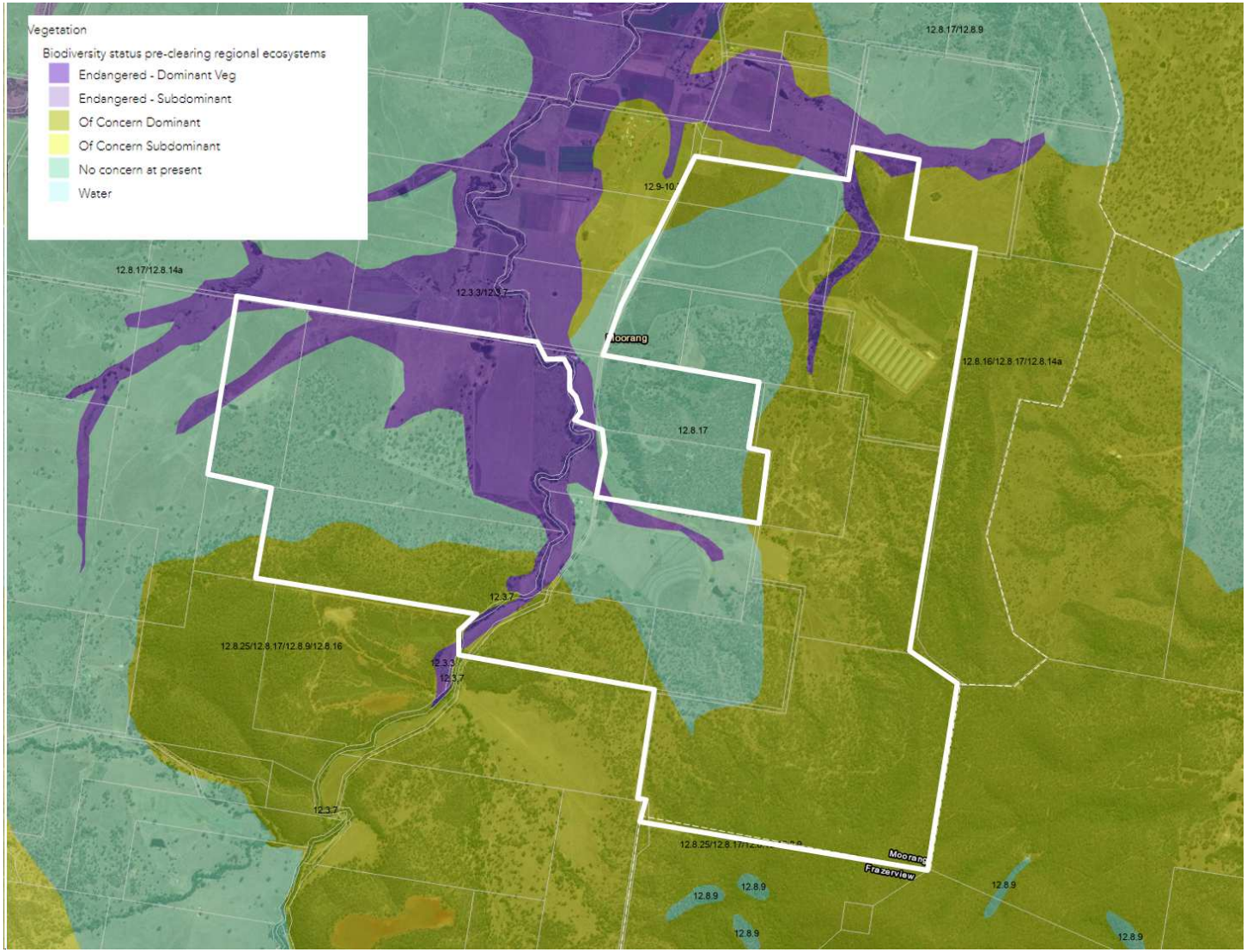
Rosevale Offset Site Approximate Location

Recorded Koala Species

Plan 3.3 Pre-Clear Vegetation and Biodiveristy Status Mapping – Queensland Government



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Rosevale Offset Site Approximate Location

Recorded Koala Species

COMPLIANCE WITH THE OFFSET POLICY PRINCIPLES

Table 1 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 1: Compliance with EPBC Act Environmental Offsets Policy Principles

Principle	Offset Strategy Compliance
Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action	The offset area delivers a conservation gain for the Koala through: • The creation of new habitat through the revegetation of 17.00 ha. • Providing new connectivity with surrounding habitat for the protected matters. • Providing further expansion and connectivity to other EPBC offsets for the same protected matter (Koala). • Introducing, funding and continually improving offset area Management Actions to reduce and manage threats (feral dogs, 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 *Vegetation Management Act 1999*. This removes future wholesale and selective clearing opportunities and through the management plan removes ongoing impacts caused by livestock intrusion into habitat areas.
be built around direct offsets but may include other compensatory measures	The offset area includes legally securing the land area and undertaking necessary improvements to achieve a greater than 100% offset outcome for impacts calculated on the APD Projects Pty Ltd Barrams Road project for Koala Habitat (100%). The Offset Area is wholly achieved through direct delivery to land.
be in proportion to the level of statutory protection that applies to the protected matter	At the time of the EPBC referral decision, the Koala was scheduled within the EPBC Act as 'Vulnerable'. Under the International Union for Conservation of Nature data the probability of annual extinction is 0.2. This factor applies through the meta data of the Offset Guide assessment calculation sheets for which each species has been assessed as achieving greater than 100% offset through the proposed offset area.
be of a size and scale proportionate to the residual impacts on the protected matter	Direct and indirect impacts for the protected matters have been calculated at the impacts site using the Modified Habitat Quality Assessment (MHQA) for the Koala. Within the Assessment Guide calculator the Quantum Impact for each species is listed as: • Koala (3.28 ha) To achieve and offset for both of these impacts the offset area provides a direct land-based outcome over 17.00 ha through habitat recreation activities on historically cleared land devoid of native vegetation.

Principle	Offset Strategy Compliance
effectively account for and manage the risks of the offset not succeeding	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. 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 Rosevale offset property are achieved and risk of the offset not succeeding is mitigated. 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.
be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs	The Barrams Road project occurs in the Ripley Valley Priority Development Area declared by the State Government. There are few environmental controls at the impacts site with the Queensland Government's *Environmental Offset Act 2014* not being applicable. There are no guidelines or controls around offset or rehabilitation for the Koala. Further, the offset property is currently utilised for various rural activities, and not protected or managed for conservation purposes. 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 property would not be protected in perpetuity for conservation purposes.
be efficient, effective, timely, transparent, scientifically	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 *Vegetation Management Act 1999*. 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.

Principle	Offset Strategy Compliance
	The offset management plan is to list the specifically designed scientific methodologies for the measuring of base line and improved outcomes for the protected matters. The OMP will also require the use of tertiary trained and experienced experts along with appropriately certified and experienced contractors for the implementation of a host of actions.
have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced	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. 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 *conservation gain* for the protected matters as designed, assessed and calculated through the selection and delivery of the offset area. 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.

EPBC OFFSET ASSESSMENT GUIDE SUMMARY

The completed EPBC offset assessment guide calculator sheets is included in **Appendix A**, with a summary of the EPBC offset assessment guide calculator inputs included below.

- **Impact area (hectares) –** 16.38 ha
- **Impact area habitat quality score –** Koala (2/10)
- **Impact area quantum impact (hectares) –** 3.28 QI ha
- **ROA 1 (hectares) –** 17.00 ha
- **ROA 1 start habitat quality score –** Koala (1/10)
- **Time until ecological benefit –** 20 years
- **Time over which loss is averted –** 20 years
- **Risk of loss without the offset –** 0 %
- **Risk of loss with the offset –** 0 %
- **ROA 1 future quality score without offset –** Koala (1/10)
- **ROA 1 future quality score with offset –** Koala (5/10)
- **Confidence in averted loss (risk of loss) values –** 90 %
- **Confidence in result (quality score increase) values –** 75 %
- **Total % of Impact Area Offset –** 149.58%

TECHNICAL SURVEY METHODOLOGIES

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 40% of the final score and Site Context being weighted 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 has been added to the MHQA to better incorporate MNES, and for the purpose of this preliminary documentation, 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.

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. **Table 2** outlines the attributes utilised to assess species stocking rate.

Table 2: 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	

PROJECT DESCRIPTION

Table 3 provides details on the impact area:

Table 3: Details on impact area

Address	254 Barrams Road, Ripley
RPD	Lot 108 on M3174
Project Area	24.94 ha
Impact Area	16.38 ha

APD Projects Pty Ltd ('the Proponent') is proposing to develop a residential community on land located at 254 Barrams Road, South Ripley, described as Lot 108 on M3174. The site is located within the 'Urban Living' zone of the Ripley Valley Priority Development Area (RVPDA) and the broader surrounding area includes residential developments, future sports precinct and town centre with shopping precinct. A portion of 'Environmental Protection' zone mapped under the PDA is located within the referral area.

The referral area encompasses the entire lot and accounts for a total of 24.94 hectares (ha). The proposed action involves the creation of a residential development within the 'Urban Living' zone of the RVPDA. The proposed action includes mixed-density residential dwellings, linear parks, environmental protection area, sub arterial road, internal road network, and supporting infrastructure. This will involve the construction of 220 dwellings.

The referral area is located in a highly degraded landscape containing fragmented ecological values dominated by historic and ongoing agricultural land uses. The site is bound by Barrams Road to the south, Cumner Road to the east, rural landscape to the west and east and mapped Category C (high value regrowth) and Category B (remnant) vegetation to the north. The site itself does not contain regulated vegetation.

The impact area is contained to the construction of the residential allotments, internal roads and local parks, totalling 16.38 ha. The balance of the referral area is linear park containing the site's drainage lines and conservation land in the north-east corner together totalling 9.55 ha that will be retained and rehabilitated for ongoing habitat and connectivity value. Notably, 0.55 ha along the Barrams Road frontage will be lost to the trunk upgrade of Barrams Road, which is a separate action.

Open Linear Park Areas – Encompasses the park areas either side of the major and minor waterways on the site. The park will retain existing trees to provide for site amenity and ecological connectivity and be rehabilitated. The major corridor runs east to west (north of the development) and will maintain the linkage to Bundamba Creek corridor, and the minor corridor runs south to north (through the development) and will assist with flood management across the application area.

Environmental Protection Area – Portions of the broader site are to be retained to provide ongoing environmental values as per the intent of the Development Scheme. The preservation of these areas is intended to augment the values preserved within adjoining landscapes. The over-arching design philosophy of the site layout is to concentrate development impacts within the lower value areas across the property to enable genuine and robust

protection of the Significant Biodiversity Values in the major waterway area and along the ground truthed remnant regional ecosystem. This will ensure that areas of greater habitat value within the development area will remain connected and intact. The concentration of impacts away from these values integrates environmental features within development zones. Any habitat losses are to be compensated by retention of trees within proposed park area and the ground truthed remnant regional ecosystem, and rehabilitation works within retained areas

OFFSET PROPERTY DESCRIPTION

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. Rosevale is contained on the following allotments:

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

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

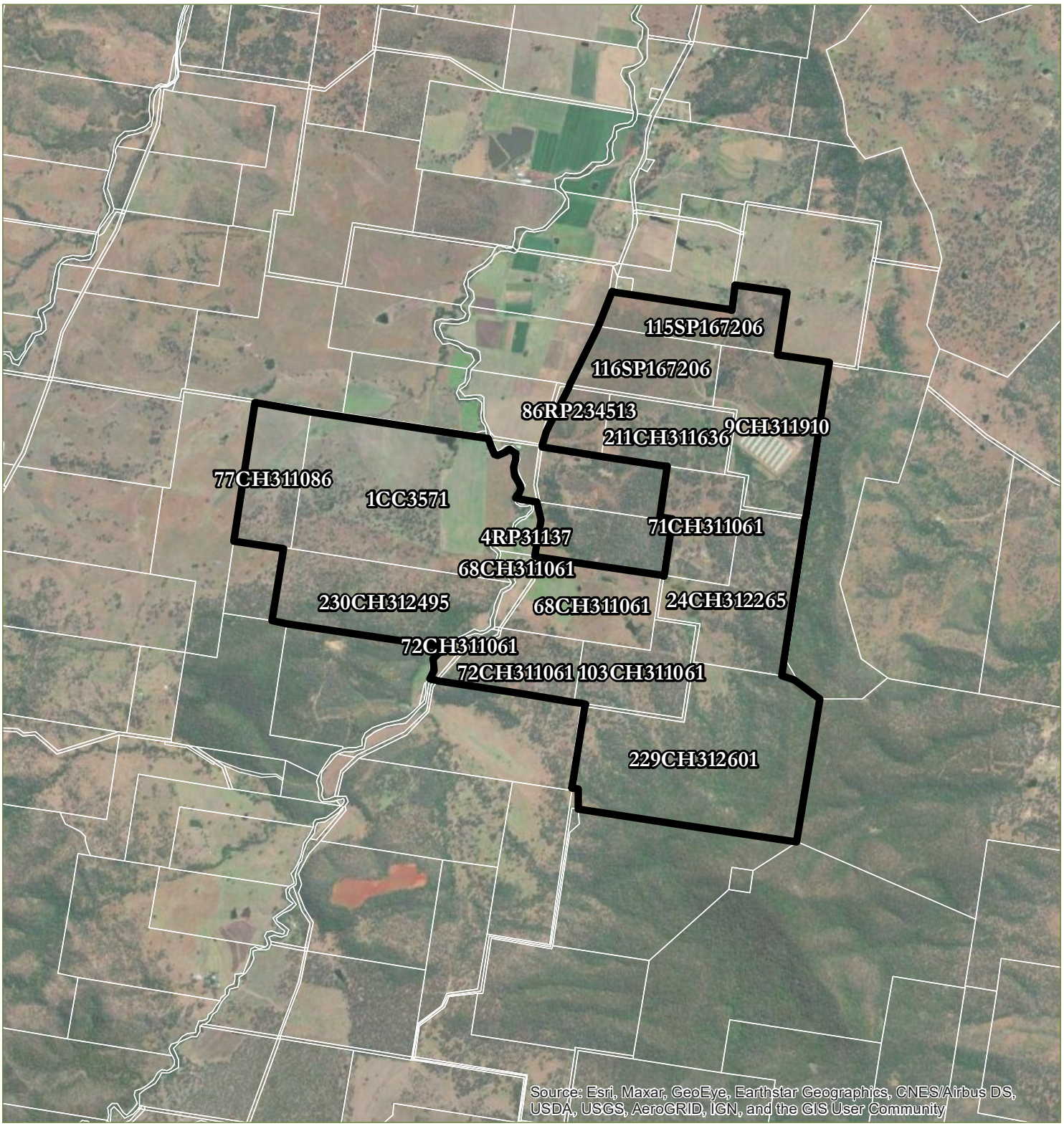
- Lot 115/SP167206

Refer to **Figure 1** for the offset property aerial imagery and **Figure 2** for the offset area.

The land tenure of Rosevale is freehold, where it retains a rural land use zoning under the Scenic Rim Planning Scheme 2020. The offset property can be accessed via Tarome Road which is a rural road starting in the Aratula town centre. From boundary to boundary, the offset property is located approximately 46 km south-west of the impact site (refer to **Plan 1** for the context assessment).

For baseline habitat areas at the impact site and offset property, refer to **Plan 5** and **Plan 6**.

Figure 1 Site Context



Montauban Environmental Offsets

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Location/Adress:Aratula, QLD

Date: 28/09/2022

Figure Name: Figure 1 Site Context V2

References:
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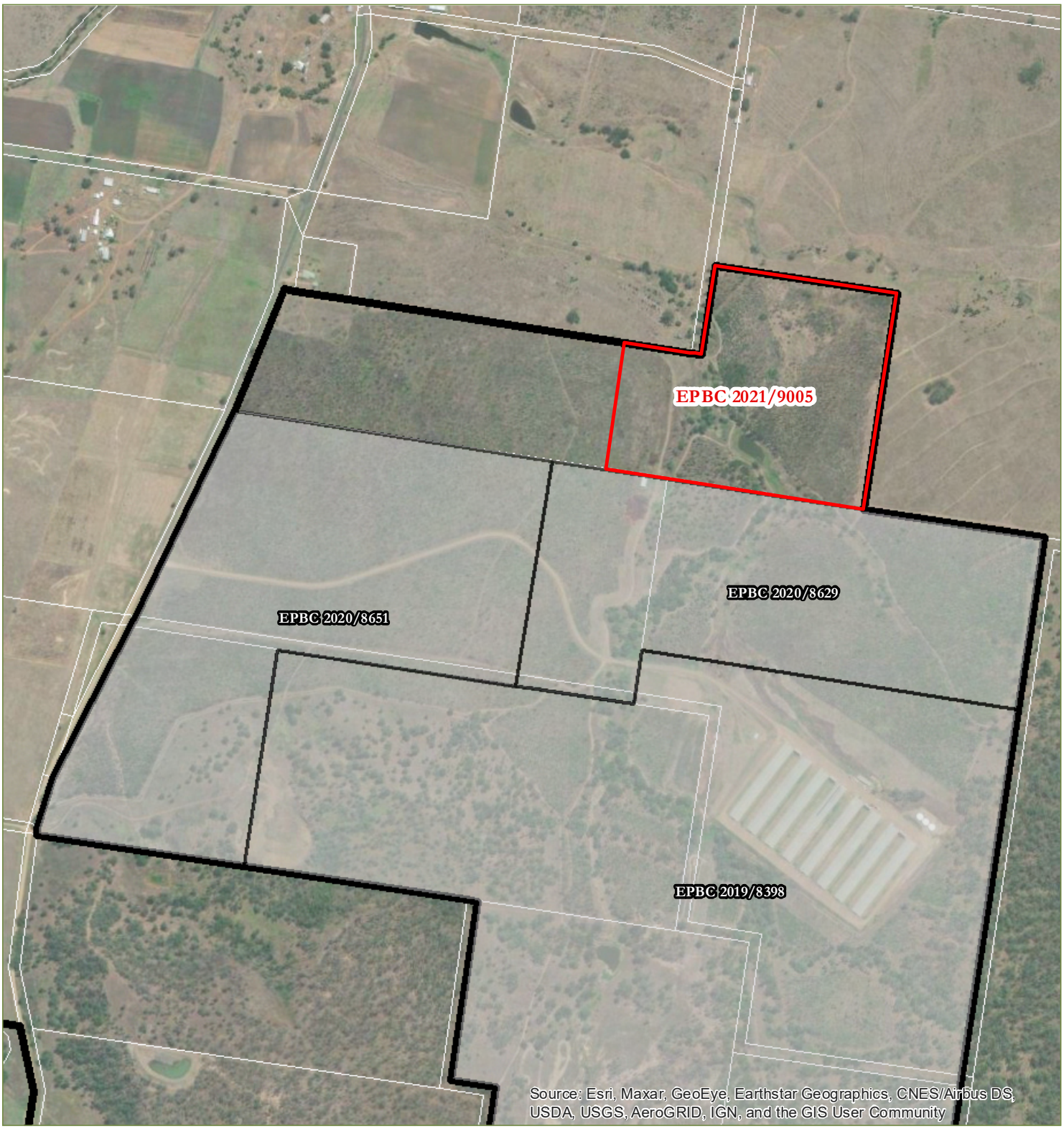
Legend

Offset Area DCDB

Qld DCDB

Figure 2 Site Aerial



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Location/Adress: Aratula, QLD

Date: 27/04/2022

Figure Name: Figure 2 Site Aerial V1

References:
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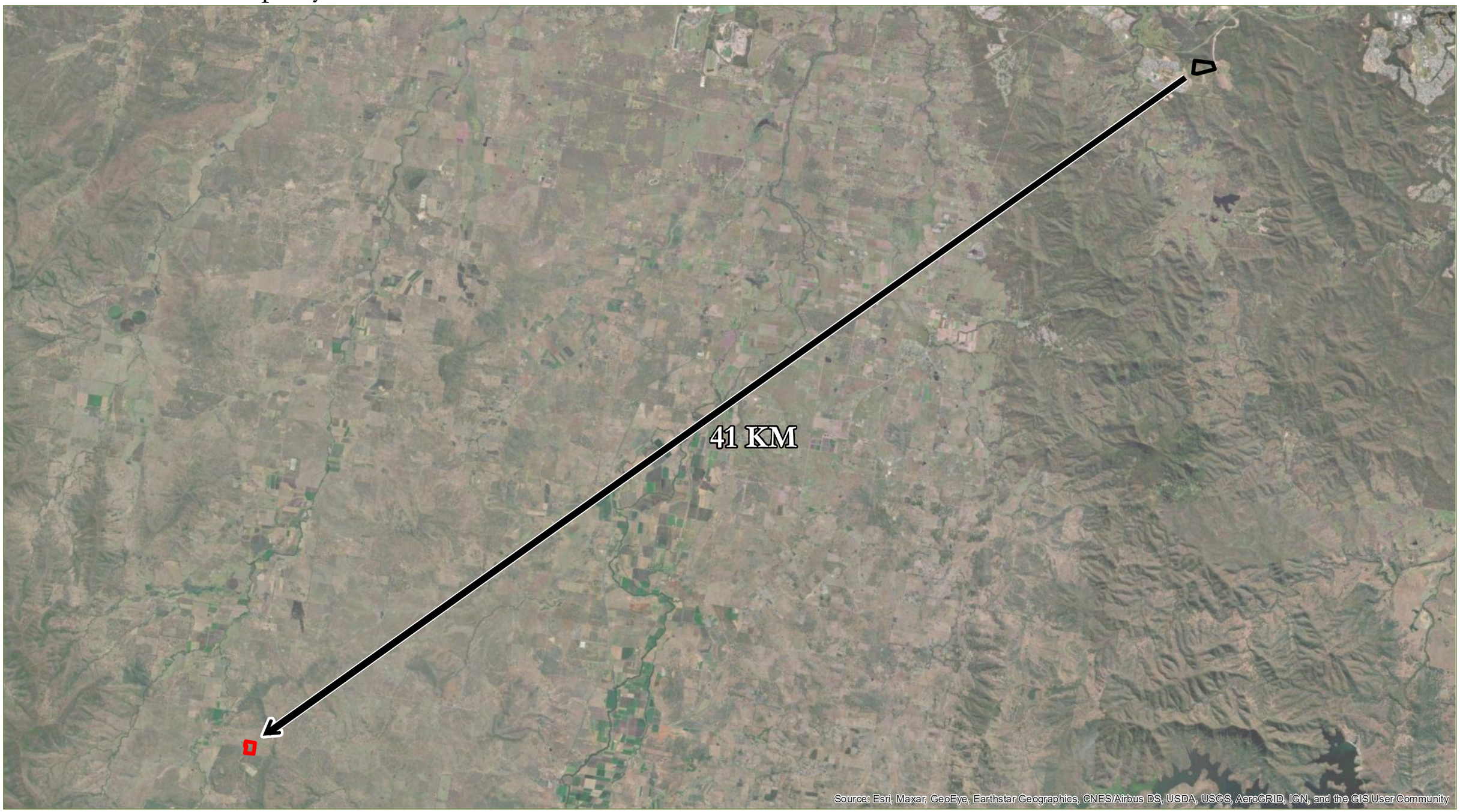
Legend

