



Additional Offset Management Plan (EPBC 2013/7057)

Springfield Rise, Spring Mountain, Queensland
(Little Kipper Creek Road Offset Area)

Prepared for KFF1 Pty Ltd ATF KFF1 Sub Trust as the offset provider for SRCP
(Springfield) Pty Ltd

March 2025

Document Information

Additional Offset Management Plan (EPBC 2013/7057) prepared for KFF1 Pty Ltd ATF KFF1 Sub Trust as the offset provider for SRCP (Springfield) Pty Ltd, dated 6 March 2025.

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Executive Summary

SRCP (Springfield) Pty Ltd, formerly Lendlease Communities (Springfield) Pty Ltd, are the approval holder for long-term project 'Spring Mountain Masterplanned Community,' located at Spring Mountain, Queensland (EPBC 2013/7057). The conditions of the original approval (EPBC 2013/7057) granted on 23 December 2015 were varied to accommodate an additional 19.6 ha impact on Matters of National Environmental Significance (MNES) and an increase in the approved MNES impact area from 255 ha to 274.60 ha. This includes areas that are located within the northern portion of the existing referral area.

The purpose of this AOMP is to provide the objectives, key commitments including milestones and measurables (performance targets) and completion criteria to compensate for significant residual impacts on the following MNES:

- *Phascolarctos cinereus* (koala); and
- *Pteropus poliocephalus* (grey-headed flying-fox).

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

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

AU	Area	Koala Habitat Quality Score		GHFF Habitat Quality Score	
		Baseline	Future	Baseline	Future
1	24.4	4	8	4	7
2	12.15	7	8	5	7
3	3.75	7	8	5	7
4	1.11	6	8	5	7
5	32.77	4	8	4	7

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

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

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

Overall, the proposed offset is considered suitable for the proposed residual impacts on MNES based on an offset suitability analysis, proposed management framework and scale of offset area. The proposed offset area achieves **130.89 percent** of the required offset for koala and **110.33 percent** for grey-headed flying-fox.

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Acronyms

ACR	Annual Compliance Report
AOMP	Additional Offset Management Plan
ATF	As Trustee For
AU	Assessment Unit
DAWE	Department of Agriculture, Water and Environment (Commonwealth, former)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEHP	Department of Heritage and Protection (Qld, former)
DOR	Department of Resources (Qld)
DEE	Department of the Environment and Energy (Commonwealth, former)
EDL	Ecologically Dominant Layer
EOP	EPBC Act Environmental Offset Policy (2012)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FHA	Foraging Habitat Assessment
GER	Great Eastern Ranges
GPS	Global Positioning System
ha	hectare
KFF	Koala Farmland Fund
km	kilometres
KPI	Key Performance Indicator
LGA	Local Government Area
m	metre
MHQA	Modified Habitat Quality Assessment
mm	millimetres
MNES	Matters of National Environmental Significance
NJKHT	Non-juvenile Koala Habitat Tree
OMU	Operational Management Unit
PMAV	Property Map of Assessable Vegetation
RAI	Relative Abundance Index
RE	Regional Ecosystem
SAT	Spot Assessment Technique
SEQ	South East Queensland
SEQERF	Southeast Queensland Ecological Restoration Framework
VDEC	Voluntary Declaration
WONS	Weeds of National Significance

Declaration of Accuracy

In making this declaration, I am aware that section 491 of the EPBC Act makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed

Rob Martyn

Full name

Rob Martyn

Position

Offset Provider

Organisation

KFF1 Pty Ltd

Date

21 January 2025

1. Introduction

KFF1 Pty Ltd ATF KFF 1 Sub Trust as the offset provider for SRCP (Springfield) Pty Ltd (the Proponent) have prepared an Additional Offset Management Plan (AOMP) in accordance with Condition 1A of the EPBC Approval for the 'Spring Mountain Masterplanned Community,' located at Spring Mountain, Queensland (EPBC ref 2013/7057) as varied on 18 September 2024. The proposed action is for additional impacts to MNES habitat to facilitate the master planned community.

The Spring Mountain Masterplanned Community (the action) was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and subsequently declared a "Controlled Action" on the 18 December 2013 by the former Department of the Environment and Energy (DEE), now Department of Climate Change, Energy, the Environment and Water (DCCEEW), requiring assessment by "Preliminary Documentation" pursuant to section 18 and 18A (listed threatened species and communities) (EPBC 2013/7057). The trigger for the controlling provision was due to impacts on *listed threatened species and communities*. The masterplanned development was approved on 23 December 2015.

The approved referral area covers 383.72 ha and the approved development requires the removal and fragmentation of 255 ha of Matters of National Environmental Significance (MNES) habitat for the koala and grey-headed flying-fox (GHFF). The project will deliver 68.9 ha MNES habitat retention and rehabilitation area and a collective open space area of 99.1 ha, exceeding the area proposed as part of the published Preliminary Documentation. The development includes a range of land uses including residential development, commercial, mixed-use, educational establishments, assorted open space facilities, community facilities, major roads and transport routes and the required infrastructure to service the development.

1.1. Variation to EPBC approval

The conditions of the original approval (EPBC ref 2013/7057) were varied on 18 September 2024 to accommodate an additional 19.6 ha impact on MNES resulting in an increase in the approved MNES impact area from 255 ha to 274.6 ha. The variation notice is attached at **Appendix A**. Importantly, the increase in impact area does not reflect an increase in developable land or commercial benefit. The provision of the 19.6 ha of additional impacts will allow for the project to be delivered in accordance with the original proposal submitted in 2013.

As per condition 1A of the approval (variation dated 18 September 2024), the approval holder must prepare an AOMP to compensate for additional impacts to MNES, specifically the koala and GHFF. The purpose of this plan in relation to the approval is to provide the required AOMP for the Little Kipper Creek Offset Area. The specific requirements of this AOMP in accordance with the EPBC approval variation are detailed further in **Section 1.2**.

The AOMP includes the dedication and rehabilitation of a total of 74.18 ha of land located at Little Kipper Creek Road, Biarra (herein referred to as the 'offset area'). This offset area is located within a broader offset property containing a range of approved Federal offsets for the koala and GHFF, among other species. The offset area as proposed will acquit the required residual impacts and provide additional benefit for the species. Details of the additional offset area are provided in **Section 6**.

1.2. Purpose of the Management Plan

The purpose of this AOMP is to provide the objectives of the plan, key commitments including milestones and measurables (performance targets) and completion criteria to compensate for significant residual impacts on

Phascolarctos cinereus (koala) and *Pteropus poliocephalus* (grey-headed flying-fox). The plan must include (but not limited to):

- i. the ecological outcomes of the offset site (including key milestones and baseline survey results);
- ii. management measures proposed to achieve the ecological outcomes;
- iii. for each management action and monitoring outcome, detail how and when performance will be quantified, measured and monitored;
- iv. detail contingency measures to be implemented if some or all of the specified are not achieved.

Conditions 1A, 1B, 1C and 1D

The AOMP is required to be prepared accordance with **Condition 1A** of the approval (under approved variation), provided below:

To compensate for the **clearing** of 19.6 ha of **koala habitat** and **grey-headed flying-fox foraging habitat** enabled by this variation decision, additional to the **clearing** allowed by the approval decision made on 23 December 2015, the approval holder must submit an Additional Offset Management Plan (AOMP) to the **department** for the **Minister's** approval. The AOMP must specify how a direct offset to compensate for the impacts to the 19.6 ha of **MNES habitat** will be provided. The approval holder must not clear more than 255 ha within the project site until the AOMP has been approved by the **Minister** in writing.

The AOMP must be prepared a **suitably qualified person**, be in accordance with the **Environmental Management Plan Guidelines** and the **EPBC Act Environmental Offsets Policy (October 2012)** to the satisfaction of the **Minister** and include:

- a) a description of the proposed direct offset, including location, size, condition, environmental values present, adjacent land uses and a map of the proposed offset that meets the **mapping guidelines**;
- b) details to demonstrate how the proposed offset will compensate for the additional clearance of 19.6 ha of **MNES habitat** enabled by this variation decision;
- c) details of how the proposed offset will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for **MNES**;
- d) maps and **shapefiles**, prepared in accordance with the **mapping guidelines**, to clearly specify the location and boundaries of the proposed offset, accompanied by **offset attributes**.
- e) mitigation and management measures to achieve the outcomes required under these conditions;
- f) an assessment of the risks to achieving the outcomes committed to in the AOMP and risk management strategies that will be applied;
- g) an annual monitoring program that measures the progress of achieving the outcomes required under these conditions and includes:
 - i. results of baseline surveys of the **habitat quality** of the proposed offset;
 - ii. measurable, timebound performance indicators, including milestones to be achieved within 5, 10 and 15 years after the date of commencement of implementing the AOMP;
 - iii. completion criteria to determine when and how the habitat quality improvements committed to in the AOMP have been fully achieved;

- iv. trigger values and proposed corrective actions to be implemented, if the trigger values are reached; the timing, methods and frequency of monitoring capable of detecting trigger values and changes in the performance indicators; and
 - v. reporting and review mechanisms.
- h) Evidence of how management measures and corrective actions for the proposed offset consider and are consistent with **conservation advice/s, recovery plans and threat abatement plans** for **MNES**;
 - i) Details of how the proposed offset and AOMP meet the principles of the **EPBC Act Environmental Offsets Policy (October 2012)**; and
 - j) Details of the mechanism and timing proposed to legally **secure** the proposed offset.

This AOMP also provides the details on how **Conditions 1B, 1C and 1D** of the approval (provided below for reference) will be achieved.

Condition 1B) The approval holder must not **clear** more than 255 ha within the **project site** until the offset site proposed in the approved AOMP has been legally **secured**. The approval holder must ensure that the offset site proposed in the approved AOMP remains secured at least until the expiry date of this approval.

Condition 1C) The approval holder must commence implementing the approved AOMP no later than the date on which the offset site proposed in the approved AOMP is legally **secured** and continue to implement the AOMP until the expiry date of this approval.

Condition 1D) The approval holder must, within 5 **business days** of commencing implementation of the AOMP, notify the **department** of the date on which implementation of the AOMP commenced.

EPBC Act approval definitions

Clear/Clearing/Cleared means the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of vegetation excluding Weeds of national significance.

Conservation advice/s, recovery plans and threat abatement plans means conservation advice/s (including listing advice/s), recovery plans and threat abatement plans for MNES approved by the Minister.

Department means the Australian Government Department or any other agency administering the EPBC Act from time to time.

Environmental Management Plan Guidelines means the Environmental Management Plan Guidelines, Commonwealth of Australia 2024, as published at the following webpage address: [Environment Management Plan Guidelines](#)

EPBC Act Environment Offsets Policy (October 2012) is the Policy guiding the use of offsets under the Environment Protection and Biodiversity Conservation Act 1999, published by the then Department of Sustainability, Environment, Water, Population and Communities, October 2012.

Gain in habitat quality means an improvement in the quality and extent of koala habitat and grey-headed flying-fox foraging habitat in comparison to baseline environmental conditions at the offset and compared with an unmanaged control site.

Grey-headed flying-fox foraging habitat means the known native food trees, including eucalypts (genera Eucalyptus, Corymbia and Angophora), melaleucas and banksias that are the primary food for the species.

Koala habitat means any forest or woodland containing species that are known koala food trees or shrubland with emergent food trees. This can include remnant and non – remnant vegetation in natural, agricultural, urban and peri-urban environments and is defined by the vegetation community present and the vegetation structure; koalas do not necessarily have to be present.

Mapping guidelines means Guide to providing maps and boundary data for EPBC Act projects (2021), as published at the following webpage address: [Maps and boundary data for EPBC Act projects](#)

Minister means the Minister administering the EPBC Act and includes a delegate of the Minister.

MNES means matters of national environmental significance.

MNES habitat means **koala habitat** and **grey-headed flying-fox foraging habitat**.

Offset attributes means a '.xls' file capturing relevant attributes of the offset site, including the EPBC reference ID number, the physical address of the offset site, coordinates of the boundary points in decimal degrees, the EPBC Act protected matters that the offset compensates for, any additional EPBC Act protected matters that are benefiting from the offset, and the size of the offset in hectares.

Secure or secured means to provide enduring conservation protection on the title of land under relevant Queensland legislation, or another enduring protection mechanism agreed to in writing by the **department** to provide protection for the site against development incompatible with conservation.

Shapefile means an ESRI Shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes including at least the EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.

Suitably qualified person means a person with qualifications in environmental science, ecology or biology from a recognised institute and a minimum of 5 years field experience in flora and fauna management, or as agreed in writing by the Department.

This AOMP has been developed to satisfy the conditions of the EPBC Approval Variation and EPBC Environmental Offsets Policy (EOP) to guide the implementation and management of offset activities.

The AOMP will be accompanied by a digital version of the offset attributes and shapefiles and are in accordance with the spatial data guidelines. In addition, the plan includes a commitment to provide updated shapefiles to DCCEE, within a reasonable timeframe if the specifics of the offset change for any reason.

1.3. Additional Definitions

In addition to the definitions provided under the EPBC Act approval, the following additional definitions are used:

Additional impact area – The area where the additional clearing will occur. This is located within Lot 1600 on SP313733 and encompasses 19.6 ha.

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

Offset area – The 74.18 ha area within the offset property where the specific offset will be implemented and consists of five assessment units.

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

Year 1 of the offset – The 12-month period following the legal securement of the offset area.

Years 2 to 20 of the offset – The 12-month period following each anniversary of the legal securement of the offset area.

1.4. Report Structure

This AOMP contains the following sections:

- Section 2: Roles and Responsibilities
- Section 3: Environmental Outcomes
- Section 4: Monitoring and Reporting Schedule
- Section 5: Overview of Additional Impact Area
- Section 6: Overview of Offset Area
- Section 7: Offset Area Suitability
- Section 8: Baseline Surveys
- Section 9: Management Framework
- Section 10: Adaptive Management
- Section 11: References
- Section 12: Appendices
 - Appendix A – EPBC Approval and Variation 2013/7057
 - Appendix B – Offset Assessment Guide Calculator Results and Justification
 - Appendix C – Curriculum vitae of suitably qualified ecologists
 - Appendix D – Additional impact area – MHQA raw data
 - Appendix E – Offset area – koala MHQA baseline scoring
 - Appendix F – Offset area – baseline raw data
 - Appendix G – Offset area – grey-headed flying-fox FHA baseline scoring
 - Appendix H – Risk Assessment

2. Roles and Responsibilities

The successful implementation of this AOMP requires a number of key personnel to complete various roles.

A list of key contacts for the project is contained in **Table 1**.

Table 1: Key Personnel

Role	Nominated Person	Company / Entity	Contact details
Proponent/Approval Holder	Katie Cullen	SRCP (Springfield) Pty Ltd	katie.cullen@stockland.com.au
Offset Provider	Rob Martyn	KFF1 Pty Ltd	rob.martyn@koalafarmlandfund.com.au
Administering Authority	N/A	DCCEEW Compliance Monitoring Branch	EPBCMonitoring@dcceew.gov.au
Suitably qualified person/contractor	Appointed as required by either the proponent or the Offset Provider	Appointed as required by either the proponent or the Offset Provider	Appointed as required by either the proponent or the Offset Provider

3. Environmental outcomes

This AOMP identifies outcomes focused management actions pursuant the EPBC Act, for the provision of koala (*Phascolarctos cinereus*) and grey-headed flying-fox (*Pteropus poliocephalus*) habitat offset. The management objectives for the offset area, in alignment with the Environmental Offsets Policy (EOP) will:

- Deliver an overall conservation outcome that improves the viability of habitat for the koala and GHFF.
- Provide a direct offset that is in proportion to the level of statutory protection that applies to koala and GHFF habitat.
- Be of a size and scale proportionate to the residual impacts on koala and GHFF habitat.
- Effectively account for and manage the risks of the offset not being successful within the required management timeframe.
- Provide a conservation gain additional to what is already required by a duty of care or to any environmental planning laws at any level of Government.
- Be efficient, effective, timely, transparent, scientifically robust and reasonable with appropriate transparent governance arrangements in place for measuring, monitoring, auditing and enforcing the management of the offset area.

3.1. Koala

A summary of the baseline and improvement scoring for each assessment unit within the offset area is outlined in **Table 2**. Detailed environmental outcomes showing the specific attributes which are improved by the offset actions including interim milestones are provided at **Table 6 to Table 10**.

Table 2: Koala baseline MHQA and offset improvement scores

MHQA Final Scores	AU1 – Baseline	AU1 – Uplift	AU2 – Baseline	AU2 – Uplift	AU3 – Baseline	AU3 – Uplift	AU4 – Baseline	AU4 – Uplift	AU5 – Baseline	AU5 – Uplift
Site condition (/3)	0.83	2.55	2.04	2.7	2.04	2.85	1.49	2.7	0.72	2.55
Site context (/3)	2.2	2.79	2.2	2.79	2.2	2.79	2.2	2.79	2.2	2.79
Species stocking rate (/4)	1.14	2.29	2.29	2.29	2.29	2.29	2.29	2.29	1.14	2.29
AU score	4.16	7.62	6.52	7.78	6.52	7.93	5.97	7.78	4.06	7.63
Rounded	4	8	7	8	7	8	6	8	4	8
Assessment Unit Area (ha)	24.4		12.15		3.75		1.11		32.77	

3.2. Grey-headed flying-fox

A summary of the baseline and improvement scoring for each assessment unit within the offset area is outlined in **Table 3**. Detailed environmental outcomes showing the specific attributes which are improved by the offset actions including interim milestones are provided at **Table 11 to Table 15**.

Table 3: GHFF baseline FHA and offset improvement scores

MHQA Final Scores	AU1 – Baseline	AU1 – Uplift	AU2 – Baseline	A2 – Uplift	AU3 – Baseline	AU3 – Uplift	AU4 – Baseline	AU4 – Uplift	AU5 – Baseline	AU5 – Uplift
Site condition (/4)	1.33	2.92	2.16	2.92	1.93	2.92	1.76	2.92	1.17	3.12
Site context (/3)	2	2.25	2	2.25	2	2.25	2	2.25	2	2.25
Species stocking rate (/3)	0.6	1.8	1.2	1.8	1.2	1.8	1.2	1.8	0.6	1.8
AU score	3.93	6.97	5.36	6.97	5.13	6.97	4.96	6.97	3.77	7.17
Rounded	4	7	5	7	5	7	5	7	4	7
Assessment Unit Area (ha)	24.4		12.15		3.75		1.11		32.77	

3.3. Offset Assessment Guide – Calculator

Table 4 outlines a summary of the MNES offset compensation associated with the 19.6 ha of additional impacts being **130.89 %** for koala and **110.33%** for grey-headed flying-fox. The offset compensation for the impacts on MNES is derived from the EPBC Offset Assessment Guide calculator and habitat quality gains achieved from the successful implementation of the management actions.

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

Table 4: Summary of MNES offset compensation

	Impact Site			Offset Area			Total % of Impact Offset
	Impact Area	Impact Score	Quantum Impact (QI) Area	Habitat Quality Gain	Offset Area (ha)	% of Impact Offset	
Koala	19.6 ha	7/10	13.72 QI ha	AU1 4/10 to 8/10	24.4	51.26 %	130.89 %
				AU2 7/10 to 8/10	12.15	7.23 %	
				AU3 7/10 to 8/10	3.75	2.23 %	
				AU4 6/10 to 8/10	1.11	1.32 %	
				AU5 4/10 to 8/10	32.77	68.85 %	
Grey-headed flying-fox	19.6 ha	7/10	13.72 QI ha	AU1 4/10 to 7/10	24.4	38.45 %	110.33 %
				AU2 5/10 to 7/10	12.15	14.46 %	
				AU3 5/10 to 7/10	3.75	4.46 %	
				AU4 5/10 to 7/10	1.11	1.32 %	
				AU5 4/10 to 7/10	32.77	51.64 %	

Completion Criteria

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

A summary of the management actions and their completion criteria required to achieve the environmental outcomes are provided in **Table 5**. The management actions will result in a net gain of the overall habitat quality for koala and grey-headed flying-fox over the period of effect of the offset through active management, maintenance, monitoring and reporting.

This AOMP includes completion criteria and performance targets that evidence protection or improvement of koala and grey-headed flying-fox habitat. For the purpose of the plan:

- a) **completion criteria** are longer term time-bound values, specified for measurable parameters, that if attained and maintained ensure the plan’s environmental outcomes are achieved; and
- b) **performance targets** are time-bound short- and medium-term targets guided by prescribed management measures, for management interventions and environmental condition, that are used to monitor, evaluate, review and improve the effectiveness of the plan to offset impacts.

Tracking of progress against the environmental outcomes will be measured at milestone monitoring years using the baseline survey methodologies detailed in **Section 8**. A schedule of monitoring and reporting is provided in **Section 4**.

Table 5: Completion Criteria and Performance Targets

Management Action	AOMP Section	Performance Targets	Completion criteria
Management Action 1 – Legally Secure Offset Area	9.3	<ul style="list-style-type: none"> The offset area is legally secured via the Voluntary Declaration (VDEC) process administered under the <i>Queensland Vegetation Management Action 1999</i> prior to the additional impacts occurring (Condition 1B) <i>i.e.</i>, clearing more than 255 ha within the project site. The Department is notified of the legal securement within 5 business days of commencing the implementation of the AOMP <i>i.e.</i>, the date from which the offset area is legally secured (Condition 1C and 1D). The offset area is not used for other purposes – site access is restricted. 	<ul style="list-style-type: none"> The offset area is legally secured in perpetuity via a covenant under the <i>Land Act 1994</i> or <i>Land Titles Act 1994</i> within 12 months of the implementation of the AOMP. The Department is notified within 5 business days of the offset area being legally secured via a covenant. The offset area is not used for other purposes – site access is restricted.
Management Action 2 – Non-native Vertebrate Pest Management	9.4	<ul style="list-style-type: none"> Development and implementation of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) and ongoing monitoring methods (including datasheets) to be utilised, will be completed within <u>Year 1 of the offset</u>. A suitably qualified pest management contractor is engaged to manage pests within the offset area for the life of the offset (20 years). 	<ul style="list-style-type: none"> No recorded injury or death of koala from non-native predator attacks within the offset area. Non-native vertebrate pests and evidence of pests are suppressed within the offset area.
Management Action 3 – Management of Weeds of National Significance	9.5	<ul style="list-style-type: none"> Establish photo monitoring locations in <u>Year 1</u> prior to treatment of WONS commencing. 	<ul style="list-style-type: none"> The management actions must reduce the extent of or maintain WONS weed cover below 5% of baseline levels by the end of Year 10 and be maintained for the life of the offset (20 years).

Management Action	AOMP Section	Performance Targets	Completion criteria
		<ul style="list-style-type: none"> All WONS will receive initial treatment within <u>Year 1</u> of the offset to allow for planting works to commence. Follow-up treatment of WONS will occur <u>annually</u> or as needed, determined by the suitably qualified regeneration contractor. 	
Management Action 4 – Bushfire Management Plan	9.6	<ul style="list-style-type: none"> A Bushfire Management Plan (BMP) will be developed and implemented in accordance with relevant Queensland guidelines and endorsed by an experienced bushfire practitioner to reduce potential threats from fires to koala and GHFF. 	<ul style="list-style-type: none"> No record of high intensity fires in the offset area. No record of koala injury or death from fire. Vegetation composition and restoration regime is not negatively affected by prescribed fire regimes.
Management Action 5 – Habitat Creation and Regeneration	9.7	<ul style="list-style-type: none"> Offset area planting completed by the end of <u>Year 2 of the offset</u>. 	<ul style="list-style-type: none"> Rehabilitated areas are established, regenerated and mapped as remnant vegetation under Queensland’s VMA successor legislation by year 20 which requires 70% of canopy height and 50% of expected cover according to the relevant Regional Ecosystem benchmark to be reached. Site condition metrics for koala and grey-headed flying-fox improves in accordance with environmental outcomes (see Table 6 to Table 15).
Management Action 6 – Fencing and Signage	9.8	<ul style="list-style-type: none"> Fencing and signage is installed and retrofitted by the end of <u>Year 1 of the offset</u> and maintained for the life of the offset (20 years). 	<ul style="list-style-type: none"> There are no mortalities or injury to koala or grey-headed flying-fox recorded as a result of barbed-wire fencing. There are no stock breaches or unauthorised access recorded.

Table 6: Koala Environmental Outcomes – AU1

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	3	3	5	5	5	10 years	Recruitment of EDL dominant species will increase to >75% as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Recruitment is currently 50% of the benchmark. If improvement to greater than 75% has not been achieved at the 10 year mark then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness – Trees	2.5	2.5	5	5	5	10 years	All of the expected tree species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree species richness is currently at 40% of the benchmark. Recruitment of tree species is to be greater than 75% at 10 years as specified above. If the sub-canopy layer species richness has not improved to greater than 95% at 10 years then remedial actions to improve the prospect of achieving 95% in 20 years will be applied. These include remedial plantings of advanced stock.
Native plant species richness - Shrubs	2.5	2.5	2.5	5	5	15 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub species richness is currently at 27.78% of the benchmark. If the shrub species richness has not improved to greater than 75% at 10 years then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Native plant species richness - Grasses	2.5	2.5	2.5	2.5	2.5	20 years	All of the expected grass species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Grass species richness is currently at 36.36% of the benchmark. If the grass species richness has not improved to greater than 75% at 10 years then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Native plant species richness - Forbs	0	0	0	2.5	2.5	20 years	Native forb species richness between 25% and 90% of the benchmark will be achieved as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Forb species richness is currently at 17.65% of the benchmark. If the forb species richness has not improved to greater than 25% at 10 years then remedial actions to improve the prospect of achieving between 25% and 90% in 20 years will be applied. These include remedial plantings.
Tree canopy height	4	4	4	4	5	20 years	A median tree height greater than 70% of the benchmark will be achieved as a result of 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Median tree canopy height is currently at 86.36% (EDL) and 50% (sub-canopy) of the benchmark (average 68%). If tree height has not transitioned above 70% at 20 years, then the prospect of extending the management period may be investigated. By Year 20 species plantings to be a minimum of 70% of the tree canopy height benchmark.

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Tree canopy cover	0	0	2	2	5	15 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree canopy cover is currently at 6.59% (EDL) and 0% (sub-canopy) of the benchmark. Recruitment of tree species is to be greater than 75% at 10 years as specified above. If canopy cover has not reached 10% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include remedial plantings of advanced stock.
Shrub canopy cover	0	0	3	3	5	20 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 0% of the benchmark. If the shrub canopy cover has not improved to greater than 10% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include remedial plantings.
Native perennial grass cover	3	3	3	5	5	15 years	Native grass cover to achieve at least 90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Native perennial grass cover is currently at 80% of the benchmark. If the native perennial grass cover has not improved to greater than 90% in 20 years then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter	3	3	3	5	5	15 years	Organic litter to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Organic litter is currently at 25.71% of the benchmark. If organic litter has not improved to greater than 50% at 15 years then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees	5	5	5	5	5	Immediate	The number of large trees will be maintained between 0% and 50% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the number of large trees will be maintained between 0% and 50%. Remedial actions are not anticipated.
Coarse woody debris	0	0	2	2	5	15 years	Course woody debris greater than 50% and less than 200% of the benchmark will be achieved by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Coarse woody debris is currently 5.36% of the benchmark due to current and historical land uses. If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	0	5	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 10 years by specific management actions 3 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. An additional survey is recommended at Year 8 to track progress to the Year 10 milestone objective.	Weed cover is currently 72.5% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 10 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Quality and availability of food and foraging habitat	1	1	5	5	10	20 Years	Quality and availability of food and foraging habitat will be improved to high by specific management actions 1, 3, 4, 5 and 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of food and foraging habitat is currently poor. All site condition remedial actions also apply to this criterium achieving a high rating.
Quality and availability of shelter	1	1	5	5	10	20 Years	Quality and availability of shelter will be improved to high by specific management actions 1, 3, 4, 5 and 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of shelter is currently poor. All site condition remedial actions also apply to this criterium achieving a high rating.
Site Condition Score	27.5	32.5	54.5	66	85				
Overall Site Condition Score out of 3	0.83	0.98	1.64	1.98	2.55				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	15	15	15	15	5 Years	Threats to species including barbed wire fencing, non-native predators and WONS will be reduced to low levels by specific management actions 2, 3 & 6 outlined in Table 5 .	Baseline attributes are established. This criterium is reliant upon the suppression and control of pest species and WONS. Pest monitoring will be evaluated as per the pest management program.	The control of pest species will provide an immediate and large reduction in threats. If monitoring as per the pest management program indicates pest species are not reduced then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	7	7	7	7	10	20 Years	Species mobility capacity will be improved to minor restriction (<25%) by specific management actions 1 to 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently moderately restricted by the absence of habitat and presence of weeds and pests. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a high rating.
Site Context Score	41	49	49	49	52				
Overall Site Context Score (out of 3)	2.20	2.63	2.63	2.63	2.79				
Presence	10	10	10	10	10	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Usage	5	5	5	5	15	20 Years	It is anticipated that under the management actions specified under management actions 1 to 6 outlined in Table 5 Koala usage of the site as a measure of habitat type and evidence usage will increase. It is considered that with the reinstatement of key habitat values, the site will be considered breeding habitat by Year 15 as per the conservation advice.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The absence of trees across the majority of the assessment unit indicates limited potential for usage within the assessment unit by Koala. Due to the presence of scattered trees, the assessment unit has been scored as dispersal habitat. If usage levels are not transitioning toward foraging level at the 10 year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala usage

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
									(measured as both the increase in habitat values and Koala activity) has not improved to breeding level by 20 years then the management period may be extended and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala usage.
Approximate Density	0	0	0	0	10	20 Years	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in Table 5 at least low level Koala activity (<22.52% scats recorded using the East Coast med-high population category) will be recorded.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The absence of trees across the majority of the assessment unit indicate no usage of the assessment unit by Koala. If density levels are not transitioning toward low level at the 10 year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala activity has not improved to low level by Year 20 then the management period may be extended and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala activity.
Role of the population	5	5	5	5	5	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
SSR Score (out of 70)	20	20	20	20	40				
SSR Score out of 4	1.14	1.14	1.14	1.14	2.29				
Total Habitat Quality Scores	4.16	4.75	5.41	5.75	7.62				

Table 7: Koala Environmental Outcomes – AU2

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	3	3	5	5	5	10 years	Recruitment of EDL dominant species will increase to >75% as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Recruitment is currently 75% of the benchmark. If improvement to greater than 75% has not been achieved at the 10 year mark, then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness – Trees	5	5	5	5	5	Immediate	Native tree species richness greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the native tree species richness will be maintained over 90%. Remedial actions are not anticipated.
Native plant species richness - Shrubs	2.5	2.5	2.5	5	5	15 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub species richness is currently at 62.5% of the benchmark. If the shrub species richness has not improved to greater than 75% at Year 10 then remedial actions to improve the prospect of achieving 90% in 15 years will be applied. These include remedial plantings.
Native plant species richness - Grasses	5	5	5	5	5	Immediate	Native grasses species richness greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the native grasses species richness will be maintained over 90%. Remedial actions are not anticipated.
Native plant species richness - Forbs	2.5	2.5	2.5	5	5	15 years	All of the expected forb species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Forb species richness is currently at 79.41% of the benchmark. If monitoring indicates that forb species richness is not transitioning to over 90% at Year 15 then remedial actions will be applied. These include remedial plantings.
Tree canopy height	5	5	5	5	5	Immediate	Tree canopy height greater than 70% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Median tree canopy height is currently 100% (EDL) and 79.17% (sub-canopy), average 89.58%. It is anticipated that the tree canopy height will be maintained over 70%. Remedial actions are not anticipated.
Tree canopy cover	5	5	5	5	5	Immediate	Tree canopy cover between 50% and 200% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree canopy cover is currently 168.87% (EDL) and 104.78% (sub-canopy), average 136.83%. It is anticipated that the tree canopy cover will be maintained between 50% and 200%. Remedial actions are not anticipated.

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Shrub canopy cover	3	3	3	3	5	20 years	Shrub canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 14.55% of the benchmark. If monitoring indicates that shrub canopy cover is not transitioning to between 50 and 200% at year 15 then remedial actions will be applied to ensure it is achieved by Year 20. These include remedial plantings.
Native perennial grass cover	5	5	5	5	5	Immediate	Native perennial grass cover greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the native perennial grass cover will be maintained over 90%. Remedial actions are not anticipated.
Organic litter	5	5	5	5	5	Immediate	Organic litter between 50% and 200% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the organic litter will be maintained between 50% and 200%. Remedial actions are not anticipated.
Large trees	5	5	5	5	5	Immediate	The number of large trees will be maintained between 0% and 50% of the benchmark as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the number of large trees will be maintained between 0% and 50%. Remedial actions are not anticipated.
Coarse woody debris	2	2	2	2	5	20 years	Coarse woody debris greater than 50% and less than 200% of the benchmark will be achieved by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Coarse woody debris is currently 21.66% of the benchmark due to current and historical land uses. If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	0	5	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 10 years by specific management actions 3 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. An additional survey is recommended at Year 8 to track progress to the Year 10 milestone objective.	Weed cover is currently 72.5% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 10 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	10	10	10	10	10	Immediate	It is not anticipated that the quality and availability of food and foraging habitat will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the quality and availability of food and foraging habitat shows decline, then remedial actions will be implemented.
Quality and availability of shelter	10	10	10	10	10	Immediate	It is not anticipated that the quality and availability of shelter habitat will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the quality and availability of shelter shows decline, then remedial actions will be implemented.
Site Condition Score	68	73	80	85	90				
Overall Site Condition Score out of 3	2.04	2.19	2.4	2.55	2.7				
Size of patch	10	10	10	10	10	NA	NA	NA	NA

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	15	15	15	15	5 Years	Threats to species will be reduced to low levels by specific management actions 2, 3 & 6 outlined in Table 5 .	Baseline attributes are established. This criterium is reliant upon the suppression and control of pest species and WONS. Pest monitoring will be evaluated as per the pest management program.	The control of pest species will provide an immediate and large reduction in threats. If monitoring as per the pest management program indicates pest species are not reduced then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	7	7	10	10	10	10 Years	Species mobility capacity will be improved to minor restriction (<25%) by specific management actions 1 to 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently highly restricted by heavy Lantana infestations. All site condition remedial actions, as well as threat reductions also apply to this criterium achieving a high rating.
Site Context Score	41	49	52	52	52				
Overall Site Context Score (out of 3)	2.20	2.63	2.79	2.79	2.79				
Presence	10	10	10	10	10	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Usage	15	15	15	15	15	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Approximate Density	10	10	10	10	10	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Role of the population	5	5	5	5	5	Immediate	NA - Not anticipated to change	NA - Not anticipated to change	NA - Not anticipated to change
SSR Score (out of 70)	40	40	40	40	40				
SSR Score out of 4	2.29	2.29	2.29	2.29	2.29				
Total Habitat Quality Scores	6.52	7.11	7.48	7.63	7.78				

Table 8: Koala Environmental Outcomes – AU3

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	3	3	5	5	5	10 years	Recruitment of EDL dominant species will increase to >75% as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Recruitment is currently at 66.5% of the benchmark. If improvement to 75% has not been achieved at the 10 year mark then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness – Trees	5	5	5	5	5	Immediate	Native tree species richness greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the native tree species richness will be maintained over 90%. Remedial actions are not anticipated.
Native plant species richness - Shrubs	5	5	5	5	5	Immediate	Native shrub species richness greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the native shrub species richness will be maintained over 90%. Remedial actions are not anticipated.
Native plant species richness - Grasses	2.5	2.5	2.5	2.5	5	20 years	All of the expected grass species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Grass species richness is currently at 54.55% of the benchmark. If the grass species richness has not improved to greater than 75% at 10 years then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Native plant species richness - Forbs	2.5	2.5	2.5	2.5	5	20 years	All of the expected forb species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Forb species richness is currently at 52.94% of the benchmark. If the forb species richness has not improved to greater than 75% at 15 years then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Tree canopy height	5	5	5	5	5	Immediate	Tree canopy height greater than 70% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Median tree canopy height is currently 111.36% (EDL) and 100% (sub-canopy), average 105.68%. It is anticipated that the tree canopy height will be maintained over 70%. Remedial actions are not anticipated.
Tree canopy cover	4	4	4	4	5	20 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree canopy cover is currently at 150.49% (EDL) and 352.5% (sub-canopy) of the benchmark. If canopy cover is still above 200% at 10 years then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied.

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Shrub canopy cover	3	3	3	3	5	20 years	Shrub canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 266.67% of the benchmark. If monitoring indicates that shrub canopy cover is not transitioning to between 50 and 200% then remedial actions will be applied. These include a review of actions that impact on shrub canopy cover.
Native perennial grass cover	1	1	3	3	5	20 years	Native grass cover to be achieved at least 90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Native perennial grass cover is currently at 37.14% of the benchmark. It is anticipated that native perennial grass cover will achieve at least 50% of the benchmark by Year 10 and 90% of the benchmark by Year 20. If monitoring indicates that native perennial grass cover is not transitioning to 90% then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter	5	5	5	5	5	Immediate	Between 50 and 200% of the benchmark for organic litter will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10 and 15 years.	It is anticipated that the organic litter will be maintained between 50 and 200%. Remedial actions are not anticipated.
Large trees	10	10	10	10	10	Immediate	Between 0 and 50% of the benchmark for large trees will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the large tree count will be maintained between 0 and 50% of the benchmark. Remedial actions are not anticipated.
Coarse woody debris	2	2	2	2	5	20 years	Coarse woody debris greater than 50% and less than 200% of the benchmark will be achieved by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Coarse woody debris is currently 39.88% of the benchmark due to current and historical land uses. If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	0	5	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 10 years by specific management actions 3 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. An additional survey is recommended at Year 8 to track progress to the Year 10 milestone objective.	Weed cover is currently 85% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 10 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	10	10	10	10	10	Immediate	It is not anticipated that the quality and availability of food and foraging habitat will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the quality and availability of food and foraging habitat shows decline, then remedial actions will be implemented.

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Quality and availability of shelter	10	10	10	10	10	Immediate	It is not anticipated that the quality and availability of shelter habitat will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the quality and availability of shelter shows decline, then remedial actions will be implemented.
Site Condition Score	68	73	82	82	95				
Overall Site Condition Score out of 3	2.04	2.19	2.46	2.46	2.85				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	15	15	15	15	5 Years	Threats to species will be reduced to low levels by specific management actions 2, 3 & 6 outlined in Table 5 .	Baseline attributes are established. This criterion is reliant upon the suppression and control of pest species and WONS. Pest monitoring will be evaluated as per the pest management program.	The control of pest species will provide an immediate and large reduction in threats. If monitoring as per the pest management program indicates pest species are not reduced then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	7	7	10	10	10	10 Years	Species mobility capacity will be improved to minor restriction (<25%) by specific management actions 1 to 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently highly restricted by heavy infestations of Lantana. All site condition remedial actions, as well as threat reductions also apply to this criterion achieving a high rating.
Site Context Score	41	49	52	52	52				
Overall Site Context Score (out of 3)	2.20	2.63	2.79	2.79	2.79				
Presence	10	10	10	10	10	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Usage	15	15	15	15	15	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Approximate Density	10	10	10	10	10	Immediate	NA - Not anticipated to change	Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Role of the population	5	5	5	5	5	Immediate	NA - Not anticipated to change	NA - Not anticipated to change	NA - Not anticipated to change
SSR Score (out of 70)	40	40	40	40	40				
SSR Score out of 4	2.29	2.29	2.29	2.29	2.29				
Total Habitat Quality Scores	6.52	7.11	7.54	7.54	7.93				

Table 9: Koala Environmental Outcomes – AU4

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	5	5	5	5	5	Immediate	Recruitment of woody perennial species greater than 75% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the recruitment of woody perennial species will be maintained over 75%. Remedial actions are not anticipated.
Native plant species richness – Trees	5	5	5	5	5	Immediate	Native tree species richness greater than 90% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the native tree species richness will be maintained over 90%. Remedial actions are not anticipated.
Native plant species richness - Shrubs	2.5	2.5	2.5	5	5	15 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub species richness is currently at 44.44% of the benchmark. If the shrub species richness has not improved to greater than 75% at Year 15 then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Native plant species richness - Grasses	2.5	2.5	2.5	2.5	5	20 years	All of the expected grass species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Grass species richness is currently at 54.55% of the benchmark. If the grass species richness has not improved to greater than 75% at Year 15 then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Native plant species richness - Forbs	2.5	2.5	2.5	2.5	5	20 years	All of the expected forb species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Forb species richness is currently at 52.94% of the benchmark. If the forb species richness has not improved to greater than 75% at Year 15 then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Tree canopy height	5	5	5	5	5	Immediate	Tree canopy height greater than 70% of the benchmark will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Median tree canopy height is currently 81.82% (EDL) and 100% (sub-canopy), average 90.91%. It is anticipated that the tree canopy height will be maintained over 70%. Remedial actions are not anticipated.
Tree canopy cover	4	4	4	4	5	20 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree canopy cover is currently at 64.63% (EDL) and 282% (sub-canopy) of the benchmark with an average of 173.32%. If canopy cover is still above 200% for the sub-canopy at Year 15 then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied.

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Shrub canopy cover	3	3	3	3	5	20 years	Shrub canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 396.67% of the benchmark. If monitoring indicates that shrub canopy cover is not transitioning to between 50 and 200% then remedial actions will be applied. These include a review of actions that impact on shrub canopy cover.
Native perennial grass cover	0	1	3	3	5	20 years	Native grass cover to achieve at least 90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Native perennial grass cover is currently at 5.71% of the benchmark. If the native perennial grass cover has not improved to greater than 10% at Year 5 and 50% at Year 15 then remedial actions to improve the prospect of achieving 90% in 20 years will be applied. These include remedial plantings.
Organic litter	3	3	3	5	5	15 years	Organic litter to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Organic litter is currently at 25.71% of the benchmark. If organic litter has not improved to greater than 50% at Year 15 then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees	5	5	5	5	5	Immediate	Between 0 and 50% of the benchmark for large trees will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the large tree count will be maintained between 0 and 50% of the benchmark. Remedial actions are not anticipated.
Coarse woody debris	2	2	2	2	5	20 years	Course woody debris greater than 50% and less than 200% of the benchmark will be achieved by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Coarse woody debris is currently 29.58% of the benchmark due to current and historical land uses. If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% at Year 15 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.
Weed cover	0	5	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 10 years by specific management actions 3 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. An additional survey is recommended at Year 8 to track progress to the Year 10 milestone objective.	Weed cover is currently 55% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 10 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	5	5	5	5	10	20 Years	Quality and availability of food and foraging habitat will be improved to high by specific management actions 1, 3, 4, 5 and 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of food and foraging habitat is currently moderate. All site condition remedial actions also apply to this criterium achieving a high rating.

Attribute	Current Score	Year 5 Score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Quality and availability of shelter	5	5	5	5	10	20 Years	Quality and availability of shelter will be improved to high by specific management actions 1, 3, 4, 5 and 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of shelter is currently moderate. All site condition remedial actions also apply to this criterion achieving a high rating.
Site Condition Score	49.5	55.5	62.5	67	90				
Overall Site Condition Score out of 3	1.49	1.67	1.88	2.01	2.7				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	15	15	15	15	5 Years	Threats to species will be reduced to low levels by specific management actions 2, 3 & 6 outlined in Table 5 .	Baseline attributes are established. This criterion is reliant upon the suppression and control of pest species and WONS. Pest monitoring will be evaluated as per the pest management program.	The control of pest species will provide an immediate and large reduction in threats. If monitoring as per the pest management program indicates pest species are not reduced then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	7	7	10	10	10	10 Years	Species mobility capacity will be improved to minor restriction (<25%) by specific management actions 1 to 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently highly restricted by the absence of habitat and presence of Lantana. All site condition remedial actions, as well as threat reductions also apply to this criterion achieving a high rating.
Site Context Score	41	49	52	52	52				
Overall Site Context Score (out of 3)	2.20	2.63	2.79	2.79	2.79				
Presence	10	10	10	10	10	Immediate	NA - Not anticipated to change	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Usage	15	15	15	15	15	Immediate	NA - Not anticipated to change	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Approximate Density	10	10	10	10	10	Immediate	NA - Not anticipated to change	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Role of the population	5	5	5	5	5	Immediate	NA - Not anticipated to change	NA - Not anticipated to change	NA - Not anticipated to change
SSR Score (out of 70)	40	40	40	40	40				
SSR Score out of 4	2.29	2.29	2.29	2.29	2.29				
Total Habitat Quality Scores	5.97	6.59	6.96	7.09	7.78				

Table 10: Koala Environmental Outcomes – AU5

Attribute	Current Score	Year 5 score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Recruitment of woody perennial species	0	3	3	5	5	15 years	Recruitment of EDL dominant species will increase to >75% as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Establish photo monitoring points where remedial tree planting occurs at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Recruitment is currently at 16.5% of the benchmark. If improvement to 75% has not been achieved at the Year 15 then remedial actions to improve recruitment will be applied. These include refining weed and fire control methods and increasing remedial plantings.
Native plant species richness – Trees	2.5	2.5	2.5	2.5	5	20 years	All of the expected tree species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree species richness is currently at 25% of the benchmark. Recruitment of tree species is to be greater than 75% at 10 years as specified above. If the sub-canopy layer species richness has not improved to greater than 90% at Year 15 then remedial actions to improve the prospect of achieving 90% at Year 20 will be applied. These include remedial plantings of advanced stock.
Native plant species richness - Shrubs	0	2.5	2.5	5	5	15 years	All of the expected shrub species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub species richness is currently at 14.29% of the benchmark. If the shrub species richness has not improved to greater than 75% at Year 15 then remedial actions to improve the prospect of achieving 90% at Year 20 will be applied. These include remedial plantings.
Native plant species richness - Grasses	2.5	2.5	2.5	2.5	2.5	Immediate	All of the expected grass species to be present as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Grass species richness is currently at 50% of the benchmark. It is anticipated that the native grass species richness will be maintained between 25% and 90% of the benchmark. Remedial actions are not anticipated.
Native plant species richness - Forbs	2.5	2.5	2.5	2.5	2.5	Immediate	Between 25% and 90% of the benchmark for native forb species richness will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the native forb species richness will be maintained between 25% and 90% of the benchmark. Remedial actions are not anticipated.
Tree canopy height	1.5	1.5	3	3	5	20 years	A median tree height greater than 70% of the benchmark will be achieved as a result of 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree canopy height is currently at 42.86% (EDL) and 0% (sub-canopy) of the benchmark with an average of 21.43%. If tree height has not transitioned toward 70% at Year 15, then the prospect of extending the management period may be investigated. By Year 20 species plantings to be a minimum of 70% of the tree canopy height benchmark.

Attribute	Current Score	Year 5 score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Tree canopy cover	0	2	2	2	5	20 years	Canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Tree canopy cover is currently at 7.03% (EDL) and 0% (sub-canopy) of the benchmark with an average of 3.52%. Recruitment of tree species is to be greater than 75% at Year 15 as specified above. If monitoring indicates that tree canopy cover is not progressing towards 50%, then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include remedial plantings of advanced stock.
Shrub canopy cover	0	3	3	3	5	20 years	Shrub canopy cover to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Shrub canopy cover is currently at 6.67% of the benchmark. If monitoring indicates that the shrub canopy cover is not progressing towards 50%, then remedial actions to improve the prospect of achieving between 50% and 200% in 20 years will be applied. These include remedial plantings.
Native perennial grass cover	5	5	5	5	5	Immediate	Native grass cover to be maintained at greater than 90% of the benchmark by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that native perennial grass cover will be maintained above 90% of the benchmark. If monitoring indicates a decline to below 90% then remedial actions will be applied. These include refining weed and fire control methods to ensure native grass cover is maintained.
Organic litter	0	0	3	3	5	20 years	Organic litter to be between 50% and 200% of the benchmark as a result of specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Organic litter is currently at 0% of the benchmark. If organic litter is not progressing to 50% at Year 15 then remedial actions to improve the prospect of achieving 50% in 20 years will be applied. These include refining weed and fire control methods to ensure organic litter is maintained.
Large trees	5	5	5	5	5	Immediate	Between 0 and 50% of the benchmark for large trees will be maintained as a result of management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is anticipated that the large tree count will be maintained between 0 and 50% of the benchmark. Remedial actions are not anticipated.
Coarse woody debris	0	0	2	2	5	20 years	Coarse woody debris greater than 10% of the benchmark will be achieved by specific management actions 1, 3, 4 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Coarse woody debris is currently 2.87% of the benchmark due to current and historical land uses. If monitoring indicates that coarse woody debris is not transitioning to between 50 and 200% at Year 15 then remedial actions will be applied. These include a review of actions that impact on coarse woody debris such as fire regimes and importing native tree debris if necessary.

Attribute	Current Score	Year 5 score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
Weed cover	3	5	10	10	10	10 Years	Weed coverage will reduce to less than 5% over the course of 10 years by specific management actions 3 & 5 outlined in Table 5 .	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years. An additional survey is recommended at Year 8 to track progress to the Year 10 milestone objective.	Weed cover is currently 40% of the benchmark. If improvement to below 5% has not been achieved by the end of Year 10 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Quality and availability of food and foraging habitat	1	1	5	5	10	20 Years	Quality and availability of food and foraging habitat will be improved to high by specific management actions 1, 3, 4, 5 and 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of food and foraging habitat is currently poor. All site condition remedial actions also apply to this criterion achieving a high rating.
Quality and availability of shelter	1	1	5	5	10	20 Years	Quality and availability of shelter will be improved to high by specific management actions 1, 3, 4, 5 and 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality and availability of shelter is currently poor. All site condition remedial actions also apply to this criterion achieving a high rating.
Site Condition Score	24	36.5	56	60.5	85				
Overall Site Condition Score out of 3	0.72	1.1	1.68	1.82	2.55				
Size of patch	10	10	10	10	10	NA	NA	NA	NA
Connectedness	2	2	2	2	2	NA	NA	NA	NA
Context	4	4	4	4	4	NA	NA	NA	NA
Ecological Corridors	6	6	6	6	6	NA	NA	NA	NA
Role of site location to species overall population in the state	5	5	5	5	5	NA	NA	NA	NA
Threats to the species	7	15	15	15	15	5 Years	Threats to species will be reduced to low levels by specific management actions 2, 3 & 6 outlined in Table 5 .	Baseline attributes are established. This criterion is reliant upon the suppression and control of pest species and WONS. Pest monitoring will be evaluated as per the pest management program.	The control of pest species will provide an immediate and large reduction in threats. If monitoring as per the pest management program indicates pest species are not reduced then the management plan will require amendment and improved control demonstrated.
Species mobility capacity	7	7	7	7	10	20 Years	Species mobility capacity will be improved to minor restriction (<25%) by specific management actions 1 to 6 outlined in Table 5 .	Baseline attributes are established. Establish strategic photo monitoring points at commencement of offset. Habitat quality transects and photo monitoring to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species mobility is currently severely restricted by the absence of habitat and presence of weeds and pests. All site condition remedial actions, as well as threat reductions also apply to this criterion achieving a high rating.
Site Context Score	41	49	49	49	52				
Overall Site Context Score (out of 3)	2.20	2.63	2.63	2.63	2.79				
Presence	10	10	10	10	10	Immediate	NA - Not anticipated to change	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	NA - Not anticipated to change
Usage	5	5	5	15	15	20 Years	It is anticipated that under the management actions specified under management actions 1 to 6 outlined in Table 5 Koala	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably	The absence of trees across the majority of the assessment unit indicates limited potential for usage within the assessment unit

Attribute	Current Score	Year 5 score	Year 10 score	Year 15 score	Year 20 score	Time Until Measured Benefit	Justifications / Management Actions	Monitoring	KPIs and Adaptive Management
							activity will be recorded providing evidence of breeding as per the conservation advice.	qualified professionals at 5, 10, 15 and 20 years.	by Koala. Due to the presence of scattered trees, the assessment unit has been scored as dispersal habitat. If usage levels are not transitioning toward foraging level at the 10 year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala usage (measured as both the increase in habitat values and Koala activity) has not improved to breeding level by 20 years then the management period may be extended and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala usage.
Approximate Density	0	0	0	10	10	20 Years	It is anticipated that under the management actions specified in management actions 1 to 6 outlined in Table 5 Koala activity will be recorded providing an approximate density level increase to low.	Baseline SAT attributes are established. Koala SAT surveys will be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The absence of trees across the majority of the assessment unit indicate no usage of the assessment unit by Koala. If density levels are not transitioning toward low level at the 10 year mark, then broader Koala population surveys will be undertaken to ascertain potential external causes and the management actions re-visited accordingly. If Koala activity has not improved to low level by 20 years then the management period may be extended and further remedial actions applied in consideration of other scoring improvements relative to potential external factors impacting on Koala activity.
Role of the population	5	5	5	5	5	Immediate	NA - Not anticipated to change	NA - Not anticipated to change	NA - Not anticipated to change
SSR Score (out of 70)	20	20	20	20	40				
SSR Score out of 4	1.14	1.14	1.14	1.14	2.29				
Total Habitat Quality Scores	4.06	4.87	5.45	5.59	7.63				

Table 11: Grey-headed Flying-fox Environmental Outcomes – AU1

Assessment Unit - Regional Ecosystem	AU 1 - Non-remnant paddock with scattered trees (pre-clear RE12.12.5)											
Site Reference	Transect 4	Transect 5	Max Score	Average	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
	Raw Data	Raw Data										
Vegetation Condition	Cat X	Cat X	20	5	5	5	5	10	20	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Vegetation Condition' will readily attain Regrowth status within 15 years, and Remnant status within 20 years as defined under the Vegetation Management Act.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The assessment unit is to reach regrowth status in 15 years and remnant status at 20 years as per VMA definitions, which require 70% of height and 50% of expected cover to be reached. If the vegetation is not progressing toward regrowth status at Year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Species Richness	2	2	20	2	5	5	5	10	10	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Species Richness' will improve to at least four foraging species by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to achieve at least four foraging species by Year 15. If the species diversity does not reflect this requirement at Year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Flower Score	0.515	0.720	10	0.6175	8	8	8	8	8	It is not anticipated that the flower score will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the flower score shows decline then remedial actions will be implemented.
Timing of Biological Shortages	10	8.5	10	9.25	9.25	9.25	9.25	10	10	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Timing of Biological shortages' will improve to cover all shortages based on flora species presence by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Timing of biological shortages within the assessment unit is to cover all shortages by Year 15. If the species diversity does not approach this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Quality of Foraging Habitat	1	2	20	1.5	5	5	5	5	5	It is not anticipated that the quality of foraging habitat in the form of significant foraging species count will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the quality of foraging habitat shows decline then remedial actions will be implemented.

Non-native Plant Cover	55%	90%	20	72.5%	1	10	20	20	20	Non-native Plant Cover' is currently relatively high within AU1. It is anticipated that the weed management controls in actions 3 & 5 outlined in Table 5 will steadily improve 'Non-native Plant Cover' to below 5% in AU1 within 10 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at Year 10 then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.			
Site Condition Score	33.25											42.25	52.25	63	73
MAX Site Condition Score	100											100	100	100	100
Site Condition Score - out of 4	1.33											1.69	2.09	2.52	2.92
Size of patch	Patch size is greater than 200ha	Patch size is greater than 200ha	10	10	10	10	10	10	10	10	NA	NA	NA		
Connectedness	2 active camps within 20km	2 active camps within 20km	10	3	3	3	3	3	3	3	NA	NA	NA		
Context	31-75%	31-75%	10	6	6	6	6	6	6	6	NA	NA	NA		
Ecological Corridors	Within ecological corridor	Within ecological corridor	10	10	10	10	10	10	10	10	NA	NA	NA		
Role of site location to species overall population in the state	1 active Level 3 roost within 20km	1 active level 3 roost within 2km	10	6	6	6	6	6	6	6	NA	NA	NA		
Threats to the species	Moderate (barbed wire fencing)	Moderate (barbed wire fencing)	10	5	5	10	10	10	10	10	The proposed offset site currently has barbed wire fencing, a recognised threat to Flying-foxes, delineating paddocks within the proposed offset area. With the management action 6 outlined in Table 5 that will control and retrofit barbed wire, the assessment unit 'Threats' will reduce to low within 5 years.	Baseline attributes have been established. This criterium is reliant upon the management of barbed wire fencing.	The control of barbed wire will provide an immediate and large reduction in threats.		
Site Context Score	40											45	45	45	45
MAX Site Context Score	60											60	60	60	60
Site Context Score - out of 3	2											2.25	2.25	2.25	2.25
GHFF Foraging Tree Density / ha	5	5	10	5	2	2	2	4	6	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in Table 5 will improve stem densities of foraging trees to greater than 369 per hectare by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 369 per hectare by Year 20. If the stem density does not achieve 86 by year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.			
Species Stocking Rate Score	2											2	2	4	6
MAX Species Stocking Rate Score	10											10	10	10	10
Species Stocking Rate Score - out of 3	0.6											0.6	0.6	1.2	1.8
Total	3.93											4.54	4.94	5.97	6.97

Table 12: Grey-headed Flying-fox Environmental Outcomes – AU2

Assessment Unit - Regional Ecosystem	AU 2 – Remnant 12.3.7											
Site Reference	Transect 1	Transect 6	Max Score	Average	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
	Raw Data	Raw Data										
Vegetation Condition	Cat B	Cat B	20	20	20	20	20	20	20	It is not anticipated that the vegetation status will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the vegetation status shows decline then remedial actions will be implemented.
Species Richness	5	5	20	5	10	10	10	10	10	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Species Richness' will be maintained with at least four foraging species.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to be maintained with at least four foraging species. If the species diversity does not reflect this requirement at year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Flower Score	0.528	0.540	10	0.5340	8	8	8	8	8	It is not anticipated that the flower score will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the flower score shows decline then remedial actions will be implemented.
Timing of Biological Shortages	10	10	10	10	10	10	10	10	10	It is not anticipated that the timing of biological shortages will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the flower score shows decline then remedial actions will be implemented.
Quality of Foraging Habitat	2	2	20	2	5	5	5	5	5	It is not anticipated that the quality of foraging habitat in the form of significant foraging species count will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the quality of foraging habitat shows decline then remedial actions will be implemented.
Non-native Plant Cover	55%	90%	20	72.5%	1	10	20	20	20	Non-native Plant Cover' is currently relatively high within AU2. It is anticipated that the weed management controls in actions 3 & 5 outlined in Table 5 will steadily improve 'Non-native Plant Cover' to below 5% within 10 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10 year mark then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score					54	63	73	73	73			
MAX Site Condition Score					100	100	100	100	100			

Site Condition Score - out of 4			2.16	2.52	2.92	2.92	2.92						
Size of patch	Patch size is greater than 200ha	Patch size is greater than 200ha	10	10	10	10	10	10	10	NA	NA	NA	
Connectedness	2 active camps within 20km	2 active camps within 20km	10	3	3	3	3	3	3	NA	NA	NA	
Context	31-75%	31-75%	10	6	6	6	6	6	6	NA	NA	NA	
Ecological Corridors	Within ecological corridor	Within ecological corridor	10	10	10	10	10	10	10	NA	NA	NA	
Role of site location to species overall population in the state	1 active Level 3 roost within 20km	1 active level 3 roost within 2km	10	6	6	6	6	6	6	NA	NA	NA	
Threats to the species	Moderate (barbed wire fencing)	Moderate (barbed wire fencing)	10	5	5	10	10	10	10	The proposed offset site currently has barbed wire fencing, a recognised threat to Flying-foxes, delineating paddocks within the proposed offset area. With the management action 6 outlined in Table 5 that will control and retrofit barbed wire, the assessment unit 'Threats' will reduce to low within 5 years.	Baseline attributes have been established. This criterium is reliant upon the management of barbed wire fencing.	The control of barbed wire will provide an immediate and large reduction in threats.	
Site Context Score			40					45	45	45			
MAX Site Context Score			60					60	60	60			
Site Context Score - out of 3			2.00					2.25	2.25	2.25			
GHFF Foraging Tree Density / ha	135	215	10	175	4	4	4	6	6	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in Table 5 will improve stem densities of foraging trees within AU2 to greater than 221 per hectare by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 221 per hectare by year 20. If the stem density does not achieve 220 by year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.	
Species Stocking Rate Score			4					4	4	6			
MAX Species Stocking Rate Score			10					10	10	10			
Species Stocking Rate Score - out of 3			1.2					1.2	1.2	1.8			
Total			5.36					5.97	6.37	6.97			

Table 13: Grey-headed Flying-fox Environmental Outcomes – AU3

Assessment Unit - Regional Ecosystem	AU 3 – Remnant RE12.12.5											
Site Reference	Transect 2	Transect 12	Max Score	Average	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
	Raw Data	Raw Data										
Vegetation Condition	Cat B	Cat B	20	20	20	20	20	20	20	It is not anticipated that the vegetation status will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the vegetation status shows decline then remedial actions will be implemented.
Species Richness	3	4	20	3.5	5	5	5	10	10	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Species Richness' will improve to at least four foraging species by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to achieve at least four foraging species by year 15. If the species diversity does not reflect this requirement at year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Flower Score	0.643	0.698	10	0.6705	8	8	8	8	8	It is not anticipated that the flower score will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the flower score shows decline then remedial actions will be implemented.
Timing of Biological Shortages	8.5	10	10	9.25	9.25	9.25	9.25	10	10	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Timing of Biological shortages' will improve to cover all shortages based on flora species presence by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Timing of biological shortages within the assessment unit is to cover all shortages by Year 15. If the species diversity does not approach this requirement at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Quality of Foraging Habitat	2	3	20	2.5	5	5	5	5	5	It is not anticipated that the quality of foraging habitat in the form of significant foraging species count will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the quality of foraging habitat shows decline then remedial actions will be implemented.
Non-native Plant Cover	90%	80%	20	85%	1	10	20	20	20	Non-native Plant Cover' is currently relatively high within AU3. It is anticipated that the weed management controls in actions 3 & 5 outlined in Table 5 will steadily improve 'Non-native Plant Cover' to below 5% within 10 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the 10 year mark then then remedial actions to reduce weed cover will be applied. These include refining weed control methods.

Site Condition Score			48.25	57.25	67.25	73	73						
MAX Site Condition Score			100	100	100	100	100						
Site Condition Score - out of 4			1.93	2.29	2.69	2.92	2.92						
Size of patch	Patch size is greater than 200ha	Patch size is greater than 200ha	10	10	10	10	10	10	10	10	NA	NA	NA
Connectedness	2 active camps within 20km	2 active camps within 20km	10	3	3	3	3	3	3	3	NA	NA	NA
Context	31-75%	31-75%	10	6	6	6	6	6	6	6	NA	NA	NA
Ecological Corridors	Within ecological corridor	Within ecological corridor	10	10	10	10	10	10	10	10	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 roost within 20km	1 active level 3 roost within 2km	10	6	6	6	6	6	6	6	NA	NA	NA
Threats to the species	Moderate (barbed wire fencing)	Moderate (barbed wire fencing)	10	5	5	10	10	10	10	10	The proposed offset site currently has barbed wire fencing, a recognised threat to Flying-foxes, delineating paddocks within the proposed offset area. With the management action 6 outlined in Table 5 that will control and retrofit barbed wire, the assessment unit 'Threats' will reduce to low within 5 years.	Baseline attributes have been established. This criterium is reliant upon the management of barbed wire fencing.	The control of barbed wire will provide an immediate and large reduction in threats.
Site Context Score			40	45	45	45	45						
MAX Site Context Score			60	60	60	60	60						
Site Context Score - out of 3			2	2.25	2.25	2.25	2.25						
GHFF Foraging Tree Density / ha	270	200	10	235	4	4	4	6	6	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in Table 5 will improve stem densities of foraging trees within AU3 to greater than 369 per hectare by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 369 per hectare by year 20. If the stem density does not achieve 368 by year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.	
Species Stocking Rate Score			4	4	4	6	6						
MAX Species Stocking Rate Score			10	10	10	10	10						
Species Stocking Rate Score - out of 3			1.2	1.2	1.2	1.8	1.8						
Total			5.13	5.74	6.14	6.97	6.97						

Table 14: Grey-headed Flying-fox Environmental Outcomes – AU4

Assessment Unit - Regional Ecosystem	AU 4 – Regrowth RE12.12.5										
Site Reference	Transect 3	Max Score	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management	
	Raw Data										
Vegetation Condition	Cat C	20	10	10	10	20	20	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Vegetation Condition' will readily attain remnant status within 15 years as defined under the Vegetation Management Act.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The assessment unit is to reach remnant status in 15 years as per the VMA definition, which requires 70% of height and 50% of expected cover to be reached. If the vegetation is not progressing toward remnant status at 10 years, then remedial actions will be applied. These include remedial plantings of advanced stock.	
Species Richness	5	20	10	10	10	10	10	It is not anticipated that the species richness will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the species richness shows decline then remedial actions will be implemented.	
Flower Score	0.6	10	8	8	8	8	8	It is not anticipated that the flower score will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the flower score shows decline then remedial actions will be implemented.	
Timing of Biological Shortages	10	10	10	10	10	10	10	It is not anticipated that the timing of biological shortages will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the flower score shows decline then remedial actions will be implemented.	
Quality of Foraging Habitat	2	20	5	5	5	5	5	It is not anticipated that the quality of foraging habitat in the form of significant foraging species count will decline.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Although unexpected, if the quality of foraging habitat shows decline then remedial actions will be implemented.	
Non-native Plant Cover	55%	20	1	10	20	20	20	Non-native Plant Cover' is currently relatively high. It is anticipated that the weed management controls in actions 3 & 5 outlined in Table 5 will steadily improve 'Non-native Plant Cover' to below 5% within 10 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 5% has not been achieved at the Year 10 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.	
Site Condition Score			44	53	63	73	73				
MAX Site Condition Score			100	100	100	100	100				
Site Condition Score - out of 4			1.76	1.92	2.12	2.92	2.92				
Size of patch	Patch size is greater than 200ha	10	10	10	10	10	10	NA	NA	NA	

Connectedness	2 active camps within 20km	10	3	3	3	3	3	NA	NA	NA
Context	31-75%	10	6	6	6	6	6	NA	NA	NA
Ecological Corridors	Within ecological corridor	10	10	10	10	10	10	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 roost within 20km	10	6	6	6	6	6	NA	NA	NA
Threats to the species	Moderate (barbed wire fencing)	10	5	10	10	10	10	The proposed offset site currently has barbed wire fencing, a recognised threat to Flying-foxes, delineating paddocks within the proposed offset area. With the management action 6 outlined in Table 5 that will control and retrofit barbed wire, the assessment unit 'Threats' will reduce to low within 5 years.	Baseline attributes have been established. This criterium is reliant upon the management of barbed wire fencing.	The control of barbed wire will provide an immediate and large reduction in threats.
Site Context Score			40	45	45	45	45			
MAX Site Context Score			60	60	60	60	60			
Site Context Score - out of 3			2	2.25	2.25	2.25	2.25			
GHFF Foraging Tree Density / ha	200	10	4	4	4	6	6	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in Table 5 will improve stem densities of foraging trees within AU4 to greater than 369 per hectare by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 369 per hectare by year 20. If the stem density does not achieve 368 by year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Species Stocking Rate Score			4	4	4	6	6			
MAX Species Stocking Rate Score			10	10	10	10	10			
Species Stocking Rate Score - out of 3			1.2	1.2	1.2	1.8	1.8			
Total			4.96	5.37	5.57	6.97	6.97			

Table 15: Grey-headed Flying-fox Environmental Outcomes – AU5

Assessment Unit - Regional Ecosystem	AU 5 - Non-remnant paddock (pre-clear RE12.9-10.2)											
Site Reference	Transect 13	Transect 14	Max Score	Average	AU Score	Year 5 Score	Year 10 Score	Year 15 Score	Year 20 Score	Justification / Management Actions / Timing	Monitoring	KPIs and Adaptive Management
	Raw Data	Raw Data										
Vegetation Condition	Cat X	Cat X	20	5	5	5	5	10	20	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Vegetation Condition' will readily attain Regrowth status within 15 years, and Remnant status within 20 years as defined under the Vegetation Management Act.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	The assessment unit is to reach regrowth status in 15 years and remnant status at 20 years as per VMA definitions, which require 70% of height and 50% of expected cover to be reached. If the vegetation is not progressing toward regrowth status at Year 10 and remnant at Year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Species Richness	3	0	20	1.5	5	5	5	10	10	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Species Richness' will improve to at least four foraging species by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Species richness within the assessment unit is to achieve at least four foraging species by Year 15. If the species diversity does not reflect this requirement at Year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Flower Score	0.64	0	10	0.32	5	5	5	8	8	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 'Flower Score' will improve to eight by year 15.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	It is expected that 'Flower Score' will improve to at eight by Year 15. If the 'Flower Score' is not progressing towards this requirement at Year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Timing of Biological Shortages	8.5	0	10	4.25	4.25	5.75	7.25	8.75	10	It is expected that with management actions 1, 3, 4 & 5 outlined in Table 5 the assessment unit 'Timing of Biological shortages' will improve to cover all shortages based on flora species presence by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Timing of biological shortages within the assessment unit is to cover all shortages by Year 20. If the species diversity does not approach this requirement at Year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Quality of Foraging Habitat	3	0	20	1.5	5	5	5	10	10	It is expected that management actions 1, 3, 4 & 5 outlined in Table 5 will result in at least four foraging habitat tree species scoring 0.65 or greater	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Quality of foraging habitat within the assessment unit is to achieve at least four species by Year 15 in line with planting schedules for the

										being established within 15 years scoring at least a 10.		Regional Ecosystem (RE). The RE planting schedule for RE12.9-10.2 contains 4 significant food species being <i>Eucalyptus siderophloia</i> , <i>E. tereticomis</i> , <i>C. citriodora</i> , <i>E. moluccana</i> . If the species present do not reflect this requirement at year 10, then remedial actions will be applied. These include remedial plantings of advanced stock.
Non-native Plant Cover	20%	60%	20	40%	5	10	20	20	20	Non-native Plant Cover' is currently moderate within AU5. It is anticipated that the weed management controls in actions 3 & 5 outlined in Table 5 will steadily improve 'Non-native Plant Cover' to below 5% within 10 years.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	If improvement to 25% has not been achieved at Year 10 then remedial actions to reduce weed cover will be applied. These include refining weed control methods.
Site Condition Score					29.25	35.75	47.25	66.75	78			
MAX Site Condition Score					100	100	100	100	100			
Site Condition Score - out of 4					1.17	1.43	1.89	2.67	3.12			
Size of patch	Patch size is greater than 200ha	Patch size is greater than 200ha	10	10	10	10	10	10	10	NA	NA	NA
Connectedness	2 active camps within 20km	2 active camps within 20km	10	3	3	3	3	3	3	NA	NA	NA
Context	31-75%	31-75%	10	6	6	6	6	6	6	NA	NA	NA
Ecological Corridors	Within ecological corridor	Within ecological corridor	10	10	10	10	10	10	10	NA	NA	NA
Role of site location to species overall population in the state	1 active Level 3 roost within 20km	1 active level 3 roost within 2km	10	6	6	6	6	6	6	NA	NA	NA
Threats to the species	Moderate (barbed wire fencing)	Moderate (barbed wire fencing)	10	5	5	10	10	10	10	The proposed offset site currently has barbed wire fencing, a recognised threat to Flying-foxes, delineating paddocks within the proposed offset area. With the management action 6 outlined in Table 5 that will control and retrofit barbed wire, the assessment unit 'Threats' will reduce to low within 5 years.	Baseline attributes have been established. This criterium is reliant upon the management of barbed wire fencing.	The control of barbed wire will provide an immediate and large reduction in threats.
Site Context Score					40	45	45	45	45			
MAX Site Context Score					60	60	60	60	60			
Site Context Score - out of 3					2	2.25	2.25	2.25	2.25			

GHFF Foraging Tree Density / ha	20	0	10	10	2	2	2	4	6	Natural assisted regeneration and plantings as per management actions 1, 3, 4 & 5 outlined in Table 5 will improve stem densities of foraging trees within AU5 to greater than 131 per hectare by year 20.	Baseline Site Condition attributes are established. Habitat quality transects to be completed by suitably qualified professionals at 5, 10, 15 and 20 years.	Stem densities within the assessment unit is to achieve at 131 per hectare by year 20. If the stem density does not achieve 31 by year 15, then remedial actions will be applied. These include remedial plantings of advanced stock.
Species Stocking Rate Score						2	2	2	4	6		
MAX Species Stocking Rate Score						10	10	10	10	10		
Species Stocking Rate Score - out of 3						0.6	0.6	0.6	1.2	1.8		
Total						3.77	4.28	4.74	6.12	7.17		

4. Monitoring and Reporting Schedule

The timing and frequency of monitoring and reporting actions, corrective actions and responsibilities for the offset area are provided in **Table 16**. The monitoring schedule is considered appropriate to allow the Proponent, Offset Provider and appointed suitably qualified person to assess the quality of the offset area and success of management actions. In addition, if any non-compliances or ineffectiveness of management action are identified, adaptive management strategies can be implemented to ensure the offset area will increase in quality for the koala and grey-headed flying-fox.