- Offset DCDB
- Qld DCDB
- Offset Area
- Surrounding Approvals

IMPACT AND OFFSET SUMMARY

MNES	EPBC Act status	Impact area (ha)	Impact site quality score (/10)	Quantum impact area (QI ha)	Offset property start quality score (/10)	Offset property quality without offset (/10)	Offset property quality with offset (/10)	Offset assessment unit area and % of liability provided
Koala	VUL	16.38	2/10	3.28	AU1 – 2.08/10 (rounded to 2.00)	AU1 – 1/10	AU1 – 5/10	AU1 (17 ha) – 149.58% **Total – 149.58%**

Plan 4 Offset Property Context Plan



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Cordinate System: GDA2020 MGA Zone 56

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Location/Adress: Aratula, QLD

Date: 27/04/2022

Plan Name: Plan 4 Property Context V1

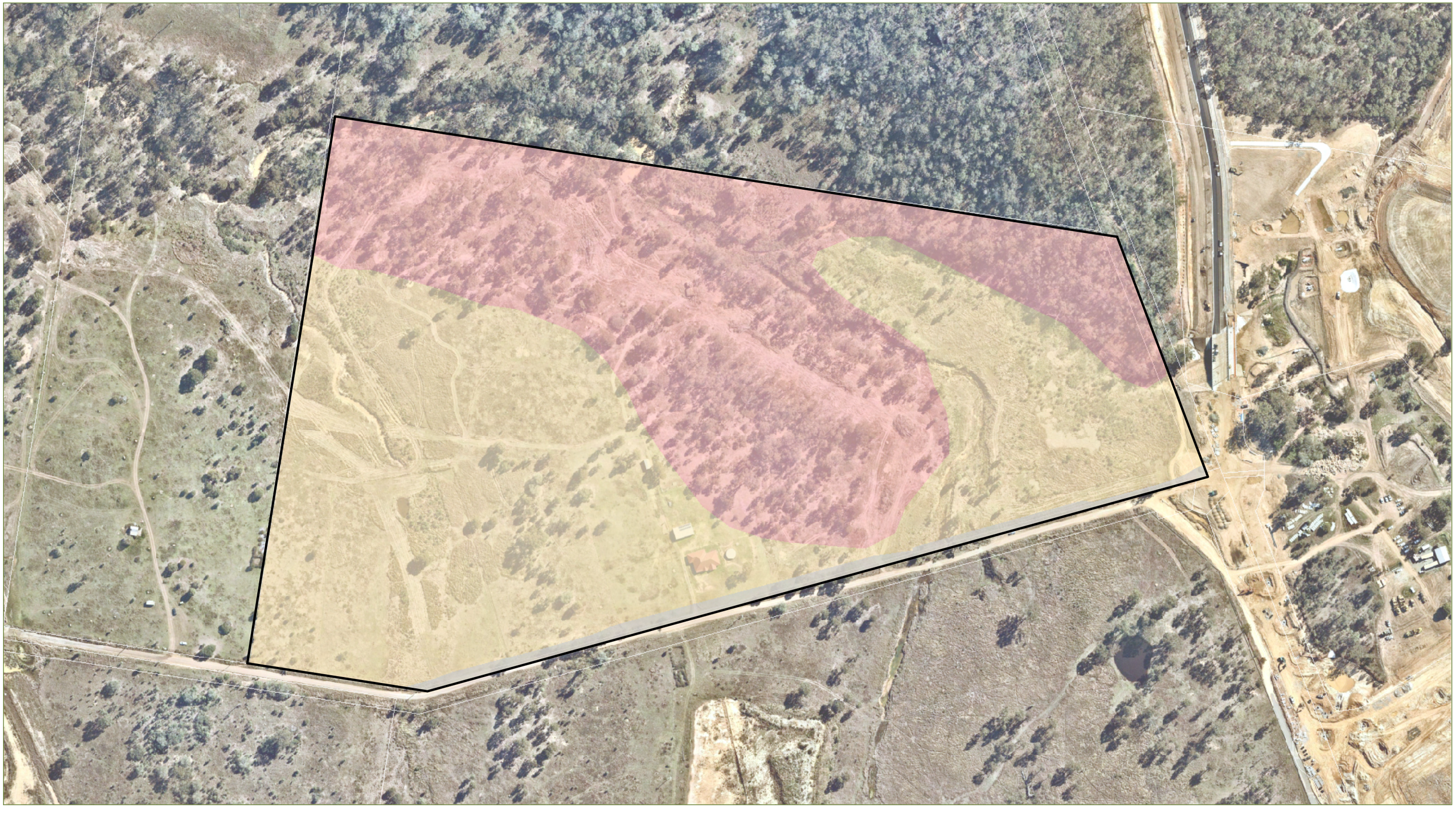
References:
© State of Queensland, 2022

Legend

Impact Area

Offset Area

Plan 5 Assessment Units



Montauban Environmental Offsets

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Cordinate System: GDA2020 MGA Zone 56

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Location/Adress: Aratula, QLD

Date: 27/04/2022

Plan Name: Plan 5 Assessment Units V1

References:
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© Nearmap, 2021

Legend

Referral Area

Qld DCDB

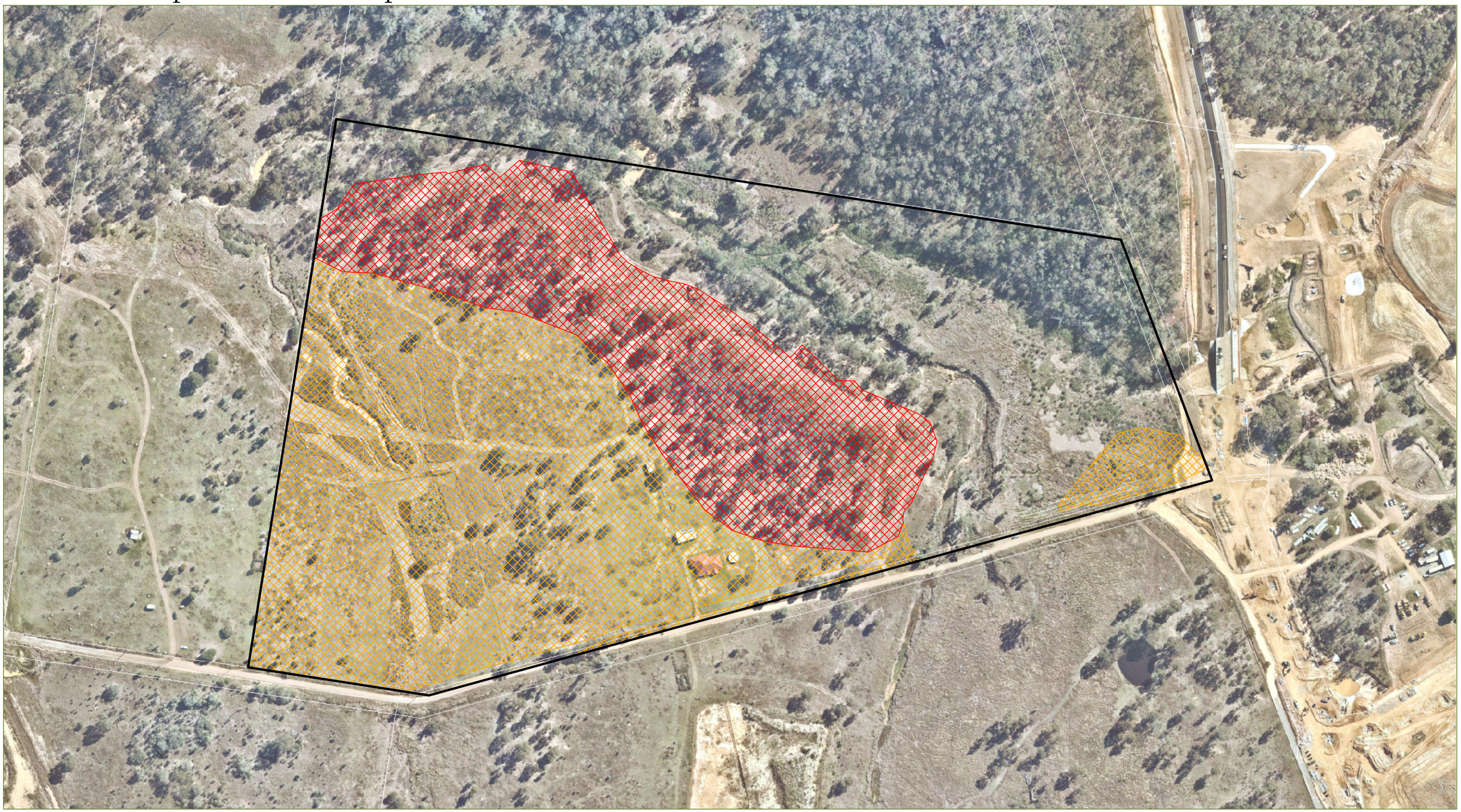
Vegetation Assessment Units

AU1 Regrowth Eucalypt Woodland - 10.85 ha

AU2 Open Paddock with Scattered Trees - 13.54 ha

Trunk Sewer Road Acquisition - 0.55 ha

Plan 6 Proposed Action Impact Area



Montauban Environmental Offsets

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Location/Adress: Aratula, QLD

Date: 27/04/2022

Plan Name: Plan 6 Impact Area V1

References:
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© Nearmap, 2021

Legend

Referral Area

Qld DCDB

Vegetation Community Impacts

Open paddock with scattered trees within works extent - 10.36 ha

Habitat within works extent critical to the survival of the Koala - 6.02 ha

OFFSET MANAGEMENT DETAILS

IMPACT AREA DESCRIPTION

The site is located within the 'Urban Living' zone of the Ripley Valley Priority Development Area (RVPDA) and the broader surrounding area includes residential developments, future sports precinct and town centre with shopping precinct. A portion of 'Environmental Protection' zone mapped under the PDA is located within the referral area.

The referral area encompasses the entire lot and accounts for a total of 24.94 hectares (ha). The proposed action involves the creation of a residential development within the 'Urban Living' zone of the RVPDA. The proposed action includes mixed-density residential dwellings, linear parks, environmental protection area, sub arterial road, internal road network, and supporting infrastructure. This will involve the construction of 220 dwellings.

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The site is mapped as Category X (non-remnant) vegetation under the rectified Property Map of Assessable Vegetation. The site is confirmed to be mostly cleared with scattered trees, with a portion of regrowth eucalypt woodland. Pre-clear RE mapping indicates the site was historically comprised of Of Concern RE12.9-10.7 and Endangered RE12.3.3, described below:

- RE12.9-10.7: *Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora leiocarpa, E. melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 13c)*
- RE12.3.3: *Eucalyptus tereticornis woodland. Eucalyptus crebra and E. moluccana are sometimes present and may be relatively abundant in places, especially on edges of plains and higher level alluvium. Other species that may be present as scattered individuals or clumps include Angophora subvelutina or A. floribunda, Corymbia clarksoniana, C. intermedia, C. tessellaris, Lophostemon suaveolens and E. melanophloia. Occurs on Quaternary alluvial plains, terraces and fans where rainfall is usually less than 1000mm/y. (BVG1M: 16c)*

The regrowth eucalypt woodland portion of the site contained species consistent with pre-clear RE12.9-10.7 with elements of RE12.3.3 in gully lines. The canopy vegetation where present was dominated by *Eucalyptus tereticornis* (Forest Red Gum) with *E. crebra* (Narrow-leaved Grey Ironbark). Other observed eucalypt species were *E. moluccana* (Gum-topped Box), *Corymbia intermedia* (Pink Bloodwood), *C. tessellaris* (Moreton Bay Ash) and *Lophostemon suaveolens* (Swamp Box). This extended from the southern central portion of the site to the north-west of the site. The woodland was observed to be highly disturbed, with cleared tracks and a high weed presence. The groundcover contains a mix of native and weed species, with the dominant species including *Lantana camara* (Lantana), *Baccharis halimifolia* (Groundsel Bush), *Heteropogon contortus* (Black Speargrass), *Aristida vagans* (Threeawn Speargrass), *Imperata cylindrica* (Blady Grass) and *Lobelia purpurescens* (White Root).

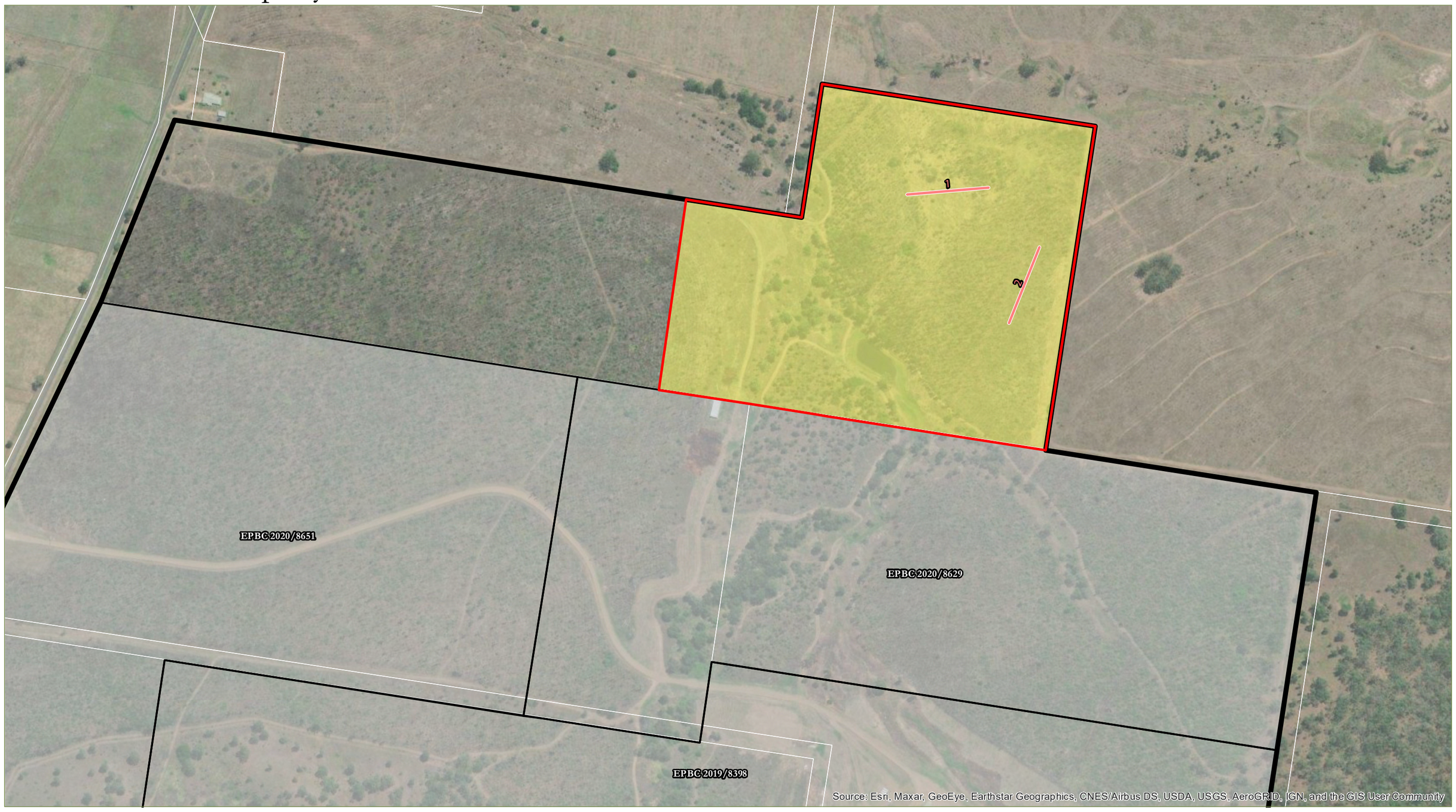
The majority of the area described as Land Zone 3 was largely devoid of native vegetation with only some scattered *E. tereticornis* and *E. moluccana* observed. The ground and shrub layer was dominated by weed species *Baccharis halimifolia* (Groundsel) which is a restricted weed under the *Biosecurity Act 2014*. Two (2) flow paths intersect the site within Land Zone 3 running from south to north. These were found to be highly disturbed and eroded.

The balance of the site consists of open paddock.

Refer to **Plan 5** for the assessment units identified on the impact site.

The proposed action will result in the direct clearing and loss of 16.38 ha of koala habitat. Refer to **Plan 7** for the proposed action impact plan.

Plan 6 Offset Property Offset Assessment Unit



Montauban Environmental Offsets

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Cordinate System: GDA2020 MGA Zone 56

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Location/Adress: Aratula, QLD

Date: 11/05/2022

Plan Name: Plan 7 Offset Assessment Units V1

References:
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Legend

- Offset DCDB
- Qld DCDB
- Offset Area
- Surrounding Approvals
- Assessment unit area [71 ha]
- Modified habitat quality transect

IMPACT ASSESSMENT TABLE

MHQA Final Weighting	Assessment Unit 1	Assessment Unit 2
Site Condition (/3)	1.50/3.00	0.78/3.00
Site Context (/3)	1.55/3.00	1.23/3.00
Species Stocking Rate (/4)	0.00/4.00	0.00/4.00
Assessment Unit Area (ha)	6.02	10.36
Total Impact Area (ha)	16.38	16.38
Size Weighting	0.37	0.632
AU Weighted Score	1.12	1.27
Total Weighted Score	**2.39**	

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 entirely open paddocks and dead plantation trees (refer to **Plan 6** 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)

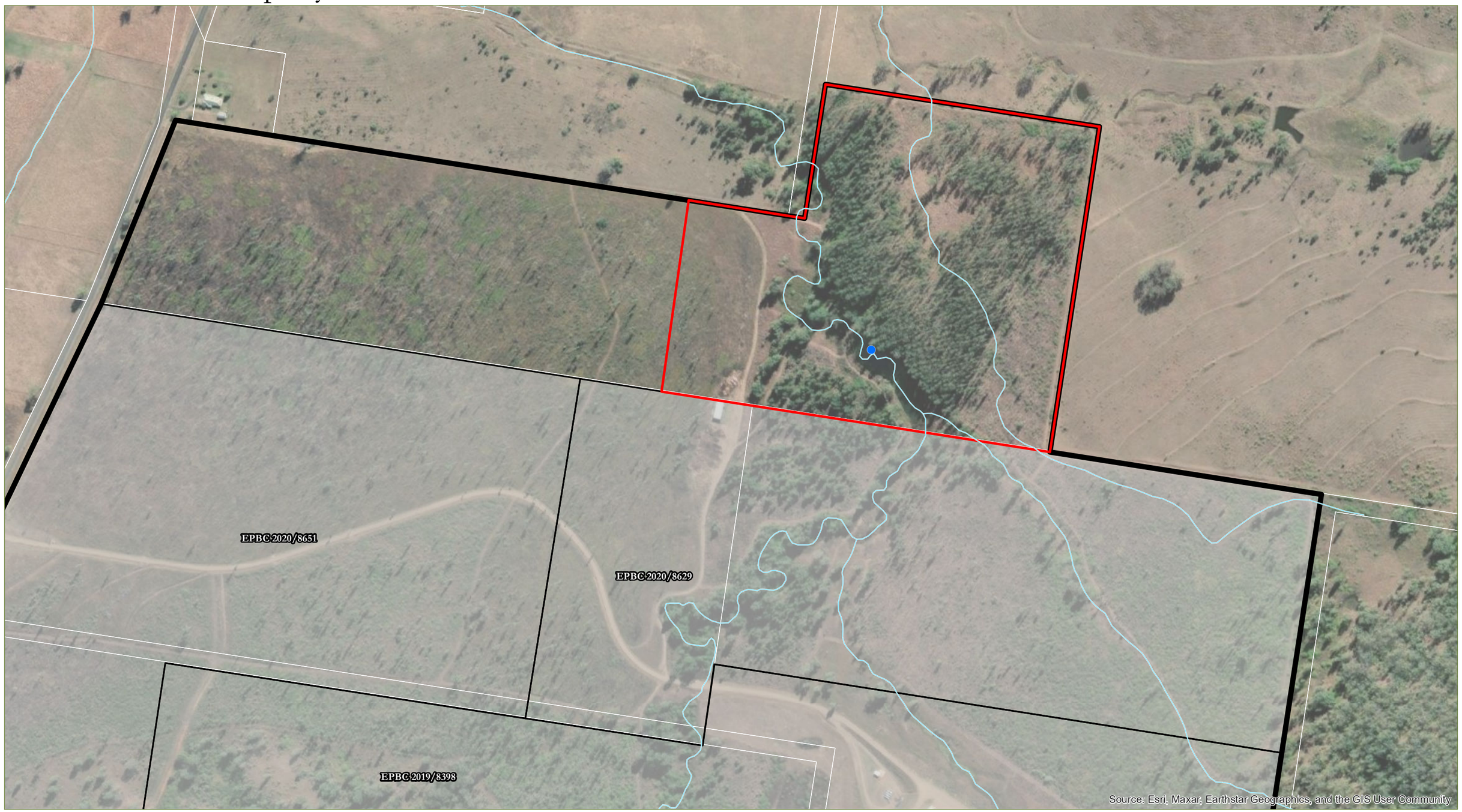
The Rosevale offset property contains numerous man-made farm dams which have been utilised for historic cropping and agricultural purposes. Natural water resources on-site are defined by the Bremer River which straddles the eastern boundary of the western parcels of the Rosevale offset property (Lot 230/CH312495 and Lot 1/CC3571). Refer to **Plan 8** for identification of the water resources on the offset property.

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 vegetation (refer to **Plan 9** for the contiguous landscape plan).

Review of publicly available data (QLD BioMaps & Atlas of Living Australia) indicate that there are numerous historical and recent koala sightings surrounding the site (refer to **Plan 3.2**). 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. This data indicates 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.