Table 16: Timeline for monitoring and reporting actions

Management Action	Monitoring action(s)	Reporting Action and Timing	Responsible person(s) for activity/reporting
1. Legally secure offset area	The offset area will be secured via a suitable method such as a Voluntary Declaration administered under the Queensland <i>Vegetation Management Act 1999</i> or a covenant under the <i>Land Act 1994</i> or <i>Land Titles Act 1994</i> prior to additional impacts occurring.	The Department will be notified that the offset area has been secured. Evidence in the form of the shapefiles and confirmation of declaration from the Queensland Department of Resources will be provided with the notification. Details will be included in the ACR.	Suitably qualified person as appointed by the Proponent
	Monitoring is to occur before the end of Years 5, 10, 15 and 20 and will include a repeat of baseline survey methodologies (i.e., motion triggered detection camera deployment), sightings (direct and indirect) with evidence of non-native predators GPS recorded. Evidence of pests presence within the offset area and pest management implementation will be extracted from the OAAR and will be used in assessments of the relative success of the management of threats and progress towards the environmental outcomes and milestone criteria.	An Offset Area Annual Report is to be completed annually within one (1) month of the end of each offset year detailing pest management. Milestone Reports prepared three (3) months after the completion of milestone surveys at Years 5, 10, 15 and 20 of the offset and included in the ACR.	Offset Provider and Suitably qualified pest management contractor as appointed by the Offset Provider. Suitably qualified person as appointed by the Proponent.

Management Action	Monitoring action(s)	Reporting Action and Timing	Responsible person(s) for activity/reporting
3. WONS management	<p>Photo monitoring is to be completed during the first three (3) years of the offset to document on-ground progress and documented in the OAAR. Photo monitoring coordinates are to be recorded and occur in the same location each survey period.</p> <p>Weed mapping and MHQA surveys to be conducted before the end of Years 5, 10, 15 and 20 of the offset in accordance with baseline survey methodologies to track progress against interim milestone targets and completion criteria and identify issues for rectification. The monitoring will be undertaken during the same time of year at every monitoring event, to ensure that the timing is consistent and aligns with the baseline assessment.</p>	<p>An Offset Area Annual Report is to be completed annually within one (1) month of the end of each offset year detailing WONS management implementation and progress against the performance targets. OAARs will be included in the ACR.</p> <p>Milestone Reports prepared three (3) months after the completion of milestone surveys at Years 5, 10, 15 and 20 of the offset and included in the ACR.</p>	<p>Offset Provider and suitably qualified weed management contractor as appointed by the Offset Provider.</p> <p>Suitably qualified person as appointed by the Proponent.</p>
4. Bushfire Management Plan	<p>Annual monitoring requirements to review access tracks, fire breaks, seasonal fuel loads and outcomes of controlled burns or other management in accordance with Bushfire Management Plan.</p>	<p>An Offset Area Annual Report is to be completed annually within one (1) month of the end of each offset year which documents bushfire management actions undertaken under the direction of the local authority or recommended in consultation with the Queensland Rural Fire Brigade. OAARs will be included in the ACR.</p>	<p>Offset Provider and suitably qualified bushfire management contractor as appointed by the Offset Provider.</p>
5. Habitat creation and regeneration	<p>Photo monitoring is to be completed during the first three (3) years of the offset encompassing areas of assisted natural regeneration and reconstruction areas to document on-ground progress and documented in the OAAR. Photo monitoring coordinates are to be recorded and occur in the same location each survey period.</p> <p>Reconstruction areas subject to infill planting will be subject to annual monitoring after the completion of planting works until establishment is reached. The</p>	<p>An Offset Area Assessment Report is to be completed annually within one (1) month of the end of the each offset year with input from the suitably qualified bush regeneration contractor to document:</p> <ul style="list-style-type: none"> • Planting/seedling events, • Watering schedule, • Implemented corrective actions, 	<p>Offset Provider and suitably qualified bush regeneration contractor as appointed by the Offset Provider.</p>

Management Action	Monitoring action(s)	Reporting Action and Timing	Responsible person(s) for activity/reporting
	<p>monitoring timing is dependent on the planting cycle of the engaged bush regeneration contractor. Monitoring to occur regularly after initial planting in accordance with watering schedules.</p>	<ul style="list-style-type: none"> • Success/failure rates within initial maintenance period/watering period until establishment. • Certificate of practical completion of planting works; • Certificate/sign off that establishment has been reached. <p>OAARs will be included in the ACR.</p>	
	<p>MHQA surveys to be conducted before the end of Years 5, 10, 15 and 20 of the offset in accordance with baseline survey methodologies to track progress against interim milestone targets and completion criteria and identify issues for rectification.</p>	<p>Milestone Reports prepared three (3) months after the completion of milestone surveys at Years 5, 10, 15 and 20 of the offset and will be included in the ACR.</p>	<p>Suitably qualified person as appointed by the Proponent.</p>
<p>6. Fencing and signage</p>	<p>Status of fencing and signage and any issues requiring rectification are identified through regular site inspections to be determined by the Offset Provider.</p>	<p>Installation and maintenance of fencing is reported in the Year 1 Offset Area Annual Report. Ongoing status of fencing/signage and any rectification works are reported in OAARs for the relevant offset year and subsequently in the ACR for the project period.</p>	<p>Offset Provider</p>

5. Overview of Additional Impact Area

5.1. Project and site

Contextually, Spring Mountain Estate is located adjacent to Springfield Town Centre five kilometres (km) south-east of Redbank Plains, and is bounded by residential housing to the north, east and south-east and White Rock Spring Mountain Conservation Estate and the Flinders-Karawatha Bioregional Corridor to the south and west. The northern portion of the referral area has not been subject to clearing works for the development. The 19.6 ha additional impact area is located in this area, however, is not spatially defined within the referral area.

The surrounding suburbs of Springfield Central, Springfield Lakes, Augustine Heights, Brookwater and Springfield have been subject to rapid urbanisation over the past 20 years in line with the planning intent of the Springfield Structure Plan. The surrounding landscape contains a mixed mosaic of retained bushland, major arterial roads including Centenary Highway to the north, and residential developments.

The entire site including the additional impact area is zoned Urban Living under the Springfield Structure Plan and the proposed impact area which is within the Spring Mountain Estate referral area has been guided by physical constraints and ecological values as part of the original assessment and Preliminary Documentation. The additional 19.6 ha of impacts to MNES habitat is required to deliver the Spring Mountain Estate.

Table 17 provides details on the additional impact area.

Table 17: Details of additional impact area

Address	Springfield Rise at Sinnathamby Boulevard
Impact area	Refer to Plan 1 and Plan 2
Additional Impact Area	19.6 ha

1. Spring Mountain Project Area

Legend

 Referral Area (EPBC 2013/7057)

 State Controlled Roads

Layer Sources
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Updated data available at
<http://qldspatial.information.qld.gov.au/catalogue/>



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5.2. Summary of matters requiring offset

The additional impact area involves directly impacting 19.6 ha of koala and grey-headed flying-fox critical habitat.

The AOMP proposes land-based offsets for the following MNES species that will be subject to significant residual impacts due to the Project:

- Koala – due to additional impacts to 19.6 ha of habitat critical to the survival of the species; and
- GHFF – due to additional impacts to 19.6 ha of habitat critical to the survival of the species.

Habitat for MNES proposed to be impacted for the project is summarised below.

Vegetation communities impacted

The 19.6 ha additional impact area represents a portion of the remaining MNES habitat areas required to be impacted. As this area has not been spatially defined within the referral area, the habitat quality and quantum of the 19.6 ha area has been assessed within the balance remaining vegetation areas of the Project.

The additional impact area contains 19.6 ha of Category B (remnant) vegetation mapped under the Queensland *Vegetation Management Act 1999* (VMA). The vegetation community located within the additional impact area as contained within the balance MNES habitat areas already approved to impacted is described in **Table 18**.

Table 18: Ground-truthed regional ecosystem present within additional impact area

Vegetation type	VMA status	Description	Area (ha)
Remnant RE12.9-10.2	Least concern	<i>Corymbia citriodora</i> subsp. <i>variegata</i> +/- <i>Eucalyptus crebra</i> open forest on sedimentary rocks	19.6

5.3. Habitat quality scoring methods

The habitat quality for koala of Spring Mountain project area was assessed using the Koala Habitat Assessment Tool method in the superseded *EPBC Act Referral Guidelines for the Vulnerable Koala* which scored the project area as a **7 out of 10** in the published Preliminary Documentation. As the method and Koala Referral Guidelines are superseded, the habitat quality of the additional impact area and offset area are required to be assessed under a new method. The method applied is described below.

Koala – Modified Habitat Quality Assessment Methodology

The quantum and quality of habitat for the koala within the additional impact area was assessed using a modified version of the Queensland State Governments *Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy* Version 1.2 April 2017 (herein referred to as the 'Habitat Quality Guideline'). This assessment approach utilises the site condition assessment method framework established under the *BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland* Version 2.2 February 2015 combined with site context and species stocking rate assessments to determine the habitat quality of the impact area. The guideline is a step-by-step methodology explaining how to measure habitat quality for land-based offsets. This methodology has been adopted and tailored/modified to assess the impacts and offsets relating to MNES.

The traditional terrestrial habitat quality assessment assesses three (3) core indicators:

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

The MHQA for koala combines the three (3) core indicators into two (2) (site condition and site context) with each attributed an equal weighting of 30% of the final score. The balance of the weighting (40%) has been attributed to the third indicator – species stocking rate (SSR) – which is independent of the traditional habitat quality assessment. The species stocking rate has been added to the MHQA to better incorporate MNES, and for the purpose of this project, the vulnerable-listed koala MNES. The following subsections detail the methodology utilised to assess the site condition, site context and species stocking rate under the MHQA.

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 area is suitable to establish a desired capacity to support the prescribed environmental matters being offset. The on-site condition is a key element of the MHQA method and has a direct influence on the biodiversity it supports. Site condition is assessed using a suite of attributes to describe the structure and function of the vegetation community and is benchmarked against the expected range for a relatively undisturbed community.

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

- recruitment of woody perennial species in 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 condition within the additional impact area was assessed by delineating the impact area into assessment units (AUs) as required by the Queensland environmental offsets framework. The additional impact area was delineated into one (1) assessment unit based on ground-truthed VMA regional ecosystem mapping. This is

summarised in **Table 19** and shown on **Plan 2**. Site condition was measured through the completion of habitat quality transects. Assessment at multiple locations per AU, except where the small size of an AU does not allow for multiple transects, is necessary to measure vegetation condition at representative locations across the spatial extent of the assessment unit. Site condition was assessed at a total of two (2) transect locations within the additional impact area which were completed by suitably qualified ecologists on 30 August 2023. Refer to curriculum vitae of suitably qualified ecologists at **Appendix C**. The locations of MHQA transects within the impact area are provided on **Plan 2**. Transect sites and assessment units are detailed in **Table 19**.

Table 19: Summary of assessment units and MHQA transects – additional impact area

Assessment unit	Vegetation community	Impact Area (ha)	MHQA transect
AU1	Remnant RE12.9-10.2	19.6 (located within connected habitat)	Transects 1 and 2

Site Context (30%)

The site context assessment deals with the site and its adjacent surroundings. Site context is measured using a suite of attributes to describe the location of the habitat within the surrounding landscape and the influence of its associated threats. This assessment also considers the influence of adjacent vegetated areas and ecological corridors. Under the MHQA, site context is measured using the following seven (7) characteristics:

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

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

Habitat critical to the survival of the koala was determined using the combination of the Unsupervised Classification tool within ESRI’s ArcGIS software and the most recently available aerial photograph from Nearmap.com. The Unsupervised Classification tool is able to determine vegetation areas through the near infrared (NIR) composite band of the Landsat 8 imagery available online. The tool is able to create a dataset of vegetation areas without the analyst’s intervention providing a rapid method for mapping habitat critical to the survival of the koala over large regions such as Southeast Queensland. Nearmap.com aerial image is used for calibration purposes, particularly when dealing with smaller scale EPBC assessment areas. The dataset created by the Unsupervised Classification tool is revised using the latest aerial imagery available from Nearmap.com at scale of 1:40,000 and provides a more accurate depiction of habitat critical to the survival of the koala at the assessment scale.

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

1. patch size – The calculation of the area of the patch size uses the method outlined in the BioCondition assessment manual v2.2 that considers the patch to be areas connected by corridors greater than 200 m wide within a 1 km radius of the site. This methodology includes use of a “segmentation” process that removes areas connected to the assessment area by narrow corridors.
2. connectedness – Connectivity relates to the capacity that the species have to disperse through the landscape. The attribute is calculated using GIS by measuring the length of koala habitat that is along the boundary of the site.
3. context – The context score is calculated by GIS to quantify the amount of vegetation immediately surrounding the assessment site. The attribute is measure of the percentage of koala habitat within a 1 km buffer of the site.
4. ecological corridors – This attribute is as per the methods of the *Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy (Version 1.2 April 2017)* and is used to determine if a site is located within or shares a boundary with an ecological corridor that facilitates long term ecosystem function by connecting large patches of remnant vegetation with sufficient tract size (corridor width in relation to the fragmentation of the landscape) (EHP 2014). These corridors support the habitat of MNES by providing opportunity for long term dispersal of habitat species following landscape level changes in climate. Although the ecological corridors allow for the dispersal of MNES themselves, for example, koala, this is not their primary function when assessing the attribute. The ecological corridors have been mapped by the Queensland State Government under the ‘CORR_TYPE’ attribute table. The mapping can also be viewed on Queensland Globe in the ‘Statewide Biodiversity Corridors’ layer.
5. role of site location to species overall population in the state – This attribute is based on the observed role of the site in relation to the overall population of the species. The scoring table considers the effect that of damage to or removal of the site would have to the likelihood of the species’ overall population survival.
6. threats to species – Threats to koala are predominantly, habitat loss, car strike, dog attack and disease. The highest threat level is given to a site if it isolated from other koala habitat, or if major roads without exclusion measures, or residential encroachment is within 1500 m of the site boundary.
7. species mobility capacity – This attribute is a measure of the presence and severity of factors that would contribute to a reduction in mobility of koala and is scored on the presence of roads or large cleared areas bordering the site.

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

Table 3 - Site Context scoring sheet guide

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

*measured for fragmented bioregions only

†measured for intact bioregions only

Table 4 - Species habitat index scoring guide

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

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

Species Stocking Rate (40%)

The MHQA incorporates species stocking rate as an attribute not discussed under the traditional terrestrial habitat assessment methodology. Species stocking rates are estimates of the koala carrying capacity of the site at the time 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 20** outlines the attributes utilised to assess species stocking rate.

Table 20: Species Stocking Rate Scoring

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

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

Baseline koala presence surveys for SSR

Koala presence and activity levels were determined through utilising the Spot Assessment Technique (SAT) (Phillips *et al.* 2011). The SAT method is an industry recognised technique for identifying presence/absence, density and habitat usage of koala at a site and is specified as an appropriate survey method in the former *EPBC Act Referral Guidelines for the Vulnerable Koala*. Results from the SAT surveys are compared against current available published scientific literature to identify an estimated koala carrying capacity (stocking rate) to be determined.

SAT survey results are interpreted using the broad population categories provided in the Australian Koala Foundation Koala activity level classification table. These categories being 'East Coast (low)', 'East Coast (med-high)' and 'Western (med-high)' are shown in **Table 21** and are used to estimate koala activity within a given area. Depending on the population category applied, koala activity is described as 'low', 'moderate', or 'high'. Population categories are assigned as follows:

- Sites considered to be suitable or have high suitability for Koalas are assigned the 'East Coast (med-high)' category;
- Sites considered to have low suitability are assigned the 'East Coast (low)' category; and
- The 'Western (med-high)' category does not apply to South East Queensland local government areas.

A total of two (2) SAT surveys were completed across the additional impact area on 30 August 2023.

Table 21: Koala Activity Level Classification (Phillips and Callaghan 2011)

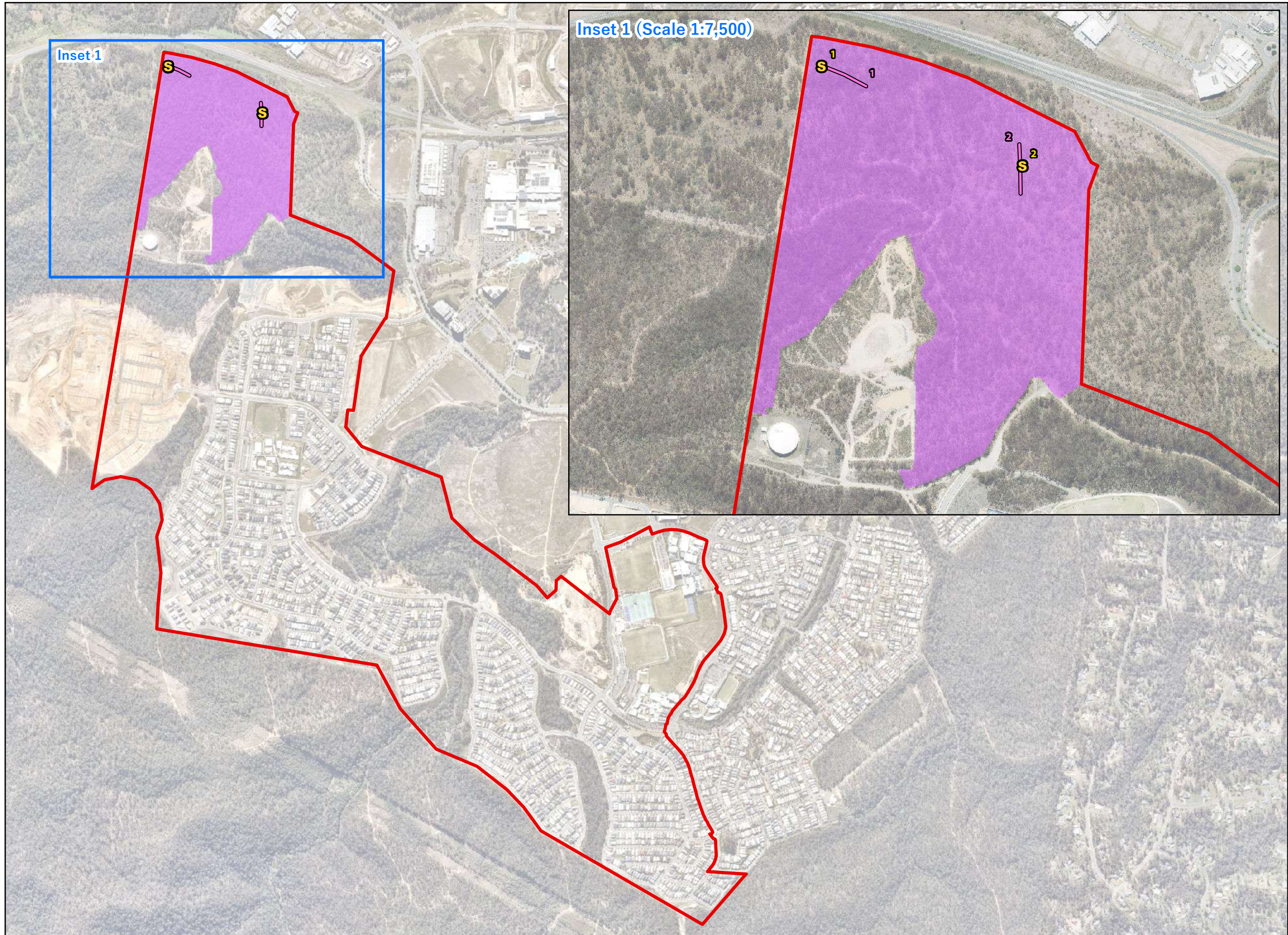
Activity	East Coast (low)	East Coast (med-high)	Western (med-high)
Low	<3.33%	<22.5%	<35.8
Moderate	3.33-12.6%	22.5-32.8%	35.8-46.7
High	>12.6%	>32.8	>46.7

2. Additional Impact Area Assessment Units

Legend

- Referral Area
- Assessment Unit 1 - RE 12.9-10.2
- Containing Approved Clearing Areas and Additional 19.6 ha
- MHQA Transect
- S SAT Survey

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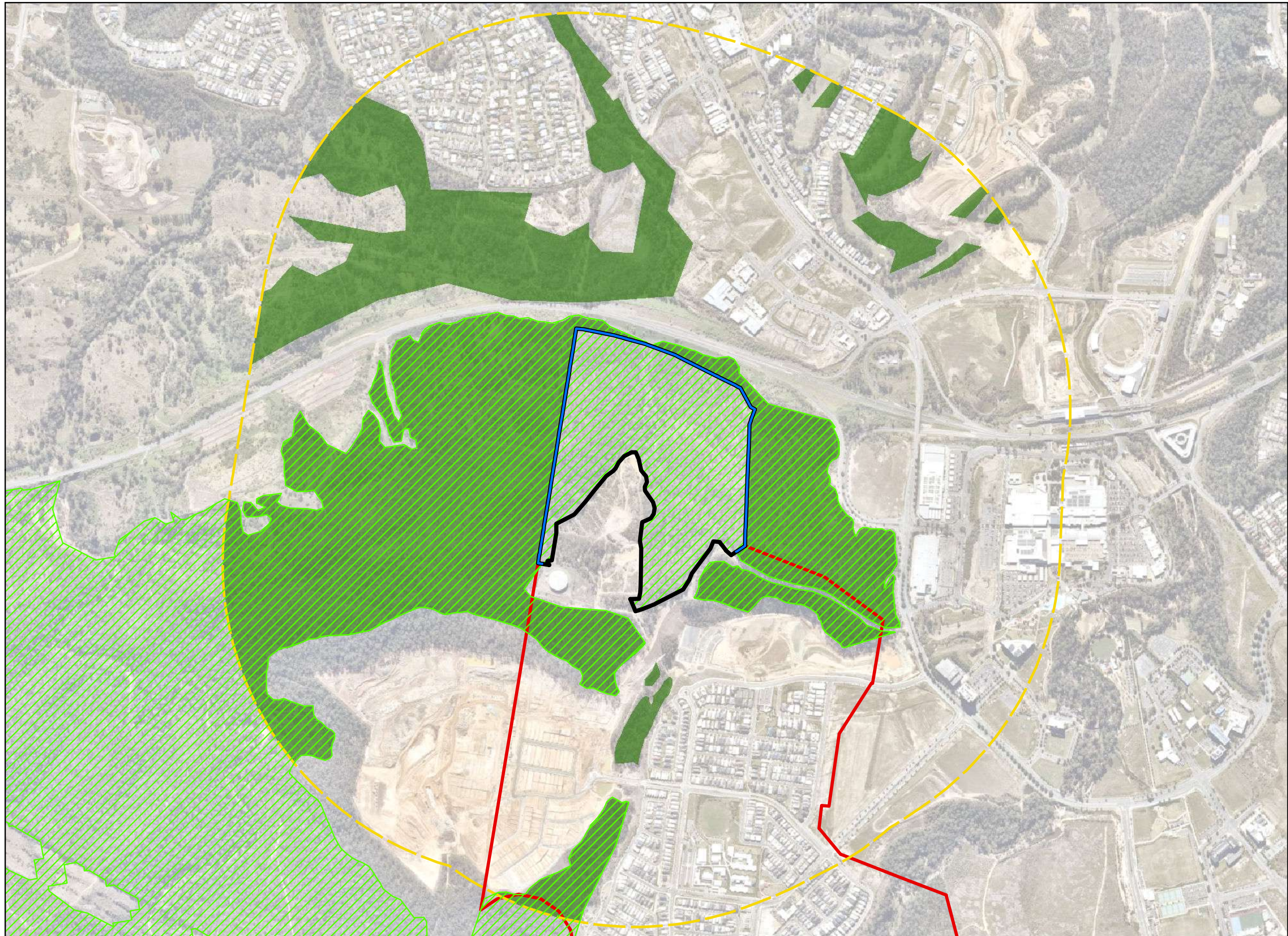
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3. Additional Impact Area Koala Context Assessment

Legend

- Referral Area
- Assessment Unit 1 Area
- Assessment Unit 1 - 1km Buffer
- Percentage of Koala critical habitat within 1km of Impact Area [31%]
- Size of Koala critical habitat patch adjoining Impact Area [>500 ha]
- Percentage of Impact Area boundary length supporting a Koala critical habitat connection off and on site [55%]

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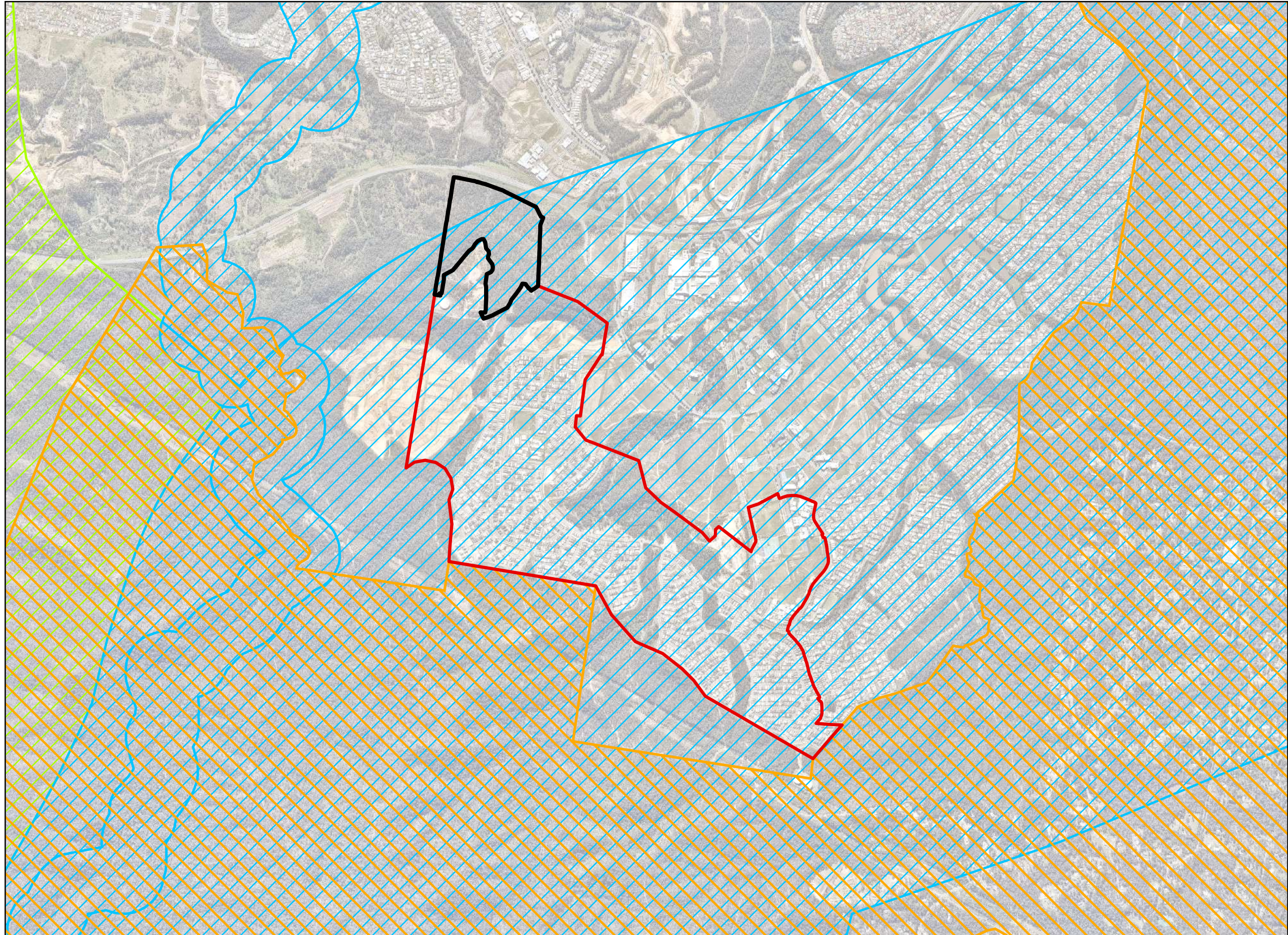
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4. Additional Impact Area Ecological Corridors

Legend

-  Referral Area
-  Impact Area
-  SEQ Regional Plan 2017 Regional Biodiversity Corridor
-  Statewide Corridor Regional Significance
-  Statewide Corridor State Significance

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Discussion

The habitat quality scores for each AU were determined using a combination of Site Condition, Site Context and Species Stocking Rate technical data and scoring. The scores for Site Condition are derived directly from the MHQA tool data. These scores are then used to determine the scores for Quality and Availability of Food and Foraging Habitat, and Quality and Availability of Shelter. The site was given an overall weighted habitat quality score of **6.93** out of the total of 10. This score is calculated based on the combined weighted habitat quality scores for each assessment unit.

Refer to **Table 22** for a summary of the results. The detailed results are presented in **Table 23** and **Table 24**. The complete raw data is provided at **Appendix D**.

Table 22: MHQA Final Weighted Score Summary

MHQA Final Weighting	AU1
Site Condition (/3)	2.13
Site Context (/3)	2.52
Species Stocking Rate (/4)	2.29
Assessment Unit Area (Impact) (ha)	19.6
Total Impact Area (ha)	19.6
AU Score	6.93

Site Condition

The site condition achieved a score of **2.13** out of **3** attributed to high species richness, tree canopy height and tree canopy cover.

Site Context

→Size of patch

This attribute is a measure of the size of the patch of vegetation in which the assessment unit is located. The scoring reflects the importance of large patches in the landscape and is based on the size of the patch of critical Koala habitat connected to the site in this instance. This attribute is scored such that it reflects the fact that larger patches are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller patches. The size of patch attribute was calculated using GIS and determined the referral area to be part of a patch size of larger than 1000 ha. This achieved a score of **10 out of 10** (>200 ha Koala Habitat as per the *Queensland BioCondition Assessment* methodology) (refer **Plan 3**).

→Connectedness

As a landscape level attribute, connectedness aims to assess the degree to which the assessment unit is connected to adjacent native vegetation. Connectedness relates to the capacity of the species to disperse through the landscape between sustainable patches of habitat, and therefore has important implications for species persistence. Connectedness was calculated using GIS, with the percentage of referral area boundary length supporting a Koala critical habitat connection off and on-site was calculated at 55 %, and consequently this attribute scored a **5 out of 5** as per the *Queensland BioCondition Assessment* methodology (refer **Plan 3**).

→Context

The context attribute refers to the amount of critical koala habitat that is retained within a 1 km buffer of the site being assessed and is calculated using GIS. Each assessment unit achieved the same scores for Site context. Existing critical koala habitat within a 1 km buffer of the site was calculated at 59 %, and therefore the context

attribute achieved a score of **4 out of 5** as per the *Queensland BioCondition Assessment* methodology (refer **Plan 3**).

→*Ecological Corridors*

GIS was utilised to identify the role of the site in any ecological corridors on or adjacent to the site. A score of **6 out of 6** was given to the Ecological Corridors component of Site Context (30 %). The site is located within an ecological corridor (refer **Plan 4**).

→*Role of site location to species overall population in the State*

This attribute aims to quantify the importance of the site for state koala populations through a combined approach that considers the activity and usage across the site and the importance of habitat for fulfilling the koala's life cycle (*i.e.*, foraging and breeding) and thus the effect that removal of habitat would have on a local population and the species as a whole. This attribute was assigned a score of **5 out of 5** due to the presence of key values to support the koala.

→*Threats to the species*

The 'threats to the species' attribute quantifies potential risks to the survival of koala existing within and adjacent to the project area. Key known threats to the survival of the koala include proximity to main roads increasing the risk of motor vehicle strike, as well as predation by wild or domestic dogs and European foxes. Due to the presence of Centenary Highway directly north of the project area and location within an urban environment where wild and domestic dogs are likely to be present, this attribute was scored a **7 out of 15** for the assessment unit which is considered a moderate level of threat.

→*Species mobility capacity*

Species mobility capacity is used to quantify the ability of the species to move from the site and through the surrounding landscape to meet survival needs. Species mobility capacity is considered particularly important in response to rapid changes to the surrounding environment, such as the commencement of land clearing. GHFF and avi-fauna for example are considered highly mobile species due to their ability to fly quickly and over land barriers such as highly frequented roads or residential developments. Conversely, the koala is considered a relatively immobile species, requiring land for movement, and covering relatively small distances on-ground compared to other highly mobile fauna.

Due to the presence of remnant vegetation with limited *in situ* obstacles to movement, the species mobility capacity for the koala on-site was assigned the score of **10 out of 10** reflecting minor restriction.

Species Stocking Rate

The final component of the MHQA technique is species stocking rate. Species stocking rates are estimates of the koala carrying capacity of the site at the time of undertaking the survey. A species stocking rate score of **40 out of 70** was attributed to the assessment unit.

Total Quantum Impact – Koala

The proposed action will result in additional impact area of **19.6 ha** of vegetation identified as critical habitat for the koala. With a weighted habitat quality score rounded to **7.00**, there is an overall Quantum Impact of **13.72 ha**.