Plan 8 Offset Property Water Resources



Montauban Environmental Offsets

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Cordinate System: GDA2020 MGA Zone 56

Location/Adress:Aratula, QLD

Date: 3/12/2024

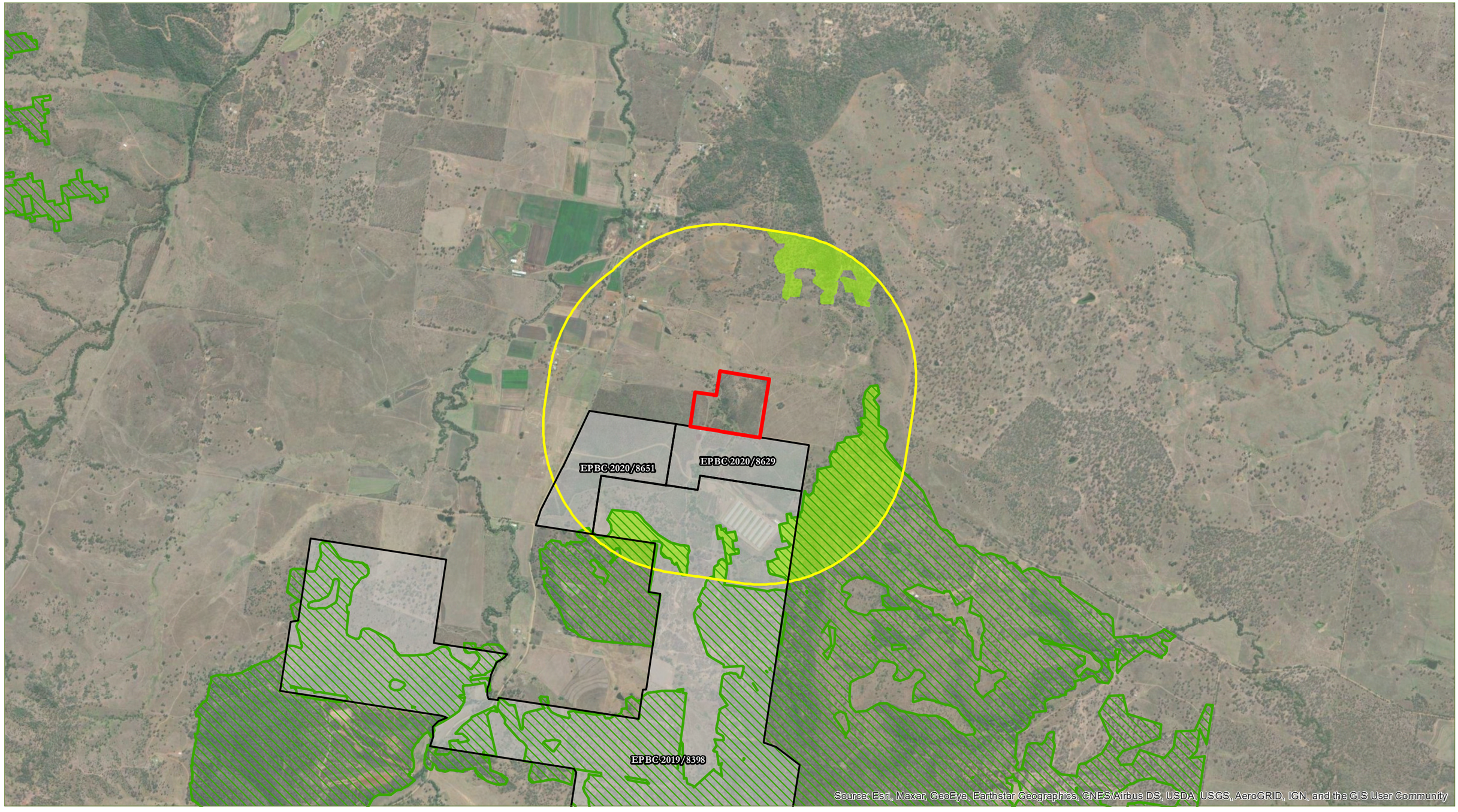
Plan Name: Plan 8 Water Rescources V2

References:

Legend

- Offset DCDB
- Qld DCDB
- Offset Area
- Surrounding Approvals
- Creeks and Drainage Features

Plan 9 Offset Site Koala Context Assessment



Montauban Environmental Offsets

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Cordinate System: GDA2020 MGA Zone 56

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Location/Adress: Aratula, QLD

Date: 11/05/2022

Plan Name: Plan 9 Context Assessment V1

References:
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Legend

- Offset Area
- Surrounding Approvals
- Site 1km Buffer
- Percentage of Koala Critical habitat within 1km of Referral area (18%)
- Size of Koala critical habitat patch >200m corridor connectivity (>200 ha)
- Percentage of Referral area boundary length supporting a koala critical habitat connection off and on site - 0%

Assessment Unit Descriptions

The offset area associated with this project is characterised by one distinct assessment unit:

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

Refer to **Plan 7** 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. 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 Habitat Quality

The one assessment unit was assessed utilising the MHQA method to determine the baseline habitat quality score. A summary of the habitat quality of the Rosevale offset area is included in **Table 4**.

Table 4: Offset property MHQA Summary

	Assessment Unit 1
Site Condition (/3)	0.68/3.00
Site Context (/3)	0.43/3.00
Species Stocking Rate (/4)	0.29/4.00
Total (/10)	**1.39/10.00**

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. Further, refer to **Plan 10** which identifies the location of the current management arrangements.

Poultry Farming

Presently, the offset property retains existing poultry farming operations. The poultry farming operations 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. A Development Application has been approved for a further 8 sheds (360,00 birds) which will be constructed in the next 2 years. 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. Refer to **Plan 10** for the location of the poultry farming operations on the offset property.

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 10** for the hardwood plantation management area.

Cattle Grazing

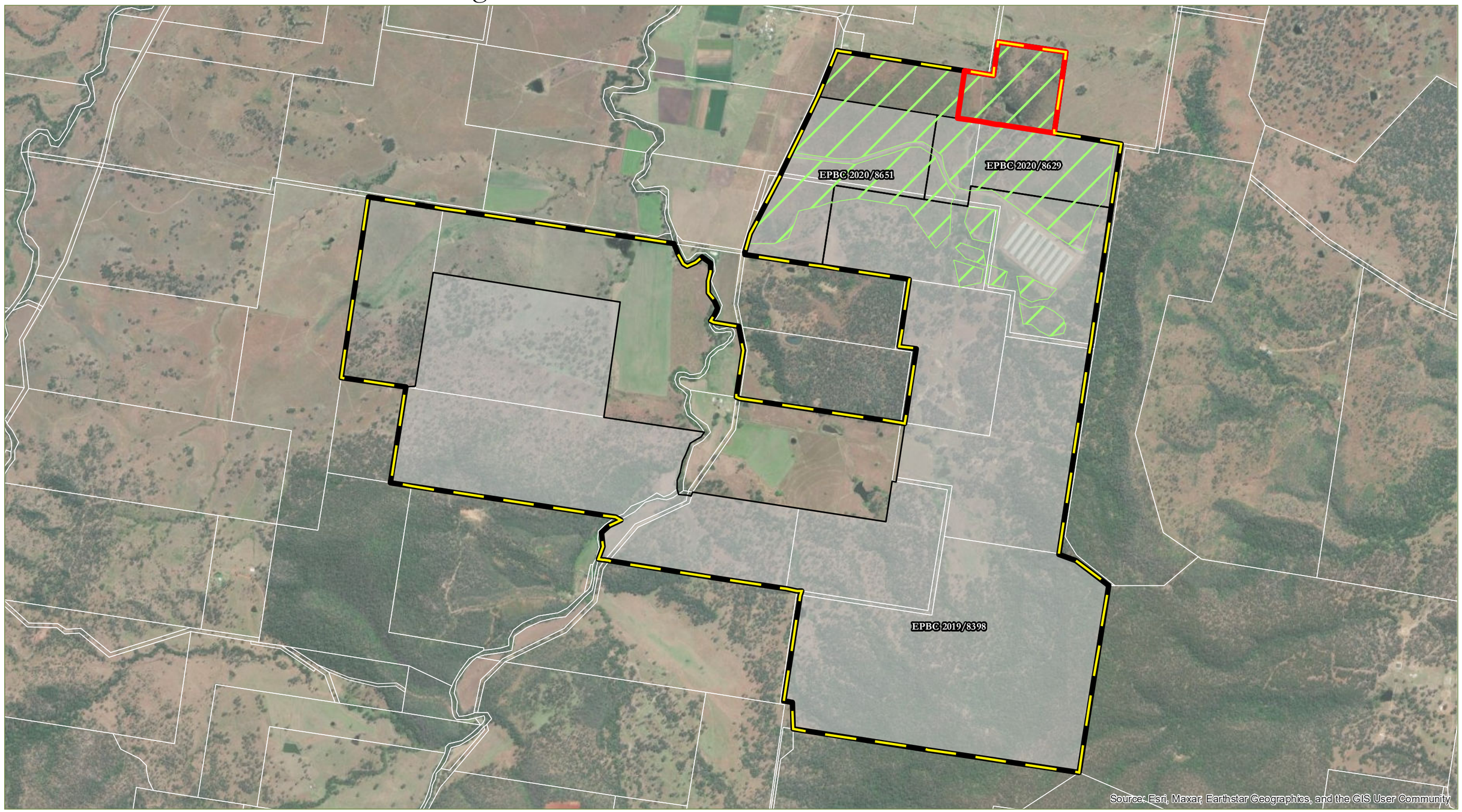
The rural designation, undulating landscape and historically cleared open paddocks of the offset property provide for suitable cattle grazing practices. The offset property has a cattle carrying capacity of approximately 300 head of cattle. The cattle grazing management arrangement compliments the poultry farming and hardwood plantation land uses, with no loss in cattle grazing capacity. The cattle grazing management practices occurs over the entirety of the 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. Refer to **Plan 10** for the location of the cropping use on the offset property.

Plan 10 Offset Area Current Management Activities



Montauban Environmental Offsets

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Cordinate System: GDA2020 MGA Zone 56

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Location/Adress:Aratula, QLD

Date: 22/07/2022

Plan Name: Plan 10 Management Activities V2

References:
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Legend

- Offset DCDB
- Qld DCDB
- Offset Area (17 ha)
- Surrounding Approvals
- Cattle Grazing
- Historical Hardwood Plantation Area

CURRENT THREATS

The offset property contains a number of agricultural land uses, which attracts threats to both livestock and native wildlife. Several flora and fauna species observed directly or indirectly (scats, prints, etc) within the broader Offset Property and ROA 1 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. Notably this includes Wild Dogs (*Canis familiaris dingo*, *Canis familiaris dingo* X *Canis familiaris, Canis familiaris*), Feral Pigs (*Sus scrofa*), Feral Cats (*Felis catus*), European Foxes (*Vulpes vulpes*) and Lantana (*Lantana camara*).

Wild dogs are considered a high priority threat to the Koala. This conclusion is based on several federal government documents including:

- DAWE 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 (Australian Wool Innovation, 2020)

Medium priority threats to Koala and Grey-headed Flying Fox include Feral Cat and European Fox. These species are not listed as a key threatening process to either of the MNES species, however, both are known to be opportunistic predators with significant impacts to native species.

It is also acknowledged that although they are not listed as a direct threatening process to the target MNES species, Feral Pigs are opportunistic omnivores and 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 ROA 1 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 11** for feral pest management prioritisation and justification.

Other threats include:

- Clearing and harvesting of hardwood eucalypt plantation, and
- Significant weed infestations, in particular, *Lantana camara.*

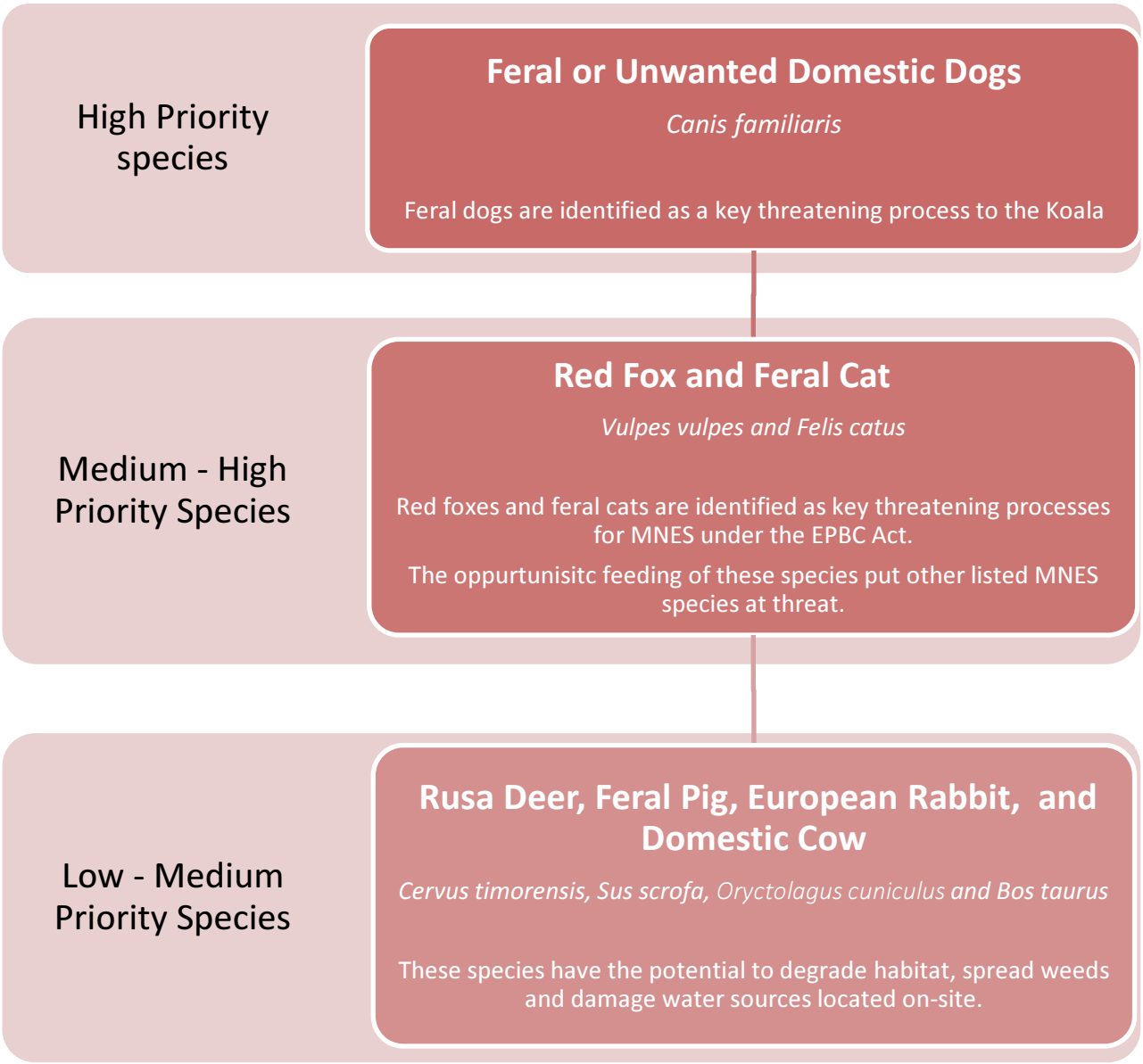


Figure 1: Feral Animal Management Prioritisation

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 (ie. 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 (ie. the expenditure to undertake feral animal control would not result in enough economic gain in productivity to warrant implementation).

Part of the broader offset property, located to the south of ROA 1, operates as a poultry farm. 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). 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 Dog

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 within the broader 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 5** for an example of wild dog observed). 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. This is particularly true when compared to the pest species results from the Aroona Offset Site (EPBC 2016/7818) annual compliance reporting. This offset site is 5 km north of the Rosevale Offset Property and does not have poultry farming within or adjacent to the approved area. Regardless, prior to management of the area, abundance of dogs across the offset area was recorded at 3 in 2019, 10 in 2020 and 8 in 2021. These numbers are similar to the recordings on-site despite no poultry farming being present. Therefore, it can be inferred that the presence of the poultry farms has not increased wild dog presence. Similarly, only 2 foxes were recorded within the Rosevale Offset Property during baseline surveys. This is again similar to or less than the recorded numbers at the approved Aroona Offset which recorded 2 in 2019, 3 in 2020 and 6 in 2021.

Wild 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 program to assist owners of larger land holdings in managing pest animals and guides landowners through the legislative requirements of baiting (SRRC 2023b). Although again not under law to do so, the programs 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 1 offset.

Photo Plate 5: Wild dog evidence recorded on the offset property.

Feral Cat

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 12**).

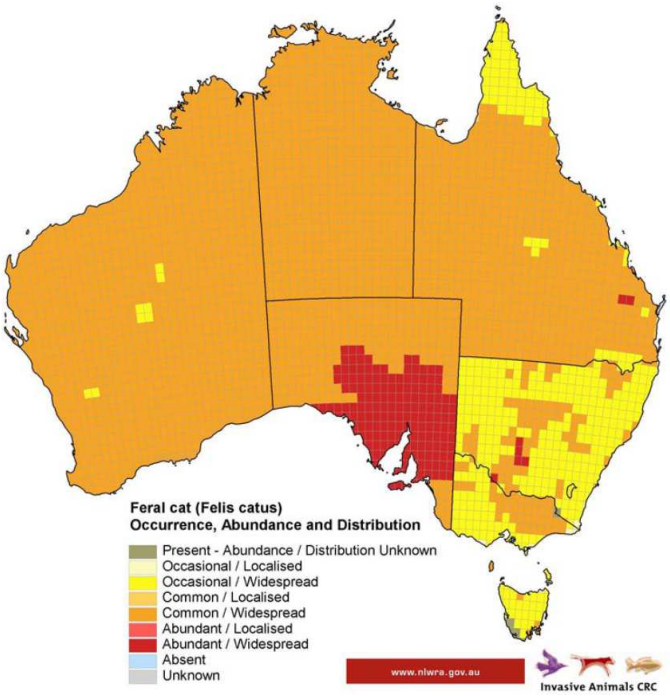


Figure 2: Feral Cat occurrence in Australia (From Assessing Invasive Animals in Australia (2008) National Land & Water Resources Audit, Canberra)

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 2023b). 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 6**). 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 6: European Fox evidence recorded on the offset property.

Feral Pig

Feral Pigs 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 broader offset property and ROA 1 cause destruction of current habitat value and water resources, and indirectly impacting essential habitat areas for Koala and Grey-headed Flying-fox.

According to the SRRC website (SRRC, 2021), Feral Pigs are found mostly in isolated areas and trapping is conducted when reported sightings are received. Within the region, Feral Pig populations have increased due to increased animal husbandry, and availability of food sources such as feed lots and the feeding of livestock like horses on rural residential blocks. Following identification of feral pig activity, trapping programs are initiated with varied success rates ranging from 100% removal to dispersal and subsequent reduction in feral pig numbers.

Feral pigs are confirmed to occur within the broader offset property (refer to **Photo Plate 7**).

Photo Plate 1: Feral pigs recorded within offset property.

Lantana Infestation

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 Grey-headed Flying-fox as they rely on Eucalypt bushland for foraging and breeding. For this reason, the Queensland Government's '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 Grey-headed Flying-fox.

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.

Management of the offset area will relate to maintaining a low weed extent as the cropping use ceases and native revegetation occurs. Lantana, other identified WONS and general weed management will occur in order to prevent impacts to regenerating native flora. Refer to **Photo Plate 8** for examples of Lantana infestation within the offset area.

Photo Plate 2: Examples of significant Lantana invasion

ROA 1 BASELINE SURVEY METHODS & RESULTS

INTRODUCTION

The conditions of approval for EPBC2021/9005 require weed extent and feral animal baseline surveys to be conducted within Year 1. During the period from 2 November 2022 to 2 November 2023 (Year 1), baseline weed extent surveys and feral animal abundance surveys were conducted within the Rosevale Offset Area 1 to satisfy conditions 8a and 8b extracted below.

Condition 8

During Year 1, a suitably qualified field ecologist must complete baseline surveys of the Rosevale Offset Area in accordance with a scientifically valid, robust and repeatable methodology, to determine:

a. the **extent of weed cover**, and
b. the **seasonal** abundance of **feral animals**.

Condition 9

Within three months of completion of the baseline surveys required under condition 8, and in any case no later than 15 months after the date of this approval, the approval holder must submit to the **department** for the **Minister**'s approval a version of the **Rosevale Offset Management Plan**, revised to include at a minimum:

a. the methods, dates and results of the baseline surveys required under condition 8,
b. details of how the outcomes specified under condition 8 will be achieved,
c. a program of monitoring, and reporting progress against, performance and completion criteria in respect of achieving the ecological outcomes specified in the **Rosevale Offset Management Plan**, and
d. Measures to provide fire management regimes appropriate for the **Koala**.

Definitions relevant to determining the extent of weed cover as required under condition 8a are provided below.

- **Extent of weed cover** means the proportion (expressed as a percentage) of the total land area in which any square metre contains a non-native plant species known to restrict the movement of Koala and/or degrade the quality of Koala habitat, or reduce its ability to regenerate.
- **Weed/s** means any weed species identified within the Weeds of National Significance and weed species listed under the *Biosecurity Act 2014* (Qld).
- **Seasonal** means the abundance measured separately for each season (summer, autumn, winter and spring).
- **Feral animal/s** means non-native feral animals known to predate or injure the Koala, including but not limited to wild dogs and foxes, as well as animals that may contribute to the degradation of Koala habitat.

The following sections outline the methods, dates and results of the baseline surveys required under condition 8 to satisfy condition 9a. In addition, photo monitoring points were established in Year 1 to monitor MNES habitat restoration in accordance with monitoring actions for Action 5.

Conditions 9a to 9d are addressed within the monitoring actions detailed in the OMP.

All pest and weed extent surveys were conducted by suitably qualified field ecologists led by David Havill. Details are provided in **Appendix B**.

METHODS

Feral Animal Abundance

Targeted 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. 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 1 offset.

Guidelines for tracking feral animal abundance

At present, DCCEEW does not have a published guideline for detecting feral animals. However, there are State guidelines available for the implementation of feral animal monitoring focusing on wild dogs including the Guide for camera trapping wild dogs, foxes and feral cats (Department of Primary Industries, NSW Government 2018).

For successful monitoring of feral animal abundance, camera trapping is frequently utilised and remains the industry standard. Camera traps have the advantage of obtaining a wide range of significant information based on the set up. Automatic camera systems are triggered by an animal passing in front of a sensor that detects movement, changes in ambient light, or a thermal differential (Moen & Lindquist 2004). Cameras allow for the detection of species that are difficult to study due to their elusive or nocturnal habits (Mace *et al.* 1994). Camera deployment is less time consuming, less costly, and less invasive than long-term direct observation of animals. They are also beneficial in studying animals in inaccessible or difficult to access locations such as dens and nest cavities, or in rugged terrain (Mace *et al.* 1994). In addition, they enable the collection of valuable information about multiple species within any given community (Rosellini *et al*. 2008) and provide data that is more permanent and less disputable than data gathered by direct observation. Furthermore, camera trapping allows consistent and repeatable surveys to be completed by placing the same cameras in the same locations using the same settings for the same length of time and set with the same bait. The repeatability of motion sensor camera trapping means it is an appropriate method to monitor changes of the abundance of feral animals over time.

Design and Procedure

Motion sensor cameras were deployed across the entire proposed Rosevale Offset Property and within the ROA 1 offset area in order to provide baseline data. Baseline surveys including the use of baited camera trapping and trail cameras (non-baited) targeting wild dogs and pest herbivore species such as wild pigs and deer, were completed over multiple years and seasons. Focus was given to the eastern portion of the property 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. Property-wide baseline data allows for feral animal abundance and trends to be ascertained at the broader landscape scale and allow for management actions to be targeted over the broader properties. The following installation methods were applied:

- Cameras should 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 should be 1.5 – 2m from the camera and in the centre of the camera frame.