Table 23: Additional impact area – Koala MHQA results

Assessment Unit - Regional Ecosystem	AU 1 - Category B 12.9-10.2					
	RE12.9-10.2 Benchmark	Transect 1	Transect 2	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	60	60	60	60	3
Native plant species richness - trees	8	9	7	8	100.00	5
Native plant species richness - shrubs	7	1	2	1.5	21.43	0
Native plant species richness - grasses	7	6	6	6	85.71	2.5
Native plant species richness - forbs	14	7	5	6	42.86	2.5
Tree canopy height (Canopy)*	21	23	23	23	109.52	5
Tree canopy height (Sub-canopy)*	11	11	12	11.5	104.55	5
*Average tree canopy height						5
Tree canopy cover (Canopy)**	44	64.2	77.5	70.85	161.02	5
Tree canopy cover (Sub-canopy)**	18	25.8	32.6	29.2	162.22	5
**Average tree canopy cover						5
Shrub canopy cover	13	54.3	11	32.65	251.15	3
Native grass cover*	26	13	17	15	57.69	3
Organic litter*	51	84	77	80.5	157.84	5
Large trees (euc plus non-euc) (per ha)	29	32	26	29	100.00	10
Coarse woody debris (per ha)	640	244	5	124.5	19.45	2
Non-native plant cover	0	40	5	22.5	22.50	5
Quality and availability of food and foraging habitat	NA	10	10	10	-	10
Quality and availability of shelter	NA	10	10	10	-	10
Site Condition Score (/100)						71
Overall Site Condition Score - out of 3						2.13
SITE CONTEXT						
Size of patch	10	10	10	10		10
Connectedness	5	5	5	5		5
Context	5	4	4	4		4
Ecological Corridors	6	6	6	6		6
Role of site location to species overall population in the state	5	5	5	5		5
Threats to the species	15	7	7	7		7
Species mobility capacity	10	10	10	10		10
Site Context Score (/56)						47
Overall Site Context Score - out of 3						2.52
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	40	40	40		40
Species Stocking Rate Score (/70)						40.00
Overall Species Stocking Rate Score - out of 4						2.29
Overall Assessment Unit Score						6.93

Table 24: Additional impact area Koala Species Stocking Rate Results

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

*Species Stocking Rate supplementary table attributes	
Key source population for breeding	0/10
Key source population for dispersal	5/5
Necessary for maintaining genetic diversity	0/15
Near the limit of the species range	0/15

Grey-headed flying-fox – Foraging Habitat Assessment Tool

The additional impact area has been assessed using a GHFF Foraging Habitat Assessment (GHFF FHA) tool developed by the Saunders Havill Group (2019) which adopts characteristics of the Habitat Quality Guideline, while also integrating published scientific literature on GHFF foraging habitat.

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

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

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

Site Condition (40%)

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

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

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

Site condition under the GHFF FHA was assessed at the habitat quality transect locations within the impact assessment units summarised in **Table 25**.

Assessment methodology of the above condition characteristics is outlined below:

- Vegetation condition – This condition characteristic is assessed using the Queensland *Vegetation Management Act 1999* vegetation community status definition, being Category B (remnant), Category C (high-value regrowth) and Category X (non-remnant). This characteristic is scored from a desktop mapping perspective and verified on-ground during assessment. Refer to **Table 25**.
- Species richness (canopy trees) – This condition characteristic is assessed using a 100 m X 20 m plot following the contour of the land when possible. Within the plot, all canopy tree and subcanopy tree

specimens are recorded. It should be noted that non-GHFF foraging species are also documented. Refer to **Table 26**.

- Flower scores (average) – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the ‘species richness (canopy trees)’ characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *National Recovery Plan for the Grey-headed Flying-fox* (DAWE, 2021) and determining the flower score of the recorded canopy species. The individual score for each flowering GHFF foraging tree is then divided by the number of species recorded (GHFF foraging and non-GHFF foraging trees) to produce an average. The benchmark values for this condition characteristic have been derived from the findings published by Eby and Law (2008) (*Ranking the feeding habitat of Grey-headed flying foxes for conservation management*). Refer to **Table 27**.
- Timing of biological shortages – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the ‘species richness (canopy trees)’ characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *National Recovery Plan for the Grey-headed flying-fox* (DAWE, 2021) and determining the ability of the canopy species in the vegetation community to produce foraging habitat during biological shortages (food shortages, pregnancy and birthing, lactation, mating and conception, migration paths and fruit industries). It should be noted that this condition characteristic is weighted and ‘food shortages’ has been weighted heavier than the balance of the characteristics which are equal, as ‘food shortages’ is recognised as a major issue. Refer to **Table 28**.
- Quality of foraging habitat – This condition characteristic is assessed by analysing and cross-referencing the species recorded in the ‘species richness (canopy trees)’ characteristic with the published literature, specifically the information within *Ranking the feeding habitat of Grey-headed flying foxes for conservation management* (Eby and Law 2008) and the *National Recovery Plan for the Grey-headed flying-fox* (DAWE, 2021) and determining which canopy species recorded contain a flower score greater than 0.65 wt p*r and is recognised as a significant food plant by Eby and Law (2008). It should be noted that species recorded that are not prescribed a value by Eby and Law (2008) but are recognised as GHFF foraging trees, have been given an average weighted value of related species or, in the case of *Eucalyptus crebra* (Narrow-leaved Ironbark) been prescribed a value of 0.65 and classified as a significant food plant given its importance as a winter flowering species as acknowledged in the *National Recovery Plan for the Grey-headed Flying-fox* (DAWE, 2021). Refer to **Table 29**.
- Non-native plant cover – This condition characteristic is assessed using a 100 m X 20 m plot following the contour of the land when possible. All non-native plant cover was assessed by estimating the cover of exotic species over the 100 m X 20 m plot. Refer to **Table 30**.

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

Site Context (30%)

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

- Size of patch (refer **Plan 5**);
- Connectedness (active GHFF roost camps in a 20 km radius) (refer **Plan 5**);
- Context (percentage of GHFF foraging habitat in a 20 km radius) (refer **Plan 5**);
- Ecological corridors (refer **Plan 4**);

- Role of site location to species overall population in the state (active GHFF national flying-fox monitoring viewer 'level 3' roost camps in a 20 km radius) (refer **Plan 5**); and
- Threats to the species.

The assessment methodology of the above context characteristics is outlined below:

- Size of patch – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the directly connected patch of GHFF foraging habitat to site measured. This context characteristic is measured using GIS. The benchmark values for this context characteristic are those used in the traditional habitat quality assessment. Refer to **Table 31**.
- Connectedness – This context characteristic is assessed by analysing the number of active GHFF roost camps (over the past year of monitoring (2023-2024)) within a 20 km radius of the site. For consistency purposes this assessment is to utilise the data provided on the national flying-fox monitoring viewer (Australian Government). Refer to **Table 32**.
- Context – This context characteristic is assessed using a modified version of the traditional habitat quality assessment with the percentage of GHFF foraging habitat within a twenty (20) kilometre buffer of the site measured. This context characteristic is measured using GIS. Refer to **Table 33**.
- Ecological corridors – This context characteristic is assessed using the traditional habitat quality assessment methodology which involves determining the proximity of the site to state, bioregional, regional or sub-regional corridors. Refer to **Table 34**.
- Threats to species – This context characteristic is assessed by analysing the published scientific literature regarding threats to GHFF and determining the number and severity of the threatening processes observed at or adjacent to the site. Refer to **Table 35**.
- Role of site location to species overall population in the state (active GHFF national flying-fox monitoring viewer 'level 3' roost camps in a 20 km radius) – This context characteristic is assessed by analysing the number of active GHFF roost camps level 3 or greater (over the past year of monitoring (2023-2024)) within a 20 km radius of the site. For consistency purposes this assessment is to utilise the data provided on the national flying-fox monitoring viewer (Australian Government). Refer to **Table 36**.

Species Stocking Rate (30%)

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

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

This methodology involves assigning the strata for canopy (T1) and subcanopy (T2) and then counting the number of individual tree specimens within the 100 m X 20 m plot. A tree that branches into two or more stems above 30 cm above the ground is counted as one individual. The stem density of canopy species recorded within the 0.2 ha plot is multiplied by five (5) to produce a stem density per ha. This number is then compared to the benchmark stem density per ha based on the sum of the T1 stem density taken from the relevant regional ecosystem technical description as per the Technical Descriptions of Regional Ecosystems of Southeast Queensland (Ryan 2019). Refer to **Table 37** for benchmark scoring values for species stocking rate.

Table 25: GHFF FHA Vegetation Condition Scoring

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

Table 26: GHFF FHA Species Richness Scoring

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

Table 27: GHFF FHA Flower Score (average) Scoring

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

Table 28: GHFF FHA Timing of Biological Shortages Scoring

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

Table 29: GHFF FHA Quality of Foraging Habitat (trees >0.65 wt p*r) Scoring

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

Table 30: GHFF FHA Non-Native Plant Cover Scoring

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

Table 31: GHFF FHA Size of Patch Scoring

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

Table 32: GHFF FHA Connectedness Scoring

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

Table 33: GHFF FHA Context Scoring

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

Table 34: GHFF FHA Ecological Corridors Scoring

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

Table 35: GHFF FHA Threats to Species Scoring

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

Table 36: GHFF FHA Role of Site Location to Species Overall Population in the State Scoring

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

Table 37: GHFF Species Stocking Rate Scoring

Score	Stem density per hectare			
	RE12.9-10.2	RE12.9-10.7	RE12.3.7	RE12.12.5
2	0-30	0-60	0-51	0-85
4	31-130	61-260	52-220	86-368
6	131-220	261-440	221-372	369-623
8	221-235	441-470	373-398	624-666
10	236-245	471-490	399-414	667-694
8	246-260	491-520	415-440	695-737
6	261-350	521-700	441-592	738-992
4	351-450	701-900	593-761	993-1275
2	>451	>901	>762	>1276

5. Additional Impact Area Grey-headed Flying-fox Context Assessment

- Legend**
- Referral Area
 - Assessment Unit 1 Area
 - Assessment Unit 1 - 5km Buffer
 - Assessment Unit 1 - 20km Buffer
 - Potential and Known Grey-headed Flying-fox habitat within 20km of Assessment Unit 1 [37%]
- Grey-headed Flying-fox Camp Locations**
- Grey-headed Flying Fox roost inactive within recent surveys [7 within 20km]
 - Grey-headed Flying Fox roost active within recent surveys [10 within 20km]
 - Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [9 within 20km]
 - Nationally significant Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [3 within 20km]

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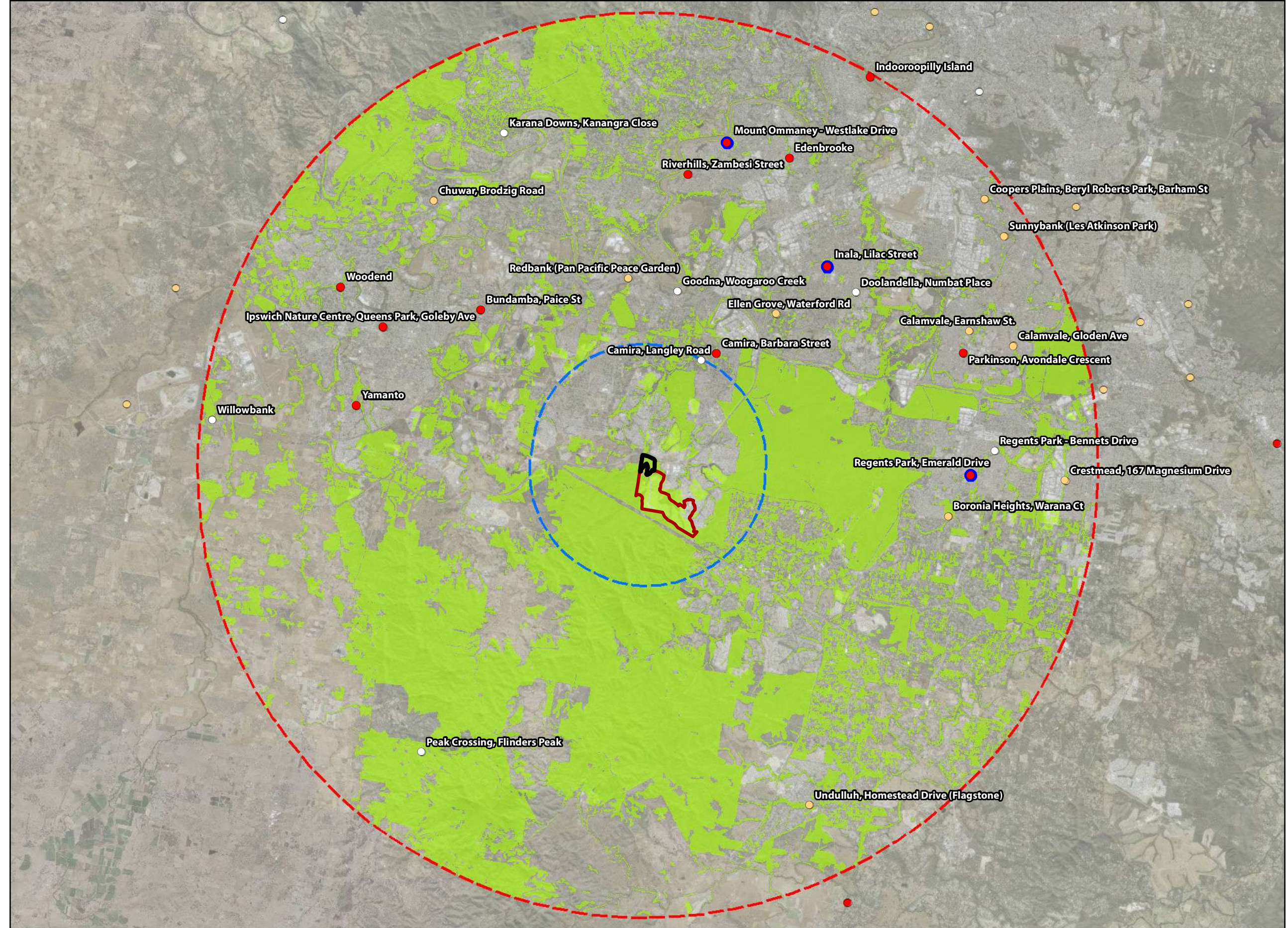


Table 38: Additional impact area grey-headed flying-fox – FHA assessment summary

		Maximum Score	Assessment Unit – Regional Ecosystem	
			AU 1 Remnant RE 12.9-10.2	
Site Condition (40%)	Vegetation Condition	20	20	Category B remnant vegetation.
	Species Richness	20	10	T1 – 5 GHFF species T2 – 5 GHFF species Average – 5 GHFF species
	Flower Score	10	8	T1 – 0.592 T2 – 0.566 Average – 0.58
	Timing of Biological Shortages	10	10	T1 – 8.5 T2 – 10 Average – 9.25
	Quality of Foraging Habitat	20	10	T1 – 5 species T2 – 5 species Average – 5 species
	Non-native Plant cover	20	20	T1 – 60% T2 – 5% Average – 32.5%
	Site Condition Score	100	62.25	
	Site Condition Score – out of 4	4.00	2.49	

Site Context (30%)	Size of Patch	10	10	Patch size is greater than 200 ha
	Connectedness	10	10	>8 active camps within 20 km
	Context	10	6	37%
	Ecological Corridors	10	10	Located within Statewide corridor
	Roles of the site location to the species overall population in the state	10	10	3 active level 3 GHFF camps within a 20 km radius
	Threats to species	10	5	The site has barbed wire fencing, is not subject to bushfire controls and feral animal predators are present. A moderate threat level is prescribed.
	Site Context Score	60	51	
	Site Context Score – out of 3	3.00	2.55	

Additional Offset Management Plan

Species Stocking Rate (30%)	GHFF Foraging Tree Density per hectare	-	6	T1 – 265 T2 – 355 Average – 310
	Species Stocking Rate Score	10	6	
	Species Stocking Rate – out of 3	3.00	1.80	
	Total score		6.84	

5.4. Impact Assessment Summary

The overall habitat quality scores for koala and GHFF at the additional impact area are presented in **Table 39** and **Table 40**.

As per the proposed EPBC Approval variation (EPBC 2013/7057), the action proposes to impact an additional 19.6 ha of koala habitat and GHFF foraging habitat with a MHQA score of 6.93 (rounded to 7) for koala and 6.84 (rounded to 7) for GHFF. The Offset Assessment Guide (OAG) (DoEE 2012) was used in consultation with DCCEEW to identify a total quantum of impact of **13.72 ha** for the koala and the GHFF.

Table 39: Impact area MHQA for koala

MHQA Final Weighting	AU 1
Site Condition (/3)	2.13
Site Context (/3)	2.52
Species Stocking Rate (/4)	2.29
Total Impact Area (ha)	19.6
Total Weighted Score	6.93

Table 40: Impact area FHA for grey-headed flying-fox

FHA Final Weighting	AU 1
Site Condition (/4)	2.49
Site Context (/3)	2.55
Species Stocking Rate (/3)	1.80
Total Impact Area (ha)	19.6
Total Score	6.84

6. Overview of Offset Area

6.1. Offset property description and tenure

The Little Kipper Creek Road Offset area is located at Little Kipper Creek Road, Biarra, within the Somerset Regional Council Local Government Area (LGA), approximately 11 km west of the Queensland town of Esk. The offset area comprises parts of Lot 273 on CA311588 and Lots 10 and 11 on CA31764. The offset area is located approximately 74 km north-west of the additional impact area (refer **Plan 6**).

The offset area is currently zoned as Rural under the Somerset Regional Council Planning Scheme. Key details relating to the offset area are provided in **Table 41**.

Table 41: Little Kipper Creek Road offset area summary

Address	Little Kipper Creek Road, Biarra, Queensland, 4313
Lot / Plan	Parts of Lot 273 on CA311588 and Lots 10 and 11 on CA31764
Area	74.18 ha
Tenure	Freehold
Local Government Area	Somerset Regional Council

The Springfield Rise additional offset area forms part of the broader Little Kipper Creek Road Offset Property, which totals to approximately 728 hectares (refer **Plan 7**). The offset area currently contains five (5) different vegetation communities, including non-remnant and regulated regrowth and remnant vegetation under the VMA.

The offset area is currently used for pastoral grazing and rural land uses. The site is relatively disturbed resulting from grazing activities, with patches of retained vegetation including regrowth and remnant vegetation, predominantly restricted to the gullies and waterways of the site. A review of historical aerial imagery was undertaken to assist with the broad delineation of vegetation communities and identification of historical land management patterns that potentially affect current local vegetation values (refer to **Plan 8**).

The offset area is considered to have the capacity to meet the offset requirements, with the presence of existing vegetation to provide habitat, as well as non-remnant areas that can act as a receiving area for rehabilitation and an increase in habitat value across the offset area. The closest conservation area and mapped Category A vegetation (under the Queensland VMA), declared as an environmental offset area for koala and greater glider under EPBC Act approval 2021/9065, is located approximately 200 m east of the offset area within the same property. The offset area and Category A conservation areas are located within a regional biodiversity corridor identified within the SEQ Regional Plan 2023 (Shaping SEQ).

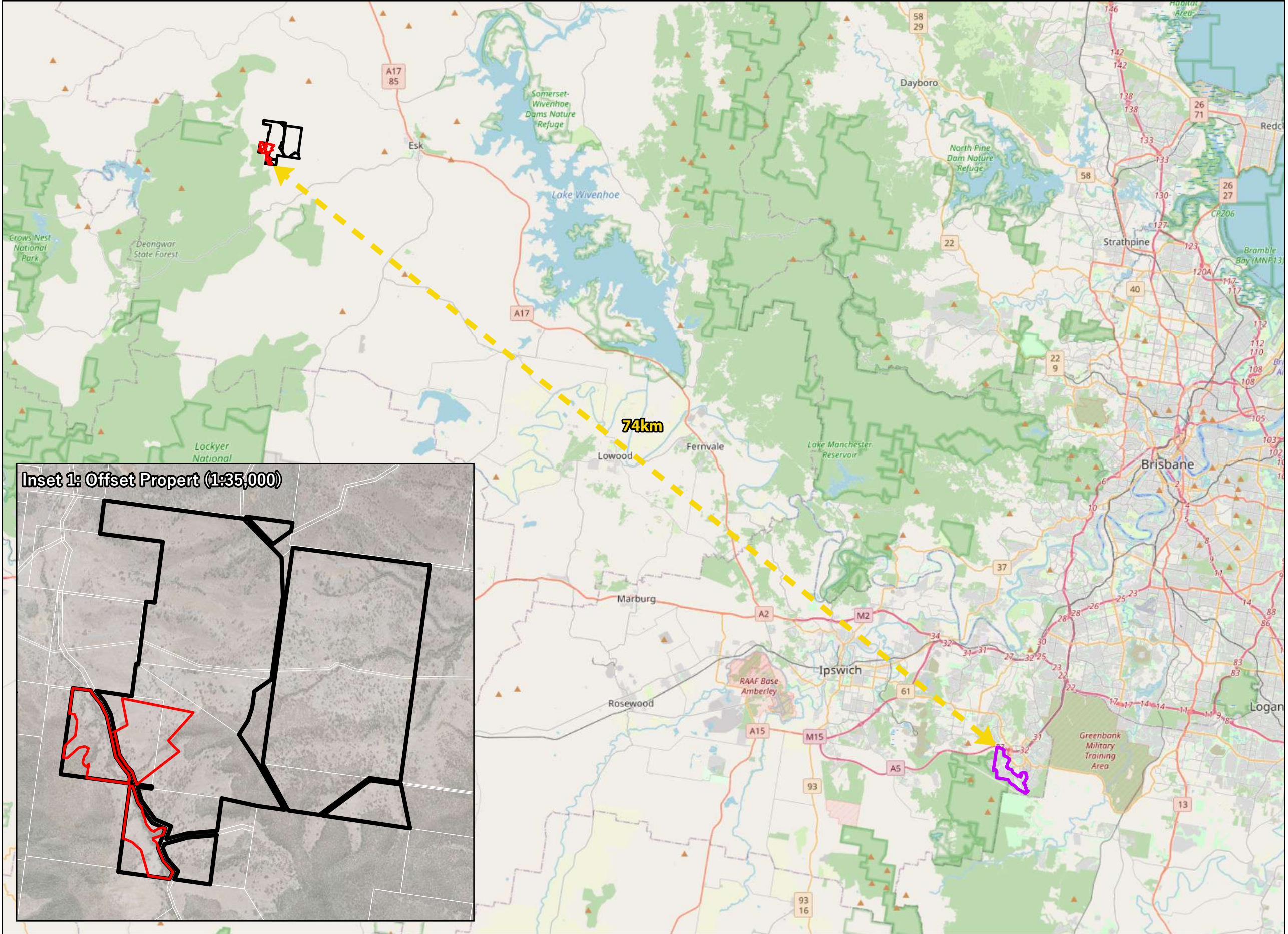
Upon EPBC Act Approval, the offset will be protected by the mechanism chosen by DCCEEW being a Voluntary Declaration under the *Vegetation Management Act 1999* initially followed by a covenant either under the *Land Act 1994* or *Land Titles Act 1994*, which will provide protection in perpetuity. An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

6. Offset Area Context

Legend

- Referral Area (EPBC 2013/7057)
- Offset Area
- Little Kipper Creek Offset Property

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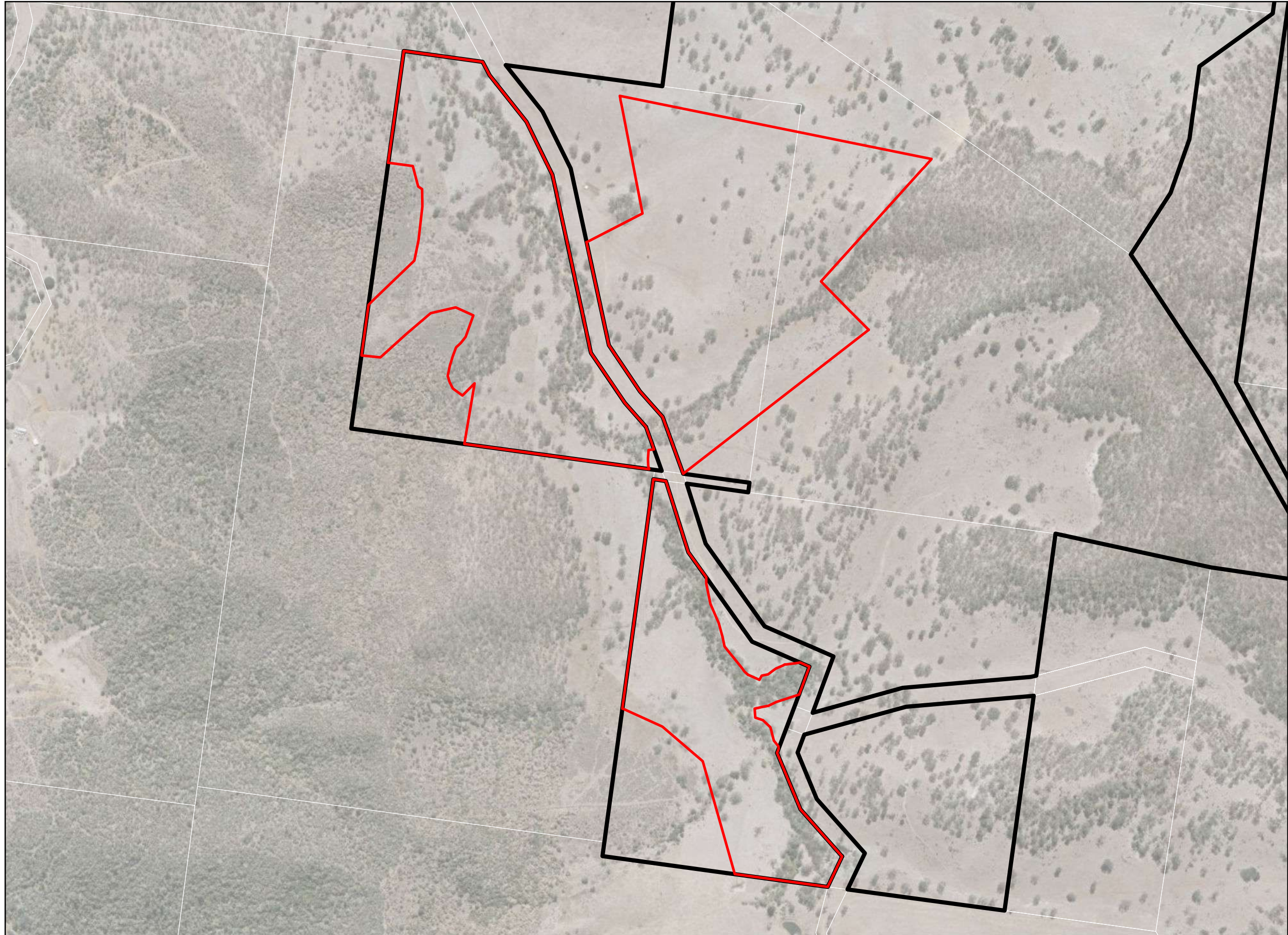
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7. Little Kipper Creek Offset Area

Legend

- Offset Area
- Little Kipper Creek Offset Property
- QLD DCDB

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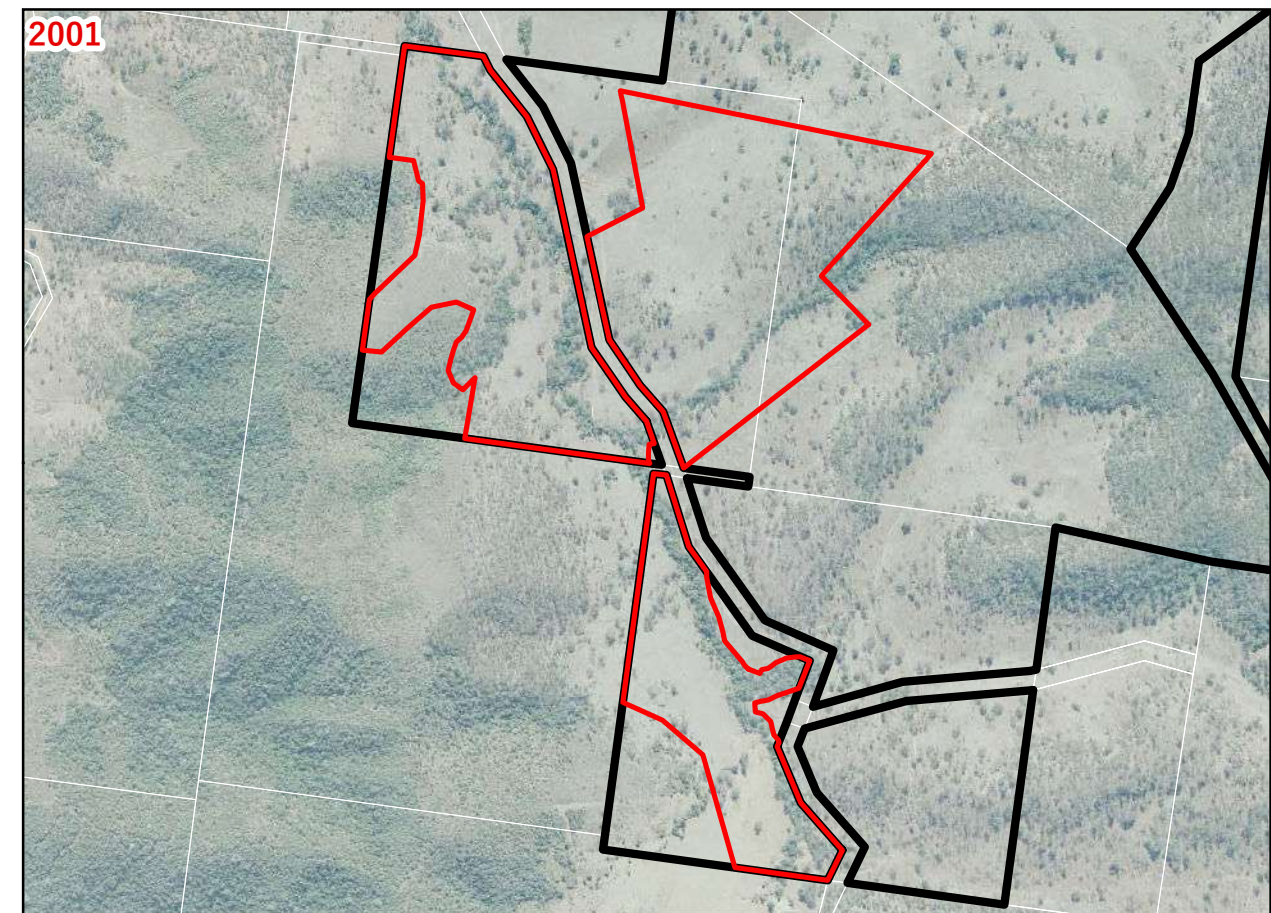
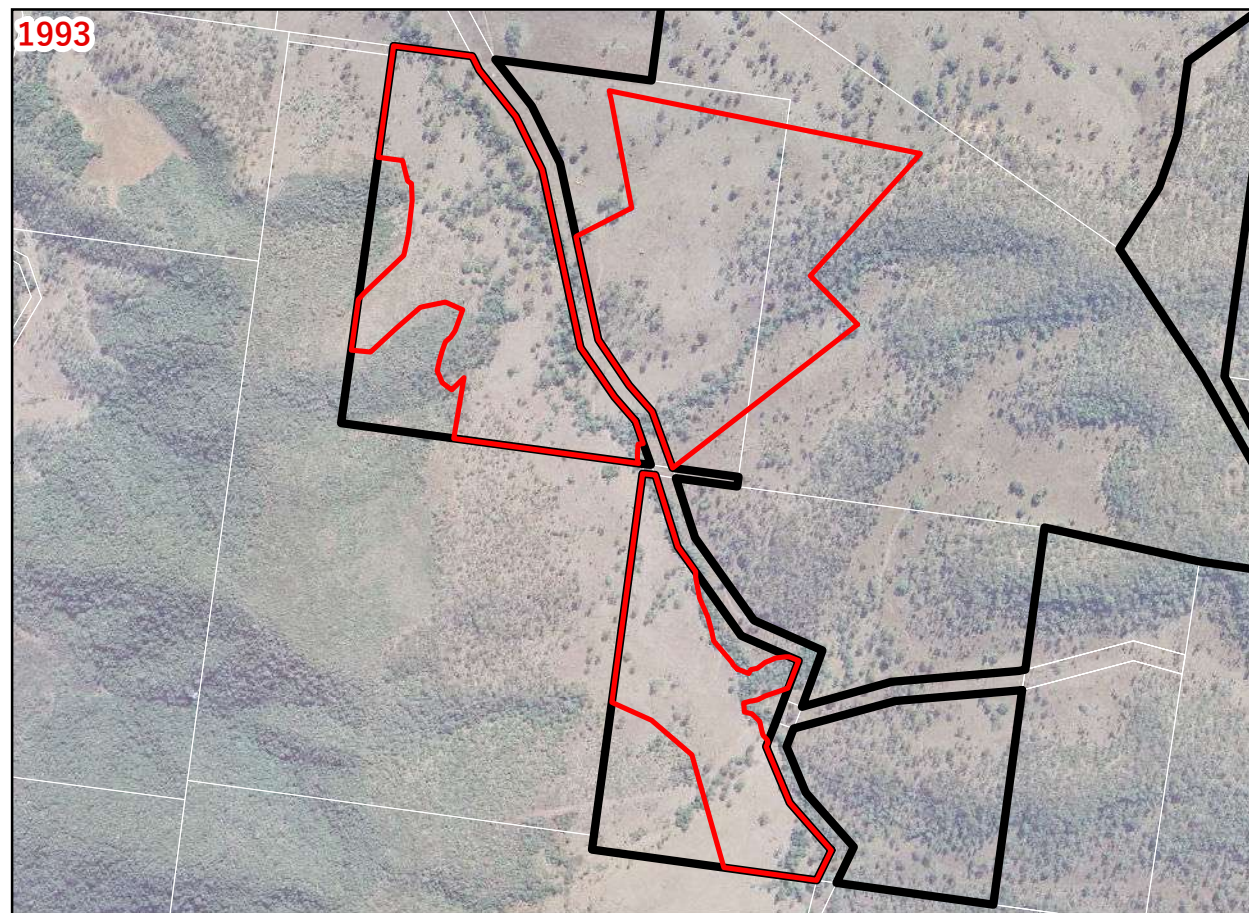
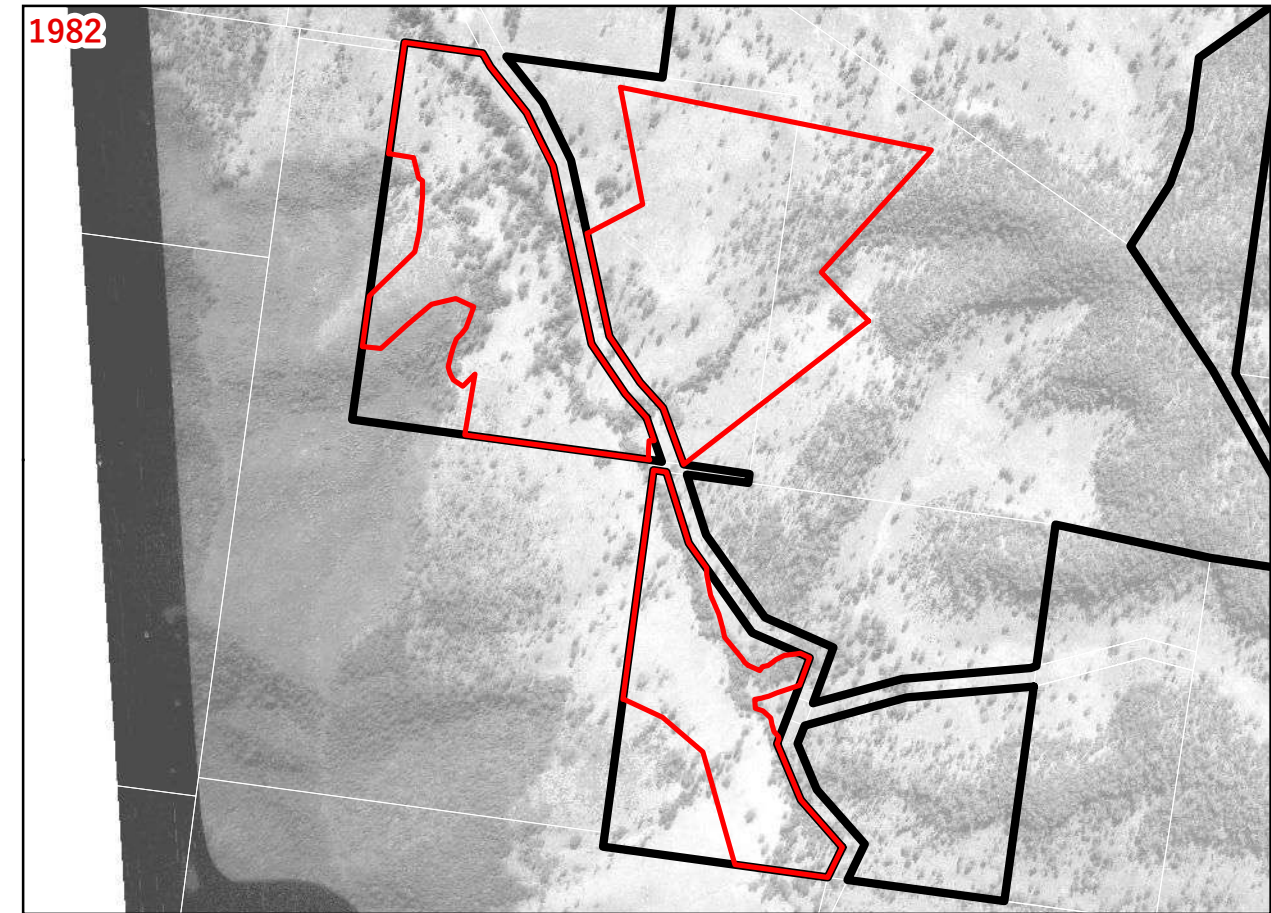
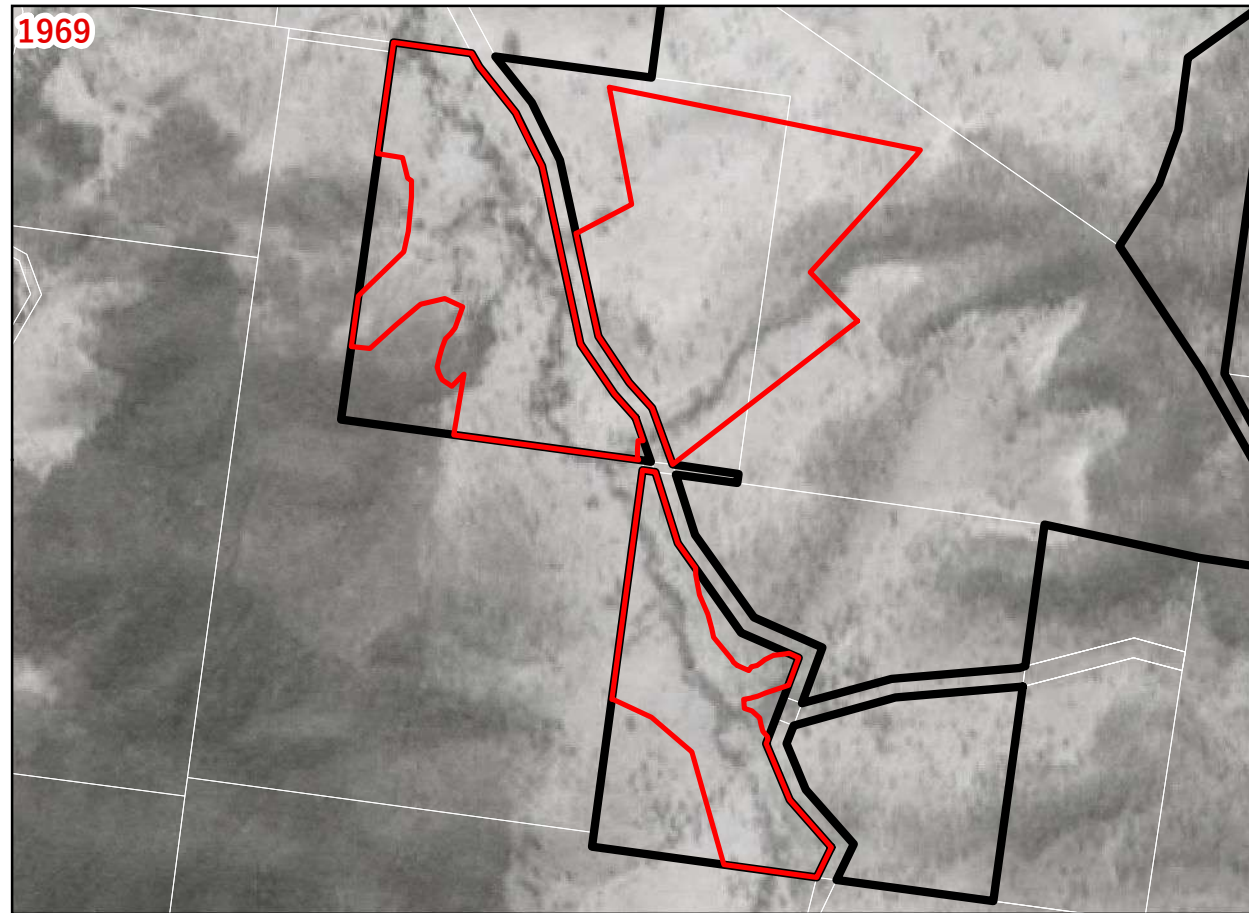
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8. Offset Area Historical Aerial Imagery