- Camera traps should 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 utilised by wild dogs, with or without bait.
- Baseline feral animal management surveys were conducted by suitably qualified field ecologists (details located at **Appendix B**).

Fourteen camera traps were set up within the broader offset property across 3 different survey periods in 2023 – April to May, May to August and August to November (**Plan 11**). 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 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.

Motion sensor cameras were deployed across the entire proposed offset area for determining baseline data, within the approved offset area within Lot 115 on SP167206 and more recently on the eastern side of the existing chicken sheds adjacent to property boundaries and existing tracks. The varying survey periods and camera deployment was 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. Motion sensor cameras were attached 30 – 50 cm from the ground on a tree or post, directed downward towards a bait station attached to a tree or post 1.5 – 2m from the camera and in the centre of the camera frame (**Photo Plate 8**). **Table 5** outlines the camera trap survey periods and details of baits utilised across the offset property.

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.

Photo Plate 8: Example of motion sensor camera set up at Rosevale Offset Area.

Table 5: Summary of survey periods for motion sensor camera deployment across the offset property.

Camera Deployment Period	Number of Cameras Deployed	Camera Deployment Date	Camera Pick-up Date	Baits Utilised	Number of Days Recording
1.	6	20th April, 2023	4th May, 2023	Peanut butter & oats	15
2.	4	15th May, 2023	11th August, 2023	Chicken necks	89
3.	4	11th August, 2023	2nd November, 2023	No-baits	83

Camera monitoring locations and timing

While it is noted in the approval conditions define seasonal monitoring requirements across summer, winter, autumn and spring, broadscale camera trapping has been completed over the majority of 2023 which is considered to cover the life cycle of the primary target pest species being wild dog. This period encompasses part of the wild dog breeding season which occurs typically from April to June 2024 (Queensland Government, 2024).

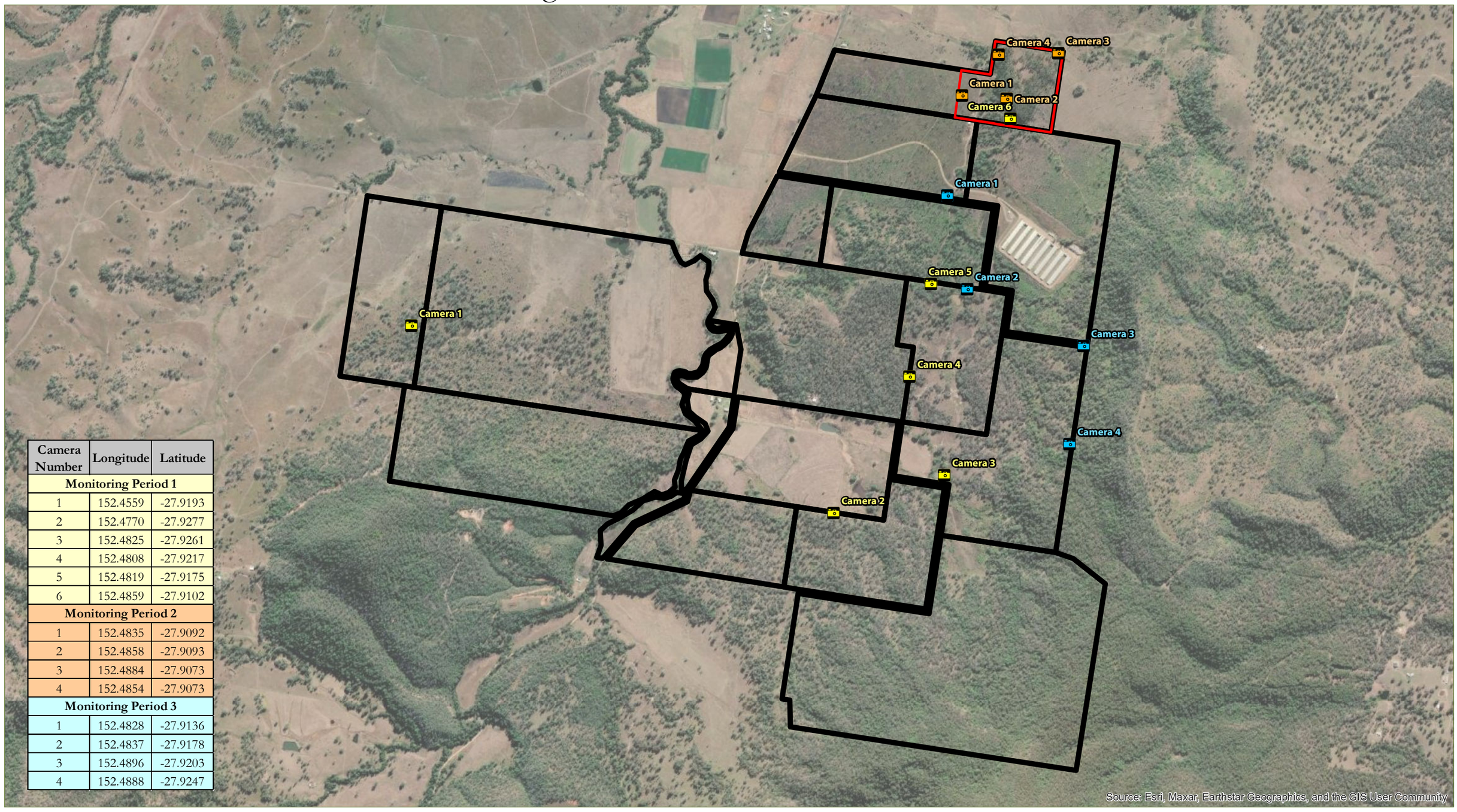
As stated in Section 4.6 of *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland June 2022 (V 4.0)* the patterns of faunal activities and estimates of relative abundance, or presence-absence of species, varies temporally in response to the time of day (day versus night), seasonal changes (spring versus winter) as well as between years (drought versus wet). It is noted that in South-east Queensland, the optimal time and conditions for 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 is in Autumn (late February – April) when high summer temperatures begin to drop and before the onset of colder overnight temperatures.

Cameras were deployed generally in accordance with these guidelines, however, for significantly longer periods of time to optimise data collection and results.

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. Between April 2023 – November 2023, data was recorded for a total of one hundred and eight-seven (187) nights, well above the minimum amount recommended.

The location of baseline pest camera monitoring is shown on **Plan 11.**

Plan 11 Baseline Pest Camera Monitoring



Camera Number	Longitude	Latitude
Monitoring Period 1		
1	152.4559	-27.9193
2	152.4770	-27.9277
3	152.4825	-27.9261
4	152.4808	-27.9217
5	152.4819	-27.9175
6	152.4859	-27.9102
Monitoring Period 2		
1	152.4835	-27.9092
2	152.4858	-27.9093
3	152.4884	-27.9073
4	152.4854	-27.9073
Monitoring Period 3		
1	152.4828	-27.9136
2	152.4837	-27.9178
3	152.4896	-27.9203
4	152.4888	-27.9247

Montauban Environmental Offsets

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0 100 200 400 600 Meters

1:18,130

Cordinate System: GDA2020 MGA Zone 56

Location/Adress:Aratula, QLD

Date: 3/12/2024

Plan Name: Plan 11 Baseline Camera V1

References:

Legend

- Offset Site DCDB
- Barrams Rd Offset Boundary
- Monitoring Period 1 Camera
- Monitoring Period 2 Camera
- Monitoring Period 3 Camera

Site Camera Deployment 1 – April to May 2023

Six cameras were deployed across the entire proposed offset area to determine baseline data. Each trap site considered the pre-clear regional ecosystem communities as well as current on-site conditions, including density of vegetation and habitat features. Motion cameras were deployed between the 20th April through to the 4th May, 2023, totally fifteen (15) days of assessment. All motion cameras were deployed with non-meat-based baits including peanut better and oats for general results. The results varied across the site with common species including *Trichosurus vulpecula* (Common Brushtail Possum), *Phascogale tapoatafa* (Brush-tailed Phascogale), and *Macropus rufogrisues* (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 and two (2) European foxes were recorded during this survey period. Details of each camera installation and location are provided in **Table 6**.

Table 6: Camera summary – deployment period 1 (20th April to 4th May 2023)

ID	Latitude	Longitude	Photo	Description of location
1	-27.91929828940	152.45585257800		Camera 1 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.
2	-27.92774891030	152.47698854800		Camera 2 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.

ID	Latitude	Longitude	Photo	Description of location
3	-27.92606866940	152.48254838200		Camera 3 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.
4	-27.92166466160	152.48081831600		Camera 4 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.
5	-27.91754789670	152.48192522400		Camera 5 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.
6	-27.91020562720	152.48594307400		Camera 6 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.

Site Camera Deployment 2 – May to August 2023

Four camera traps were deployed within the approved offset are 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. All cameras were deployed from the 15th May, 2023 through to 11th August, 2023 (total eighty-nine days).

All cameras throughout the survey period were baited with meat-based bait (chicken necks). These were 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 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. Details of each camera installation and location are provided in **Table 7**.

Table 7: Camera summary – deployment period 2 (15th May to 11th August 2023)

ID	Latitude	Longitude	Photo	Description of location
1	-27.90915479060	152.48351207300		Camera 1 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* (Syndey 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.
2	-27.909333594	152.485766808		Camera 2 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

ID	Latitude	Longitude	Photo	Description of location
				fauna, including increasing recordings of wild dogs.
3	-27.90730013040	152.488363183		Camera 3 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.
4	-27.90734306100	152.48536560700	N/A	Camera 4 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.

Site Camera Deployment 3 – August to November 2023

Four camera traps were deployed within the approved offset are 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. All cameras were deployed from the 15th 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 chicken shed from the 11th August, 2023 through to 2nd November, 2023 (eighty-three days). Five (5) dogs were observed through this survey period. Details of each camera installation and location are provided in **Table 8**.

Table 8: Camera summary – deployment period 3 (11th August to 2nd November 2023)

ID	Latitude	Longitude	Photo	Description of location
1	-27.91361530610	152.48276964700		Camera 1 was deployed 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.
2	-27.91779423900	152.48374456700		Camera 2 was deployed 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.
3	-27.92034623730	152.48955937600		Camera 3 was deployed 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.

ID	Latitude	Longitude	Photo	Description of location
4	-27.92471553210	152.48883771500		Camera 4 was deployed 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.

Extent of Weed Cover

Baseline weed extent mapping assessments were undertaken across the Rosevale Offset Property on 20th, 24th, 27th April and 5th May 2023 utilising an antenna-based GPS system to determine the extent of weed cover, as defined under the approval conditions for EPBC 2021/9005.

The *Biosecurity Act 2014*, which commenced on 1 July 2016, establishes a framework to regulate and control invasive plants and animals. Under the *Biosecurity Act 2014*, landowners are responsible for taking all reasonable and practical steps to minimise the risks associated with invasive plants and animals under their control. This is known as the general biosecurity obligation (GBO).

The *Biosecurity Act 2014* categorises restricted matters (restricted plants and animals) into the following:

- Category 1: must be reported to an inspector within 24 hours (includes Red Imported Fire Ants, amongst others).
- Category 2: must be reported within 24 hours Biosecurity Queensland on 13 25 23.
- Category 3: must not be distributed either by sale or gift, or released into the environment.
- Category 4: must not be moved.
- Category 5: must not be kept.
- Category 6: must not be fed (animals).
- Category 7: must be euthanised (animals).

The primary weed species located within ROA 1 is *Lantana camara* (Lantana) which is identified as a WONS.

The percentage cover of WONS and weeds listed under the *Biosecurity Act 2014* was determined using a method detailed in the *Guidelines for Monitoring Weed Control and recovery of native vegetation* (Auld 2009). In this method, weed areas are mapped on-ground followed by an estimation of the percentage cover of weeds.

Using an antenna-based GPS system, the spatial extent or patches of WONS and other weeds within the offset area was mapped on-ground as polygons to produce a 'mud map' of the site (**Figure 13**).

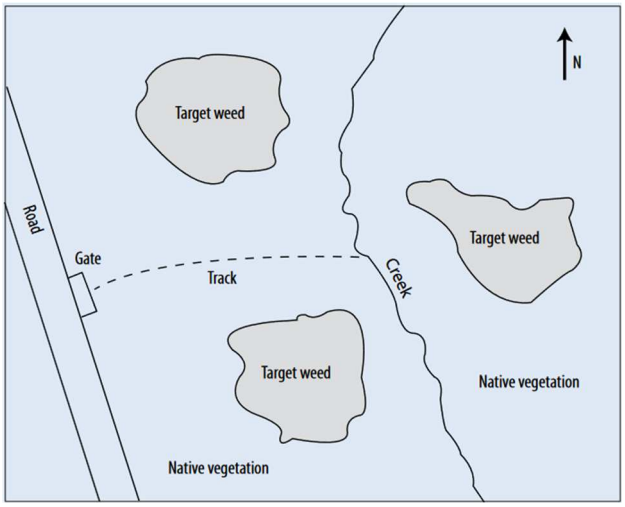


Figure 13. Example 'Mud map'. Extract from Auld (2009) – Figure 1.

The offset area was stratified into broad weed management areas based on the dominant prevailing vegetation type and preliminary estimates of weed cover. An antenna-based GPS system was used to accurately delineate the areas on-ground. The offset area was delineated into four (4) management areas (**Plan 12**):

1. Rhodes grass paddock with scattered Lantana (Low weed cover)
2. Moderate Lantana with scattered Eucalyptus species (Moderate weed cover)
3. Moderate to high Lantana coverage (Moderate-High weed cover)
4. High Lantana coverage and plantation (High weed cover)

Within these broad areas, the percentage weed cover was estimated on-ground and a vegetation cover class of WONS and weeds listed under the *Biosecurity Act 2014* assigned for each management area. Observed weed species within each management area were also recorded. Weed cover is estimated as a percentage range which corresponds with a cover class detailed in **Table 9**. A diagrammatic representation of 5%, 25% and 50% cover is provided in **Figure 14** below.

Table 9: Classes for vegetation cover

Class	Percentage range
1	0
2	0-5
3	6-25
4	26-50
5	51-100

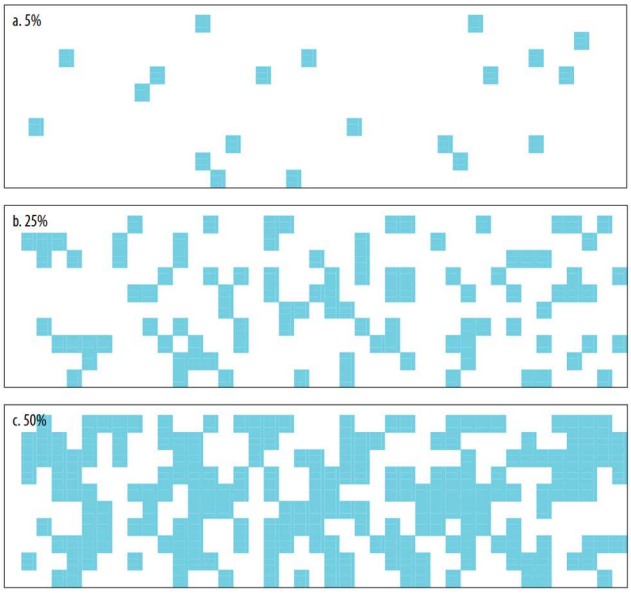


Figure 7. Shaded areas represent percent cover.

Figure 14. Extract from Auld (2009) – Figure 7.

Surveys to estimate the weed cover using the vegetation cover classes proposed by Auld (2009) will be used in milestone assessments at Years 5, 10, 15 and 20 of the offset in addition to Modified Habitat Quality Assessment transects which also involve a component of weed cover estimation. Results and progress against the management and monitoring actions will be reported on as part of the Annual Compliance Report.

Caveats and future surveys

The weed cover estimation method described above was selected as the preferred method due to site conditions reducing the ability for other methods to be applied. The heavy density of weeds rendered a large portion of the offset area inaccessible on foot to implement other techniques. While large areas could be accessed, completing surveys within the areas that are accessible, such as the western paddock areas which contains minor weed cover, would result in a misrepresentative sample of weed extent within the offset area.

With the implementation of weed management measures and the anticipated improvement in access across the offset area, the methods to determine percentage cover of weeds as defined under the approval may be adapted as part of future surveys. Methods that may be employed in future monitoring surveys may include line-transects. This alternative method is described below. If this alternative technique is chosen for future surveys, this will be the method used going forward.

Line-transect method

In order to quantify the percentage cover within each mapped area, the line-transect methodology presented in the *Guidelines for Monitoring Weed Control and recovery of native vegetation* (Auld 2009) was implemented to estimate weed cover percentage. This step is completed to define patches of weeds and subsequently guide the placement of targeted weed transects as a means of estimating percentage cover within a given patch.

In this methodology, the ground cover of a weed is a measure of the perpendicular projection of aerial parts of plants to the ground, shown in **Figure 15**. This method minimises user variability as cover calculations are not reliant on estimations, cover is instead accurately measured against the tape, typically standardised at 100 metres in length. With this technique, the percentage cover of all weed species (WONS and non-WONS) along the line-transect is recorded. Because shrubs may overlap plants growing closer to the ground, the total percentage cover of vegetation over an area may be greater than 100%. The data is recorded in metres, however, can be interpreted as a percentage.

Auld (2009) does not prescribe a minimum number of line-transects which is a feature of other transect methods such as that prescribed in the BioCondition Assessment Manual. The number of transects established within the four (4) delineated weed areas described above. Where line-transect sites are established they will be considered permanent and repeated as part of future survey rounds.

At the 50 m centre point location, photos are to be taken documenting vegetation to the north, south, east and west. It is noted that the measurements are estimates of the whole rather than a precise and complete record.

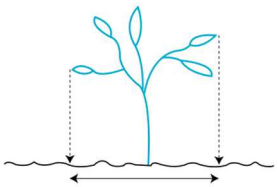


Figure 5. Ground cover of a plant indicated by the horizontal arrowed line.

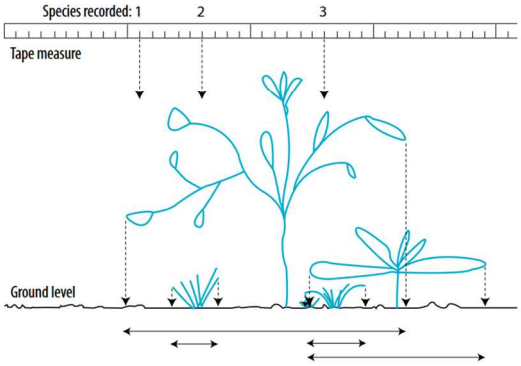


Figure 6. Overlapping vegetation means that total ground cover is often more than 100%. Three different sampling points indicated on the tape measure, used as a line-transect, will record either one, two or three plants.

Figure 15. Extract from Auld (2009) – Figures 5 and 6.

Following the completion of line-transects to estimate the percentage cover of weeds, the estimated cover in hectares of WONS and other weeds across the offset area can be calculated. Where there are multiple transects in a given patch, the percentage cover of WONS and other weeds is first averaged across transects to produce an average percentage cover for the given patch

The cover of WONS and other weeds in hectares is then calculated for each patch as the proportion of the percentage and/or average percentage cover multiplied by the size of the patch in hectares. The hectares of WONS, and separately for other weeds, is then summed for all patches to produce a total cover of WONS for the offset area.

Photo Monitoring – MNES Habitat Restoration

During Year 1 several actions are required to demonstrate evidence of Management Action 5 – MNES Habitat Restoration including:

- Finalise locations, sequence and timing for revegetation program
- Cultivate and prepare ROA 1 (17.0ha) area in preparation for year 2 planting
- Create ROA 1 water source for revegetation establishment (purpose located dam or broadscale irrigation)
- Establish photo monitoring points and protocols for the ROA 1

Seven (7) photo monitoring points were established within the offset area to monitor vegetation state and weed extent on 15th May 2023.

Camera Trap Surveys – Feral Animal Management

Table 10 includes a summary of the species identified during the camera trap survey periods. **Plan 12** shows the locations of the camera trap deployment. The results varied across the site with common species including *Trichosurus vulpecula* (Common Brushtail Possum), *Macropus giganteus* (Eastern Grey Kangaroo), *Phascogale tapoatafa* (Brush-tailed Phascogale), and *Macropus rufogrisues* (Red-necked Wallaby) recorded in most of the results in each camera during camera deployment period 1. Multiple *Sus scrofa* (feral pig) were also recorded at Camera 3 which was situated adjacent to an existing dam (**Photo Plate 9**). Four (4) *Canis familiaris* (wild dog) were detected on Camera 4 (**Photo Plate 10**) and a *Vulpes vulpes* (European red fox) was recorded at Cameras 2 and 3 (**Photo Plate 11**). No wild dogs were recorded during camera deployment period 2. Eight (8) wild dogs were detected during camera deployment period 3 (**Table 11**).

The raw survey data is provided at **Appendix C**.

Table 10: Species recorded on motion cameras

Species	**Common Name**	**Camera Deployment 1**	**Camera Deployment 2**	**Camera Deployment 3**
Anas superciliosa	Pacific Black Duck	✓		
Chenonetta jubata	Australian Wood Duck	✓		
Egretta novaehollandie	White-faced Herron	✓		
Ardea ibis	Cattle Egret	✓		
Ardea intermedia	Intermediate Egret	✓		
Gallinula tenebrosa	Dusky Moorhen	✓		
Vanellus miles	Masked Lapwing	✓	✓	
Centropus phasianinus	Pheasant Coucal	✓		
Gymnorhina tibicen	Australian Magpie	✓	✓	✓
Corvus orru	Torresian Crow	✓	✓	✓
Strepera graculina	Pied Currawong	✓	✓	
Tachyglossus aculeatus	Echidna	✓	✓	
Phascogale tapoatafa	Brush-tailed Phascogale	✓		
Isoodon macrourus	Northern Brown Bandicoot	✓	✓	
Trichosurus vulpecula	Common Brushtail Possum	✓	✓	✓
Macropus rufogriseus	Red-necked Wallaby	✓	✓	✓
Macropus parryi	Whiptail Possum	✓	✓	✓
Macropus giganteus	Eastern Grey Kangaroo	✓	✓	✓
Sus scrofa	Feral Pig	✓		
Canis familiaris	Wild Dog	✓		✓
Bos taurus	Cattle	✓		✓
Vulpes vulpes	European Red Fox	✓		

Table 11: Motion sensor camera pest animal results

Site Camera Deployment	Number of Cameras Deployed	Total Days Recording (number of camera x number of days)	Total wild dogs records	Total foxes recorded	Total feral pigs recorded
1.	6	90	4	2	6
2.	4	356	0	0	0
3.	4	332	8	0	2
Total	**14**	**778**	**12**	**2**	**8**

Photo Plate 9: Feral pigs (*Sus scrofa*) recorded during deployment 1.

Photo Plate 10: Wild dog (*Canis familiaris*) recorded during deployment 3.

Photo Plate 11: European red fox (*Vulpes vulpes*) recorded during deployment 1.