Legend

- Offset Area
- Little Kipper Creek Offset Property
- QLD DCDB

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7. Offset Area Suitability

As detailed **Section 1**, one (1) offset area has been selected to be secured to wholly acquit the additional impacts to MNES approved under the EPBC approval variation (EPBC 2013/7057) and provide benefit additional to the required compensation for residual impacts. The suitability of the offset area is discussed within this section and considers the bioregional context of the site, ecological values, water resources and topography and existing habitat values for koala and grey-headed flying-fox.

7.1. Bioregional context

Queensland is divided into 13 biogeographical areas to identify biodiversity features at a regional scale. The offset area is located in the South East Queensland (SEQ) Bioregion. The SEQ Bioregion shares its western boundary with the Brigalow Belt Bioregion and extends from the Border Ranges on the New South Wales border, north to the dry coastal corridor between Gladstone and Rockhampton (DEHP 2016). The McPherson Range borders the southern boundary of the bioregion while the Great Dividing Range is to the west. Ranges extend north south through the central region creating an altitudinal gradient from the coast. Small volcanic plugs remain in the landscape offering distinctive conditions for taxa and ecosystems (DEHP 2016). Large sand islands off the coast offer unique environments and create sheltered bays and passages within which marine and coastal plants and animals thrive (DEHP 2016). The impact area and offset area are both in the same sub-bioregion, being the Moreton Basin.

7.2. Offset area values

Regional and landscape context

The offset area is located within the Biodiversity Planning Assessment (BPA) regional corridor, and South East Queensland Regional Plan (*'ShapingSEQ 2017'*) regional biodiversity corridor which spans from the Noosa headland in the north, down to Mount Barney and Lamington National Park on the Queensland border (refer **Plan 9**). The corridor aims to encompass large tracts of vegetation, terrestrial connectivity, aquatic connectivity, species richness, diversity and refugia, ecosystem representation and uniqueness and climate resilience areas (Queensland Government 2017). It is noted that the offset area shares a similar regional context to the impact area being located within the same regional biodiversity corridor and adjacent sub-bioregions.

The regional biodiversity corridor forms part of the Great Eastern Ranges (GER) terrestrial corridor which extends from the mountains of Victoria to the Atherton Tablelands in far north Queensland (Mackay *et al.* 2010). The GER corridor provides habitat and movement for a range of species that have Federal, State and Local significance, supports significant cultural heritage values and offers scenic amenity and outdoor recreation opportunities (Mackay *et al.* 2010).

The offset area will conserve freehold land within the regional biodiversity corridor, linking remnant habitat and habitat incorporating legally bound environmental offset areas. This linkage provides a valuable contiguous habitat corridor, ensuring the possibility of habitat fragmentation is minimised and improving the connectivity of koala habitat within SEQ, contributing to the future protection and persistence of the species. The offset area contains high conservation values and through the management actions proposed in this AOMP, the property will provide biodiversity offsets that ensure an ecological gain on the residual impacts resulting from the impact site which aligns with offset principle 1 of the EOP.

Adjacent land uses

The 74.18 ha offset area is located in the western extent of the broader Little Kipper Creek Offset Property. The surrounding landscape is comprised of a mix of open grazing land forming part of the broader offset property and private land to the north and south, and regrowth and remnant vegetation values. To the west is dominated by contiguous vegetation mapped under the Queensland VMA as Category B and C vegetation containing areas of RE12.12.13, RE12.12.5 and RE12.11.11.

Topography

The offset area has a varied topography characterised by open woodland and gully lines. The topography of the offset area ranges from 200 Above Sea Level (ASL) within the lower gully line areas to a maximum of 310 ASL. The highest point of the offset area is within the north-eastern portion of the offset area with land becoming increasingly steep toward to the west and south of the offset area. The site gently slopes down to the north-east, forming a low-lying gully area, before sloping upwards again in the north-eastern corner of the site. Refer to **Plan 10**.

Water resources

The offset area contains a watercourse which flows downstream to the north-west. The offset area also contains multiple mapped drainage features under the Queensland *Water Act 2000*. Refer to **Plan 10**.

Koala and grey-headed flying-fox habitat

The offset area comprises high to low quality Category X (non-remnant), Category C (high-value regrowth), and Category B (remnant) vegetation. The non-remnant land ranges from cleared grazing and slashed grassy areas through to higher value regrowth patches, while the remnant vegetation ranges from highly degraded to intact.

Under the VMA, the remnant and regrowth vegetation within the offset area is mapped as Least Concern RE12.12.5, RE12.3.7, RE12.9-10.2 and composite Least Concern RE12.9-10.5/12.9-10.2 (85/15%). The non-remnant area historically contained the above listed REs according to pre-clear vegetation mapping. These RE descriptions are presented in **Table 42** below.

The offset area was delineated into separate assessment units based on the ground-truthed non-remnant, regrowth and remnant vegetation communities under the MHQA methodology due to the high level of observed variability in vegetation structure, quality and species composition.

Table 42: Regional Ecosystem Descriptions

Regional Ecosystem	Vegetation Structure	Description (Queensland Herbarium)
12.3.7	Sparse	Narrow fringing woodland of <i>Eucalyptus tereticornis</i> , <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> +/- <i>Melaleuca viminalis</i> . Other species associated with this RE include <i>Melaleuca bracteata</i> , <i>M. trichostachya</i> , <i>M. linariifolia</i> . North of Brisbane <i>Waterhousea floribunda</i> commonly occurs and may at times dominate this RE. <i>Melaleuca fluviatilis</i> occurs in this RE in the north of the bioregion. <i>Lomandra hystrix</i> often present in stream beds. Occurs on fringing levees and banks of rivers and drainage lines of alluvial plains throughout the region. Riverine. (BVG1M: 16a).

Regional Ecosystem	Vegetation Structure	Description (Queensland Herbarium)
12.9-10.5	Sparse	Shrubby woodland complex. More widely distributed and abundant species include <i>Corymbia trachyphloia</i> subsp. <i>trachyphloia</i> , <i>C. citriodora</i> subsp. <i>variegata</i> , <i>Eucalyptus crebra</i> , <i>E. fibrosa</i> subsp. <i>fibrosa</i> , <i>E. major</i> , <i>Angophora leiocarpa</i> , <i>E. helidonica</i> . Understorey of sclerophyllous shrubs. Localised occurrences of <i>Eucalyptus baileyana</i> , <i>E. pilularis</i> , <i>Corymbia henryi</i> , <i>E. dura</i> , <i>E. decorticans</i> (extreme west of bioregion), <i>E. taurina</i> , <i>Angophora woodsiana</i> , <i>Lysicarpus angustifolius</i> and <i>Lophostemon confertus</i> . Tends to shrubland or monospecific woodland of species such as <i>Eucalyptus dura</i> on shallow lithosols. Occurs on quartzose sandstone scarps and crests. Not a Wetland. (BVG1M: 9h).
12.9-10.2	Mid-dense	<i>Corymbia citriodora</i> subsp. <i>variegata</i> open forest or woodland usually with <i>Eucalyptus crebra</i> . Other species such as <i>Eucalyptus tereticornis</i> , <i>E. moluccana</i> , <i>E. acmenoides</i> and <i>E. siderophloia</i> may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of <i>Lophostemon confertus</i> (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. Not a Wetland. (BVG1M: 10b).
12.12.5	Sparse	Open forest to woodland of <i>Corymbia citriodora</i> subsp. <i>variegata</i> , usually with <i>Eucalyptus crebra</i> . Other species such as <i>Eucalyptus exserta</i> and <i>E. moluccana</i> present in scattered patches or in low densities. Understorey generally grassy. Occurs on hills and ranges on Mesozoic to Proterozoic igneous rocks. Not a Wetland. (BVG1M: 10b).

The dominance of vegetation communities containing foraging habitat values for the koala and GHFF suggests the offset area provides value for these species and will continue to with targeted restoration and preservation in historically degraded areas.

Current Management Arrangement

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

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

Current Threats

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

In addition, wild dogs and European foxes are confirmed to occur within the offset property. The Queensland WildNet database identifies 3 confirmed records of *Canis* sp. and/or *Canis familiaris*, 4 records of European foxes and 3 records of feral cats within 20 km of the offset area, located within connected vegetation. Wild dogs are known to travel up to 20 km seeking prey with home ranges of individuals likely to overlap with the offset area.

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

Other threats include:

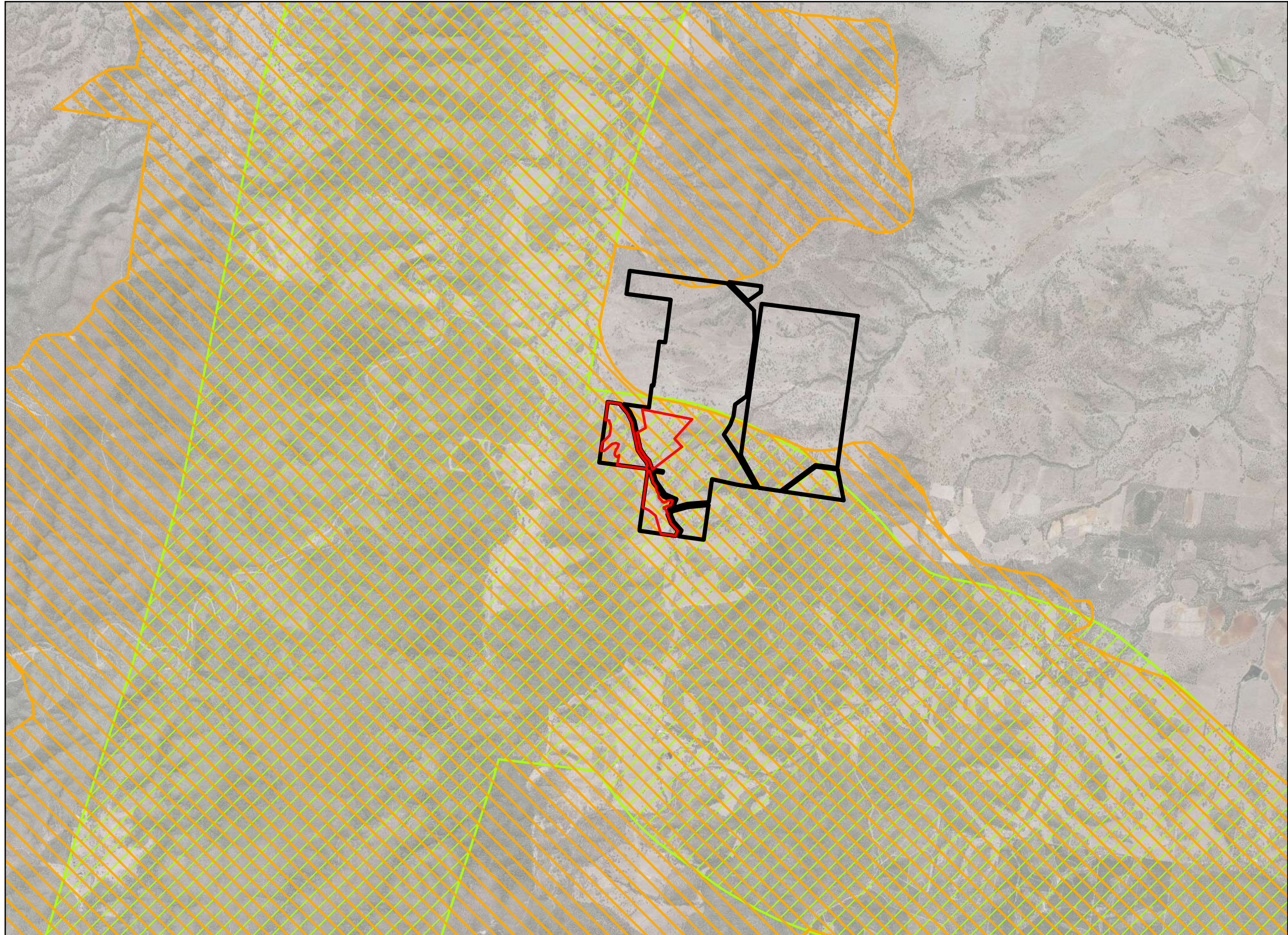
- clearing and harvesting of timber for pastoral uses,
- uncontrolled wildfire;
- barbed wire; and
- significant weed infestations, in particular, *Lantana camara*.

9. Offset Area Ecological Corridors

Legend

-  Offset Area
-  Little Kipper Creek Offset Property
-  SEQ Regional Plan 2017 Regional Biodiversity Corridor
-  Statewide Corridor Regional Significance

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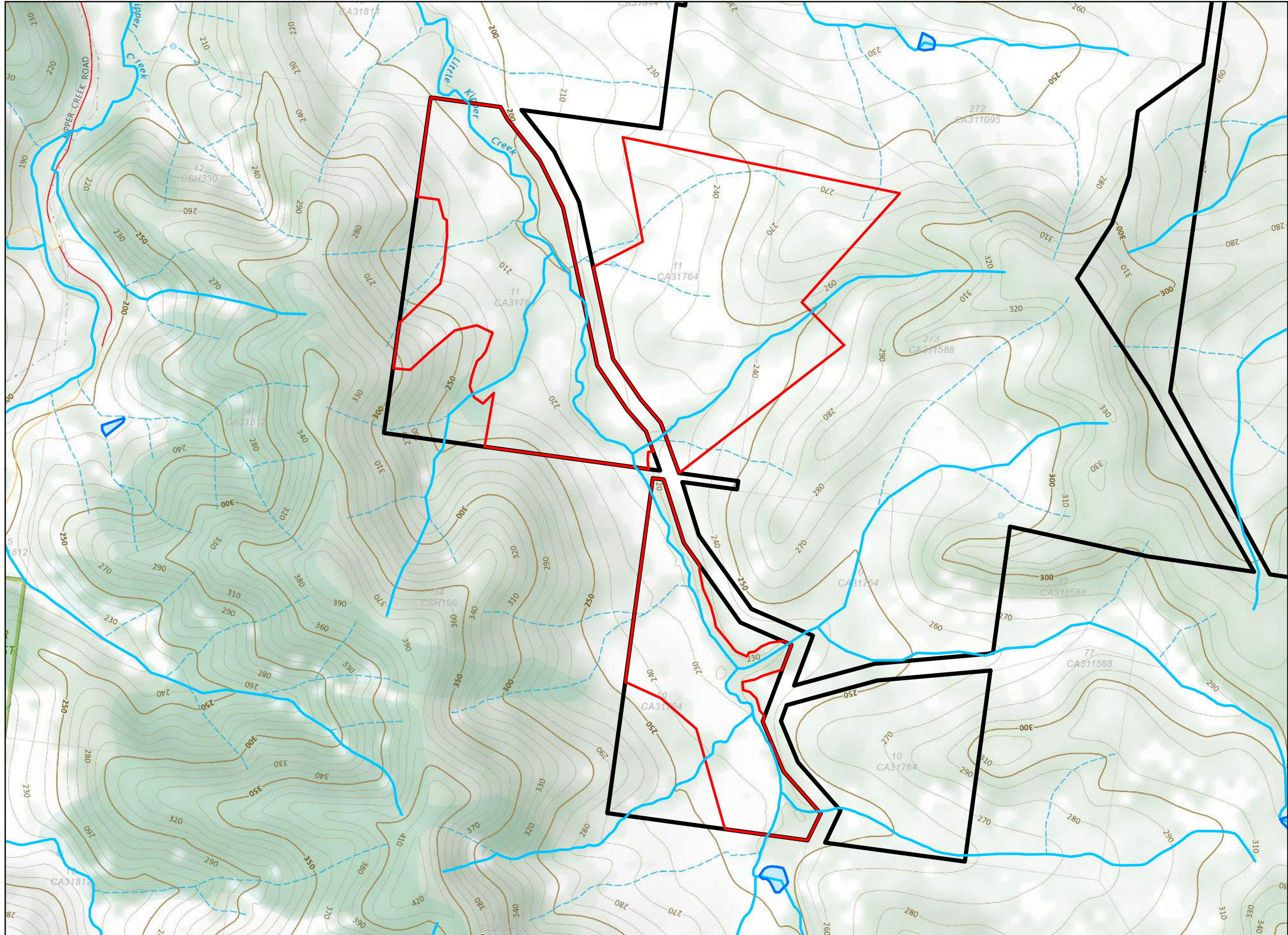
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10. Offset Area Topography and Water Resources

Legend

- Offset Area
- Little Kipper Creek Offset Property
- Mapped Reservoir
- Watercourse / Drainage Feature

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7.3. Suitability Analysis – Environmental Offset Policy

The objective of this AOMP is to outline appropriate management actions to achieve the offset outcomes specified within the EPBC Act and provide an overall improved conservation outcome and net gain in koala and grey-headed flying-fox habitat, thereby ensuring the long-term viability of these species. **Table 43** lists the principles of the EPBC Act Environmental Offsets Policy (EOP) and describes how the proposed offset has been developed to adhere to these principles.

Table 43: Offset Suitability Analysis – Environmental Offsets Policy

EOP Requirements	Delivery
Suitable offsets must:	
Deliver an overall conservation outcome that improves or maintains the viability of the protected matter	The offset area will directly contribute to the ongoing viability of the koala (<i>Phascolarctos cinereus</i>) and GHFF (<i>Pteropus poliocephalus</i>). Protection and management of the offset area in accordance with this AOMP aims to deliver an overall conservation and net gain in Koala and GHFF habitat. Prior to the impact, the offset area was not protected or managed for conservation outcomes. This AOMP and management actions within will support regeneration and restoration of habitat, contributing to a connected corridor with reduced threats. In doing so, the AOMP aims to encourage the use of restored and new areas of habitat through provided increased numbers and area of koala and GHFF food trees, removal of weeds and reduction in predators. The proposed offset aims to contribute to the resilience of the koala and GHFF by increasing landscape connectivity provided through the protection of the offset properties.
Be built around direct offsets but may include other compensatory measures	The offset is built around direct offsets and easily compensates for the potential impact. The offset area is to be legally secured for conservation purposes prior to the impact occurring and will endure for the duration of the impact. Legally securing and managing the offset area in accordance with this AOMP protects the areas from incompatible land uses and contributes to the viability of the koala and GHFF.
Be in proportion to the level of statutory protection that applies to the protected matter	The OAG lists the probability of annual extinction of the koala as 0.2%. This use of this measurement in the OAG ensures that the appropriate level of statutory protection is applied. All threats to koalas outlined in the Department’s Species Profile and Threats Database (SPRAT) and EPBC Act referral guidelines for the Vulnerable koala (Koala referral guidelines) have been addressed within this AOMP. Threats outlined in the Department’s SPRAT for GHFF have been addressed within this AOMP.
Be of a size and scale proportionate to the residual impacts on the protected matter	Permanent protection and management for the lifetime of the approval will deliver a conservation gain adequately compensating for the quantum impact for each matter. The total offset area for protection and

EOP Requirements	Delivery
Suitable offsets must:	
	<p>management is 74.18 ha, delivering a 130.89% offset for the koala and a 110.33% offset for the GHFF, thus satisfying the 90% minimum direct offset area.</p> <p>Management actions outlined within this AOMP aim to protect and enhance koala and GHFF habitat, compensating for and exceeding habitat quality of the impact.</p> <p>The offset and management actions will provide:</p> <ul style="list-style-type: none"> • Legally secured and long-term protection of 74.18 ha of koala habitat and GHFF foraging habitat. • Improvement of habitat through revegetation and natural regeneration of koala food trees and removal of weeds. • Contribution to a large contiguous protected habitat and biodiversity corridor with reduced threats. • Long-term reduction in threats, through the removal of incompatible land uses. • Reduced risk of koala mortality or injury due to vehicle strike. • Reduced risk of koala mortality or injury due to predators, through control of non-native predators. • Reduced risk of high intensity fire through management of fuel loads. • Reduced risk of the spread of diseases and/or pathogens.
Effectively account for and manage the risks of the offset not succeeding	<p>Confidence in the success of the offset is high ($\geq 75\%$) given the detail and intensity of the management actions outlined within this AOMP. The confidence is supported by the offset area selection, design of management actions, and clear monitoring and reporting procedures. The offset area contains well-maintained access tracks that will facilitate access to high priority weed treatment areas and planting areas. Non-remnant vegetation areas across the offset area are considered to have a lower confidence level reflecting the potential risks relating to higher levels of disturbance, revegetation processes and plant stock success/failure rates, and natural events.</p> <p>Risks associated with the offset delivery will be mitigated and managed through the detailed management actions outlined in Section 9. Management actions have been drawn from offset targets which aim to protect and conserve large, connected areas of koala and GHFF foraging habitat to support viable populations.</p>
Be additional to what is already required, determined by law or	<p>Legally securing the offset area for the duration of the impact will ensure existing and future owners are prohibited from conflicting land uses, including clearing. Management beyond minimum legislative</p>

EOP Requirements	Delivery
Suitable offsets must:	
planning regulations, or agreed to under other schemes or programs	requirements is proposed across the whole area to ensure loss of habitat values does not occur through intensification of weeds causing loss of connectivity, destruction of habitat via hot, intense fires, or increased risk of mortality or injury by dog attack.
Be efficient, effective, timely, transparent, scientifically robust and reasonable	<p>Efficient and Effective:</p> <ul style="list-style-type: none"> • The offset area is large and located within a contiguous landscape of connected koala and GHFF habitat. Management actions will ensure efficient delivery of outcomes over the offset area and proactive management, monitoring and reporting will ensure response/corrective actions are timely and focused. • Prior to the EPBC Act process, the offset area was not protected or managed for conservation outcomes. Protection and management of the offset area in accordance with this AOMP aims to deliver an overall improved conservation outcome and net gain in koala and GHFF habitat. <p>Timely:</p> <ul style="list-style-type: none"> • The mix of remnant, regrowth and non-remnant vegetation provided within the offset area allows for the achievement of immediate and long-term conservation outcomes. The offset area is to be legally secured prior to the commencement clearing above 255 ha at the project site. • Following the approval and implementation of this AOMP, management actions outlined within Section 9 will commence. Adaptive management processes will ensure management actions respond to technology improvements, natural events and potential risks identified in the risk assessment. <p>Transparent:</p> <ul style="list-style-type: none"> • The baseline surveys established the survey methodology to be used for the monitoring and reporting required for the lifetime of the approval. A clear monitoring and reporting framework is established within this AOMP (refer Section 4). Monitoring and reporting of the offset area will be summarised within the Offset Area Annual Report provided by the Offset Provider which is then included in the Annual Compliance Reports for project. <p>Scientifically robust:</p> <ul style="list-style-type: none"> • The proposed offset area was assessed by qualified and experienced ecologists. Ongoing management and monitoring actions will be conducted in collaboration with other qualified ecologists and regeneration specialists to achieve the

EOP Requirements	Delivery
<p>Suitable offsets must:</p>	<p>outcomes specified within the EPBC Act approval and this AOMP.</p> <ul style="list-style-type: none"> The baseline surveys conducted for the offset area follows standard, accepted monitoring methodology and are considered scientifically robust, reliable and repeatable. This will ensure the monitoring and compliance reporting are consistent and relate back to the overall outcomes specified within the EPBC Act approval. <p>Reasonable:</p> <ul style="list-style-type: none"> The offset is considered reasonable as the offset areas are greater than the significant residual impact on both koala and GHFF habitat and provide a 130.89% offset for the koala and a 110.33% offset for the GHFF based on the quantum impact (using the OAG). This AOMP outlines appropriate management actions to achieve the offset outcomes specified within the EPBC Act approval and an overall improved conservation outcome and net gain in koala and GHFF habitat, ensuring the long-term viability of the protected matters.
<p>Have transparent governance arrangements including being able to be readily measures, monitored, audited and enforced</p>	<p>This AOMP provides a detailed monitoring and reporting framework, performance criteria and corrective actions (refer Sections 6 and 7). These provide minimum requirements for success/failure of management actions and triggers for corrective actions.</p> <p>The approval holder will engage qualified and experienced consultants and specialists periodically throughout the offset delivery to ensure the offset outcomes are achieved. Section 491 of the EPBC Act makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the <i>Environment Protection and Biodiversity Conservation Regulations 2000</i> (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. As such, engaged consultants and specialists are required to complete a declaration of accuracy in reports provided to the Department, acknowledging their responsibility and accountability for information provided to the Department.</p> <p>Annual Compliance Reports must be published on the approval holder’s website in accordance with an EPBC Act approval and may be subject to audit by the Department by an independent auditor in accordance with section 458 of the EPBC Act, and/or used to verify compliance with</p>

EOP Requirements	Delivery
Suitable offsets must:	
	the conditions. Summaries of the result of an audit may be published on the Department's website or through the general media.

Recovery Plans and Advice

Koala Conservation Advice and National Recovery Plan

Conservation Advice for *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory.

The Conservation Advice came into effect on 12 February 2022. It lists six conservation and recovery actions that are categorised into 'supporting strategies' which provide for governance to coordinate actions, led by the Australian Government in partnership with the States and Territories, and 'on-ground (direct) strategies' which relate to improving habitat quality and restoration, implemented at the site level.

The development and offset is considered to be consistent with the on-ground strategies detailed in the Conservation Advice and Recovery Plan:

- Strategy 5: Strategic habitat restoration
- Strategy 6: Active metapopulation management

Strategy 5: Strategic habitat restoration

Restoration increases the overall habitat available for koalas and increases the connectivity between areas of habitat to contribute to ensuring the long-term survival of koala populations. It involves restoring lost and degraded habitat to improve environmental functions.

While the development proposes to impact an additional 19.6 ha of habitat identified as critical for the survival of the koala, the habitat on-site is surrounded by urban values and infrastructure. A total of 68.9 ha of MNES habitat retention and rehabilitation area and a collective open space network of 99.1 ha is to be delivered as part of the project, exceeding the area proposed as part of the published Preliminary Documentation. Additionally, the 293 ha Springfield Rise offset area located directly adjoining the project area has been legally secured and rehabilitated, providing uplift in the koala habitat values.

Metapopulation management concerns the movement of individuals and genes between populations. Consideration of metapopulation management is reflected in the design of the development, specifically the creation and rehabilitation of conservation areas to promote connectivity and koala movement within the landscape, and through the removal of hazards to koala.

The preservation of ecological corridors within the project area allows for the retention and koala movement within the landscape and mitigates the losses of habitat within the project footprint.

Although the proposed action will involve the removal of habitat critical to the survival of the koala, all significant residual impacts are to be compensated through the provision of land-based offsets. Proposed offsets will be located in koala occupied areas of connected and resilient habitat.

South East Queensland Koala Conservation Strategy

The South East Queensland Koala Conservation Strategy 2020-2025 (the Strategy) came into effect on 16 February 2020 and addresses the key threats facing Koalas and outlines strategies to stop the decline of Koala numbers and set in train the species' recovery. Issues addressed in the Strategy include:

Habitat Protection

The project requires additional impacts of 19.6 ha. This will involve the removal of habitat critical to the survival of koala as defined under the EPBC Act and Koala habitat area mapped under the Strategy. However, as the project is located within the Springfield Structure Plan, assessment under the Strategy is not triggered.

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

Habitat Restoration for Koalas

The project will impact an additional area of 19.6 ha. The impact area is located within the approved masterplanned development which is located within the urban land-use of the Springfield Structure Plan. Habitat restoration is recommended within areas of connected habitat. Proposed offsets will be located in areas of connected and resilient habitat.

Threat Management

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

Improved mapping, monitoring, research and reporting

Not applicable.

Strong Community engagement and partnerships

Awareness signage and traffic calming devices will be employed to ensure motorists are aware that koalas have potential to occur in the area, making them more conscious of potentially dispersing koalas and encouraging them to maintain a low vehicle speed. The proponent will continue to be involved in perpetuity the proposed development, providing ongoing management of the action.

Partnerships and strategic coordination

Not Applicable.

The proposed action has sought to reduce impacts to the Koala through the avoid, mitigate and offset hierarchy. The proposed residential development will be entirely located within the approved masterplanned project area which is approved for development under approval ref EPBC 2013/7057. The proposed action has been sited within the referral area to reduce impacts to higher quality habitat within the state mapped Koala Habitat Areas as well as maintaining and enhancing connected habitat to the east and west. As such, only areas that are relatively fragmented and with low habitat scores and with lesser koala habitat value are proposed for removal and development. All vegetation clearing under the proposal will be government by State requirements for fauna management and any significant residual impacts are to be compensated through land-based offsets.

Grey-headed Flying-fox National Recovery Plan

The purpose of the National Recovery Plan for the Grey-headed Flying-fox is to set out the management and research actions necessary to stop the decline of, and support the recovery of the Grey-headed Flying-fox over the next 10 years. The overall objectives of this Grey-headed Flying-fox recovery plan are:

- to improve the Grey-headed Flying-foxes national population trend by reducing the impact of the threats outlined in this plan on Grey-headed Flying-foxes through habitat identification, protection, restoration and monitoring, and
- to assist communities and Grey-headed Flying-foxes to coexist through better education, stakeholder engagement, research, policy and continued support to fruit growers.

The approved National Recovery Plan lists the overall objectives for the Grey-headed Flying-fox to improve the national population trend by reducing in impact of threats through habitat identification, protection, restoration and monitoring as well as assisting communities and Grey-headed Flying-fox to coexist through education, stakeholder engagement, research, policy and continued support to fruit growers.

The project is removing an additional 19.6 ha of critical habitat for the Grey-headed Flying-fox, however, will deliver 68.9 ha of MNES habitat retention and rehabilitation area within the on-site corridors which will allow for continued persistence of Grey-headed Flying-fox within the landscape.

The plan addresses the key threats facing the Grey-headed Flying-fox and recovery objectives which are provided below with responses relevant to the proposed action:

Identify, protect and increase native foraging habitat that is critical to the survival of the Grey-headed Flying-fox
Although no roosts were identified on-site, the referral area is located in proximity to a known Grey-headed Flying-fox roosts and foraging habitat. Habitat critical to the survival of the species is considered important winter and spring flowering vegetation communities, and natives that are known to be productive from August to May. Important winter and spring vegetation communities are those that contain *Eucalyptus tereticornis*, *E. albens*, *E. crebra*, *E. fibrosa*, *E. melliodora*, *E. paniculata*, *E. pilularis*, *E. robusta*, *E. seeana*, *E. sideroxylon*, *E. siderophloia*, *Banksia integrifolia*, *Castanospermum australe*, *Corymbia citriodora*, *C. eximia*, *C. maculata*, *Grevillea robusta*, *Melaleuca quinquenervia* or *Syncarpia glomulifera* (Eby and Law 2008; Eby 2016; Eby et al. 2019).

Of the species listed above *Eucalyptus crebra*, *Eucalyptus tereticornis*, *Corymbia citriodora*, *Eucalyptus siderophloia* and *Melaleuca quinquenervia* were recorded within the referral area. The Grey-headed Flying-fox is a highly mobile species and many known roosts occur within 20 km of the subject site. As such, the proposed action will result in the unavoidable loss of 19.6 ha of potential foraging vegetation considered critical habitat for the Grey-headed Flying-fox.