Feral Animal Relative Abundance Index

The 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= D/TN x 100, where D is numbers of detections and TN is the total number of camera-trap nights (all cameras combined). This methodology ensures that the surveys are representative of the entire area and are repeatable for future monitoring requirements. RAIs are completed for predator pest species (wild dogs and foxes combined) and herbivorous pest species (feral pig).

Based on the total survey period twelve (12) wild dogs, two (2) European red foxes and eight (8) feral pigs were detected via motion camera at various locations throughout the site (**Table 11**). A total of fourteen (14) cameras were deployed throughout this period and totals seven hundred and seventy-eight (778) camera nights.

The baseline RAI of predator pest species (wild dogs and European red foxes) on site is therefore **1.79.**

The baseline RAI of herbivorous pest species (feral pigs) which have potential to damage koala habitat is **1.02**.

Extent of Weed Cover – Results

During ground-truthing and delineation of weed management areas all weed species were recorded. These are listed in **Table 12** below. Two (2) species of WONS were recorded within the offset area being *Lantana camara* (Lantana) and *Senecio madagascariensis* (Fireweed). Seven (7) species of Category 3 restricted weeds listed under the Queensland *Biosecurity Act 2014* were recorded. The dominant weed species across the offset area is Lantana camara with occurrences of other weeds species scattered at low densities or confined to waterway environments at a cover less than 5%.

Table 12: Weed species recorded within the offset area

Species Name	Common Name	Listing
Ageratum houstonianum	Blue Billygoat weed	
Ambrosia artemisiifolia	Annual Ragweed	Category 3 – restricted
Baccharis halimifolia	Groundsel	Category 3 – restricted
Bidens pilosa	Cobbler's Pegs	
Celtis sinensis	Chinese Elm	Category 3 – restricted
Chloris gayana	Rhodes Grass	
Corymbia torelliana	Cadaghi	
Gomphocarpus physocarpus	Balloon Cotton Bush	
Gomphrena celosioides	Gomphrena Weed	
Heliotropium amplexicaule	Blue Heliotrope	
Lantana camara	Lantana	WONS, Category 3 – restricted
Macroptilium lathyroides	Phasey Bean	
Megathyrsus maximus	Guinea Grass	
Melinis repens	Red Natal Grass	
Passiflora suberosa	Corky Passion	
Schinus terebinthifolia	Broad-leaved Pepper	Category 3 – restricted
Senecio madagascariensis	Fireweed	WONS, Category 3 – restricted
Senna pendula	Easter Cassia	
Setaria phacelata	South African Pigeon Grass	
Sida cordifolia	Flannel Weed	
Solanum chrysotrichum	Giant Devil's Fig	
Solanum chrysotrichum	Devil's Fig	
Solanum mauritianum	Wild Tobacco	
Sporobolus pyramidalis	Giant Rat's Tail Grass	Category 3 – restricted
Verbena bonariensis	Purple-top Verbena	

The spatial extent of weed dominated areas are shown on **Plan 12** indicating a substantial portion of the offset area is heavily infested with weeds. The results of the baseline weed delineation surveys are presented in **Table 13** which assigns a weed cover class and approximate density of weed cover for each weed management area shown on **Plan 12**.

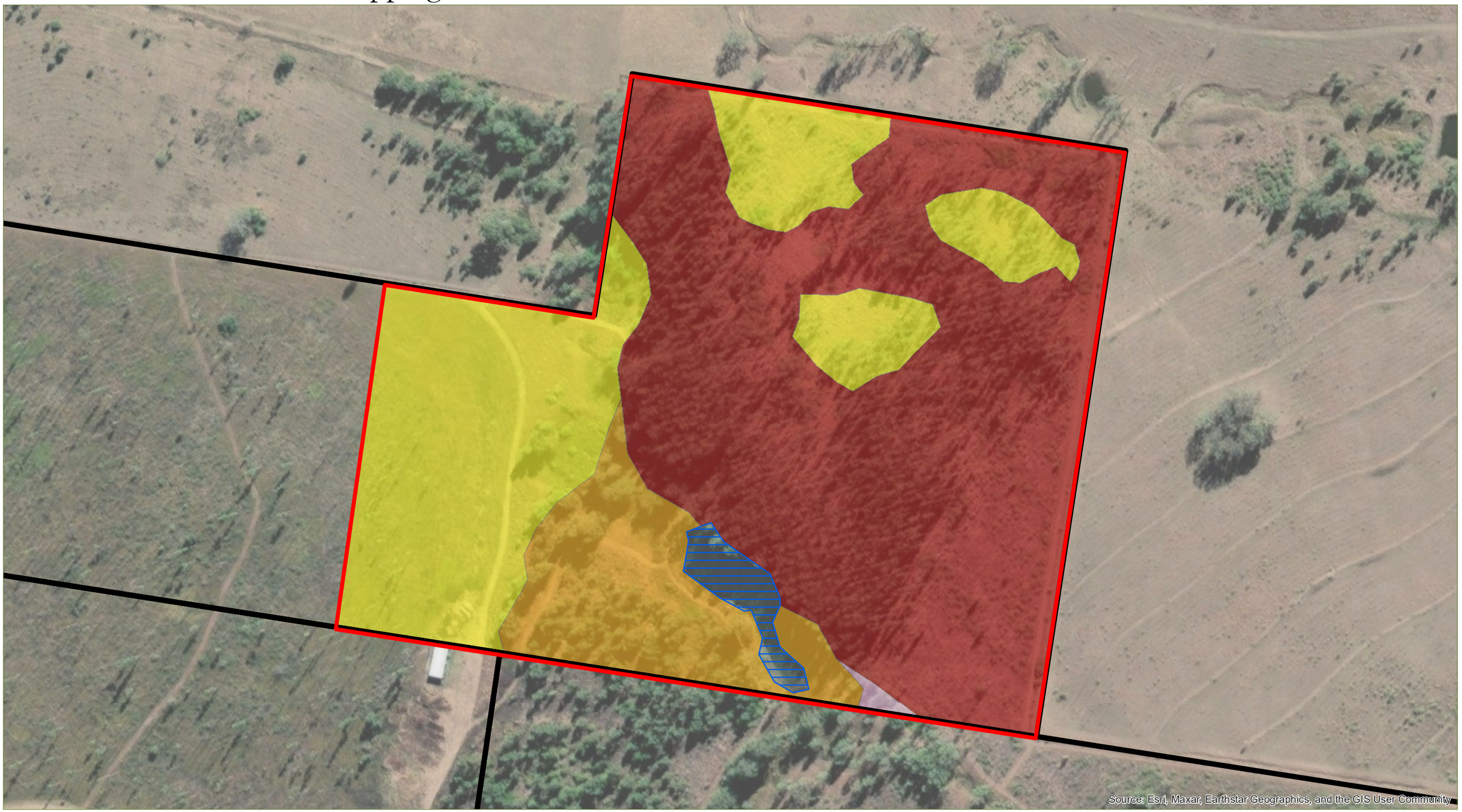
These results indicate large areas of the offset area have a high density of weeds, dominated by WONS species *Lantana camara* with approximately 85% cover in Area 1, while an area in the southern extent described as Area 2 contains medium WONS density at approximately 45% cover. In the northern and western portion of the offset site (Area 4), areas of open paddock are dominated by *Chloris gayana* (Rhodes Grass) which is not identified as a Biosecurity Act weed or WONS with scattered patches of *Lantana camara* (Lantana). The estimated cover of weeds, primarily WONS, within these cleared paddock areas is 5% (**Table 13**).

The total estimated area of weeds across the 17 ha offset area is 9.207 ha which was determined as the percentage of area covered by weeds within each management area.

Table 13: Baseline Weed Cover Results

Weed Management Area	Weed Class	Percentage weed cover	Area (hectares) of offset area	Area (hectares) of Weeds	Description
1	**Class 5**	85%	9.42	8.007	Plantation of eucalypt species, stag trees with understorey dominated by *Lantana camara*.
2	**Class 4**	45%	2.00	0.9	Scattered *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus grandis* (Flooded Gum) with regrowth and patches of *Lantana camara*.
3	**Class 5**	60-80% (average 70%)	0.06	0.04	Moderate to high *Lantana camara* coverage with scattered eucalypt trees.
4	**Class 2**	5%	5.21	0.26	Paddock dominated by *Chloris gayana* (Rhodes grass) with scattered *Lantana camara*, no canopy cover.
Total			**17.0**	**9.207**	

Plan 12 Baseline Weed Mapping



Montauban Environmental Offsets

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1:2,500

Cordinate System: GDA2020 MGA Zone 56

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Location/Adress: Aratula, QLD

Date: 3/12/2024

Plan Name: Plan 12 Weed Mapping V1

References:
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Legend

- Offset Site DCDB
- Barrams Rd Offset Boundary
- Existing Dam
- Area 1 – High Lantana coverage and plantation (85% - Class 5 weed cover) [9.42 ha]
- Area 2 – Moderate Lantana with scattered Eucalyptus species (45% - Class 4 weed cover) [2.00 ha]
- Area 3 – Moderate to high Lantana coverage (60-80% - Class 5 weed cover) [0.06 ha]
- Area 4 – Rhodes grass paddock with scattered Lantana (5% - Class 2 weed cover) [5.21 ha]

Photo Monitoring – MNES Habitat Restoration

Table 14 shows the **Year 1** baseline photo monitoring points. Refer to **Plan 13** for locations of photo points.

Table 14: Seven (7) photo monitoring points within the Rosevale ROA1 offset area

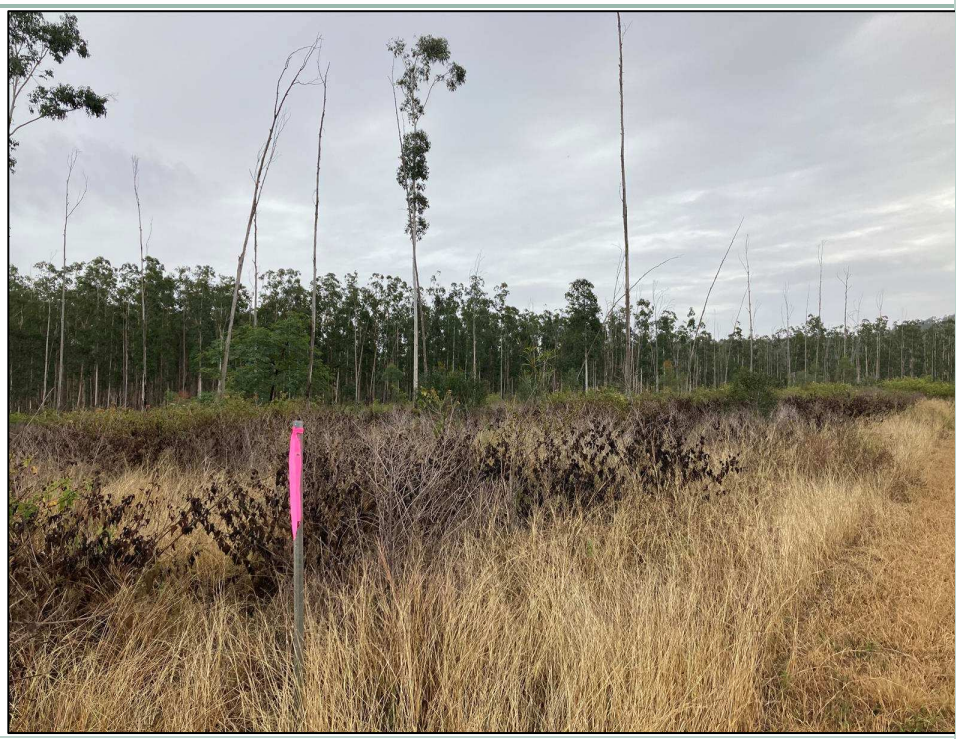
Photo Monitoring Point / Coordinates	Direction	Photo
10559 – 01	North-west	
10559 – 02 (a)	North-east	

Photo Monitoring Point / Coordinates	Direction	Photo
10559 – 02 (b)	West	
10559 – 03	South	

Photo Monitoring Point / Coordinates	Direction	Photo
10559 – 04	East	
10559 – 05 (a)	East	

Photo Monitoring Point / Coordinates	Direction	Photo
10559 – 05 (b)	West	
10559 – 06 (a)	East	

Photo Monitoring Point / Coordinates	Direction	Photo
10559 – 06 (b)	South	
10559 – 07 (a)	South-east	

Photo Monitoring Point / Coordinates	Direction	Photo
10559 – 07 (b)	South-west	

Plan 13 Photo Monitoring Locations

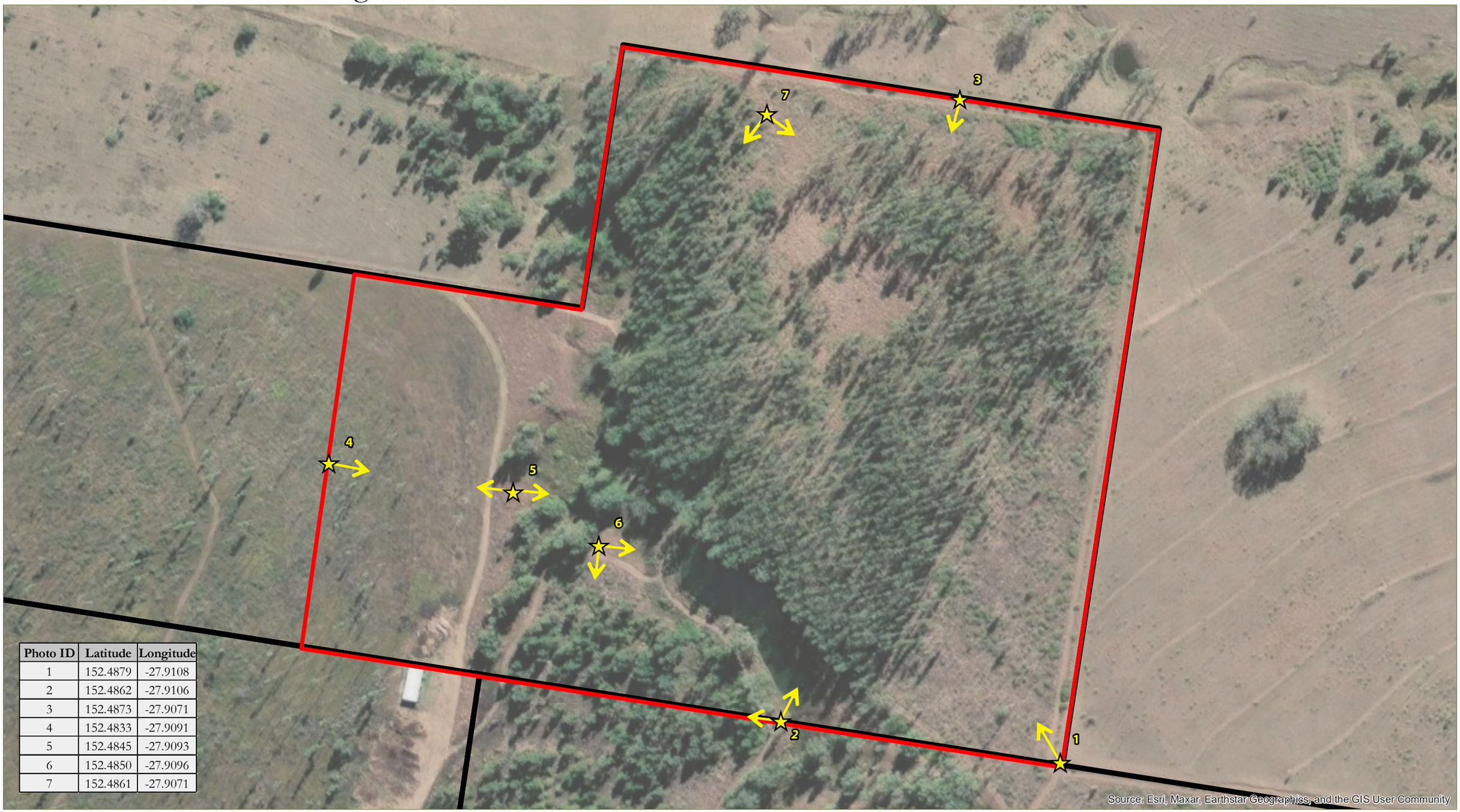


Photo ID	Latitude	Longitude
1	152.4879	-27.9108
2	152.4862	-27.9106
3	152.4873	-27.9071
4	152.4833	-27.9091
5	152.4845	-27.9093
6	152.4850	-27.9096
7	152.4861	-27.9071

Montauban Environmental Offsets

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0 20 40 80 Meters

1:2,300

Cordinate System: GDA2020 MGA Zone 56

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Location/Adress:Aratula, QLD

Date: 3/12/2024

Plan Name: Plan 13 Photo Monitoring V1

References:

Legend

- Offset Site DCDB
- Barrams Rd Offset Boundary
- Photo Point (with direction)

ROSEVALE OFFSET AREA 1 MANAGEMENT ACTIONS

There are six (6) management actions identified as relevant and necessary for the ROA 1 to achieve outcomes which will benefit MNES and in particular, the Koala. The management actions focus on the recreation of habitat for the Koala, while also reducing threats to the Koala. Although there may be overlap between some of the management actions, all management actions are considered to contribute to the improvement of Koala habitat on ROA 1.

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 Habitat Quality Assessment* (MHQA) method for Koala habitat to set benchmarks and targeted improvements within the ROA 1.

Actions to be completed in accordance with this OMP include:

- **Management Action 1:** Feral Animal Control (primarily targeting wild dogs)
- **Management Action 2:** 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:** 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.

A summary table of the management measures and commitments is included in **Table 15** below. It should be noted that all management measures are to be completed across the entirety of the ROA 1.

Table 15: Summary of Management Actions and Commitments

	Completion Criteria	Preliminary Completion Criteria	Monitoring Activity
Management Action 1 – Feral Animal Control			
Year 1	Complete detailed baseline / seasonal feral animal management survey(s) Consult Scenic Rim Regional Council and / or the Regional Pest Management Representative Develop a Pest Management Implementation Strategy	Baseline of pest animals established; Quarterly or bi-annually meeting organised with SRRC or the Regional Pest Management Representative; Finalise the Pest Management Implementation Strategy.	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Year 5	Replicate the Year 1 detailed baseline / seasonal pest management survey(s) to demonstrate less than 5% of the Year 1 baseline survey results.	Implement the Pest Management Implementation Strategy (Year 2 - 5); Demonstrate that pest animals have been reduced to less than 5% of the year 1 baseline survey results.	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Year 10, 15 & 20	Repeat the baseline surveys in year 10, 15 and year 20 to demonstrate a maintenance of year 5 statistically reduced vertebrate pest species incidence and or occurrence below the 5%-year 1 baseline survey results.	Implement the Pest Management Implementation Strategy (Year 5 - 20); Continue to demonstrate that pest animals have been reduced to less than 5% of the year 1 baseline survey results.	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Adaptive Management	If greater than 5% of the baseline pest survey results remain in the Year 5 survey and reporting, Year 10 survey results to demonstrate that the less than 5% of the baseline survey has been achieved.		Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Management Action 2 - Weeds of National Significance Control			
Year 1	Complete detailed baseline / weed extent surveys utilising an antenna based GPS system	Complete mapping of all *Lantana spp*. infestations across the ROA 1; Detailed maps identifying the extent of *Lantana spp.* infestations; Specific total area of *Lantana spp.* infestations within the ROA 1; Exclusion of stock from the ROA 1	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Year 5	Replicate Detailed Weed Extent Re-Survey through the ROA 1 – Include plans and calculations in the Year	Demonstrate that woody weed coverage across ROA 1 has been reduced by 95%;	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual

	Completion Criteria	Preliminary Completion Criteria	Monitoring Activity
	5 OAAR demonstrating less than 5% of the ROA 1 area to contains weed infestations.	Demonstrate that all stock has been excluded from the ROA 1;	Compliance Report and on the Approval Holders website
Year 10	Replicate Detailed Weed Extent Re-Survey through the ROA 1 – Include plans and calculations in the Year 10 OAAR demonstrating less than 5% of the ROA 1 area to contains weed infestations	Continue to demonstrate that woody weed coverage across ROA 1 has been reduced by 95%;	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Year 15 & 20	Repeat of Baseline surveys in year 15 and year 20 to demonstrate a maintenance of year 10 significant reductions to the extent of Lantana spp. below 5% of the ROA 1 area to contains weed infestations	Continue to demonstrate that woody weed coverage across ROA 1 has been reduced by 95%;	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Management Action 3 – Livestock Control			
Year 2	Erect fauna friendly exclusion perimeter fencing	Demonstrate that the fencing is completed in year 1 and 2 until the entire ROA 1 is fenced;	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Other	Annual inspection of the fencing integrity and stock breaches	Nil stock breaches into the ROA 1 from Year 3 - Year 20;	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Management Action 4 - Access and Trespass Control			
Year 1	Inspection and rectification of all perimeter fencing Notification of offset areas, purpose and outcomes to all adjoining land holders	Provide evidence of the notification letter issued to the adjoining landholders;	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Other	Access gates and signage to be installed where ROA 1 fencing crosses tracks required to be maintained for access	Installation of access gates and signage throughout the ROA 1 to be completed by Year 2, when Action 3 is completed;	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website

	Completion Criteria	Preliminary Completion Criteria	Monitoring Activity
Management Action 5 – MNES Habitat Restoration			
Year 1	Finalise locations, sequence and timing for revegetation program	Revegetation is undertaken where identified to planting specifications and consistent with the pre-clear Regional Ecosystem type; All revegetation will be completed by end of Year 2, with the revegetation area totalling 17.0 ha; Minimum of 90% survival rate of the revegetation stock or equivalent stem density (ie. through natural regeneration) by the Year 10 major monitoring period;	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
	Cultivate and prepare ROA 1 (17.0ha) area in preparation for year 2 planting		
	Create ROA 1 water source for revegetation establishment (purpose located dam or broadscale irrigation)		
	Establish photo monitoring points and protocols for the ROA 1		
Year 2	Complete ROA 1 MNES habitat restoration (17.0ha)		Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Year 5	Replicate transects surveys completed in accordance with the Modified Habitat Quality Assessment (Koala) tool, species stocking rate surveys and photo point monitoring	Demonstrate MNES habitat restoration survival rate; Demonstrate an increase in the MHQA score	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
	For the ROA 1, achieve a MHQA score of 3/10		
Year 10	Replicate transects surveys completed in accordance with the Modified Habitat Quality Assessment (Koala) tool, species stocking rate surveys and photo point monitoring	Demonstrate an increase in the Koala usage in ROA 1 based on the baseline and future increased expected; Demonstrate an increase in the MHQA score.	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
	For the ROA 1, achieve a MHQA score of 4/10		
Year 15	Replicate transects surveys completed in accordance with the Modified Habitat Quality Assessment (Koala) tool, species stocking rate surveys and photo point monitoring	Demonstrate an increase in the Koala usage in ROA 1 based on the baseline and future increased expected; Demonstrate an increase in the MHQA score.	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
	For the ROA 1, achieve a MHQA score of 6/10		

	Completion Criteria	Preliminary Completion Criteria	Monitoring Activity
Year 20	Replicate transects surveys completed in accordance with the Modified Habitat Quality Assessment (Koala) tool, species stocking rate surveys and photo point monitoring For the ROA 1, maintain a MHQA score of 7/10	Demonstrate an increase in the Koala usage in ROA 1 based on the baseline and future increased expected; Demonstrate an increase in the MHQA score.	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website
Other			
Annually & Year 5, 10, 15 & 20	Complete Offset Area Annual Reports, with major milestone reporting completed in Year 5, Year 10, Year 15 and Year 20.	Provide the Offset Area Annual Reports to the proponent to be published with the Annual Compliance Report.	Offset Area Annual Report (OAAR) to be published in the EPBC Approval Annual Compliance Report and on the Approval Holders website

ACTION 1: FERAL ANIMAL MANAGEMENT

MANAGEMENT ACTION OUTCOME

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.

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 (ie. 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 (ie. the expenditure to undertake feral animal control would not result in enough economic gain in productivity to warrant implementation).

A core role of the management action 1 will be for the prolonged control and reduction in feral dogs over the Rosevale offset property for the offset period.

MANAGEMENT ACTION LOCATION

- Feral animal control will be focussed within ROA 1;
- 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

- Reduce the occurrence of feral animal species (namely wild dogs) below the baseline survey in the ROA 1 within 5 years from the commencement of the action;
- Maintain the statistical reduction of feral animal species within the ROA 1 at or below the baseline survey results for the life of the approval; and
- Ensure no koala injury or mortality occurs within the ROA 1 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:

- 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 baseline of feral animal populations and 'hot spots' and key activity periods (eg 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.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria	Implementation Progress
Year 1	Complete detailed baseline / seasonal feral animal survey(s)	**Completed** – Detailed feral animal abundance surveys completed in Year 1 by suitably qualified professionals. Results were provided in the Year 1 OAAR published in ACR and are also provided in this OMP.
Year 1	Develop a Pest Management Plan	**Completed** – A Pest Management Strategy has been formulated. Evidence provided in Year 1 OAAR published in ACR. Details of the Pest Management Implementation Strategy provided in following sections.
Year 2 – 5	Implement the Pest Management Plan	Ongoing
Year 5	Replicate the Year 1 detailed baseline / seasonal pest management survey(s) to demonstrate a statistical reduction of the Year 1 baseline survey results	-
Year 5 – 20	Implement the Pest Management Plan	-
Year 10, Year	Repeat the baseline surveys in year 10, 15 and year 20 to demonstrate a maintenance of year 5 statistically reduced vertebrate pest species	-

Timing	Preliminary Completion Criteria	Implementation Progress
15 & Year 20	incidence and or occurrence below the-year 1 baseline survey results	

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 to complete:

- Baseline and repeat surveys to be completed by a senior tertiary trained ecologist, zoologist or environmental scientist with a minimum of five years industry field experience;
- Use of 1080 or sodium fluoroacetate poisons is regulated under the *Health (Drugs and Poisons) Regulations 1996*. Deployment and use of this control method to be via a registered contractor holding relevant permits and demonstrated experience;
- Deployment and use of suitable wild dog traps and euthanasia to be in accordance with Queensland *Biosecurity Act 2014*; and
- Hunting / shooting program to occur in accordance with all relevant Queensland Government permits and regulations.

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.

PEST MANAGEMENT IMPLEMENTATION STRATEGY

During Year 1, the Pest Management Implementation Strategy was devised:

1. Initial Assessment and Data Collection

1.1 Baseline Data

Baseline data identified wild dogs (*Canis familiaris*) and feral pigs (*Sus scrofa*) as pests present on the property therefore require management actions. Refer to **Appendix B** for detailed baseline methodology and results.

2. Goal Establishment

2.1 Define Objectives

The objectives of the Pest Management Implementation Strategy are to reduce the population of wild dogs, foxes and feral pigs, minimising damage to vegetation, and safeguarding native species.

3. Methodology and timeframe for implementation

3.1 Feral pigs:

- Offset Provider will set up a series of pig traps that will be baited on a quarterly basis depending on activity noted on ground and via trail cams set up in strategic locations.
- Strategic 1080 baiting will occur annually or as required per above monitoring.

3.2 Wild dogs and foxes:

- Offset Provider will monitor via strategically set up trail cameras combined with on ground inspections.
- A thorough 1080 baiting program will be conducted annually or as required per monitoring above.

MANAGEMENT ACTION MONITORING

Completion of baseline surveys and range estimate of feral animal populations, seasonal locations, dispersal patterns and hot spots, including sighting and incidence (death / injury) data. Survey methods and results provided in Year 1 Offset Area Annual Report (and incorporated in Year 1 Annual Compliance Report for the Approved Action).

To determine the baseline level of feral animals within the ROA 1, a non-invasive survey technique utilising baited camera traps will be implemented, as per the methodology in the following section.

Interim actions and results provided in Year 2-4 Offset Area Annual Report. (provided as conditioned in the relevant Annual Compliance Report for the Approved Action).

Replicated baseline surveys in year 5, 10, 15 & 20 to demonstrate statistical reduction in:

- Incidental sighting 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;
- Stock losses over the property; and
- Statistical reduction or nil occurrence of injury or mortality of vertebrate pest species on site koala populations.

Year 5 Offset Area Annual Report (OAAR) to include repeat survey methods, results data and comparative analysis demonstrating statistical reduction in vertebrate pest management evidence and impacts. Report to include any adaptive management recommended changes to pest control and reduction 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 DAWE 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)

Repeat of Baseline surveys in year 10, year 15 and year 20 to demonstrate a maintenance of year 5 statistically reduced vertebrate pest species incidence and or occurrence at or below the year 1 baseline survey results.

If greater than the baseline pest survey results remain in the Year 5 survey and reporting, then consultation with an expert in feral animal control is required to assist in adaptively managing the program and implementation to ensure a statistical reduction at or below the baseline survey has been achieved.

Year 10 Annual OAAR to include repeat survey methods, results data and comparative analysis demonstrating a maintenance or statistical reduction in vertebrate pest species evidence and impacts. Report to include any adaptive management recommended changes to pest control and reduction methods 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 statistically reduced vertebrate pest species incidence and or occurrence at or below the year 1 baseline survey results.

Actions and results provided in Year 11-19 of continuation of Year 10 adaptive management feral animal management strategy (provided as conditioned in the relevant Annual Compliance Report for the Approved Action).

Progress update:

Year 1 – baseline feral animal abundance surveys completed and documented and provided in this OMP.

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. Three cameras will be set up within the ROA 1. The cameras are to be systematically located to capture a representative of the ROA 1. The three cameras are to be deployed seasonally, with a focus on spring and summer, where wild dogs are known to be more active. 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. 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.

MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

Without intervention and active management, the risk of feral animal impacts on the Koala 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. 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 a reduction in occurrence and impacts. Major survey and review periods for independent review of the OMP are set at year 5 and year 10 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.

YEAR 1 BASELINE SURVEY RESULTS

Baseline feral animal management surveys were conducted by Saunders Havill Group (SHG) across the offset site during three periods in 2023 using baited motion sensor camera traps. Fauna surveys were conducted throughout the offset site to determine the presence/absence of species as well as to understand the relative abundance of terrestrial fauna species, particularly wild dogs, and other pest species throughout the offset site. Relative abundance index was calculated to determine the baseline feral animal abundance across the offset site, with methods and results of these surveys presented in the section starting at **page 57**.

ACTION 2: WEEDS OF NATIONAL SIGNIFICANCE MANAGEMENT

MANAGEMENT ACTION OUTCOME

Preliminary site surveys and observations over the Rosevale offset property recorded a number of weed species, with the most prevalent and inhibitive to Koala movement and habitat restoration being *Lantana camara*. 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 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.

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.

Lantana camara occurs 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 Estimates of the extent of Lantana and weed cover generally within the offset area are provided in baseline survey results in the section starting on **page 57**.

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. Although baseline data is limited to the survey events undertaken for this EPBC Application research infers the highly invasive and spreading nature of the species, coupled with the in-active management in areas would result in progressive increases as local climatic events align with optimal germination and seeding periods. In areas blanket layers of *Lantana camara* additionally form a barrier to terrestrial species, which would include limiting the Koalas ability to access areas containing and over-canopy of NJKHTs. Refer to **Photo Plate 12** for on-ground images of *Lantana camara* infestations on the Rosevale offset property.

Photo Plate 12: Dense *Lantana camara* infestations observed on the Rosevale offset area.

MANAGEMENT ACTION LOCATION

- Management of weeds of national significance (WONS) is to occur in the entire ROA 1, with a particular focus on *Lantana camara*.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Removal and control of all major *Lantana camara* infestations from within the ROA 1 using a variety of mechanical and herbicide methods. *Lantana camara* infestations are to be reduced to below 5 % of the ROA 1 area. Areas identified as containing higher infestations are to be targeted during weed removal events.
- Ongoing maintenance to ensure that *Lantana camara* extents within the ROA 1 are retained at or below the 5 % of the total area through weed management actions; and
- Prevent the further spread or establishing of new *Lantana camara* outbreaks within the ROA 1 by excluding cattle from the offset management zone.

MANAGEMENT ACTION RISK REDUCTION MEASURES

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 1 (achieve a total ha extent of weed infestations / occurrences within the ROA 1);
- Exclude stock (cattle) access from *Lantana camara* infestation areas within the ROA 1 (grazing cattle provide the most continuous source of *Lantana camara* spread);
- Undertake detailed weed management control activities within the ROA 1. 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.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria	Implementation Progress
Year 1	Complete detailed baseline / weed extent survey utilising an antenna-based GPS system to map the full extent of all *Lantana camara* areas within the ROA 1. Results of baseline weed extent surveys to be included in year 1 Offset Area Annual Report for inclusion in the project ACR.	**Completed** – Detailed baseline weed extent surveys completed in Year 1 by suitably qualified professionals. Results were provided in the Year 1 OAAR published in ACR and are also provided in this OMP.
Year 1	Exclude cattle from within the ROA 1. By Year 2, the entire ROA 1 will retain cattle exclusion fencing (refer to **Management Action 3**)	**Completed** – Cattle are excluded from ROA 1 via the maintenance of boundary fencing.
Year 2 – 5	Commence detailed weed management control activities within the ROA 1. 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: o 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 o 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.	-
Year 2 – 5	Demonstrate a downward trend in the weed extent, vigor and health annually through years 2-5, achieving a significant reduction in *Lantana spp*. extent within the ROA 1 by year 5, with less than 10% of the ROA 1 area to contains weed infestations. Actions and downward trend to be reported annually in the OAAR.	-
Year 5	Replicate detailed weed extent survey through the ROA 1 – Include plans and calculations in the Year 5	-

Timing	Preliminary Completion Criteria	Implementation Progress
	OAAR demonstrating less than 10% of the year 1 baseline survey results.	
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 *Lantana spp*. extent within the ROA 1 by year 10, with less than 5% of the year 1 baseline survey results. Actions and downward trend to be reported annually in the OAAR.	-
Year 10	Remobilise and replicate detailed weed extent survey through the ROA 1 – 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 year 1 baseline survey results.	-
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 *Lantana spp.* below the 5%-year 1 baseline survey results.	-

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 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

Completion of baseline Lantana surveys providing an actual mapped extent of infestations and occurrences in hectares to be used as the benchmark for measuring improvement. Survey methods and results 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 year 1 base case data.

Replicate baseline surveys in year 5 to demonstrate less than 20% of the year 1 baseline survey extents of *Lantana camara* infestations.

Year 5 OAAR to include repeat survey methods, results data and comparative analysis demonstrating less than 20% of the year 1 baseline survey extents of *Lantana camara* 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, vigor and health annually through years 6-10, achieving a further reduction in *Lantana camara* extent within the ROA 1 by year 10, with less than 5% of the year 1 baseline survey results

Year 10 OAAR to include repeat survey methods, results data and comparative analysis less than 5% of the year 1 baseline survey extents of *Lantana camara* 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 *Lantana camara* below the 5%-Year 1 baseline survey results. 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 *Lantana camara* is maintained below 5% of the year 1 baseline survey results provided as conditioned in the relevant Annual Compliance Report for the Approved Action.

Progress update:

Year 1 – baseline weed extent surveys completed and documented and provided in this OMP.

MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

The primary weed issue through the ROA 1 is Lantana. Mapping of 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 don't 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

YEAR 1 BASELINE SURVEY RESULTS

Baseline weed extent mapping assessments were undertaken across the Rosevale Offset Area 1 on 20th, 24th, 27th April and 5th May 2023 utilising an antenna-based GPS system. Areas of *Lantana camara* (Lantana) patches were mapped and the approximate density of weed coverage within patches of Lantana were recorded to provide actual mapped extents of infestations and occurrences in hectares. The methods and results of these surveys are presented in the section starting on **page 67**.

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 La Nina climatic season prediction for 2020-2021 and increased beef prices, the head of cattle on the Rosevale offset property have increased.

Although there is some limited research that intensive cattle grazing can result in some positive biodiversity outcomes generally cattle farming re-engineers the landscape to support 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 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).

Fauna friendly stock exclusion fencing or removal of all livestock is the ultimate proposed solution for restricting stock from accessing the Offset Area (ROA 1).

MANAGEMENT ACTION LOCATION

- Livestock control is to focus on ROA 1. ROA 1 is to be fenced with fauna friendly livestock exclusion fencing OR removal of all livestock from the ROA 1.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Prevention and management of livestock from the ROA 1 utilising fauna friendly livestock exclusion fencing OR removal of all livestock from the ROA 1.

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*) 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 1.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria	Implementation Progress
Year 1	Fencing of the ROA 1 (ROA 1) will commence immediately and will be completed by end of Year 1. Alternatively, removal of all livestock from within ROA 1.	**Completed** – An assessment of boundary fencing integrity has been completed. Stock are excluded from the offset area. Evidence is provided in the Year 1 OAAR.
Year 1	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).	**Completed** – The Year 1 OAAR provides details on the fencing locations. Whole of property fencing and fencing bounding the offset area is shown on **Plan 14.**
Year 2 – 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 1. This is to be reported on in the OAAR.	-

It should be noted that 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 where deemed appropriate) OR the Offset Provider will remove all livestock from ROA 1.

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 shown on the **Plan 14** in place by Year 1 reporting;
- Nil stock breaches into ROA 1s from year 2-20 (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 2-20.

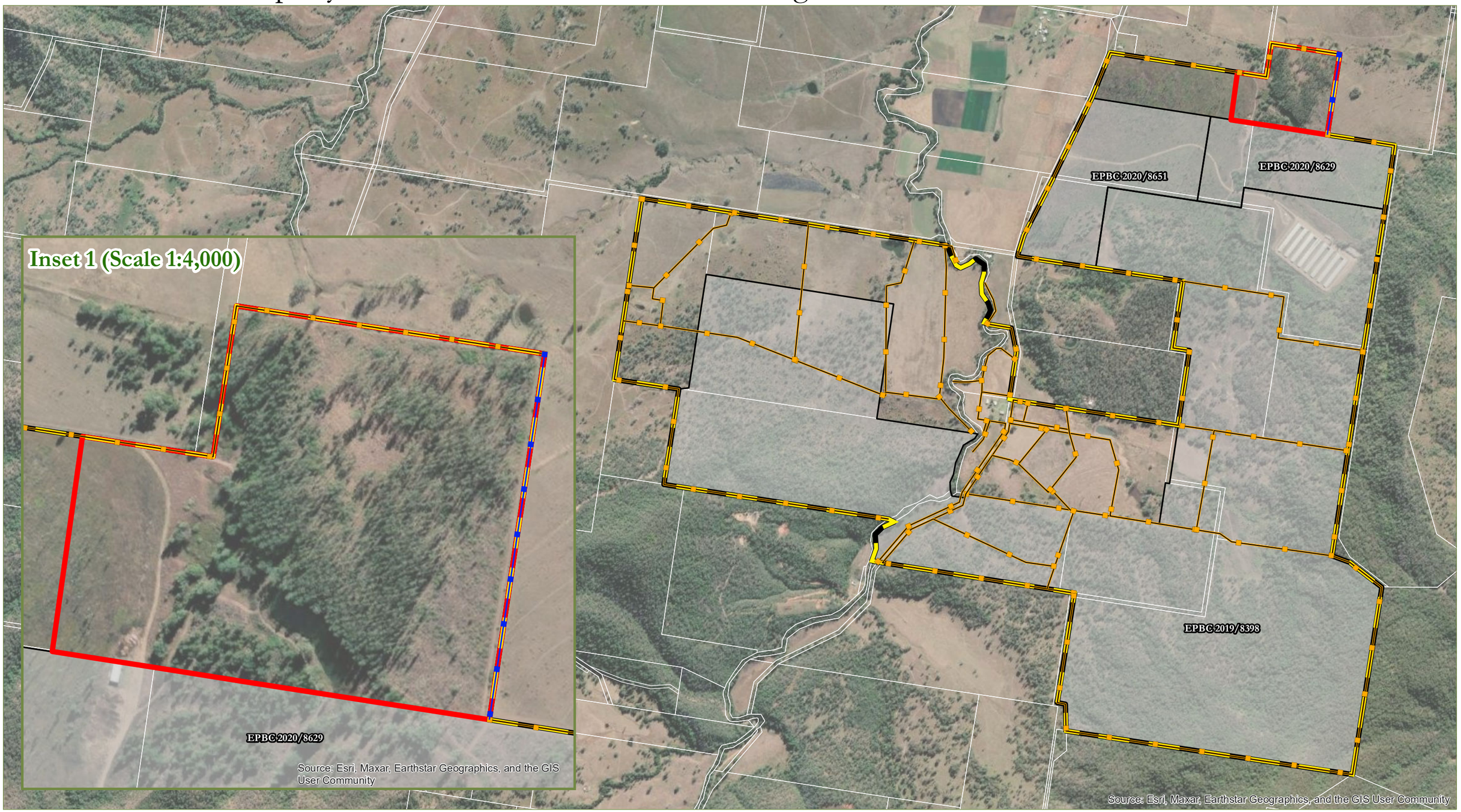
Project progress:

Year 1 – all boundary fencing installed as shown on **Plan 14**. Evidence was provided in Year 1 OAAR.

MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

Providing the right type of fencing is installed in the correct locations and monitored the risk of failure is extremely unlikely. Regardless any breach of cattle accessing the ROA 1 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.

Plan 14 Offset Property and ROA 1 Stock Exclusion Fencing



Montauban Environmental Offsets

N
W E
S

0 100 200 400 600 Meters

1:18,130

Cordinate System: GDA2020 MGA Zone 56

DISCLAIMER:
THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT. REPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTENTS OF THESE DRAWING BY ANY THIRD PARTY CANNOT BE ACCEPTED .

Location/Adress:Aratula, QLD

Date: 3/12/2024

Plan Name: Plan 14 Exclusion Fencing V1

References:
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Legend

- Offset DCDB
- Qld DCDB
- Offset Area (17 ha)
- Surrounding Approvals
- Property-wide Stock Exclusion Fencing
- Existing Fencing
- New Fencing

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 1 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.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Prevention / control of unauthorised access and trespass through the ROA 1.

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*) 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 1.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria	Implementation Progress
Year 1	Inspection and rectification of all external fence boundaries of ROA 1.	**Completed** – Inspection of offset perimeter fencing was conducted. No replacement immediately required. Offset boundary signage installed (photo below). 
Year 1	Notification of ROA 1, purpose and outcomes to all adjoining land owners (where applicable)	**Completed** – Montauban notified the only adjoining neighbour, Shane Ryan via telephone call and email. Evidence provided in Year 1 OAAR.
Year 1 – 20	No new access tracks through ROA 1 unless to support offset outcomes	**N/A as per Year 1** – No new access tracks have been required to be installed. Year 2 – 20 will be reported on in OAARs.

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 land owners (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 1 habitat improvement.

MANAGEMENT ACTION RISKS AND ADAPTIVE MANAGEMENT

Given there is not legal requirement for access through the land holding (eg 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

The entirety of the offset is to 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 Koala habitat through infill planting of broad hectare cleared land;
- Expand the available habitat for MNES and in particular, the Koala by adjoining other EPBC offsets; and
- Provide new connectivity with surrounding habitat for the protected matters and adjoins the bioregional conservation corridor.

MNES habitat restoration will occur through the transitioning of grassed grazing areas (ROA 1) into vegetated ecosystems supporting habitat for the koala. In total the entire 17.0 ha is proposed for MNES habitat restoration. Restoration is a high cost and high labour intensive task from preparation to commencement through to the first 5 years of establishment. Only planning and preparation works are proposed within year 1 of the offset while beginning communication with a local nursery for stock will be conducted. All rehabilitation planting is to be completed by the end of Year 2. All revegetation and planting species are to be in accordance with the technical regional ecosystem description and the Rehabilitation Management Plan included in **Appendix D**.

The rehabilitation planting is to consist of the following species:

- *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 tessellaris* (Moreton Bay Ash)

At a minimum, the rehabilitation is to contain a density of 250 non-juvenile koala habitat tree stems per hectare.

Where vegetation does occur within the ROA 1, transects have been completed in accordance with the Modified Habitat Quality Assessment (Koala) tool to establish a base score. ROA 1 scored a 2/10 under this system for Koala habitat. 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.

MANAGEMENT ACTION LOCATION

- The entirety of ROA 1 is to contain MNES habitat restoration.

MANAGEMENT ACTION TASKS AND COMPLETION CRITERIA

- Ceasing grazing activities within the ROA 1;
- 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 non-juvenile Koala habitat tree species; and
- Monitoring and maintaining the MNES habitat restoration works until the ROA 1 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 contractors and bushland regenerators to undertake all revegetation and rehabilitation works. Ensure selected contractors included 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	Implementation Progress
Year 1	Undertake soil testing for both the modified planting soil and for the planting locations; Finalise locations, sequence and timing of MNES habitat restoration program; Cultivate and prepare the ROA 1 for year 2 planting; Create ROA 1 water source for MNES habitat restoration activities (purpose located dam, temporary tank or slow-release gravity feed).	**Completed** – Initial works focussed on weed management within remnant and regrowth areas. Heavy machinery was utilised in January 2023 to remove dead plantation trees, rip the soil and prepare for planting. A dam to be utilised as a water source for revegetation establishment is located in the southern extent of the ROA 1 offset area (photo below). 
Year 2	Complete ROA 1 MNES habitat restoration activities (17.0 ha).	-
Year 3 – 20	Monitor and maintain the ROA 1 (17.0 ha MNES habitat restoration area) inclusive of rectification and replacement works for failed area or plant dieback.	-
Year 5	Complete transect surveys in accordance with the Modified Habitat Quality Assessment (Koala) tools within established MNES habitat restoration area (ROA 1); Undertake Koala Spot Assessment Technique to derive koala occurrence	-

Timing	Preliminary Completion Criteria	Implementation Progress
	category for MNES habitat restoration area; and Report on results of both surveys within the Year 5 Offset Area Annual Report inclusive of any adaptive management changes.	
Year 10	Complete transect surveys in accordance with the Modified Habitat Quality Assessment (Koala) tools within established MNES habitat restoration area (ROA 1); Undertake Koala Spot Assessment Technique to derive koala occurrence category for MNES habitat restoration area; and Report on results of both surveys within the Year 10 Offset Area Annual Report inclusive of any adaptive management changes.	-
Year 15	Complete transect surveys in accordance with the Modified Habitat Quality Assessment (Koala) tools within established MNES habitat restoration area (ROA 1); Undertake Koala Spot Assessment Technique to derive koala occurrence category for MNES habitat restoration area; and Report on results of both surveys within the Year 15 Offset Area Annual Report inclusive of any adaptive management changes.	-
Year 20	Complete transect surveys in accordance with the Modified Habitat Quality Assessment (Koala) tools within established MNES habitat restoration area (ROA 1); Undertake Koala Spot Assessment Technique to derive koala occurrence	-

Timing	Preliminary Completion Criteria	Implementation Progress
	category for MNES habitat restoration area; and Report on results of both surveys within the Year 20 Offset Area Annual Report inclusive of any adaptive management changes.	