An offset for the loss of potential Grey-headed Flying-fox foraging habitat will be provided and will increase the available foraging habitat for the Grey-headed Flying-fox.

Identify, protect and increase roosting habitat of Grey-headed Flying-fox camps

There are no roosts within the project area. Preferred roosting habitat for the Grey-headed Flying-fox is poorly understood, therefore it is difficult to preserve potential roosting habitat for the species.

Determine trends in the Grey-headed Flying-fox population so as to monitor the species' national distribution, habitat use and conservation status

Not applicable. Mitigation measures will be implemented during construction and operation of the proposed action and at the offset area to reduce threats.

Build community capacity to coexist with flying-foxes and minimise the impacts on urban settlements from new and existing camps while avoiding interventions to move on or relocate entire camps

Not applicable. There are no observed roosts on-site.

Increase public awareness and understanding of Grey-headed Flying-foxes and the recovery program, and involve the community in the recovery program where appropriate

Not applicable.

Improve the management of Grey-headed Flying-fox camps in areas where interaction with humans is likely

Not Applicable. There are no observed roosts on-site.

Significantly reduce levels of licenced harm to Grey-headed Flying-foxes associated with commercial horticulture

Not applicable.

Support research activities that will improve the conservation status and management of Grey-headed Flying-foxes

Not applicable.

Reduce the impact on Grey-headed Flying-foxes of electrocution on power lines, and entanglement in netting and on barbed-wire

Electrocution on powerlines and entanglement on barbed-wire are a risk, although impacts to barbed wire will be reduced and this species is considered a temporary and intermittent visitor to the site due to lack of detection during fauna surveys. These impacts will be managed through the implementation of mitigation measures and procedures outlined within future management documents for the specific impact area including the VCFMP. As such, the proposed action is not considered likely to impact the recovery of this species.

Notably, the risk of barbed wire entanglement will be managed by retrofitting fences within the offset area.

8. Baseline Surveys

8.1. Offset Area Baseline Surveys – Methodology

Baseline field surveys to determine habitat quality for koala and grey-headed flying-fox and non-native vertebrate pest presence were completed on 27, 28 and 29 February 2024, 12 and 19 March 2024, 8 August 2024 and 12 and 26 November 2024. Refer to **Table 44** and the subsections below for specific details on survey dates for each method applied.

Table 44: Offset area baseline field surveys methods summary

Date	Temperature	Rainfall	Methods implemented
27 February 2024	22.2°C min – 32.0°C max	0 mm	MHQA transects, camera installation, SAT surveys, weed mapping
28 February 2024	19.3°C min – 31.6°C max	0 mm	MHQA transects, SAT surveys, spotlighting meander 1
29 February 2024	19.8°C min – 32.8°C max	0 mm	MHQA transects, Spot Assessment Technique surveys, weed mapping
12 March 2024	19.3°C min – 30.6°C max	1.0 mm	Spotlighting meander 2
19 March 2024	20.7°C min – 31.4°C max	0 mm	MHQA transects, camera collection
8 August 2024	7.1°C min – 21.3°C max	0 mm	MHQA transects, SAT survey
12 November 2024	20.8°C min – 31.4°C max	0 mm	Camera installation
26 November 2024	14.6°C min – 30.7°C max	0 mm	Camera collection

Source: Bureau of Meteorology station 040082 University of Queensland Gatton (Temperature) and 040823 Rosentreters Bridge TM (Rainfall).

Habitat quality – koala and grey-headed flying-fox

The koala and grey-headed flying-fox habitat quality assessment methods utilising the MHQA and FHA methodology used for the impact area (described in **Section 5.3**) were also applied to the offset area. Site condition within the offset area was assessed using the BioCondition method as recommended under the Queensland environmental offsets framework within the five (5) AUs identified in the offset area. These are summarised in **Table 45** and shown in **Plan 11**. Site condition was measured through the completion of MHQA transects. Assessment at multiple locations per assessment unit is necessary where possible to measure vegetation condition at representative locations across the spatial extent of each assessment unit.

Site condition was assessed through the completion of a total of six (6) MHQA transects within the offset area totalling two (2) in each AU with the exception of AU4 as the small size of the AU did not permit two transects to be located.

Table 45: Summary of assessment units and MHQA transects – offset area

Assessment unit	Vegetation community	Area (ha)	MHQA transect
AU1	Non-remnant RE12.12.5 with 12.3.7	24.4	Transects 4 and 5
AU2	Remnant RE12.3.7	12.15	Transects 1 and 6
AU3	Remnant RE12.12.5	3.75	Transects 2 and 12
AU4	Regrowth RE12.12.5	1.11	Transect 3
AU5	Non-remnant RE12.9-10.2	32.77	Transects 13 and 14

Spot Assessment Technique surveys

Baseline Koala activity levels were determined through utilising the Spot Assessment Technique (SAT) (Phillips et al. 2011). The SAT method is an industry recognised technique for identifying presence/absence of koala at a site and is specified as an appropriate survey method in the EPBC Act Referral Guidelines for the Vulnerable Koala. Results from the SAT surveys are compared against current available published scientific literature to identify an estimated koala carrying capacity (stocking rate) to be determined. A total of six (6) SAT surveys were completed across the offset area in conjunction with the MHQA transects (refer **Plan 12**) to target presence of koala.

Spotlighting





A combination of high-powered spotlights and head torches were used to detect nocturnal mammals, birds and reptiles within the offset area in accordance with the relevant Commonwealth and State survey guidelines. Spotlighting meander surveys were completed on foot by two observers and involved slowly walking through eucalypt woodland at an average pace of 10 minutes per 100 m. Observers took care to ensure areas already surveyed were not revisited during the same survey transect. It was also ensured that surveys were not completed during inclement weather such as strong winds or rain to limit the potential for reduced detectability. Two (2) spotlighting meander surveys were completed on 28 February 2024 and 12 March 2024 targeting presence of koala and GHFF. Refer to **Plan 12** for the location of spotlighting meanders.



Motion-triggered camera trapping

Surveys for non-native vertebrate pest presence, primarily targeting wild dogs which are the primary threat to koala, were completed via the use of infrared motion-triggered camera trapping. Camera trapping involves setting up a fixed digital camera to capture images or video of animals that pass in front of a camera with an infrared trigger. This survey technique identifies fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts. Cameras were placed in the vicinity of an assumed animal trail within remnant and waterway areas more likely to support fauna. Heavy, loose vegetation was avoided as this can cause false triggering, and the camera was aimed to avoid sun shining directly onto the lens. Cameras were attached 30-100 cm from the ground on a tree or post and directed towards landscape features. The camera position was directed towards an area away from other frequent survey activity.

Four (4) camera traps were installed across the offset area on 27 February 2024 and collected on 19 March 2024, for a period of 21 nights, baited with chicken necks to target wild dogs and other known potential threats to MNES in the broader area. Two (2) camera traps were installed across the offset area for a period of 14 nights from 12 November 2024 to 26 November 2024. Refer to **Plan 13** for the location cameras and **Table 46** for a description of camera deployment locations.

Table 46: Fauna camera summary (27 February to 19 March 2024 and 12 November to 26 November 2024)

ID	Latitude	Longitude	Photo	Description of location
1	-27.252209°	152.305303°		<p>Camera 1 was deployed in the southern portion of the offset area within Lot 10CA31764 along the remnant creekline of RE12.3.7.</p>
2	-27.247400°	152.303077°		<p>Camera 2 was deployed in the central portion of the offset area within Lot 10CA31764 along the remnant creekline of RE12.3.7.</p>
3	-27.243740°	152.300189°		<p>Camera 3 was deployed in the central portion of the offset area within Lot 11CA31764 along the remnant creekline of RE12.3.7. on a used animal trail.</p>
4	-27.239026°	152.298948°		<p>Camera 4 was deployed in the central portion of the offset area within Lot 11CA31764 along the remnant creekline of RE12.3.7 adjoining a grassy paddock.</p>

ID	Latitude	Longitude	Photo	Description of location
5	--27.22798°	152.306139°		Camera 5 was deployed in the eastern portion of the offset area where a dirt car track crossed the gully line.
6	-27.229192°	152.309214°		Camera 6 was deployed in the central portion of the offset area just next to the gully line, along an assumed animal track that crossed under lantana bushes and across the gully.

Relative Abundance Index

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

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

WONS Mapping

The primary weed species located within the offset area is *Lantana camara* (Lantana) which is identified as a WONS. The percentage cover of WONS was determined using a method detailed in the *Guidelines for Monitoring Weed Control and recovery of native vegetation* (Auld 2009). The method details that areas of weed cover can be estimated, delineated and grouped into percentage ranges. A diagrammatic representation of 5%, 25% and 50% cover is provided in **Extract 2** below. During baseline field surveys, mapping of WONS was undertaken using GPS units with polygons or descriptive points taken to visually represent on-ground invasive values. On ground estimates assigned a percentage to the invasive species observed, with ranges including little to no weeds (0%), 0 – 20%, 20 – 40%, 40 – 60%, 60 – 80%, and 80 – 100%.

Surveys to estimate the weed cover using the vegetation cover classes proposed by Auld (2009) will be undertaken by suitably qualified person before the end of Years 5, 10, 15 and 20 of the offset and recommended at Year 8, 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.

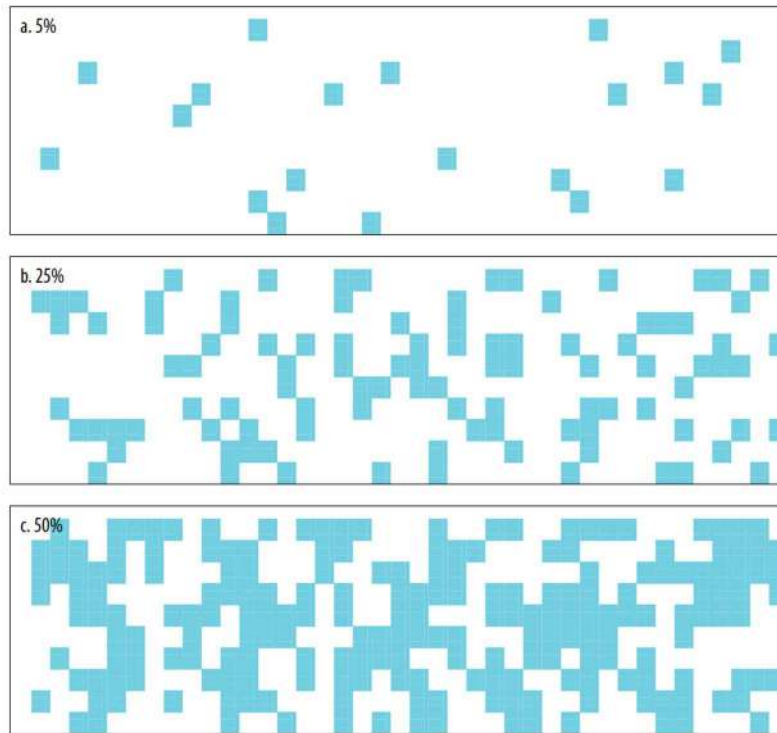


Figure 7. Shaded areas represent percent cover.

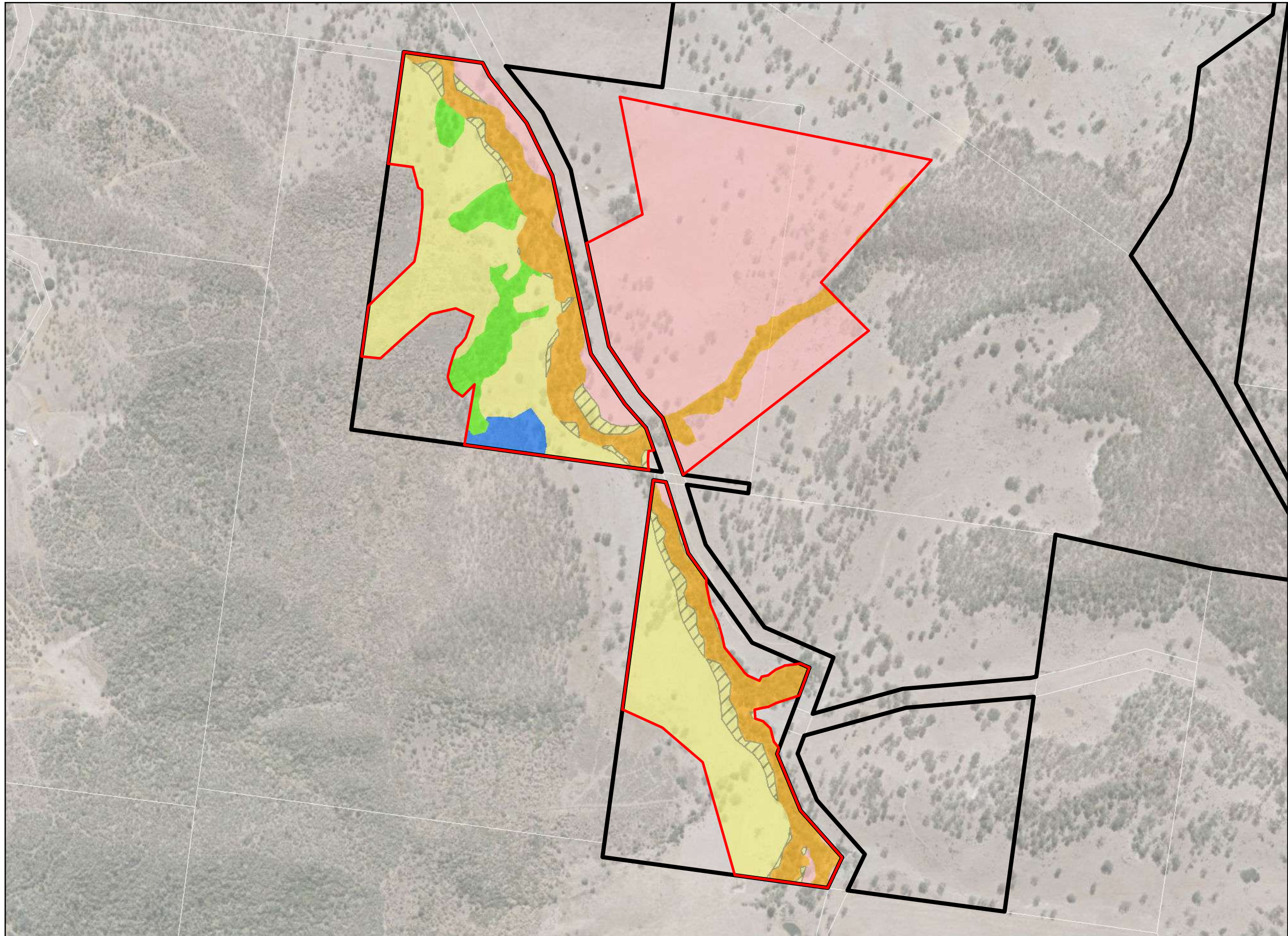
Extract 2: Extract from Auld (2009) – Figure 7.

11. Offset Area Assessment Units

Legend

- Offset Area
 - Little Kipper Creek Offset Property
 - QLD DCDB
- Assessment Units (AUs)**
- AU1: Non-remnant (12.12.5) [24.40 ha]
 - AU2: Remnant (12.3.7) [12.15 ha]
 - AU3: Remnant (12.12.5) [3.75 ha]
 - AU4: Regrowth (12.12.5) [1.11 ha]
 - AU5: Non-remnant (12.9-10.2) [32.77 ha]
 - Non-remnant (12.3.7)

Layer Sources
 © State of Queensland (Department of Resources) 2024
 Updated data available at
<http://qldspatial.information.qld.gov.au/catalogue/>



DISCLAIMER:
 This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose.

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12. Offset Area Baseline Field Surveys

Legend

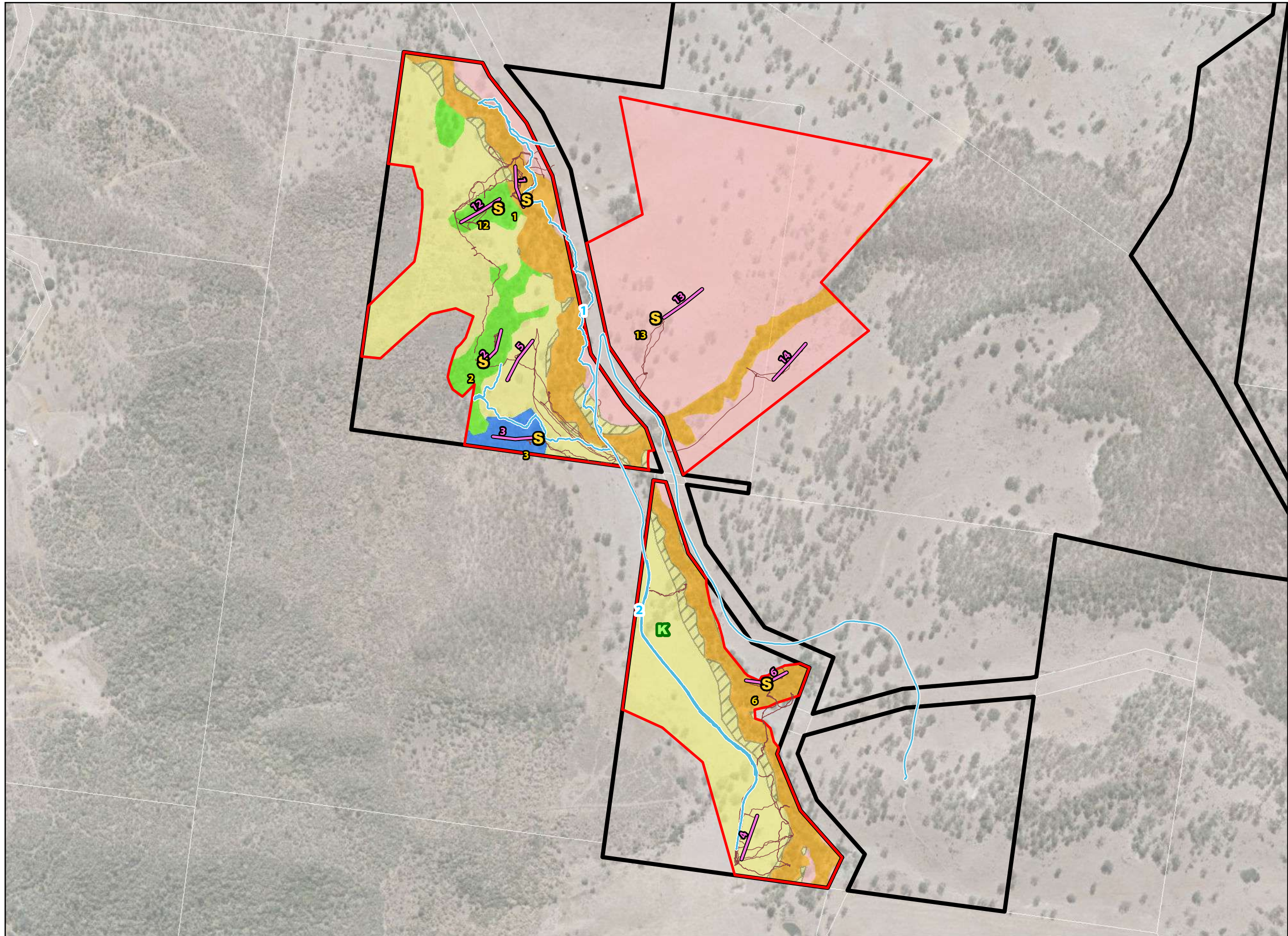
- Offset Area
- Little Kipper Creek Offset Property
- QLD DCDB
- Assessment Units (AUs)**
- AU1: Non-remnant (12.12.5) [24.40 ha]
- AU2: Remnant (12.3.7) [12.15 ha]
- AU3: Remnant (12.12.5) [3.75 ha]
- AU4: Regrowth (12.12.5) [1.11 ha]
- AU5: Non-remnant (12.9-10.2) [32.77 ha]
- Non-remnant (12.3.7)
- Spotlighting (28/02/2024 & 12/03/2024)
- Modified Habitat Quality Transect
- Survey tracklog (GPS)
- S SAT location
- K Koala sighting

Layer Sources
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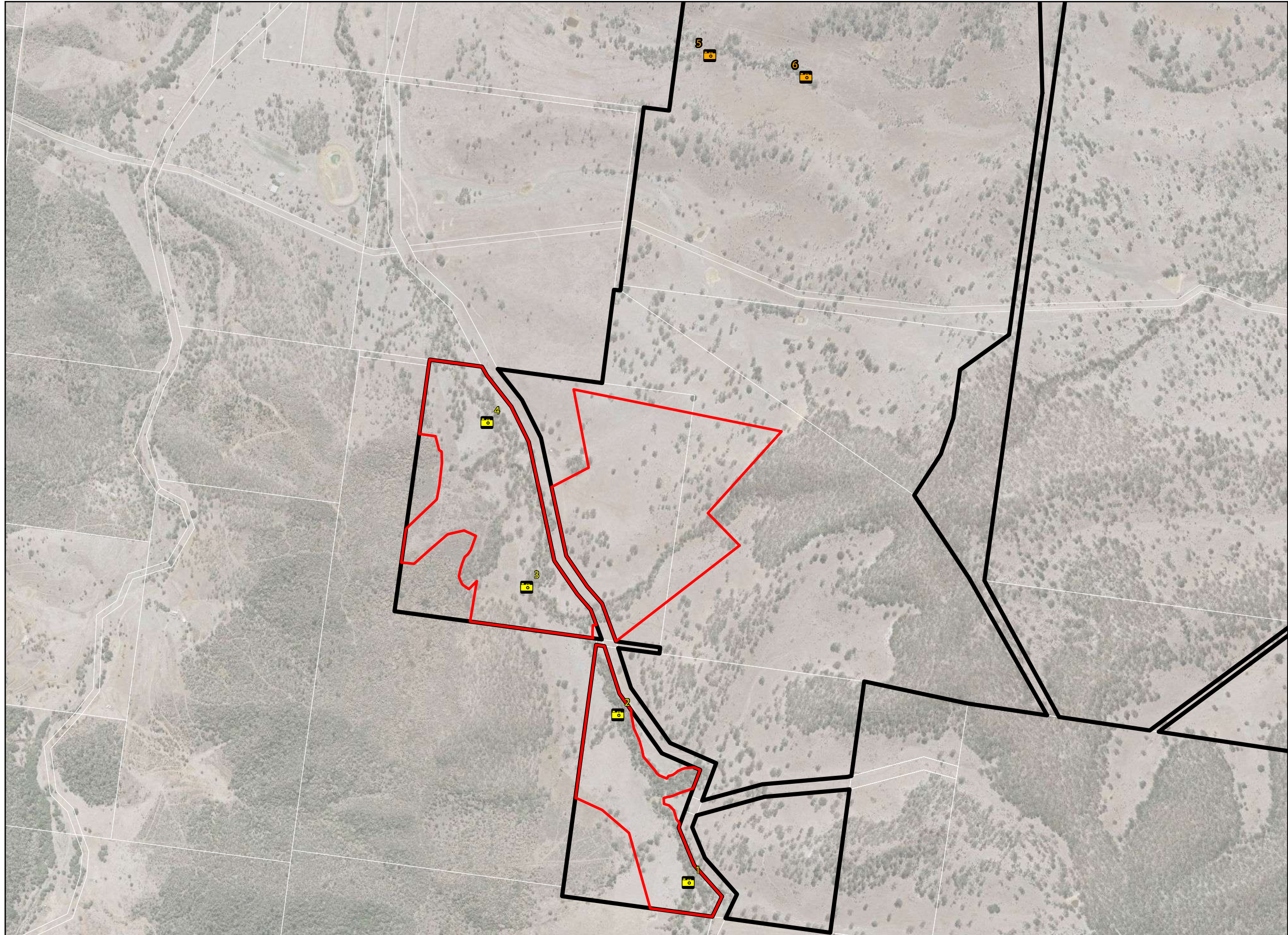
Koala Farmland Fund - Spring Mountain (EPBC)

13. Offset Area Baseline Camera Monitoring

Legend

- Offset Area
- Little Kipper Creek Offset Property
- QLD DCDB
- o Camera Trap - February 2024
- o Camera Trap - November 2024

Layer Sources
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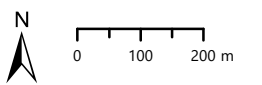
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Koala Farmland Fund - Spring Mountain (EPBC)

REF: 11606 / 20/01/2025 / 11606 E 13 Offset Baseline Cameras A_KFF



Transverse Mercator / GDA 1994 / Zone 56 / 1:12,000 @ A3

8.2. Offset Area Baseline Assessment Results

Assessment Unit Description

Assessment Unit 1

The non-remnant cleared open paddock area is located in the western and central portions of the offset area. As shown in **Photo plate 1**, this vegetation community is characterised by predominantly weeds and cattle grazing pastoral grasses with scattered paddock trees and scattered *Lantana camara*. MNES values in this vegetation community are limited to scattered mature trees, with broad revegetation necessary to reinstate habitat values in cleared areas. The pre-clear regional ecosystem mapping is predominantly RE12.12.5 with polygons of RE12.3.7 in the central portion of the site.

Habitat quality transects 4 and 5 were completed within AU1.



Photo plate 1: Vegetation representative of Assessment Unit 1 – open grazing paddock in the offset area (transect 4 = left and transect 5 = right).

Assessment Unit 2

AU2 is comprised of linear remnant vegetation associated with the mapped waterway. The AU contains consistent coverage of mature and regrowth vegetation along banks and adjoining areas of the waterway with riverine vegetation attributes present. It is located over the lower topographical portions of the site and is characterised by banks and a central gully line. The vegetation community is reflective of RE12.3.7 with the dominant canopy species being *Eucalyptus tereticornis* with *Angophora subvelutina*, with regrowth *Corymbia tessellaris* and *Lophostemon suaveolens* (refer **Photo plate 2**). Moderate to high weed cover was observed within this vegetation community, particularly within the gully where an infestation of *Lantana camara* was observed.

Habitat quality transects 1 and 6 were completed within AU1.



Photo plate 2: Vegetation representative of Assessment Unit 2 – remnant vegetation on the offset area (transect 1 = left and transect 6 = right).

Assessment Unit 3

AU3 consists of remnant vegetation in the form of open woodland within and adjoining eroded gullies to the west of the mapped central waterway. The vegetation community is reflective of RE12.12.5 with the dominant canopy species being *Corymbia citriodora* with *Eucalyptus crebra* and *Eucalyptus tereticornis* also present (refer **Photo plate 3**). Several hollow-bearing canopy trees were observed within this AU. Weed cover within this AU was observed to be high with the shrub layer dominated by a heavy infestation of *Lantana camara*.

Habitat quality transects 2 and 12 were completed within AU3.



Photo plate 3: Vegetation representative of Assessment Unit 3 – remnant vegetation on the offset area (transect 2 = left and transect 12 = right).

Assessment Unit 4

The native regrowth RE12.12.5 area is located within a relatively small polygon on the western boundary of the site. This vegetation community is dominated by regrowth values and open paddock containing *Corymbia citriodora* with other species recorded including *Eucalyptus crebra*, *Eucalyptus siderophloia*, *Eucalyptus melanophloia*, *Corymbia tessellaris*, *Erythrina vespertilio*, and *Petalostigma pubsecens* (refer **Photo plate 4**). The canopy vegetation reaches 18m in height with a subcanopy layer at 9 m in height. Scattered weeds including *Lantana camara* are present at the shrub and ground level. The regrowth native vegetation area would meet the definition of koala habitat given the juvenile trees meet the definition of a 'non-juvenile koala habitat tree'. Despite evidence of native regrowth, the implementation of revegetation and assisted natural regeneration techniques in accordance with the South East Queensland Restoration Framework (SEQRF) is recommended to ensure the vegetation community will transition to 'remnant' quality within the proposed timeframe.

Habitat quality transect 3 was completed within AU4.



Photo plate 4: Vegetation representative of Assessment Unit 4 – regrowth vegetation on the offset area (transect 3).

Assessment Unit 5

AU5 is comprised of non-remnant cleared open paddock area located in the north-eastern portion of the offset area. As shown in **Photo plate 5**, this vegetation community is characterised by a mixture of native and non-native cattle grazing pastoral grasses with scattered mature eucalypt trees including *Corymbia intermedia*, *Corymbia citriodora*, and *Eucalyptus crebra*. Weeds including *Lantana camara* and *Gomphocarpus physocarpus* are scattered throughout the assessment unit. MNES values in this vegetation community are limited to scattered mature paddock trees, with broad revegetation necessary to reinstate habitat values in cleared areas. The pre-clear regional ecosystem mapping is RE12.9-10.2.

Habitat quality transects 13 and 14 were completed within AU5.



Photo plate 5: Vegetation representative of Assessment Unit 5 – open grazing paddock in the offset area (transect 13 = left and transect 14 = right).

Fauna observations

A total of thirty (30) fauna species were recorded during baseline surveys including one (1) koala observed during spotlighting surveys.

Table 47: Fauna recorded within offset area during baseline surveys

Scientific name	Common name	Introduced/native	Observation method
<i>Accipiter fasciatus</i>	brown goshawk	Native	Observed
<i>Alisterus scapularis</i>	Australian king-parrot	Native	Observed
<i>Boiga irregularis</i>	brown tree snake	Native	Spotlighting
<i>Bos taurus</i>	Domestic cow	Introduced	Observed, camera trapping
<i>Burhinus grallarius</i>	bush stone-curlew	Native	Observed
<i>Canis lupis familiaris</i>	wild dog	Introduced	Camera trapping
<i>Centropus phasianinus</i>	pheasant coucal	Native	Observed
<i>Cervus elaphus</i>	red deer	Introduced	Observed, camera trapping
<i>Corvus orru</i>	Torresian crow	Native	Observed
<i>Cyncloramphus timoriensis</i>	tawny grassbird	Native	Observed
<i>Dacelo novaeguineae</i>	laughing kookaburra	Native	Observed
<i>Geopelia striata</i>	peaceful dove	Native	Observed
<i>Gerygone olivacea</i>	white-throated gerygone	Native	Observed
<i>Grallina cyanoleuca</i>	magpie-lark	Native	Observed
<i>Gymnorhina tibicen</i>	Australian magpie	Native	Observed
<i>Lepus europaeus</i>	European hare	Introduced	Camera trapping
<i>Malurus melanocephalus</i>	red-backed fairy-wren	Native	Observed
<i>Manorina melanocephala</i>	noisy miner	Native	Observed
<i>Meliphaga lewinii</i>	Lewin's honeyeater	Native	Observed
<i>Neochmia temporalis</i>	red-browed finch	Native	Observed

Scientific name	Common name	Introduced/native	Observation method
<i>Ocyphaps lophotes</i>	crested pigeon	Native	Observed
<i>Phascolarctos cinereus</i>	koala	Native	Spotlighting
<i>Platyercus adscitus</i>	pale-headed rosella	Native	Observed
<i>Psophodes olivaceus</i>	eastern whipbird	Native	Observed
<i>Rhinella marina</i>	cane toad	Introduced	Spotlighting
<i>Rhipidura albiscapa</i>	grey fantail	Native	Observed
<i>Rhipidura leucophrys</i>	willie wagtail	Native	Observed
<i>Trichoglossus haematodus</i>	rainbow lorikeet	Native	Observed
<i>Trichosurus vulpecula</i>	common brushtail possum	Native	Spotlighting
<i>Varanus varius</i>	lace monitor	Native	Observed

Non-native vertebrate pest abundance survey

There were a total of eighty (80) individual sightings of non-native animals over a combined total of 114 survey nights as part of baseline surveys (refer to **Table 48**). *Canis lupis familiaris* (wild dog) were confirmed within the offset property. Non-native herbivore species detected included *Bos taurus* (domestic cow), *Lepus europaeus* (European hare) and *Cervus elaphus* (red deer). Other native fauna species were also captured during this survey. Any non-native animal was recorded as a new individual if >1 hour had elapsed between sightings.

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

The RAI for predator species, is **1.79** and for herbivore species is **71.4** including domestic cows or **6.25** excluding domestic cows (refer **Table 48** and **Table 49**). Baseline surveys limited to two monitoring events within the offset area and north-east of the offset property confirms the presence of wild dogs and red deer have been reported to occur within the broader offset property. Public database records indicate records are present in the surrounding landscape. Refer to **Photo plate 6** for photo evidence of observed pest species.

Table 48: Non-native predator survey results summary

Camera	Survey Duration (nights)	Species	Detection	RAI
1	21	Nil	Nil	1.79
2	21	Nil	Nil	
3	21	Nil	Nil	
4	21	Nil	Nil	
5	14	<i>Canis lupis familiaris</i> (wild dog)	1	
6	14	<i>Canis lupis familiaris</i> (wild dog)	1	
Total	112	1	2	

Table 49: Non-native herbivore survey results summary

Camera	Survey Duration (nights)	Species	Detection	RAI
1	21	<i>Bos taurus</i> (domestic cow)	25	71.4 Or 6.25 if excluding domestic cows
2	21	<i>Bos taurus</i> (domestic cow)	14	
3	21	<i>Bos taurus</i> (domestic cow)	10	
4	21	<i>Bos taurus</i> (domestic cow)	24	
		<i>Lepus europaeus</i> (European hare)	1	
5	14	<i>Cervus elaphus</i> (red deer)	5*	
6	14	<i>Cervus elaphus</i> (red deer)	1	
Total	112	3	80	

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



Photo plate 6: *Canis lupis familiaris* (wild dog) and *Cervus elaphus* (red deer) observed at Camera 6 November 2024.

WONS Mapping

Broad areas of uncontrolled Lantana infestation are present across the offset area including within the gully lines of the Remnant RE12.3.7 (AU2) and RE12.12.5 (AU3) and paddock areas (AUs 1 and 5). The density of infestations ranges from low to moderate (10-30%) within 49.67 ha of the site to high cover (60-80%) within 16.98 ha of the site to severe cover (80-100%) within 7.53 ha of the site (refer **Plan 14**). The offset area was inaccessible within the severely infested area. Refer to **Photo plates 7 and 8** for photos of Lantana infestations.



Photo plate 7: Paddock infested with Lantana.



Photo plate 8: Heavy Lantana infestations within gully lines.

14. Offset Area Baseline Weed Mapping

Legend

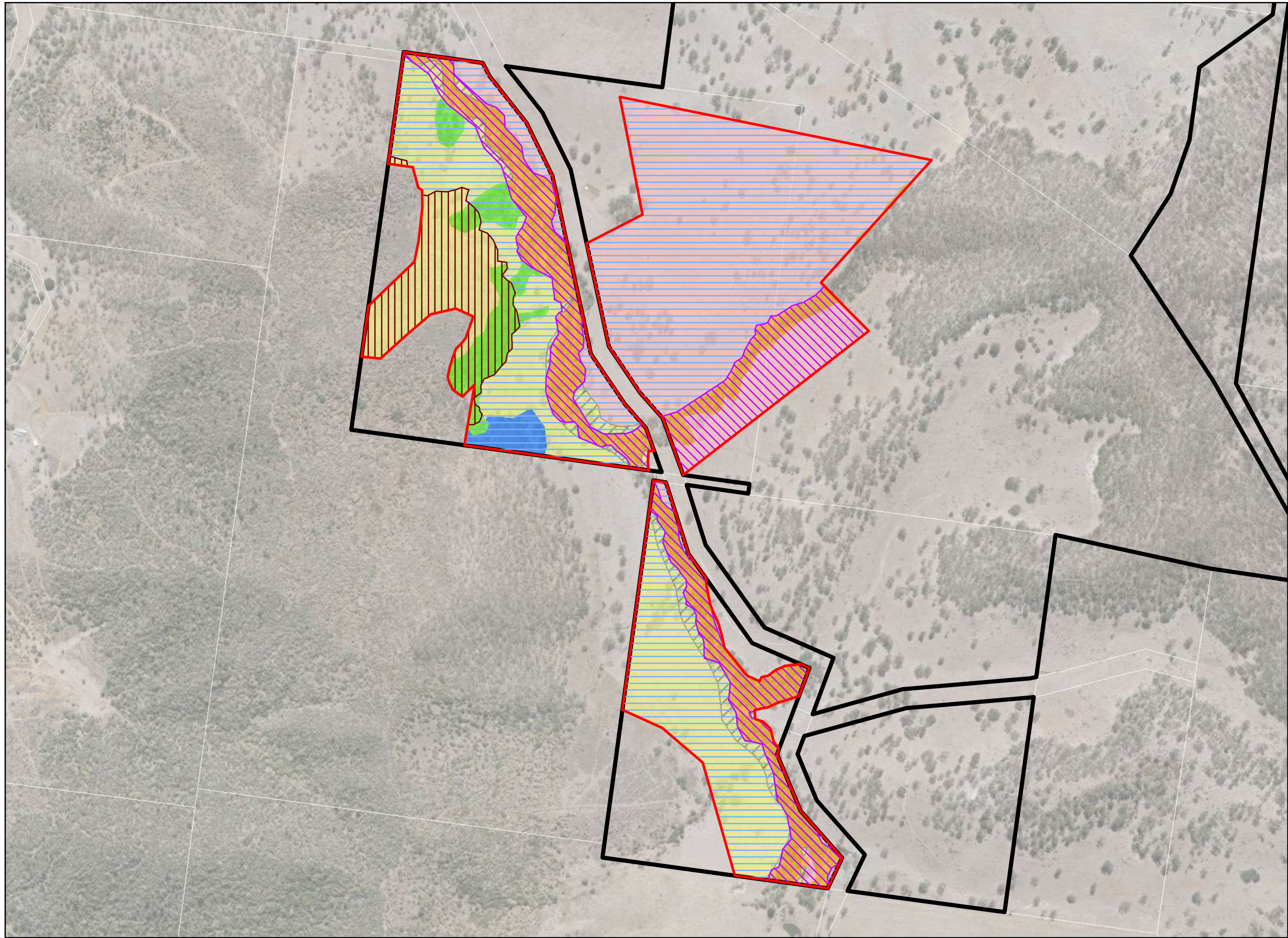
- Offset Area
 - Little Kipper Creek Offset Property
 - QLD DCDB
- Assessment Units (AUs)**
- AU1: Non-remnant (12.12.5) [21.70 ha]
 - AU1: Non-remnant (12.3.7) [2.703 ha]
 - AU2: Remnant (12.3.7) [12.15 ha]
 - AU3: Remnant (12.12.5) [3.75 ha]
 - AU4: Regrowth (12.12.5) [1.11 ha]
 - AU5: Non-remnant (12.9-10.2) [32.77 ha]
- Baseline Weed Mapping**
- 10-30% WONS [49.67 ha]
 - 60-80% WONS [16.98 ha]
 - 80-100% WONS [7.53 ha]

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Koala Farmland Fund - Spring Mountain (EPBC)

Koala MHQA

Site Condition (30%)

The site condition scoring for the offset area is summarised in **Table 50**. Refer to **Appendix E** for detailed baseline koala MHQA scoring and **Appendix F** for the raw data.

Table 50: Site condition scores for offset area assessment units

	AU1	AU2	AU3	AU4	AU5
Regional Ecosystem	12.12.5	12.3.7	12.12.5	12.12.5	12.9-10.2
Rem/NR/Reg	NR	Rem	Rem	Reg	NR
Recruitment of woody perennial species in EDL	3	3	3	5	0
Native plant species richness - trees	2.5	5	5	5	2.5
Native plant species richness - shrubs	2.5	2.5	5	2.5	0
Native plant species richness - grasses	2.5	5	2.5	2.5	2.5
Native plant species richness - forbs	0	2.5	2.5	2.5	2.5
Average tree canopy height*	4	5	5	5	1.5
Average tree canopy cover*	0	5	4	4	0
Shrub canopy cover	0	3	3	3	0
Native grass cover	3	5	1	0	5
Organic litter	3	5	5	3	0
Large trees	5	5	10	5	5
Coarse woody debris	0	2	2	2	0
Non-native plant cover	0	0	0	0	3
Quality and availability of food and foraging habitat	1	10	10	5	1
Quality and availability of shelter	1	10	10	5	1
Total (Out of 100)	27.5	68	68	49.5	24
Score out of 3	0.83	2.04	2.04	1.49	0.72

Quality and availability of food and foraging habitat

Koala foraging habitat values within the offset area is considered in terms of canopy crown cover, presence of large trees and average tree canopy height. The results were variable across the offset area, with higher quality foraging values associated with the remnant vegetation communities within AU2 and AU3. The regrowth vegetation community (AU4) is described as moderate quality while the non-remnant vegetation communities (AU1 and AU5) are described as being generally of a low quality for this attribute due to the dominance of regrowth vegetation where vegetation is present and therefore low availability of foraging resources.

Quality and availability of shelter

Koala sheltering habitat values are considered in terms of canopy crown cover, presence of large trees and average tree canopy height with a focus on how these attributes may influence the ability of the offset area to provide shelter. Within the offset area, sheltering resources are mostly located within regrowth and remnant vegetation communities where there is a more consistent canopy cover and greater abundance of mature canopy

trees. These scores have been applied, reflective of the increased quality and availability of shelter resources in AU2 and AU3.

Site Context (30%)

The site context characteristics for koala are shown on **Plan 15** with scores summarised in **Table 51**.

Table 51: Koala site context scores for offset area

	AU1 (non-remnant RE12.12.5)	AU2 (remnant RE12.3.7)	AU3 (remnant RE12.12.5)	AU4 (regrowth RE12.12.5)	AU5 (non-remnant RE12.9-10.2)
Size of patch	10	10	10	10	10
Connectedness	2	2	2	2	2
Context	4	4	4	4	4
Ecological corridors	6	6	6	6	6
Role of the site location to species overall population in the state	5	5	5	5	5
Threats to species	7	7	7	7	7
Species mobility capacity	7	7	7	7	7
Total (out of 56)	41	41	41	41	41
Score out of 3	2.2	2.2	2.2	2.2	2.2

Size of patch

The offset area is connected to a patch of 500 ha therefore achieves a score of **10 out of 10**.

Connectedness

The offset area shares 29% of its boundary with koala habitat therefore achieves a score of **2 out of 5**.

Ecological corridors

The offset area is located wholly within a Statewide corridor of regional significance (refer **Plan 9**) therefore achieves a score of **6 out of 6**.

Threats to species

Threats to koala are present across the broader Little Kipper Creek Offset Property and includes potential for dog and fox attack, degradation of habitat through uncontrolled weed infestations, namely *Lantana camara* (Lantana), uncontrolled wildfire and the presence of barbed wire. Additional to this is the likelihood of non-native feral herbivores to destroy revegetation areas.

The presence of moderate to severe Lantana infestations is a threat to the koala habitat by reducing the potential for natural regeneration of habitat. Wild dogs were confirmed within the offset property during baseline surveys (refer **Section 8.2, Photo plate 6**) and have been reported to occur on other occasions within the property by the landholder. Additionally, wild dogs are known to occur within the broader locality within connecting vegetation. The Queensland WildNet database identifies 3 confirmed records of *Canis sp.* and/or *Canis familiaris*, 4 records

of European foxes and 3 records of feral cats within 20 km of the offset area, located within connected vegetation. Wild dogs are known to travel up to 20 km seeking prey with home ranges of multiple packs of wild dogs to overlap with the offset area and broader offset property.

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

An adaptive management approach is proposed to manage threats from dogs and other vertebrate pest species for the life of the offset (20 years).

Species mobility capacity

Species mobility capacity is considered consistent across all AUs, being 'moderately restricted' (score 7) due to the scattered state of vegetation and presence of WONS species *Lantana camara* which is considered to present a notable impediment to koala movement.

Species Stocking Rate (40%)

Evidence of koala was recorded within the offset area through the detection of scats during SAT surveys as part of the baseline field surveys completed in February and March 2024. Six (6) SATs labelled 1, 2, 3, 6, 12 and 13 were completed at MHQA transects 1, 2, 3, 6, 12, and 13, respectively, which returned a 'low' usage under the East Coast (med-high) activity category with the exception of SAT 12 within AU3 which returned a 'medium' usage. SAT surveys were not completed for AU1 due to a lack of mature trees and only one in AU5 within one retained patch of eucalypt trees. A summary of the SAT survey results completed at each MHQA transect are provided in **Table 52** with raw data provided at **Appendix F**.

Table 52: Baseline SAT survey results

SAT ID (MHQA transect)	Number of scats	Evidence of koala activity (%)	Koala use (East Coast med-high)
AU1			
N/A – Insufficient mature trees			
AU2			
SAT 1	0	0	Low
SAT 6	0	0	Low
AU3			
SAT 2	3	10	Low
SAT 12	7	23.33	Medium
AU4			
SAT 3	0	0	Low
AU5			
SAT 13	0	0	Low

The SAT surveys demonstrate that koalas utilise the landscape and that the offset area has the capacity to support ecological gain for the koala.

The species stocking rate for koala scored **20 out of 70** for AU1 and AU5 and **40 out of 70** for AU2, AU3 and AU4 (refer to **Table 53**). Further details on the assessment are provided below:

- A koala was observed within the offset area therefore 'presence detected on or adjacent to site' was assigned a score of **10 out of 10** for all assessment units.
- Due to the general lack of habitat values and absence of evidence of koalas within AU1 and AU5, these assessment units were scored as **5 out of 15** for 'species usage of the site (habitat type and evidenced

usage' to reflect the use as dispersal habitat, noting there is variability in the quality of vegetation throughout the offset area as delineated by assessment units.

- The 'approximate density' for AU1 and AU5 was scored as **0 out of 30** due to the absence of evidence of utilisation within these assessment units. It is considered that the variability in the landscape of the offset area, koalas utilised the more heavily treed and connected habitat areas. It is anticipated that the capacity of these non-remnant assessment units to support koala will improve with weed management and active regeneration.
- Using the precautionary principle, the offset area is considered a key source for population for dispersal under 'role/importance of species population on-site' therefore was scored a **5 out of 15**.


Table 53: Koala species stocking rate scores within offset area assessment units

Species Stocking Rate Table					
	AU1	AU2	AU3	AU4	AU5
Presence detected on or adjacent to site (neighbouring property with connecting habitat) (/10)	10	10	10	10	10
Species usage of the site (habitat type and evidenced usage) (/15)	5	15	15	15	5
Approximate density (per ha) (/30)	0	10	10	10	0
Role/importance of species population on site* (/15)	5	5	5	5	5
Total Species Stocking Rate Score (/70)	20	40	40	40	20
Species Stocking Rate Score – out of 4	1.14	2.29	2.29	2.29	1.14

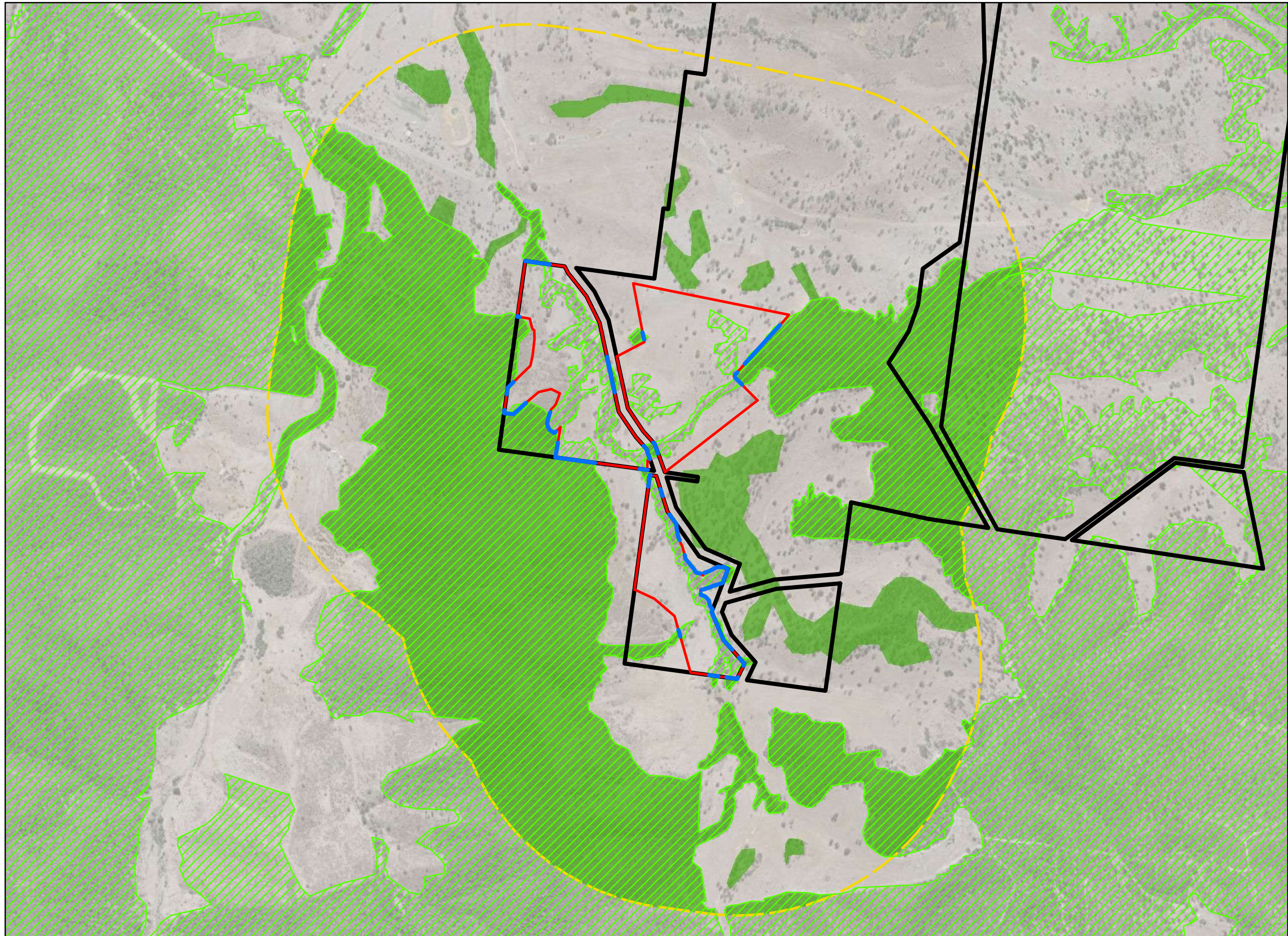
*SSR Supplementary Table – Total supplementary score 0 = 0, 5-15 = 5, 20-35 = 10, 40-45 = 15					
	AU1	AU2	AU3	AU4	AU5
Key source population for breeding (/5)	0	0	0	0	0
Key source population for dispersal (/5)	5	5	5	5	5
Necessary for maintaining genetic diversity (/15)	0	0	0	0	0
Near the limit of the species range (/15)	0	0	0	0	0

15. Offset Area Koala Context Assessment

Legend

-  Offset Area
-  Little Kipper Creek Offset Property
-  Offset Area 1km Buffer
-  Percentage of Koala critical habitat within 1km of Impact Area [50%]
-  Size of Koala critical habitat patch adjoining Impact Area [>500 ha]
-  Percentage of Impact Area boundary length supporting a Koala critical habitat connection off and on site [29%]

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Grey-headed flying-fox FHA

Site Condition (40%)

The baseline site condition characteristics for grey-headed flying-fox are summarised in **Appendix G**.

Site Context (30%)

The baseline site context characteristics for grey-headed flying-fox are shown on **Plan 16** with results summarised in **Appendix G**.

A 'moderate' level of threats to GHFF are present within the offset area including the presence of barbed-wire.

Species Stocking Rate (30%)

The baseline species stocking rate scores is determined by the stem density of GHFF foraging species. The offset area species stocking rate results for grey-headed flying-fox are summarised in **Appendix G**.

16. Offset Area Grey-headed Flying-fox Context Assessment

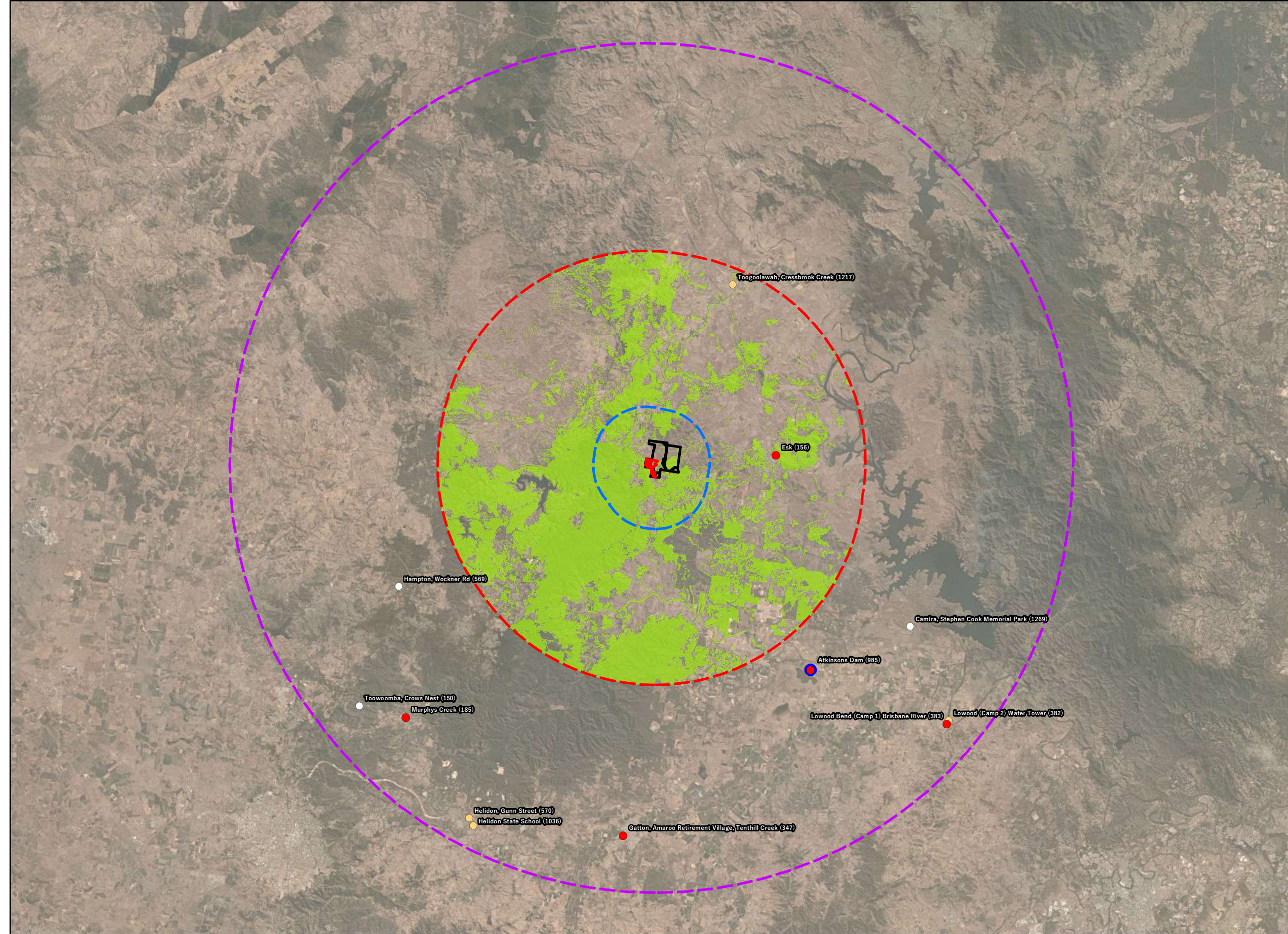
Legend

- Offset Area
- Little Kipper Creek Offset Property
- Offset Area 5km Buffer
- Offset Area 20km Buffer
- Offset Area 40km Buffer
- Potential and Known Grey-headed Flying-fox habitat within 20km of Offset Area [41%]

Grey-headed Flying-fox Camp Locations

- Grey-headed Flying Fox roost inactive within recent surveys [3 within 40km]
- Grey-headed Flying Fox roost active within recent surveys [4 within 40km]
- Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [4 within 40km]
- Nationally significant Grey-headed Flying Fox roost active within recent surveys with a population level of 3 or above [1 within 40km]

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Summary of baseline scores for offset area

The overall habitat quality scores for koala and GHFF at the offset area are presented in **Table 54** and **Table 55**.

Table 54: Offset area MHQA score summary – koala (number in parentheses is rounded score)

	AU1	AU2	AU3	AU4	AU5
Site Condition (/3)	0.83	2.04	2.04	1.49	0.72
Site Context (/3)	2.20	2.20	2.20	2.20	2.20
Species Stocking Rate (/4)	1.14	2.29	2.29	2.29	1.14
MHQA Score	4.16 (4)	6.52 (7)	6.52 (7)	5.97 (6)	4.06 (4)

Table 55: Offset area FHA score summary – grey-headed flying-fox (number in parentheses is rounded score)

	AU1	AU2	AU3	AU4	AU5
Site Condition (/4)	1.33	2.16	1.93	1.76	1.17
Site Context (/3)	2.00	2.00	2.00	2.00	2.00
Species Stocking Rate (/3)	0.60	1.20	1.20	1.20	0.60
GHFF FHA Score	3.93 (4)	5.36 (5)	5.13 (5)	4.96 (5)	3.77 (4)

9. Management Framework

This section outlines the management framework to be implemented for the life of the offset (20 years) including management measures to be implemented by the Offset Provider or appointed contractor, annual monitoring requirements and interim milestone monitoring of environmental outcomes for relevant management actions to be completed by a suitably qualified person at Years 5, 10, 15 and 20 of the offset. These management actions are designed to minimise the risks associated with key threatening processes to the koala and grey-headed flying-fox and enhance the quality of the habitat within the offset area. The proposed monitoring actions are summarised in a monitoring and reporting schedule in **Section 4**.

9.1. Management Approach

The measures outlined in the following subsections are considered effective for the listed status of the koala and GHFF in addition to the size and scale of the offset and the focus on priority management actions, which are efficient, timely and transparent (*i.e.*, able to be monitored and are auditable). Additionally, a number of these measures correspond to Priority Management Actions outlined in the following documents:

- *Approved Conservation Advice for Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory) (Koala Northern Designable Unit).*
- *National Recovery Plan for the Koala Phascolarctos cinereus.*
- *National Recovery Plan for the Grey-headed Flying-Fox (Pteropus policephalus).*

Although the measures have been developed to achieve the required offset environmental outcomes as a priority, they will deliver an overall improvement in the condition and quality of a wide range of native species present within the offset area.

9.2. Operational Management Units

For the purpose of the management framework, the Assessment Units are termed Operational Management Units (OMUs) to reflect the different actions required to achieve the environmental outcomes. The OMUs reflect both the Queensland Regional Ecosystem classification and correspond with the assessment units used for baseline assessments. OMUs details for the offset area is provided in **Table 56**.

Table 56: Offset Area Operational Management Units

OMU	Assessment Unit	VMA Status	Regional Ecosystem	Area (ha)
OMU1	AU1	Category X	Non-remnant RE12.12.5	24.4
OMU2	AU2	Category B	Remnant RE12.3.7	12.15
OMU3	AU3	Category B	Remnant RE12.12.5	3.75
OMU4	AU4	Category C	Regrowth RE12.12.5	1.11
OMU5	AU5	Category X	Non-remnant RE12.9-10.2	32.77

9.3. Management Action 1 – Legally Secure Offset Area

The offset area must be protected and managed against known and potential threats for the koala and the GHFF to attain a conservation gain. Legally securing the offset area is listed in the Conservation Advice as a Priority Management Action, under “Habitat Loss, Disturbance and Modification”. As such, the offset area is to be legally secured for conservation via a suitable method including a Voluntary Declaration (VDEC) process administered under the Queensland VMA or covenant.

Under **condition 1B** of the approval variation, the offset area is to be legally secured via a VDEC prior to additional impacts occurring with notification of declaration supplied to DCCEEW. This action will allow the AOMP to be implemented and allow offset activities to commence within the offset area.

To ensure the offset area is secured **in perpetuity**, the offset area will be secured via a covenant under the *Land Act 1994* or *Land Titles Act 1994* within 12 months of the implementation of the AOMP.

The declared areas will be recognised as being an area that makes a significant contribution to the conservation of biodiversity, and another area that contributes to the conservation of the environment. KFF1 Pty Ltd, as the offset provider, will continue to manage the offset area for the life of the offset, whilst reporting required milestones and data to the proponent annually.

Demonstration of compliance with **condition 1B, 1C and 1D** of the approval variation will be provided in the Annual Compliance Report.

9.4. Management Action 2 – Non-native Vertebrate Pest Management

Justification

Feral or unwanted domestic dogs have been identified as a key threatening process under the EPBC Act and are confirmed as a direct predation risk to koalas. Managing animal predation is listed as a Priority Management Action under the Koala Conservation Advice.

Additionally, the presence of other non-native predators which may pose a lower level of threat, such as *Felis catus* (feral cat), *Vulpes vulpes* (European red fox) and various species of feral deer, have the potential to attack koalas and indirectly stress koalas making them more susceptible to disease. Feral deer and wild pigs also indirectly impact koalas through the destruction and degradation of habitat. Predation rates by wild dogs are difficult to quantify because it often occurs in locations infrequently visited by people and the carcasses of the killed animals are buried, eaten or may go undetected (Beyer *et al.* 2018). Wild dog attack is routinely cited as one of the main causes of mortality of koalas (Rhodes *et al.* 2011; Gonzalez-Astudillo *et al.* 2017; Beyer *et al.* 2018). Wild dogs are also identified as regional pest species by Somerset Regional Council.

Removal of the wild dog threat produced significant gains in the survival of koalas in a study where the causes of mortality of 291 koalas were tracked over four years (Beyer *et al.* 2018). Wild dogs were confirmed as the cause of death for 117 (40.2% of total) deaths during the study. In addition, wild dogs were attributed to another 38 (13.1% of the total) deaths but were not confirmed. Population growth rates of koala in the study increased from 0.659 in the first year to 1.20 in the fourth year of the project through a combination of reduction in predation and disease treatment. Modelling indicated that the population would increase in size by 21% within a decade with continued management (Beyer *et al.* 2018).

Key species assessed as high priority to receive management measures, and their associated risks, are presented in **Table 57**.

Table 57: Predator species management priorities

Priority (category)	Scientific name (Common name)	Queensland Biosecurity Act 2014 status	Risks (potential and actual)	Distribution and prevalence	Objective
1 (high)	<i>Canis familiaris</i> (Wild Dog) <i>Canis familiaris</i> dingo (Dingo)	Class 2	Actual impacts on agricultural production values – HIGH Actual impacts on native fauna – MEDIUM	Widespread occurrence in low to medium densities	Control
2 (medium)	<i>Felis catus</i> (Feral Cat)	Class 2	Actual impacts on native fauna – HIGH	Widespread occurrence in low to medium densities	Control
3 (medium)	<i>Vulpes vulpes</i> (Red Fox)	Class 2	Actual impacts on native fauna – MEDIUM Actual impacts on agricultural production values – LOW	Widespread occurrence in low to medium densities	Control

Baseline surveys

Wild dog presence within the offset area was targeted through the use of motion-triggered baited camera traps. Camera trapping involves setting up a fixed digital camera to capture images or video of animals that pass in front of a camera with an infrared trigger. This survey technique identifies fauna activity beyond the scope of direct observational studies and with the absence of potential observer impacts. Cameras were attached 30-100 cm from the ground on a tree or post and directed towards landscape features. Four (4) camera traps were installed on 27 February 2024 and collected on 19 March 2024, for a period of 21 nights. An additional two (2) camera traps were installed across the offset area for a period of 14 nights from 12 November 2024 to 26 November 2024. Wild dogs and red deer were recorded during surveys in November 2024.

Baseline surveys and results are detailed in **Sections 8.1** and **Section 8.2**.

Proposed action and management measures

The control and prevention of invasive animal incursions is to be undertaken in accordance with the relevant legislation (such as the Commonwealth *Biosecurity (Consequential Amendments and Transitional Provisions) Act 2015* and the *Queensland Biosecurity Act 2014*) and to include the control of non-native predators by legal methods by suitably qualified pest management contractor(s). Any required hazardous materials must be handled and stored in accordance with the material's safety data sheets and the *Approved Code of Practice for the Storage and Handling of Dangerous Goods*. Non-native predator control is to be undertaken in a humane manner.

Management measures to be implemented by the Offset Provider for the life of the offset (20 years) for the control of the pest species identified in **Table 57** across the offset area include:

- Development and implementation of a property wide feral animal management program specifying techniques (trapping, baiting, shooting) and ongoing monitoring methods (including datasheets) to be utilised, will be completed within Year 1 of the offset.
- Where possible and practicable, adjacent land holders will be consulted for the potential of collaboration in a localised landscape-wide pest management effort. As vertebrate pest management is best achieved on a property-wide scale, this will occur across adjacent offset holdings at a minimum.
- Where practicable and appropriate, participate cooperatively in non-native predator management planning and implementation with local land managers (government departments, local governments and utility providers) to ensure effective management in the locality of the offset area, being Somerset Regional Council.
- Install signage informing that feral animal control being undertaken within the offset area.

Control methods that may be implemented at the discretion of the suitably qualified pest contractor for predator species are listed in **Table 58**. These have been adapted from the *National Wild Dog Action Plan: Promoting and supporting community-driven action for landscape scale wild dog management* (WoolProducers Australia 2014). Any control methods will be used in consultation with local residents and authorities.

The implementation of the non-native vertebrate pest management actions will be reported annually by the Offset Provider in the Offset Area Annual Report and is to provide detail on detected species, control efforts, and total trapped/baited individuals during the given management period and identified trends of the population of non-native predators within the offset area.

Table 58: Predator species control methods (adapted from WoolProducers Australia 2014)

Method	Efficacy	Cost effectiveness	Target specificity	Humaneness acceptability	Comment
Ground baiting with 1080	Effective	Cost-effective	High	Conditionally acceptable	Currently the most cost-effective technique available. Poison baits are made from raw animal meat or offal or manufactured baits are used. Average and minimum weights vary between states. Sodium fluoroacetate (1080) is the main toxin used for control of wild dogs – reference to relevant State directions for use will be required.
Shooting to euthanise trapped dogs / fox / cats	Effective	Cost-effective	High	Acceptable	Effective technique although will require to be completed in accordance with existing State laws and guidelines.
Ground shooting	Can be effective to target individual dogs / foxes – largely opportunistic	Moderately expensive and time consuming	Moderate to high	Conditionally acceptable, dependent on skillset of shooter. Welfare issues arise if animal is not shot humanely	Limited effectiveness for broadscale population reduction, however, can achieve sustained control within a local area.
Exclusion fencing	Effective in suitable areas	Expensive	Can be effective in specific situations	Acceptable	Requires substantial resource input both initially, during installation, and in an ongoing capacity due to high maintenance requirements. Electric fencing can be an effective barrier when used appropriately and in conjunction with supplementary management techniques. Often adequate defense against reinvasion of controlled areas. Due to high levels of maintenance and upkeep required, fencing can be difficult to effectively maintain.
Aversion techniques	Not known	Not known	Not certain – possible short-term until target species become familiar with technique	Acceptable	Suggested aversion methods include flashing lights, sounding alarms, objects flapping in the wind and chemicals.

Adaptive management for non-native predator species

Given the extended management timeline, it is not possible or intended that this Offset Management Framework will provide a detailed prescription of management actions. This framework has been based on the current state of knowledge of species ecology and best practice habitat management approaches for koala habitat. It is anticipated that new techniques will become available over the course of the management period to monitor environmental values through indicators including vegetation composition, koala absence, presence and abundance, and weed presence or density (including level of infestation). In addition, given the variable nature of pest management, an adaptive management approach has been adopted to ensure the Pest Management Plan works effectively for any species over the area, as well as integrating future research and insights into management and monitoring actions. This will ensure best practice techniques can be adopted as new information becomes available over time via an adaptive management approach, ensuring the anticipated delivery and measurement of offset outcomes.

Adaptive management refers to a way of managing natural resources where management actions are regularly reviewed and, if necessary, modified, based on observed changes in environmental condition and/or updates in knowledge which underpins the original management approach.

Adaptive management will be used to incorporate changes into management processes across the offset area, and will include the following:

- Assimilation of new data or information – such as updates to conservation advice or new threat abatement plans relevant to the koala.
- Annual review of risks – to reassess existing risks/threats to the offset area and ensure best practice methodology is implemented to achieve effective management of target species.
- Annual review of management measure effectiveness – to reassess management actions where monitoring performance criteria are not met.

Milestone monitoring

A suitably qualified person will complete monitoring for non-native vertebrate pests before the end of Years 5, 10, 15 and 20 of the offset.

The following non-native predator monitoring methodology will be implemented by a suitably qualified person:

- Desktop Assessment
 - Review previous survey mapping and camera locations, field datasheets, photos and notes.
- Field Survey
 - Grid-based motion detection camera deployment for minimum of 21 nights in same locations annually until 5-year milestone or performance criteria is achieved. Motion detection camera locations are to be recorded with hand-held GPS. GPS coordinates and photos to be recorded.
 - Field datasheet will detail the time of year of the monitoring event, record observed scats or tracks, photo location and notes of any evidence of positive and/or negative changes in non-native predator occurrence.
 - A GPS will be used to locate the presence of non-native predator species, with a focus on species identified during baseline field surveys via notable tracks or scats.

- Transfer GPS data to spatial data programs to generate non-native predator occurrences and collate all data in excel spreadsheets and save all digital photos to file for ongoing monitoring and reporting purposes.
- Where non-native predator presence is detected, targeted trapping and baiting programs, will be implemented on completion of the monitoring program.

Milestone monitoring survey results will be reported by the suitably qualified person in the 5, 10, 15 and 20 Year Milestone Report and included in the ACR. This will provide detail on survey methodologies and detected predator abundance with reference to the baseline survey data.

9.5. Management Action 3 – Management of Weeds of National Significance

Justification

Weed control is fundamental to improving biodiversity and the ecological condition of the habitat within the offset area. Historical land uses across the offset area have resulted in the introduction, spread and persistence of a variety of environmental weeds. Whilst there have been a wide variety of environmental weeds recorded across the site, the key species to be controlled in the offset area is *Lantana camara* (Lantana), a Weed of National Significance (WONS). The estimated cover of Lantana varying from 10-30% within areas of relatively low weed persistence, 60-80% and 80-100% throughout the offset area.

The listing and prioritisation of WONS is a joint initiative of the States, Territories and Australian Government and their long-term control is of National interest. *Lantana camara* and its impact on koala movement is listed as a key threatening process, prolonging time spent on the ground, increasing susceptibility to predators (Paull *et al.* 2019, The Honourable Leeanne Enoch 2019). The Queensland Koala Strategy 2019-2024 lists koala habitat restoration, including removal of weeds, as a key priority, and these recommendations were developed at the advice of the koala expert panel (Queensland Government 2019).

As well as limiting movement for koalas and other fauna, *L. camara* also changes the structure and health of the ecosystem, which can lead to a decline in the health and quality of koala food and habitat. *L. camara* is a transformer weed, altering wildfire behaviour, potentially resulting in destruction of native trees on a larger scale (Berry *et al.* 2011, DAF 2016). *L. camara* also suppresses eucalypt recruitment, both through its allelopathic properties and its capacity to shade out other species. This leads to an overall decline in habitat health without management intervention (Threatened Species Scientific Committee, 2010). If eucalypt species cannot recruit, succession of vegetation is interrupted, threatening future health of the ecosystem.