MANAGEMENT ACTION RESPONSIBILITY

The Offset Provider is responsible for:

- Funding the appointment of trained and experienced Bushland Regenerators or Revegetation contractors for the completion of all implementation works associated with revegetation areas (site preparation, planting, establishment and maintenance)
- Commissioning and funding tertiary trained ecologists for the 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 **Table 16** from the replicated transect surveys completed in accordance with the Modified Habitat Quality Assessment methodology (Koala). Evidence through photo point monitoring of established habitat containing NJKHTs. Plan of completed MNES habitat restoration extents in the Year 2 OAAR demonstrating the completion of all restoration works.

Spot Assessment Technique (SAT) surveys showing the establishment of koala usage within the ROA 1 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.

Table 16: MHQA Completion Criteria

Assessment Unit - Regional Ecosystem

							AU1- Cat X - cleared areas with dead plantation trees (RE12.8.17)							
	RE12.8.17 Benchmark	Transect 1	Transect 2	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
SITE CONDITION														
Recruitment of woody perennial species in EDL	100	0	0	0	0	0	0		3		3		5	
Native plant species richness - trees	7	1	1	1	14.29	0	2.5		5		5		5	Recruitment of a minimum of six tree species (>75% of the recruitment of woody perennial species in EDL benchmark)
Native plant species richness - shrubs	5	0	1	0.5	10.00	0	2.5		5		5		5	
Native plant species richness - grasses	12	3	4	3.5	29.17	2.5	2.5		2.5		5		5	Maintain recruitment of two koala food tree species (28.5% of the recruitment of woody perennial species in EDL benchmark)
Native plant species richness - forbs	27	5	2	3.5	12.96	0	0		0		0	Maintain recruitment of two koala food tree species (28.5% of the recruitment of woody perennial species in EDL benchmark)	0	Maintain a minimum of seven tree species (100% of the tree species richness benchmark)
Tree canopy height (Canopy)*	19	8	8	8	42.11	3						Maintain a minimum of seven tree species (100% of the tree species richness benchmark)		Maintain a minimum of minimum of five shrub species (100% of the shrub species richness benchmark)
Tree canopy height (Sub-canopy)*	10	4	2	3	30.00	3		Establish a minimum of two tree species (28.5% of the tree species richness benchmark)		Recruitment of two koala food tree species (28.5% of the recruitment of woody perennial species in EDL benchmark)		Maintain a minimum of minimum of five shrub species (100% of the shrub species richness benchmark)		Maintain a minimum of 12 grass species (100% of the grass species richness benchmark)
*Average tree canopy height						3	3		3		3		5	
Tree canopy cover (Canopy)**	48	0	0	0	0.00	0		Establish a minimum of two shrub species (40% of the shrub species richness)		Establish a minimum seven tree species (100% of the tree species richness benchmark)		Establish a minimum of 12 grass species (100% of the grass species richness benchmark)		Tree species plantings to be a minimum of 13.3m height (70% of the tree canopy height benchmark)
Tree canopy cover (Sub-canopy)**	20	0	0	0	0.00	0		Shrub canopy cover to be a minimum of 2.5m (50% of the shrub canopy cover benchmark)		Establish a minimum of five shrub species (100% of the shrub species richness benchmark)		Tree canopy cover to be a minimum of 4.8m (10% of the tree canopy cover (canopy) benchmark)		Tree species plantings to be a minimum of 7m height (70% of the tree sub-canopy height benchmark)
**Average tree canopy cover						0	0		0		2		5	
Shrub canopy cover	5	0	0	0	0.00	0	3		3	Maintain shrub canopy cover at a minimum of 2.5m (50% of the shrub canopy cover benchmark)	5	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)
Native grass cover*	32	59	52	55.5	173.44	5	5		5	Weed coverage to be less than 5% of the entire offset area (baseline weed coverage to be established in Year 1)	5	Maintain shrub canopy cover at a minimum of 2.5m (50% of the shrub canopy cover benchmark)	5	Tree sub-canopy cover to be a minimum of 10m (50% of the tree canopy cover (sub-canopy) benchmark)
Organic litter*	21	6	9	7.5	35.71	3	3		3		3	Record a minimum of 117m of coarse woody debris per hectare (50% of the coarse woody debris benchmark)	5	Maintain shrub canopy cover at a minimum of 2.5m (50% of the shrub canopy cover benchmark)
Large trees (euc plus non-euc) (per ha)	24	0	0	0	0.00	0	0		0		0	Weed coverage to be less than 5% of the entire offset area (baseline weed coverage to be established in Year 1)	0	Organic Litter to be 10.5% of 1m X 1m quadrats (50% of organic litter benchmark)
Coarse woody debris (per ha)	234	1566	1105	1335.5	570.73	2	2		2		5		5	Maintain a minimum of 117m of coarse woody debris per hectare (50% of the coarse woody debris benchmark)
Non-native plant cover	0	46	31	38.5	38.50	5	5		10		10		10	Weed coverage to be less than 5% of the entire offset area (baseline weed coverage to be established in Year 1)
Quality and availability of food and foraging habitat	NA	1	1	1	-	1	5		5		10		10	
Quality and availability of shelter	NA	1	1	1	-	1	5		5		5		10	
Site Condition Score (/100)						22.5	38.5		51.5		66		80	
Overall Site Condition Score - out of 3						0.68	1.16		1.55		1.98		2.40	
SITE CONTEXT														
Size of patch	10	10	10	10		0	0		0		0		0	Maintain less than 5% of the year 1 baseline survey results and zero (0) koala mortalities or injury in the Offset Area
Connectedness	5	2	2	2		0	0		0		0	Maintain less than 5% of the year 1 baseline survey results and zero (0) koala mortalities or injury in the Offset Area	0	Tree species plantings to be a minimum of 13.3m height (70% of the tree canopy height benchmark)
Context	5	4	4	4		2	2		2		2		2	
Ecological Corridors	6	0	0	0		0	0	Less than 5% of the year 1 baseline survey results and zero (0) koala mortalities or injury in the Offset Area	0	Maintain less than 5% of the year 1 baseline survey results and zero (0) koala mortalities or injury in the Offset Area	0	Tree canopy cover to be a minimum of 4.8m (10% of the tree canopy cover (canopy) benchmark)	0	Tree species plantings to be a minimum of 7m height (70% of the tree sub-canopy height benchmark)
Role of site location to species overall population in the state	5	1	1	1		1	1		1		5	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)
Threats to the species	15	1	1	1		1	7		7		7		7	Tree sub-canopy cover to be a minimum of 10m (50% of the tree canopy cover (sub-canopy) benchmark)
Species mobility capacity	10	4	4	4		4	4		4		7		7	
Site Context Score (/56)						8	14		14		21		21	
Overall Site Context Score - out of 3						0.43	0.75		0.75		1.13		1.13	
SPECIES STOCKING RATE														
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s)	70	5	5	5		5	5		30	KOALA DETECTED ON-SITE = 10/10 KOALA FORAGING ON-SITE = 10/15 KOALA SAT SURVEY RESULTS (LOW) = 10/30	30	KOALA DETECTED ON-SITE = 10/10 KOALA FORAGING ON-SITE = 10/15 KOALA SAT SURVEY RESULTS (LOW) = 10/30	30	KOALA DETECTED ON-SITE = 10/10 KOALA FORAGING ON-SITE = 10/15 KOALA SAT SURVEY RESULTS (LOW) = 10/30
Species Stocking Rate Score (/70)						5.00	5		30		30		30	
Overall Species Stocking Rate Score - out of 4						0.29	0.29		1.71		1.71		1.71	
Overall Assessment Unit Score						1.39	2.19		4.01		4.82		5.24	

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 appointed bushland regenerators or revegetation contractors to ensure retention funds and minimum success rates (eg contractor responsible for replacement and re-establishing failed stock or areas); and
2) Contractor & Offset Provider will have insurance for major external events.

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.

YEAR 1 PHOTO MONITORING ESTABLISHMENT

Seven (7) photo monitoring points were established within the offset area to monitor vegetation state and weed extent on 15th May 2023. The methods and results of photo monitoring for Year 1 are presented in the Baseline Surveys section on **page 70 and 78**.

ACTION 6: BUSHFIRE MANAGEMENT

MANAGEMENT ACTION OUTCOME

Uncontrolled wildfire is considered a key threat to Koala 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 ROA 1 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 ROA 1 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 to MNES habitat restoration as specific offset activities are sequentially completed.

MANAGEMENT ACTION LOCATION

Management actions will occur across ROA 1 to monitor and manage fuel loads and along the boundaries of ROA 1 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 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.

MANAGEMENT ACTION TIMING AND PRELIMINARY COMPLETION CRITERIA

Timing	Preliminary Completion Criteria	Implementation Progress
Year 1	Install necessary firebreaks within ROA 1.	**Completed** – Firebreaks have been installed within ROA 1, displayed on **Plan 15**.
Year 1 – 20	• Monitor and maintain fuel loads within the ROA 1; 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.

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 1, 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.

Plan 15 ROA 1 Fire Trails

Montauban Environmental Offsets

N
W E
S

0 20 40 80
Meters

1:2,300

Cordinate System: GDA2020 MGA Zone 56

DISCLAIMER:
THESE PLANS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE CLIENT. REPONSIBILITY FOR ANY USE OF OR RELIANCE UPON THE CONTENTS OF THESE DRAWING BY ANY THIRD PARTY CANNOT BE ACCEPTED .

Location/Adress:Aratula, QLD

Date: 3/12/2024

Plan Name: Plan 15 Fire Trails V1

References:
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Legend

- Offset Site DCDB
- Barrams Rd Offset Boundary
- ROA 1 Fire Trails

CORRECTIVE ACTIONS

Table 17 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 17: Triggers and Corrective Actions (including timeframes)

Triggers	Corrective Actions	Timeframes for Corrective Actions
Trees and plantings showing signs of ill health, decline or death.	• The restoration contractor 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	• 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	• Immediately treat all WoNs, particularly *Lantana camara,* 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	• 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	• Supplementary planting will be undertaken • Should the planting fail again, the contractor is to engage a suitably qualified professional to identify the likely cause of plant failure	• Within six months or the next appropriate planting period (whichever comes first) of detection • Within month of detection

Triggers	Corrective Actions	Timeframes for Corrective Actions
	• Apply recommended mitigation measure/s to improve growing conditions (as recommended by the suitably qualified professional)	• Apply in alignment with the recommendations made by the suitably qualified professional
Coarse woody debris is failing to become present naturally	• 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	• 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	• 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	• 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	• While such events (eg. Fire, flood, drought, vandalism etc) are rare and can be managed by the contractor, where events take place, restoration works are to replace losses and reporting to the DAWE is required • Evidence of impacts and rectification measures are to be	• Within six months of the event • Within six months of rectification

Triggers	Corrective Actions	Timeframes for Corrective Actions
	issued to the DAWE within three months	
Ongoing presence of pest fauna (eg. Feral dogs)	• Where recurrent pest animal species are detected, re-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	• Within three months of continued presence identification
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	• Engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions	• Within three months of detection
	• 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	• Within three months of detection
	• The proponent / approval holder will request an extension to the 20 year management timeframe from the Minister	• Within 24 months of detection if corrective actions have not amended the slowing growth rates
	• Revise the management actions for the offset	• Within 24 months of detection if corrective actions have not amended the slowing growth rates
	• Extend timeframes to meet completion criteria	• Within 24 months of detection if corrective actions have not amended the slowing growth rates
	• Revise the OMP and submit to the Minister for the Environment for approval	• Within 24 months of detection if corrective actions have not amended the slowing growth rates

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.

Table 18: 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 (*e.g. short-term delays to achieving strategy objectives, implementing low-cost, well-characterised corrective actions*)
Moderate	Isolated but substantial instances of environmental damage that could be reversed with intensive efforts (*e.g. short-term delays to achieving strategy objectives, implementing well-characterised, high cost/effort corrective actions*)
High	Substantial instances of environmental damage that could be reversed with intensive efforts (*e.g. medium-long term delays to achieving objectives, implementing uncertain, high-cost/effort corrective actions*)
Major	Major loss of environmental amenity and real danger of continuing (*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*)
Critical	Severe widespread loss of environmental amenity and irrecoverable environmental damage (*e.g. strategy objectives are unable to be achieved, with no evidenced mitigation strategies*)

Final Risk Rating (R): A function of multiplying Likelihood (L) and Consequence (C)

		Consequence				
Likelihood		Minor	Moderate	High	Major	Critical
	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

RISK 1: BUSHFIRE

The Rosevale offset property retains little to no 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 (refer to **Figure 16**). 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 1 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 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 19** for the initial risk rating calculation.

Table 19: Bushfire Risk Rating (Initial Risk Rating)

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

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 20** for the residual risk rating calculation

Table 20: Bushfire Risk Rating (Residual Risk Rating)

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

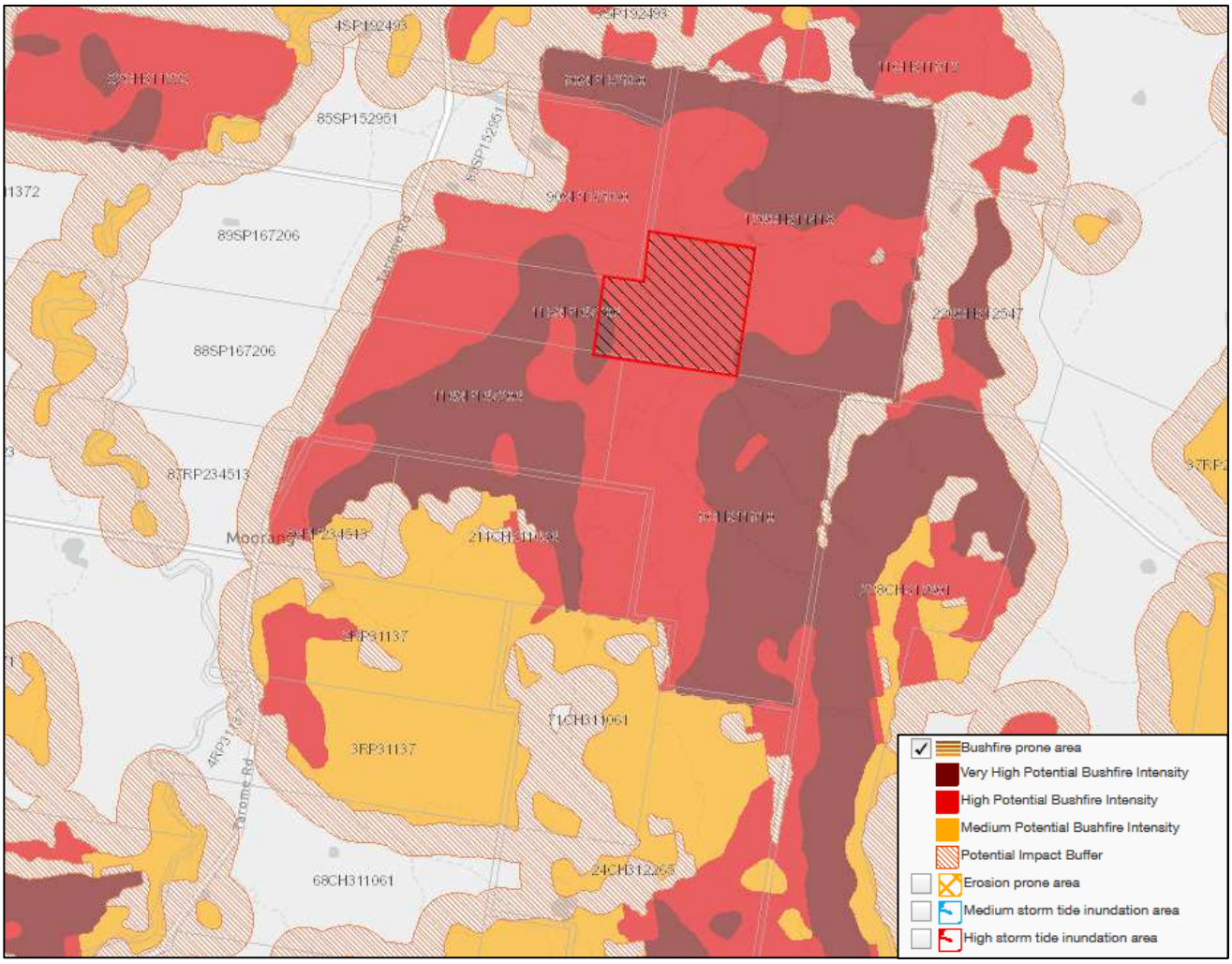


Figure 16: State Planning Policy bushfire hazard mapping (source: Queensland Government 2021)

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 21** for the initial risk rating calculation.

Table 21: Drought Risk Rating (Initial Risk Rating)

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

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 22** for the residual risk rating calculation.

Table 22: Drought Risk Rating (Residual Risk Rating)

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

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.

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 23** for the initial risk rating calculation.

Table 23: Shifting Habitat Range Risk Rating (Initial Risk Rating)

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

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 24** for the residual risk rating calculation.

Table 24: Shifting Habitat Range Risk Rating (Residual Risk Rating)

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

RISK 4: PLANT STOCK FAILURE

The entirety of the ROA 1 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 or the sourcing of planting stock from a different geographic region; 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 and contractors with relevant insurance and payment retentions. Failure of planting stock is primarily an economic impact for this project as the ROA 1 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 25** for the calculation of risk rating.

Table 25: Plant Stock Failure Risk Rating (Initial Risk Rating)

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

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 contractors and bushland regenerators to undertake all revegetation and rehabilitation works. Ensure selected contractors included 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 26** for the residual risk rating calculation.

Table 26: Plant Stock Failure Risk Rating (Residual Risk Rating)

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

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.

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 27** for the calculation of risk rating.

Table 27: Feral Animal Control Risk Rating (Initial Risk Rating)

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

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 (eg 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 28** for the residual risk rating calculation.

Table 28: Feral Animal Control Risk Rating (Residual Risk Rating)

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

RISK 6: WEEDS OF NATIONAL SIGNIFICANCE INCREASED INFESTATIONS

Preliminary site surveys and observations over the Rosevale offset property recorded a number of weed species, with the most prevalent and inhibitive to Koala movement and habitat restoration being *Lantana camara*. 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 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.

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. An exact volume or extent of Lantana at the offset property has not been calculated.

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 Grey-headed Flying-fox foraging tree species. Although baseline data is limited to the survey events undertaken for this EPBC Application research infers the highly invasive and spreading nature of the species, coupled with the in-active management in areas would result in progressive increases as local climatic events align with optimal germination and seeding periods. In areas blanket layers of *Lantana camara* additionally form a barrier to terrestrial species, which would include limiting the Koalas ability to access areas containing and over-canopy of NJKHTs.

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 29** for the calculation of risk rating.

Table 29: 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				
Likelihood		Minor	Moderate	High	Major	Critical
	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

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 1 (achieve a total ha extent of weed infestations / occurrences within the ROA 1);
- Exclude stock (cattle) access from *Lantana camara* infestation areas within the ROA 1 (grazing cattle provide the most continuous source of *Lantana camara* spread);
- Undertake detailed weed management control activities within the ROA 1. 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 30** for the residual risk rating calculation.

Table 30: 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				
Likelihood		Minor	Moderate	High	Major	Critical
	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

RISK 7: LIVESTOCK CONTROL AND ACCESS AND TRESPASS MANAGEMENT

The Scenic Ridge property has historically been utilised for cattle grazing operations. 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 (ie. correlated with rainfall) and the beef market prices. Given the La Nina climatic season prediction for 2020-2021 and increased beef prices, the head of cattle on the Rosevale offset property have increased.

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 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 Scenic Ridge property is surrounded to the south and north 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.

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 31** for the calculation of risk rating.

Table 31: 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				
Likelihood		Minor	Moderate	High	Major	Critical
	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

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 1.

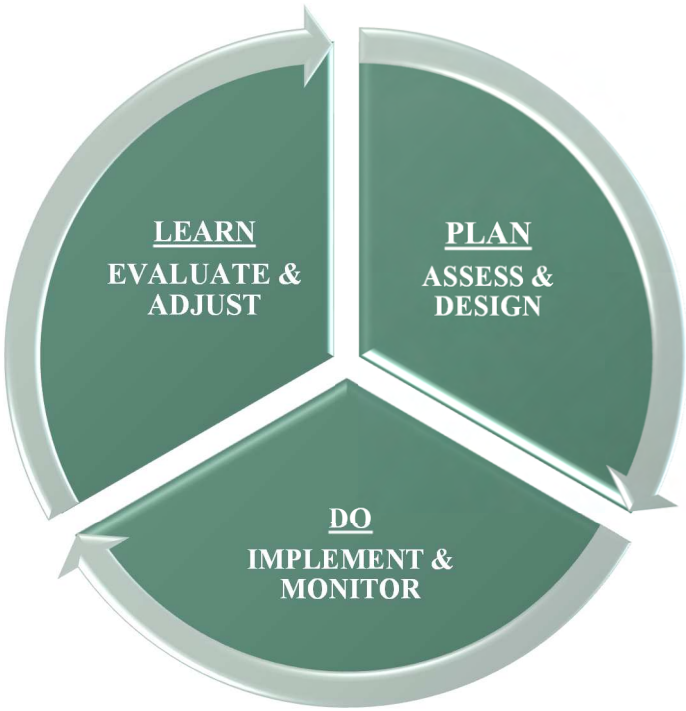
Through the implementation of the management actions listed above and **Corrective Actions**, the residual risk rating for this offset project is that it is **unlikely** that it would occur within the life of the offset and the consequences of such an event would be **minor**. With intervention and management, the residual risk of unauthorised livestock control, access or trespass is evaluated as a **low risk** to this offset project. Refer to **Table 32** for the residual risk rating calculation.

Table 32: 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				
Likelihood		Minor	Moderate	High	Major	Critical
	Highly Likely	Medium	High	High	Severe	Severe
	Likely	Low	Medium	High	High	Severe
	Possible	Low	Medium	Medium	High	Severe
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Low	Medium	High

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 1 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 Grey-headed Flying-fox and Koala 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. However, the precise inclusion of the report in the ACR will be dictated by the Proponent.

REFERENCES

Australian Wool Innovation (2020). National Wild Dog Action Plan 2020 - 2030: Promoting and supporting community-driven action for landscape-scale wild dog management.

Adams-Hosking (2011). Climate Change Adaptation Strategies for the Koala, Adaptation Case Study Series – National Climate Change Adaptation Research Facility - Adaptation Research Network – Terrestrial Biodiversity.

Auld, B (2009). Guidelines for monitoring weed control and recovery of native vegetation. New South Wales, Department of Primary Industries.

DAWE (2022). National Recovery plan for the Koala: Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory). Department of Agriculture, Water and the Environment, Canberra. March 2022. CC BY 4.0

Department of Environment and Science (2020). South East Queensland Koala Conservation Strategy 2020–2025.

Department of Primary Industries, NSW Government (2018). Guidelines for camera trapping wild dogs, foxes and feral cats.

Eby, P. and Law, B (2008). Ranking the feeding habitats of Grey-headed flying foxes for conservation management. a report for The Department of Environment and Climate Change (NSW) & The Department of Environment, Water, Heritage and the Arts October 2008.

Mace, R.D, Minta, S. C, Manley, T. l and Aune, K. E (1994). Estimating Grizzly Bear Population Size Using Camera Sightings. Wildlife Society Bulletin.

Moen, R and Lindquist, E.L (2004). Testing a remote camera protocol to animals in the superior National Park.

Queensland Government – Department of Environment 7 Heritage (2017). Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Government Environmental offset Policy (Version 1.2 April 2017).

Queensland Government Business Queensland, Restricted Invasive Animals (2024). *Wild Dog*, last updated 7 February 2024, https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/biosecurity/animals/invasive/restricted/wild-dog

Rosellini S, Osorio E, Ruiz-Gonzales A, Piñeiro A, Barja I (2008). Monitoring the small-scale distribution of sympatric European pine martens (Martes martes) and stone martens (Martes foina): a multievidence approach using faecal DNA analysis and camera-traps. Wildl Res 35:434–440 Victoria Government (2021), Guide to Monitoring Methods.

Saunders Havill Group (2022). Residential Development 254 Barrams Road South Ripley EPBC Act (2021/9005) Preliminary Documentation (PART A), dated July 2022.

Scenic Rim Regional Council (2015). Biodiversity Strategy 2015-2025.

Scenic Rim Regional Council (2021). *Declared Pest Animals*, accessed 14 August 2021, https://www.scenicrim.qld.gov.au/planning-and-permits/animal-management/declared-pest-animals

Scenic Rim Regional Council (2023a). Flying-fox Management Strategy 2023-2028.

Scenic Rim Regional Council (2023b). *Number's up for wild dogs as 1080 baiting program begins*, last updated 21 March 2023. https://www.scenicrim.qld.gov.au/news/article/870/number-s-up-for-wild-dogs-as-1080-baiting-program-begins

Youngentob, K.N, Marsh, K.F., Skewes, J., A (2021). review of koala habitat assessment criteria and methods, report prepared for the Department of Agriculture, Water and the Environment, Canberra, November. CC BY 4.0.

APPENDIX A: OFFSET ASSESSMENT GUIDE CALCULATOR VALUES

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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	Koala	**Area**	16.38	Hectares	
			Quality	**2**	Scale 0-10	
			Total quantum of impact	3.28	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					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes				Count	1

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	3.28	Adjusted hectares	Montauban	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	17	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	4.90	149.58%	Yes	
									Future area without offset (adjusted hectares)	17.0	**Future area with offset (adjusted hectares)**	17.0								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**1**	**Future quality without offset (scale of 0-10)**	**1**	**Future quality with offset (scale of 0-10)**	**5**	4.00	75%	3.00	2.88				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	Yes		Count										0		0.00	0.00	#DIV/0!	#DIV/0!		

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	#DIV/0!	**#DIV/0!**	$0.00	#DIV/0!	#DIV/0!
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	3.276	4.90	149.58%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

APPENDIX B: SUITABLY QUALIFIED FIELD ECOLOGIST – CURRICULUM VITAE

David Havill - Principal Ecologist

David Havill has significant practical experience in the areas of ecological site assessments (flora and fauna), weed management programs, large scale revegetation projects, wetland rehabilitation and waterway restoration. He has a strong understanding of the intricate workings of the *Vegetation Management Act 1999* and the complex codes and policies which influence site vegetation constraints. David's expertise relates to the on-site identification and spatial mapping of fauna and flora species including endangered, rare and vulnerable plants and animals. He has an accurate understanding of site survey processes and standards developed by the State and Commonwealth Governments. This provides the ability to challenge the various inaccuracies that occur within broad scale vegetation mapping developed by these Government agencies. David works closely with our in-house team of GIS, environmental planning, and landscape rehabilitation specialists to document findings of ecological survey and prepare targeted restoration and rehabilitation strategies. He has a strong understanding of construction techniques associated with development projects and has the ability to prepare practical flora and fauna management plans to assist in guiding the construction process within sensitive areas.

Qualifications

– Diploma of Arboriculture, Training for Trees Pty Ltd, #04453

– Bachelor of Applied Science (Natural Systems and Wildlife Management), The University of Queensland

APPENDIX C: CAMERA MONITORING – RAW DATA

10559 Motion Camera Survey Period Deployment 1 20th Aprill to 4th May 2023						
Camera ID	**Camera Name**	**Scientific Name**	**Common Name**	**Status**	**Number individuals**	**Date Recorded**
1	Camel	*Canis lupus familiaris*	Wild Dog	Feral animal	4	8th and 12th May 2023
1	Camel	*Bos taurus*	Domestic Cow	Non-native		-
1	Camel	*Macropus giganteus*	Eastern Grey Kangaroo	Native		-
2	Fly	*Phascogale tapoatafa*	Brush-tailed Phascogale	Native		-
2	Fly	*Bos taurus*	Domestic Cow	Non-native		-
2	Fly	*Macropus giganteus*	Eastern Grey Kangaroo	Native		-
2	Fly	*Trichosurus vulpecula*	Common Brushtail Possum	Native		-
2	Fly	*Macropus rufogriseus*	Red-necked Wallaby	Native		-
3	Possum	*Bos taurus*	Domestic Cow	Non-native		-
3	Possum	*Sus scrofa*	Wild Pig (multiple)	Feral animal	10	23rd March 2023
3	Possum	*Strepera graculina*	Pied Currawong	Native		-
3	Possum	*Centropus phasianinus*	Pheasant Coucal	Native		-
3	Possum	*Struthidea cinerea*	Apostlebird	Native		-
3	Possum	*Rhipidura leucophrys*	Willie Wagtail	Native		-
3	Possum	*Chenonetta jubata*	Australian Wood Duck	Native		-
3	Possum	*Vanellus miles*	Masked Lapwing	Native		-
3	Possum	*Gallinula tenebrosa*	Duskey Moorhen	Native		-
3	Possum	*Isoodon macrourus*	Northern Brown Bandicoot	Native		-
3	Possum	*Phaps chalcoptera*	Common Bronzewing	Native		-
3	Possum	*Macropus rufogriseus*	Red-necked Wallaby	Native		-
3	Possum	*Vulpes vulpes*	European Fox	Feral animal	2	28th March 2023
3	Possum	*Macropus giganteus*	Eastern Grey Kangaroo	Native		-
4	Eel	*Macropus giganteus*	Eastern Grey Kangaroo	Native		-
4	Eel	*Macropus rufogriseus*	Red-necked Wallaby	Native		-
5	Daisy	*Macropus rufogriseus*	Red-necked Wallaby	Native		-
5	Daisy	*Macropus giganteus*	Eastern Grey Kangaroo	Native		-
6	Wombat	Nil	Nil	-		-
10559 Motion Camera Survey Period Deployment 2 15th May to 11th August 2023						
Camera ID	**Camera Name**	**Scientific Name**	**Common Name**	**Status**	**Number individuals**	**Date Recorded**
2	Duck	*Macropus giganteus*	Eastern Grey Kangaroo	Native	-	-
2	Duck	*Macropus rufogriseus*	Red-necked Wallaby	Native	-	-
2	Duck	*Lepus europaeus*	European Hare	Non-native	-	-
2	Duck	*Ninox boobook*	Australian Boobook	Native	-	-
2	Duck	*Tachyglossus aculeatus*	Short-beaked Echidna	Native	-	-
3	Gecko	*Macropus giganteus*	Eastern Grey Kangaroo	Native	-	-
3	Gecko	*Macropus rufogriseus*	Red-necked Wallaby	Native	-	-
1	Prawn	*Macropus rufogriseus*	Red-necked Wallaby	Native	-	-
1	Prawn	*Macropus giganteus*	Eastern Grey Kangaroo	Native	-	-
1	Prawn	*Rattus fuscipes*	Bush Rat	Native	-	-
4	Squid	Nil	Nil	-	-	-
10559 Motion Camera Survey Deployment Period 3 11th August to 2nd November 2023						
Camera ID	**Camera Name**	**Scientific Name**	**Common Name**	**Status**	**Number individuals**	**Date Recorded**
1	Prawn	Nil	Nil	-		-
2	Gecko	*Bos taurus*	Domestic Cow	Non-native		-
2	Gecko	*Notamacropus parryi*	Whiptail Wallaby	Native		-
2	Gecko	*Macropus rufogriseus*	Red-necked Wallaby	Native		-
2	Gecko	*Macropus giganteus*	Eastern Grey Kangaroo	Native		-
2	Gecko	*Canis lupus familiaris*	Wild Dog	Feral animal	1	8th October 2023
2	Gecko	*Sus scrofa*	Wild Pig	Feral animal	2	15th August 2023 and 1st November 2023
3	Duck	*Canis lupus familiaris*	Wild Dog	Feral animal	6	16th, 17th, 19th, 23rd August 2023, 4th and 28th November 2023
3	Duck	*Macropus giganteus*	Eastern Grey Kangaroo	Native		-
3	Duck	*Macropus rufogriseus*	Red-necked Wallaby	Native		-
3	Duck	*Trichosurus vulpecula*	Common Brushtail Possum	Native		-
3	Duck	*Bos taurus*	Domestic Cow	Non-native		-
4	Squid	*Canis lupus familiaris*	Wild Dog	Feral animal	1	10th September 2023

KEY

Target pest species

APPENDIX D: REHABILIATION MANAGEMENT PLAN

REHABILITATION MANAGEMENT PLAN

Montauban Environmental Offsets

LEGEND

OFFSET AREA (170,000M²)

REHABILITATION ZONE 1 (2,911M²)

REHABILITATION ZONE 2 (167,089M²)

REHABILITATION APPROACHES

ECOLOGICAL RESTORATION APPROACHES	
NATURAL REGENERATION	
Applies:	To relatively large, intact and weed-free areas of native vegetation. Where native plants are healthy and capable of regenerating without human intervention. When native plant seed is stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water. Where the plant community has a high potential for recovery after any short-live disturbance such as a fire or cyclonic winds. When preventative action is all that is required to avert on-going disturbances e.g. erection of fencing to prevent instruction by cattle.
Role of planting:	Planting in such areas can work against the aims of restoration by interfering with natural regeneration.
Goal vegetation community:	The re-establishing plant community will be similar in structure, composition and diversity to the original vegetation.
ASSISTED NATURAL REGENERATION	
Applies:	To natural areas where the native plant community is largely healthy and functioning. When native plant seed is still stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water. Where the natural regeneration processes (seedling germination, root suckering, etc.) are being inhibited by external factors, such as weed invasion, soil compaction, cattle grazing, mechanical slashing, etc. When limited human intervention, such as weed control, minor amelioration of soil conditions, erection of fencing, cessation of slashing, etc. will be enough to trigger the recovery processes through natural regeneration. When the main management issue is weed infestation and/or current land use practices.
Role of planting:	Planting in such areas can work against the aims of restoration by interfering with natural regeneration except where species cannot return to site without direct intervention.
Goal vegetation community:	The re-establishing plant community will be substantially similar in structure, composition and diversity to the original vegetation.
RECONSTRUCTION	
Applies:	Where the site is highly degraded or altered. When the degree of disturbance has been so great and long-standing that the pre-existing native plant community cannot recover by natural means. To sites such as areas of fill, sites affected by stormwater flow, areas that have been drastically cleared, even though there may be a few remaining native trees or shrubs. When a greater degree of human intervention is required, such as weed control, cessation of grazing and/or slashing, amelioration of soil conditions such as importation of soils, drainage works or re-shaping of the landscape.
Role of planting:	Importation of native species to the area is required, either through planting or direct seeding (in some situations). natural regeneration and recruitment is insufficient to initially re-establish the original vegetation. Depending on the prevailing circumstances, the planting of a broad diversity of species from the target ecosystem may be unnecessary and the use of pioneers may be sufficient to re-establish ecological processes.
Goal vegetation community:	The re-establishing planted community should be similar to the original vegetation in structure, composition and diversity.
FABRICATION (TYPE CONVERSION)	
Applies:	Where site conditions have been irreversibly changed. When it is not possible to restore the original native plant community. Where a better-adapted local plant community can be planted that will function within the changed conditions. In situations such as the construction of a wetland plant community to mitigate increased urban storm-water run-off.
Role of planting:	Revegetation (planting) is the major component in a fabrication program.
Goal vegetation community:	The re-establishing planted community should be similar to a naturally occurring plant community of the same type (e.g. a constructed freshwater wetland should resemble a natural system in terms of structure, composition and diversity).

Note: Table adapted from Gold Coast City Council's 'Guideline for the preparation of a Rehabilitation Plan'

METHODOLOGY – REHABILITATION DESIGN

This documentation has been compiled through processes outlined in the SEQ Restoration Framework, site analysis and previous rehabilitation project experience. The rehabilitation design – comprising distinct management zones – provides assessment managers, clients and contractors a clear methodology to assist the recovery of an ecosystem that has been degraded, damaged or destroyed.

Rehabilitation zones were identified through detailed site analysis and are described below.

REHABILITATION ZONE 1 – ASSISTED NATURAL

Existing native trees, shrubs and groundcovers to be protected and retained. Weed management in accordance with the SEQ Restoration Framework to remove self-seeding weed species and encourage natural regeneration. Appropriate weed management methodology within this zone to minimise any native vegetation damage losses.

Infill planting to occur at highly disturbed areas ie. where large weed infestations have been treated leaving soil exposed or where native vegetation / regeneration in a stratum is absent / limited. Species selected to be according to site conditions and mapped / pre-clear regional ecosystem at the location. All species to be local provenance from mapped RE or existing at the location.

Refer to page 3 for rehabilitation planting species.

REHABILITATION ZONE 2 - RECONSTRUCTION

Weed management in accordance with rehabilitation zone 1.

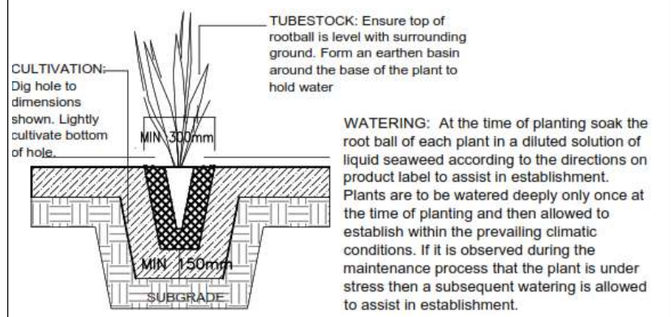
All bare denuded areas to be appropriately cultivated and ripped as required. Reconstruction of the natural environment to be undertaken via tubestock installation including a diversity of tree, shrub and groundcover species to match the pre-clear regional ecosystem of RE12.9-10.7.

Refer to the page 3 for rehabilitation planting species.

SITE PREPARATION

Areas designated for revegetation have undergone various stages of disturbance whether it be affected by introduced species, weed management or historical cattle grazing practices.

Once planting locations have been determined each planting location is to be spot sprayed should weed growth be present prior to soil cultivation (knockdown, non residual herbicide = Glyphosate or equivalent used at minimum rate of 2L per hectare of spot spraying). However, if individual weeds have been identified throughput the existing established native vegetation (rehabilitation zone 1), then manual removal should be applied and then infill planting undertaken as per the species planting palette.



EXISTING SITE CONDITIONS WITHIN THE OFFSET AREA

INSTALLATION METHODOLOGY

The following outlines the preferred installation methodology for revegetation works within the offset area. It has been designed to maximise plant establishment success rates and minimise plant mortality. Revegetation works shall be either undertaken or directly supervised by an experienced and qualified contractor.

Plant installation methods shall include:

- Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of having been restricted or damaged.
- Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In areas where planting substrate is deemed to be very poor (compacted, nutrient depauperate, hydrophobic etc.) and above areas of potential frequent inundation and water flow, topsoil may be used, or the ground mechanically ripped where access is feasible.
- Pre-water plant hole, if soil is dry, to decrease root stress upon planting and assess the infiltration of water through the soil.
- Incorporate into the planting substrate the appropriate quantity of prepared water crystals or other suitable hydrating product such as Hortex 'Rainsaver' or 'Moisturaid'.
- Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered in any less than 10mm or any more than 20mm of planting medium.
- Plants are to be watered thoroughly immediately after planting (ensure deep irrigation) and thereafter as required depending on climatic conditions. Creation of a concave hollow around the base of each plant will aid water infiltration to the plant roots.
- A complete, slow-release fertiliser is recommended, and is to be administered appropriately during planting.

WEED MANAGEMENT

The purpose of the weed management is to enhance the existing native vegetation through the removal of invasive weeds and then follow up the weed removal with selective infill planting.

The weed management will target the *Latana camara* infestations within the offset area. Weed management will provide the basis of aiding rehabilitation within the offset area. Where significant disturbances occur within rehabilitation zone 1, infill planting will be utilised to aid stabilisation and native vegetation success.

Weed management is to occur in accordance with Section 5.2 of the Offset Area Management Plan (OAMP). In summary, weed management should be generally undertaken in the following manner:

- 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). Utilise organic based Lantana targeted herbicides which minimise impacts on native vegetation regenerating within and surrounding Lantana patches.

Weed management is to be undertaken as required throughout the 20 year offset period to ensure that the offset area completion criteria is achieved.

EXISTING WEED INFESTATIONS ON THE OFFSET AREA

HISTORICALLY CLEARED OPEN PADDOCK VEGETATION

PLANTING PALETTES

REHABILITATION ZONE 1 - ASSISTED NATURAL REGENERATION

Notes:
- Retain existing native canopy, sub-canopy and shrub species.
- Infill planting on each stratum where necessary.
- Infill planting species selected from RE12.8.17 technical description.

SCIENTIFIC NAME	COMMON NAME	PLANT FORM	KOALA IMPORTANCE (LOCALLY IMPORTANT KOALA TREE OR ANCILLARY TREE (ANU 2021))
TREES			
Angophora subvelutina	Rough-barked Apple	T1 / T2	Ancillary Tree
Eucalyptus crebra	Narrow-leaved Ironbark	T1	Locally Important Koala Tree
Eucalyptus melliodora	Yellow-box Gum	T1	Locally Important Koala Tree
Eucalyptus tereticornis	Queensland Blue Gum	T1	Locally Important Koala Tree
Eucalyptus melanophloia	Silver-leaved Ironbark	T1	Locally Important Koala Tree
Corymbia intermedia	Pink Bloodwood	T1 / T2	Ancillary Tree
Corymbia tessellaris	Moreton Bay Ash	T1 / T2	Ancillary Tree
SHRUBS			
Jacksonia scoparia	Dogwood	Shrub	-
Acacia salicina	Sally Wattle	Shrub	-
Acacia maidenii	Maiden's Wattle	Shrub	-
Cassinia quinquerfaria	Wild Rosemary	Shrub	-
Exocarpos cupressiformis	Native Cherry	Shrub	-
GROUND COVERS			
Cymbopogon refractus	Barbed-wire Grass	Ground cover	-
Poa sieberiana	Blue Tussock Grass	Ground cover	-
Dichanthium sericeum	Queensland Blue Grass	Ground cover	-
Aristida vagans	Three-awn Spear Grass	Ground cover	-
Bothriochloia decipiens	Pitted Blue Grass	Ground cover	-
Heteropogon contortus	Black Spear Grass	Ground cover	-
Eragrostis brownii	Brown's Love Grass	Ground cover	-
Lepidosperma laterale	Variable Sword Sedge	Ground cover	-
Themeda triandra	Kangaroo Grass	Ground cover	-
Panicum effusum	Hairy Panic	Ground cover	-
Aristida gracilipes	Aristida	Ground cover	-
Sporobolus spp.	Sporobolus	Ground cover	-

REHABILITATION ZONE 2 - RECONSTRUCTION

Notes:
- Ensure existing fire breaks and fire management lines are retained.
- Distribute plants in groups on-site in random arrangements.
- Infill planting species selected from RE12.8.17 technical description.

SCIENTIFIC NAME	COMMON NAME	PLANT FORM	KOALA IMPORTANCE (LOCALLY IMPORTANT KOALA TREE OR ANCILLARY TREE (ANU 2021))
TREES			
Angophora subvelutina	Rough-barked Apple	T1 / T2	Ancillary Tree
Eucalyptus crebra	Narrow-leaved Ironbark	T1	Locally Important Koala Tree
Eucalyptus melliodora	Yellow-box Gum	T1	Locally Important Koala Tree
Eucalyptus tereticornis	Queensland Blue Gum	T1	Locally Important Koala Tree
Eucalyptus melanophloia	Silver-leaved Ironbark	T1	Locally Important Koala Tree
Corymbia intermedia	Pink Bloodwood	T1 / T2	Ancillary Tree
Corymbia tessellaris	Moreton Bay Ash	T1 / T2	Ancillary Tree
SHRUBS			
Jacksonia scoparia	Dogwood	Shrub	-
Acacia salicina	Sally Wattle	Shrub	-
Acacia maidenii	Maiden's Wattle	Shrub	-
Cassinia quinquerfaria	Wild Rosemary	Shrub	-
Exocarpos cupressiformis	Native Cherry	Shrub	-
GROUND COVERS			
Cymbopogon refractus	Barbed-wire Grass	Ground cover	-
Poa sieberiana	Blue Tussock Grass	Ground cover	-
Dichanthium sericeum	Queensland Blue Grass	Ground cover	-
Aristida vagans	Three-awn Spear Grass	Ground cover	-
Bothriochloia decipiens	Pitted Blue Grass	Ground cover	-
Heteropogon contortus	Black Spear Grass	Ground cover	-
Eragrostis brownii	Brown's Love Grass	Ground cover	-
Lepidosperma laterale	Variable Sword Sedge	Ground cover	-
Themeda triandra	Kangaroo Grass	Ground cover	-
Panicum effusum	Hairy Panic	Ground cover	-
Aristida gracilipes	Aristida	Ground cover	-
Sporobolus spp.	Sporobolus	Ground cover	-