It is not possible to remove *L. camara* from the offset area on a single occasion, as persistent seed banks of the species, remain viable for long periods of time. Germination can occur rapidly after the parent plant has been removed due to increases in light and resource availability (*i.e.*, availability of soil nutrients, moisture content and space). Therefore, repeat visits to the offset area following the initial treatment for follow-up weed control, is critical to prevent seed set and dispersal.

Proposed action

Weed management measures targeting Lantana will target the mapped extents and priority areas (80-100% cover) to largely reduce weeds and increase biodiversity, and work in collaboration within Management Action 5 – Regeneration management strategy. Weed removal will prioritise WONS, specifically *Lantana camara*, which is

known to impact koala mobility, with supplementary weed management completed on a priority system. Weed management strategies for Lantana specifically are listed in **Table 59** and other WONS in **Table 60**.

By the end of Year 10 of the offset, the management actions must reduce the extent of WONS weed cover below 5% of baseline levels at habitat quality transects as detailed in the environmental outcomes and below 5% cover across the offset area as determined through detailed weed mapping. WONS cover is to be maintained below 5% cover for the life of the offset.

The timing for the implementation of management measures includes:

- Establish photo monitoring locations prior to treatment of WONS commencing.
- All WONS will receive initial treatment within first 18-months of the offset.
- Follow-up treatment of WONS will occur annually and where needed.

Table 59: Lantana Management Methods

Type of infestation	Physical	Mechanical	Chemical	Fire	Biological
Small (few plants, small area)	Hand grubbing only suitable for seedlings. Wear gloves for protection from thorns.	Not suitable.	Spot spray plants less than 2 m in height between summer and autumn with a registered herbicide.	Not suitable.	There are four useful biological control agents. They are already distributed throughout their potential range.
Medium (medium density, medium total area)		Bulldoze, plough, stick-rake or slash infestations. Soil disturbance will lead to mass seed germination, so follow up with further controls. Do not use mechanical control in areas susceptible to erosion. A permit may be required.	Spraying is uneconomical for medium or large infestations. Helicopter spraying is used when there is no access for mechanical control, eg very steep slopes.	Under permit, burn in summer with good fuel load of grass and/or mechanically cleared lantana. Also use as follow-up. Do not burn in rainforests.	
Large (many plants, many ha)					

Note: table extracted from CRC for Australian Weed Management, 2003, *Weed Management Guide, Lantana – Lantana camara*, Commonwealth Department of the Environment and Heritage.

Table 60: Weed treatment and removal methods

No.	Family	Scientific name	Common name	Non-chemical control	Chemical control
1	Amaranthaceae	<i>Alternanthera philoxeroides</i>	Alligator Weed	<p>Refer to Business Queensland: Invasive Plants at https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/landmanagement/health-pests-weeds-diseases/weeds-diseases/invasive-plants for additional guidance.</p> <p>Or</p> <p>WONS weed management guides available at https://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html</p>	<p>Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable.</p> <p>Also refer to: Business Queensland: Invasive Plants at https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/landmanagement/health-pests-weeds-diseases/invasive-plants for additional guidance.</p> <p>Southeast Queensland Ecological Restoration Framework WONS weed management guides available at</p>
2	Gramineae	<i>Andropogon gayanus</i>	Gamba Grass		
3	Annonaceae	<i>Annona glabra</i>	Pond Apple		
4	Basellaceae	<i>Anredera cordifolia</i>	Madeira Vine		
5	Asparagaceae	<i>Asparagus aethiopicus</i> cv. <i>Sprengeri</i>	Asparagus Ground Fern		
6	Asparagaceae	<i>Asparagus africanus</i>	Ornamental Asparagus, Asparagus Fern		
7	Asparagaceae	<i>Asparagus asparagoides</i>	Bridal Creeper		
8	Asparagaceae	<i>Asparagus declinatus</i>	Bridal Veil, South African Creeper		
9	Asparagaceae	<i>Asparagus plumosus</i>	Asparagus Fern		
10	Asparagaceae	<i>Asparagus scandens</i>	Climbing Asparagus Fern		
11	Cactaceae	<i>Austrocylindropuntia</i> spp.	Prickly Pears		
12	Cabombaceae	<i>Cabomba caroliniana</i>	Cabomba		
13	Asteraceae	<i>Chrysanthemoides monilifera</i> subsp. <i>Monilifera</i>	Boneseed		
14	Asteraceae	<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>	Bitou Bush		
15	Asclepiadaceae	<i>Cryptostegia grandiflora</i>	Rubber Vine		
16	Cactaceae	<i>Cylindropuntia</i> spp.	Prickly Pears		
17	Fabaceae	<i>Cytisus scoparius</i>	Common Broom		
18	Bignoniaceae	<i>Dolichandra (Macfadyena) unguis-cati</i>	Cat's Claw Creeper		
19	Pontederiaceae	<i>Eichhornia crassipes</i>	Water Hyacinth		
20	Fabaceae	<i>Genista linifolia</i>	Flax-leaved Broom, Mediterranean Broom		
21	Fabaceae	<i>Genista monspessulana</i>	Montpellier Broom, Cape Broom, Canary Broom		
22	Poaceae	<i>Hymenachne amplexicaulis</i>	Hymenachne		
23	Euphorbiaceae	<i>Jatropha gossypifolia</i>	Bellyache Bush		

Additional Offset Management Plan

No.	Family	Scientific name	Common name	Non-chemical control	Chemical control
24	Verbenaceae	<i>Lantana camara var. camara</i>	Lantana		https://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html
25	Solanaceae	<i>Lycium ferocissimum</i>	African Boxthorn		
26	Mimosaceae	<i>Mimosa pigra</i>	Giant Mimosa		
27	Gramineae	<i>Nassella neesiana</i>	Chilean Needle Grass		
28	Gramineae	<i>Nassella trichotoma</i>	Serrated Tussock		
29	Cactaceae	<i>Opuntia spp.</i>	Prickly Pears		
30	Cactaceae	<i>Parkinsonia aculeata</i>	Parkinsonia		
31	Asteraceae	<i>Parthenium hysterophorus</i>	Parthenium Weed		
32	Mimosaceae	<i>Prosopis pallida</i>	Algaroba		
33	Rosaceae	<i>Rubus fruticosus aggregate</i>	Blackberry		
34	Alismataceae	<i>Sagittaria platyphylla</i>	Delta Arrowhead, Arrowhead, Slender Arrowhead		
35	Salicaceae	<i>Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii</i>	Willows (except Weeping Willow, Pussy Willow and Sterile Pussy Willow)		
36	Salviniaceae	<i>Salvinia molesta</i>	Salvinia		
37	Asteraceae	<i>Senecio madagascariensis</i>	Fireweed		
38	Solanaceae	<i>Solanum elaeagnifolium</i>	Silver Nightshade		
39	Tamaricaceae	<i>Tamarix aphylla</i>	Athel Pine		
40	Fabaceae	<i>Ulex europaeus</i>	Gorse, Furze		

Weed Notes

Weed management typically comprises a major part of rehabilitation site works. Weed management provides the basis of aiding natural regeneration and assisted natural regeneration.

Weed Management is to be undertaken in accordance with the SEQERF Primary, Follow-up and Maintenance works notes above targeting WONS.

Critical skills for Weed Management include:

- Knowledge of relevant legislation.
- Plant Identification skills.
- Knowledge of different weed management techniques.

Knowledge of Different Weed Management Techniques

A range of weed management techniques are available to combat varying weed species and scenarios. Refer to the following

Table 61 for a summary of contemporary weed management techniques extracted from the SEQERF.

Table 61: Weed Treatment Schedules (source: SEQERF)

Method	Description
Herbicide	The herbicide weed control techniques described below provide a range of proven methods that can be used on a restoration site
Cut- scrape - paint	Cut the stem of the plant close to the ground (approximately 1-2cm) ensuring that soil does not come in contact with the cut surface. The cut can be made at a slight angle in order to increase the surface area that is exposed to the chemical. Apply herbicide immediately to the cut stump using poison pot and brush or dripper bottle. Using a knife, scrape the sides of the stump thoroughly to expose the green tissue. Apply herbicide to the scraped stump. The chemical must be applied within 10 seconds of the cut or scrape being made in order for it to be fully effective.
Cut- paint	Cut the stem of the plant close to ground level. Apply herbicide to the cut stump using poison pot and brush or dripper bottle. This method is best suited to easy-to-treat weeds such as small-leaved privet (<i>Ligustrum sinense</i>), provided that the diameter of the stem at ground level is less than approximately three centimetres. If a glyphosate-/ metsulfuron methyl herbicide mix is being used in the poison pot, a greater range of weeds can be controlled using this method e.g., Easter cassia.
Scrape - paint	Scrape as much of the stem as possible (one side of the stem) using a knife and apply herbicide to the scrape. Leave a small section of the vine unscraped, and then twist the vine so that the next scrape is made on the opposite side of the stem to the preceding scrape. Continue along the length of the vine, scraping and painting as much of the stem as possible, with scraping to be concentrated along the thicker stems close to the root of the plant. This is the best method to use for madeira vine, as it allows the chemical to translocate to the underground storage organs and aerial tubers which may be hanging in large clusters above head height. This avoids the potential problem of tubers from cut stems left hanging in the trees from dropping to the ground and sprouting. When scraping madeira vine stems a deep scrape is advisable - scrape right through to the fibrous, stringy section of the stem, taking care not to sever the vine. This method is also suitable for treatment of ochna.
Over-spraying	Over-spraying involves the use of knapsacks or power sprayers to treat large expanses of weed such as lantana thickets. The foliage must be covered with herbicide but not to the point of running off the plant. The dead plants remain in place and can be cut down at a later stage. Prior to over-

Method	Description
	spraying, any weeds that are growing closely around established native plants must be hand removed or treated by cut-scrape-paint.
Oil-hang	Vines such as mile-a-minute (<i>Ipomoea cairica</i>) which produce long stolons extending many metres along the surface of the ground, are suited to the oil- hang method. Locate the base of the plant and carefully pull up the runners and roll them up. The resulting roll of vine is then hung in the fork of a tree to dry out as if it is left on the ground it is likely to re-shoot. Where runners are climbing up into a tree they are cut off at head height prior to the runner being rolled up - there is no need to pull cut vines down from trees as this action is likely to damage the tree. The base of the vine is treated using the cut scrape- paint method.
Gouge-paint	This method applies to plant species that have a fleshy underground storage organ, such as the large tuber that is often found at the base of madeira vine. It is also particularly appropriate for the treatment of climbing asparagus (<i>Protasparagus plumosus</i>). If using this technique on climbing asparagus, first cut the stems that are growing into the canopy at head height and also at the base. The fleshy rhizome can then be gouged, or alternatively in the case of climbing asparagus, it may be struck several times firmly with the head of a pair of loppers, allowing the brown outer covering of the crown to peel away exposing the white fleshy inner section of the rhizome for application of herbicide. Gouge out sections of the fleshy base with a knife and apply herbicide using a paint pot and brush or dripper bottle within 10 seconds
Basal Barking	This method involves mixing an oil soluble herbicide in diesel/kerosene and painting or spraying the full circumference of the trunk or stem of the plant from ground level to a height of approximately 45cm. Basal bark application is suitable for thin-barked woody weeds including saplings, regrowth and multi- stemmed shrubs. The method will usually result in the mortality of difficult-to- control woody weeds at any time of the year, provided the bark is not wet or too thick to enable the herbicide to penetrate. The method should not be used in wet weather, adjacent to waterways or in areas where native trees and shrubs are located. The use should be restricted to situations where a weed is particularly difficult to control e.g., cherry guava and where other methods have been unsuccessful.
Splatter Gun	This small gas-powered injector kit is fitted into a knapsack for easy carrying and delivers large droplets in a stream over the weed. The gun is used to deliver a concentrated herbicide (glyphosate or metsulfuron methyl) across large dense expanses of weed The method is used for species such as lantana (ratio of 1:9 of glyphosate water). Splatter gun involves spraying strips at one to two metre intervals over the thicket. The herbicide is then translocated throughout the entire plant. The method does not require the whole plant to be covered as in over-spray
Spot-spraying	A knapsack filled with an appropriate herbicide mix is used by the operator to selectively control environmental weeds. A keen eye and an ability to distinguish between the native and weed species likely to be present, especially at seedling stage, is essential. Marker dye is added to the chemical mix to allow the operator to see what has already been sprayed, thus covering the ground weeds comprehensively and thoroughly Glyphosate and metsulfuron methyl are the main herbicides used for spot-spraying in ecological restoration, together with the addition of a penetrant and/or surfactant and marker dye
Stem Injection	Large woody weeds such as camphor laurel, coral trees (<i>Erythrina</i> spp, Privet <i>Ligustrum</i> spp) and umbrella trees are generally treated by stem-injection. Holes are drilled at regular intervals around the base of the tree and exposed roots using a drill. A tree injection syringe attached to a small capacity knapsack is used to fill the holes with the herbicide. Stem-injection of trees can also be undertaken using a hatchet to create cuts in a brickwork pattern in trunks of trees for the application of herbicide (known as tree filling). Frilling is more labour intensive than drilling. The greatest benefit of stem injection is that the trees can be left standing in situ as they die, provided there is no risk to humans or infrastructure from falling limbs. This creates convenient roosts for birds and other animals, and prevents the formation of large amounts of debris on the ground and damage to understorey plants which would result if the trees were to be cut down using a chainsaw.

Method	Description
Wick Wiping	Wick wipers can be manually used with a sponge or wick applicator, attached to a container filled with herbicide or as an attachment towed by a tractor. The manual method can be used to selectively apply herbicide to the leaves of weeds growing in sensitive situations. The hand held container can leak and generally spot spraying would be recommended. The use of a tractor drawn wick wiper is used to control taller growing species such as introduced grasses and to encourage the growth of lower growing species. This method could be used in preparation for planting.
Mechanical	Mechanical weed control involves the use of powered and non-powered equipment such as brushcutters, chainsaws, slashers, shovels, pruners, saws, etc. These methods are best used in situations where there is a large, uninterrupted stand of weeds.
Dig and Bag	Dig and remove tuberous/ rhizomatous root systems. Remove roots or whole plant in hard/ compacted soils. Place in suitable container and remove from site, dispose of by deep burial, burn or burial at a land fill, must not place declared weed species in recycling (mulch).
Hand-pull	Remove totally from ground by hand (human). Perform when soil is moist. Applicable to small infestations or areas of environmental sensitivity (including sensitive watercourses, when frogs are breeding, or presence of threatened species).
General Mechanical	May involve use of machinery (e.g., brushcutter, chainsaw, slasher, dozer, excavator). Suitable for large infestations and weed trees. Initially cost-effective, but requires immediate revegetation of site or matting/ mulch application and extensive maintenance periods, Generates excessive soil and vegetation disturbance

Milestone monitoring

A suitably qualified person will complete monitoring for WONS before the end of Years 5, 10, 15 and 20 of the offset to track against the interim milestone and completion criteria in the environmental outcomes (see **Table 6 to Table 15**). Detailed surveys are also recommended at Year 8 to ensure WONS cover are on track to be reduced below 5% at habitat quality transects repeated as part of the MHQA (under the environmental outcomes) and less than 5% of the offset area as determined through detailed weed mapping.

The methodology for non-native plant survey is to be repeated by the suitably qualified person in accordance with the monitoring and reporting schedule in **Section 4**. Surveys include the search and recording of infestations and MHQA transects to record weed cover. The following procedures will be implemented to ensure that the monitoring events align with the baseline survey methodology:

- Desktop Assessment
 - Reviewing previous survey mapping, field datasheets, photos and notes including WONS priority areas.
 - Reviewing weed and bush regeneration records for the last year.
- Field Survey
 - MHQA transects are carried out at baseline survey locations,
 - Inspect previously identified WONS infestations, delineate and estimate cover,
 - Mapping of WONS infestation areas using GPS unit;
 - Record non-native flora species list,

- Provide photo monitoring at established locations to be set up in Year 1 of the offset with photo location and direction, and
- Notes of any notable positive and/or negative changes in weed density and coverage.

Milestone monitoring survey results will be reported by the suitably qualified person in the Years 5, 10, 15 and 20 Milestone Report and included in the ACR. This will provide detail on survey methodologies and detected predator abundance with reference to the baseline survey data.

9.6. Management Action 4 – Bushfire Management Plan

Justification

Fire management of the offset area is critical in achieving the intended outcomes and conservation gains over the management period. Managing the vegetation to promote natural regeneration and reduce the impacts of uncontrolled wildfire within the offset area will ensure management objectives are achieved. Uncontrolled wildfire is considered a key threat to koala populations with impacts 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 management measures contained in this AOMP will be used to assess baseline fuel loads and indicate management techniques and planning, specific to the offset area in the context of the surrounding landscape. The overall objective is to prevent fire-induced koala mortality via targeted fuel hazard reduction and prescribed fire management. Fire management of the offset area is critical in achieving the intended outcomes and conservation gains over the management period. Managing the vegetation to promote natural regeneration and reduce the impacts of uncontrolled wildfire within the offset area will ensure management objectives are achieved.

Under current Queensland legislation, landowners are required to prepare and plan for bushfire hazards by being aware of fire management issues in the area, trimming trees, mowing grass, removing flammable material around your home and clearing vegetation, particularly if land boundaries are shared with bushland. It is important to balance undertaking these activities and preventing harm to the natural environment and areas of cultural heritage. This can be achieved through property planning or preparing and implementing a land and water management system. At present, the offset area and broader offset property has internal tracks and access along existing fence lines that may act as fire trails. Specific actions as directed by the local authorities must be implemented which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads if required.

Proposed action and management measures

A specific Bushfire Management Plan (BMP) will be developed in accordance with relevant Queensland guidelines and endorsed by an experienced bushfire practitioner to reduce potential threats from fires to koala and GHFF. The BMP will assess baseline fuel loads and aim for no koala mortalities to occur as a result of overall fuel hazard reduction action. The BMP will expand points on wider fire management concepts.

Specific actions as directed by the local authorities must be implemented which may include burn plans, prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads.

Prescribed low intensity burning as a bushfire management technique is widely employed and generally agreed upon as an effective means of reducing widespread and severe bushfire risk particularly when implemented in line with Indigenous cultural burning practices. The National Recovery Plan for Koala acknowledges the scope of

impacts of prescribed burning on Koala population dynamics is not well understood. While the risk of wildfire can be reduced through prescribed burning regimes, it is acknowledged that the effectiveness of this is determined by the scale and severity of the bushfire, exemplified in the 2019-2020 summer bushfires which affected areas that were considered low risk to bushfire.

Instead of conducting a full ecological burn through a larger area of the offset, low intensity hazard reduction burns can be undertaken to reduce the locally abundant fire fuel loads and in turn reducing the risk of a high intensity wildfire spreading throughout the offset. A hazard reduction action will be used around fire exclusion zones to reduce the risk of any fire getting into these zones (*i.e.*, revegetation zones).

Subject to further approval by the Department reduced load livestock grazing may also be applied in selected mature tree areas and/or once revegetation and assisted regeneration areas achieve specific metrics. It is acknowledged that permanent high density / intensive grazing has potential to negatively affect vegetation composition so is not proposed. For this reason, temporary low impact grazing for short periods would occur only as a bushfire fuel load management tool which remains available when controlled burns are not suitable. Under no circumstances will the offset area be grazed outside of this management action.

Emerging research is occurring which supports the benefits of low intensity temporary grazing for the management of bushfire fuel loads and the broader benefits in avoiding the impacts of wildfire on conservation values. At the time of drafting this AOMP the Department does not support even the temporary use of light grazing as a preferred bushfire load management tool when compared to traditional controlled burns. While the Offset Provider is of the belief both are important to help manage fuel loads and can occur without impact on the creation and management of koala and GHFF habitat no grazing will occur within the approved offset area until subsequent Department approval for this use has been provided.

As part of providing further evidence on this management tool to the Department the following items will be considered and documented:

- A) Contemporary research and published literature on the use of low intensity grazing in the management of bushfire fuel loads and promoting conservation outcomes;
- B) Quantifiable triggers for when offset areas would be suitable for low intensity grazing without impact on conservation values:
 - a. Fuel loads (dry matter/ha) triggers for livestock to be introduced and removed from the area;
 - b. 5 years after replanting and establishing;
 - c. Max number of animals per ha (Stocking rates / rotational grazing);
 - d. Temporary or permanent fencing requirements;
 - e. Timing and season for when grazing is likely to occur;
 - f. Metrics for measuring before and after fuel loads, weed cover, native regeneration cover and diversity; and
 - g. Monitoring, reporting and corrective metrics.

Therefore, where conditions are deemed by a bushfire management professional to not be conducive to fuel reduction via prescription burning, for two consecutive fire management seasons, low impact grazing, for short periods only, is proposed to reduce fuel loads to prevent potentially severe impacts of uncontrolled bushfire through the offset area. Under no circumstances will the offset area be grazed outside of this management action. Given perceived potential for negative impacts on vegetation composition, regular annual monitoring and reporting

is proposed to ensure any possible negative impacts are identified early and management processes are appropriately adapted to ensure conservation outcomes are achieved.

Monitoring and reporting

Monitoring of the offset area is to be undertaken by the Offset Provider annually and as required to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques such as use of livestock. Fuel loads and bushfire breaks will be monitored annually by the Offset Provider as required depending on seasonal variation in fuel loads.

The implementation of the Bushfire Management Plan will be reported annually by the Offset Provider in the Offset Area Annual Report and is to provide detail on maintenance and monitoring activities undertaken under the BMP such as maintenance of access tracks and fire breaks, records of seasonal fuel loads and outcomes of controlled burns or other management techniques such as use of livestock. Notes of any evidence of positive and/or negative changes is to be recorded and documented. Annual monitoring and reporting is important to ensure any possible negative impacts are identified early and management processes are appropriately adapted to ensure conservation outcomes are achieved.

9.7. Management Action 5 – Habitat creation and regeneration

Justification

Habitat creation and regeneration is key management action that will improve existing habitat values within the offset areas, while also expanding habitat values in areas that have been subject to weed infestation issues. In addition, regeneration is a Priority Management Action listed under “Habitat Loss, Disturbance and Modification” of the Conservation Advice for the koala and under “Recovery Objective 1 – Action 1.4” of the GHFF National Recovery Plan. Rehabilitation aims to enhance degraded areas through Management Action 3 (WONS removal) and assisted natural regeneration. Assisted natural regeneration applies to areas where the native plant community is largely healthy and functioning or where native plant seed is still stored in the soil, can easily disperse across an area from nearby natural areas or be readily dispersed by animals. It is applied when limited human intervention, such as weed control, minor soil amelioration, fencing works or cessation of slashing etc., is enough to trigger the recovery process and natural regeneration. Planting only occurs where necessary and does not interfere with natural process.

Management Actions 3 to 5 will work together to improve habitat quality through weed removal/control, bushfire management and native species establishment.

Management actions

Operational Management Units listed in **Section 9.2** will be established across the offset area and range from higher quality remnant vegetation to non-remnant vegetation. As such, the key management actions across the OMUs will differ (refer below and **Table 62** for summary). Key management actions will include assisted natural regeneration practises to expand patches of regrowth throughout areas where high levels of weed management is required. Reconstruction and infill planting may be necessary within the non-remnant and historically cleared areas to assist in vegetation coverage and composition.












OMUs and rehabilitation areas are shown on **Plan 17**.

Table 62: Operational Management Unit Rehabilitation Method Summary

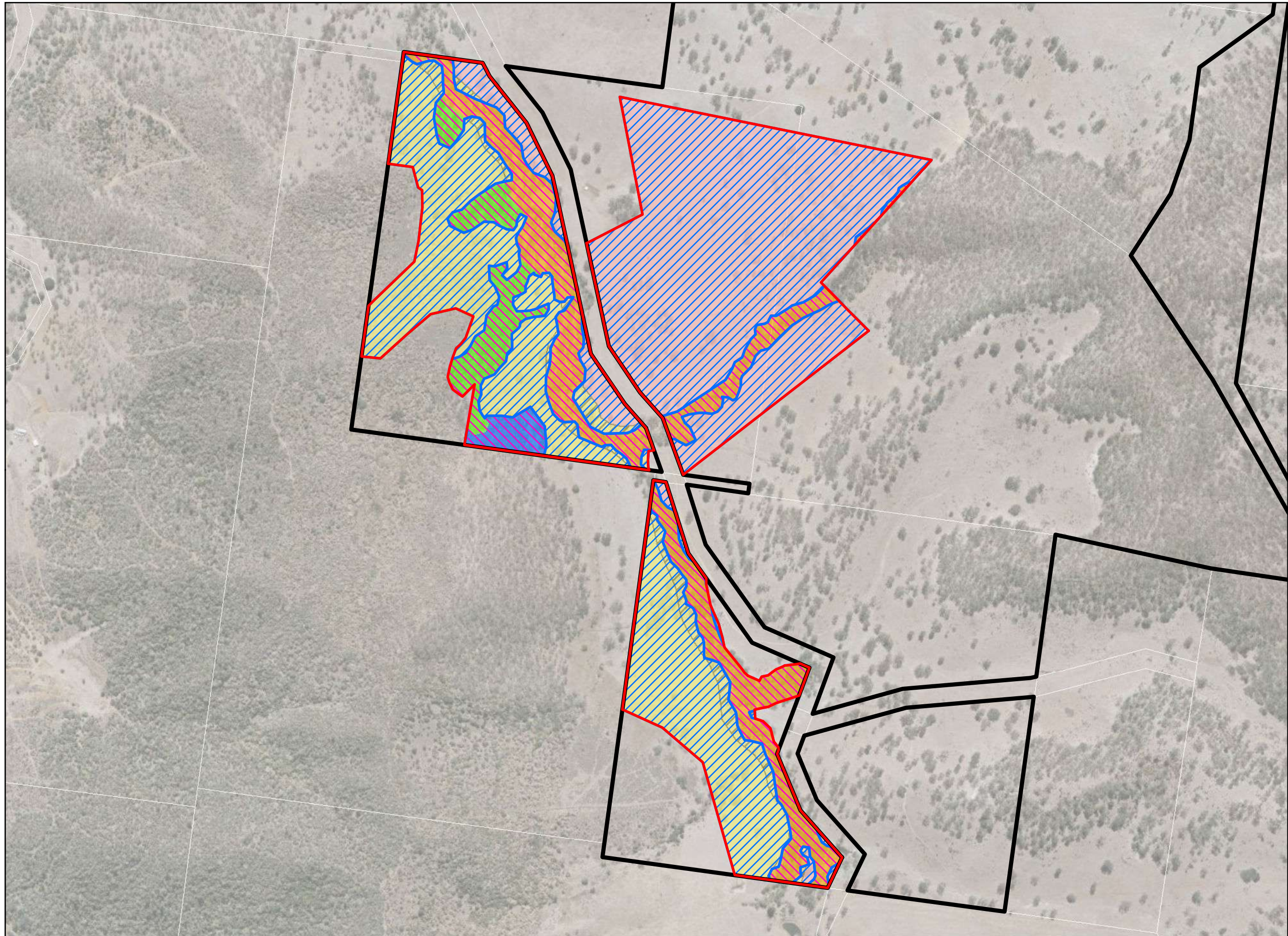
OMU	Description	Rehabilitation Method
Non-remnant vegetation area (OMU 1)	Discontinuous canopy vegetation	<ul style="list-style-type: none"> • Reconstruction • Weed removal/control • Bushfire management • Planting
Regrowth vegetation area (OMU 2)	Continuous native canopy vegetation	<ul style="list-style-type: none"> • Assisted natural regeneration • Weed removal/control • Bushfire management • Infill planting where necessary
Remnant vegetation area (OMU 3)	Continuous native canopy vegetation	<ul style="list-style-type: none"> • Assisted natural regeneration • Weed removal/control • Bushfire management • Infill planting where necessary
Regrowth vegetation area (OMU 4)	Discontinuous to continuous canopy vegetation	<p>A combination of reconstruction and assisted natural regeneration.</p> <ul style="list-style-type: none"> • Weed removal/control • Bushfire management • Infill planting where necessary
Non-remnant vegetation area (OMU 5)	Discontinuous canopy vegetation	<ul style="list-style-type: none"> • Reconstruction • Weed removal/control • Bushfire management • Planting

17. Operational Management Units and Rehabilitation Areas

Legend

-  Offset Area
-  Little Kipper Creek Offset Property
-  QLD DCDB
- Operational Management Units (OMUs)**
-  OMU1: Non-remnant (12.12.5) [21.70 ha]
-  OMU1: Non-remnant (12.3.7) [2.703 ha]
-  OMU2: Remnant (12.3.7) [12.15 ha]
-  OMU3: Remnant (12.12.5) [3.75 ha]
-  OMU4: Regrowth (12.12.5) [1.11 ha]
-  OMU5: Non-remnant (12.9-10.2) [32.77 ha]
- Rehabilitation Methods**
-  Assisted Natural Regeneration
-  Reconstruction

Layer Sources
© State of Queensland (Department of Resources) 2024
Updated data available at
<http://qldspatial.information.qld.gov.au/catalogue/>



DISCLAIMER:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose.

Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land.

KFF1 Pty Ltd therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying an application and which may be subject to alteration beyond the control of the KFF1 Pty Ltd. Unless an approval states otherwise, this is not an approved plan.

On-ground works proposed within the OMUs include are detailed below.

Non-remnant Vegetation Area (OMU 1 and OMU 5)

- Implementation of rehabilitation techniques that aim to promote the regeneration of native vegetation and improve habitat values:
 - Where natural regeneration is ineffective, seeding with native endemic seeds,
 - Where natural regeneration and/or seeding is ineffective, planting of endemic trees and shrubs specifically selected to provide koala/GHFF habitat.
- Removal of impediments to koala movement such as old, unused fences.
- Introduce management practices which support and favour habitat increase (e.g. bushfire management)
- Maintain and manage the land for the life of the offset (15 years from the legal securement/implementation of the offset area), including direct monitoring of koala/GHFF usage.

Regrowth Vegetation Area (OMU 4)

- Implementation of rehabilitation techniques that aim to promote the regeneration of native vegetation and improve habitat values:
 - Where natural regeneration is ineffective, seeding with native endemic seeds,
 - Where natural regeneration and/or seeding is ineffective, planting of endemic trees and shrubs specifically selected to provide koala/GHFF habitat.
- Assisted natural regeneration practices where weed treatment results in open areas – replanting with locally endemic species (infill planting - if necessary only).
- Removal of impediments to koala movement such as old, unused fences.
- Introduce management practices which support and favour habitat increase (e.g. bushfire management)
- Maintain and manage the land for the life of the offset, including direct monitoring of koala/GHFF usage.

Remnant vegetation (OMU 2 and OMU 3)

- Stop activities reducing habitat values, specifically selective logging and production grazing.
- Introduce management practices which support and favour habitat increase (e.g. bushfire management)
- Assisted natural regeneration practices where weed treatment results in open areas – replanting with locally endemic species (infill planting - if necessary only).
- Maintain and manage the land for the life of the offset, including direct monitoring of koala/GHFF usage.

Within the mapped regrowth and remnant areas, natural regeneration rehabilitation is less invasive and thus the preferred method to enhance remnant vegetation. Where natural regeneration is unsuccessful, infill planting will be implemented to facilitate recovery (if required). In non-remnant areas where there is little vegetation, reconstruction may be required.

Rehabilitation methodology

Following resolution of the site analysis and management areas as part of rehabilitation design, prioritising site works should be considered. Prior to site works commencing, the site should be secured from degrading impacts

such as grazing by stock, unauthorised access and rubbish. Some factors that may require immediate attention include:

- The presence of highly invasive weed species which may disperse further prior to substantial site works commencing.
- The presence of weed species which may have a long-term impact on ecological communities such as exotic and weed varieties of vines.
- Flammable materials (including weed thickets, grasses and vines).
- Damaging and easy access by 4WD, motorbikes and pedestrians into core retained vegetation and ecological restoration areas. This may require installation of temporary fencing if deemed appropriate.

Site works can be typically broken down into the following categories:

- Primary Works
- Follow-up Works
- Maintenance Works

Primary Works

Primary works or initial works within the site or a section of the site will commonly involve a sequence of activities such as the control of all groundcover weeds, woody weeds in the understorey and exotic vines prior to the control of weed trees. Primary work has the effect of creating a large degree of disturbance which will stimulate the germination of native and exotic species. Therefore, continuing works should be scheduled shortly after the initial visit to allow for timely control of the newly regenerating weeds. Highly invasive weeds should be treated as a priority during primary work in order to avoid invasion of newly disturbed areas. Some weeds will need to be treated in steps e.g., where weeded areas are being used by nesting birds or where the staged removal of canopy weed trees is required. Techniques used during primary work commonly involve spot spray, cut-scrape paint, cut-paint, scrape-paint, roll-hang and over spraying (source: SEQERF).

Following completion of weed management, rehabilitation (such as assisted natural regeneration, construction, and fabrication planting) can occur in areas unaffected by weed management activities or areas where primary weed management activities have concluded. At the end of primary work, the zone will have been comprehensively and systematically worked, ready for follow-up works.

Follow-up Works

At intervals, which will vary according to the type of weed impacting the site and growing conditions, follow-up work will be necessary. This generally involves the spot-spraying of newly germinating weeds and re-sprouting sections of woody weeds and vines. It is at this stage that observational visits should be made to the site to assess the progress of vegetation regeneration and determine whether follow-up work is necessary. A site that receives poorly-timed, too frequent, or too little follow-up will rapidly experience setbacks, as weed propagules will quickly become established in the newly disturbed areas.

Germinating native seedlings may be outcompeted by weeds or damaged by inexperienced operators thereby exhausting the seed bank. Unless adequate follow-up can be ensured when planning restoration works, there is little point in commencing primary work, as time and resources are consumed with no substantial gain achieved (source: SEQERF).

Maintenance Works

By the maintenance stage, the vegetation community supports germination and establishment of native plant species and canopy formation. Weed density decreases as the native plants which have been supported through restoration works are able to out-compete the weeds. One of the fundamental principles of ecological restoration involves the objective to create or re-establish a self-sustaining ecosystem. Therefore, it is the underlying goal that maintenance will progressively decrease. While this goal is not always possible, due to factors such as the continual reintroduction of weed propagules to the site from adjoining properties; unfavourable seasons or significant weather events; persistent weed species; or global influences such as the enhanced greenhouse effect, it should always be strived for (source: SEQERF).

Maintenance works may include minor, ongoing weed management and infill planting depending on site conditions. All rehabilitation works are to be carried out by a suitably qualified bush regeneration contractor.

Plant Identification Skills

Both native and weed species should be identified prior to primary weed removal works and ongoing throughout the follow-up and maintenance periods. This will maximise natural regeneration by reducing the likelihood of accidental weed spraying to native vegetation. Regenerating species to be treated and maintained in a similar manner to planted tubestock. Where contractor is unsure of species, advice should be sought from a botanist, specialist contractor or confirmed with Queensland Herbarium. Refer to indicative Weed Treatment schedules derived from the *South East Queensland Ecological Restoration Framework: Manual* (2012) for an indication of weed species and treatments (refer

Table 61).

Planting Notes

Areas subjected to weed removal and control may require infill planting (assisted natural regeneration) where lack of natural regeneration is evident. Prior to installation, the following items should be considered:

- Species selection;
- Sourcing plant material;
- Timing of planting;
- Site preparation;
- Planting density; and
- Planting installation.

Species Selection

Species selection is critical in achieving the desired ecological restoration outcomes for rehabilitation sites. Planting is typically derived from:

- Local Regional Ecosystem descriptions;
- Observed site native vegetation;
- Bioretention guideline requirements;
- Climatic and weather conditions observed on-site (frost, salt-spray, etc);
- 'Pioneer' species are useful in site stabilisation and encouraging native regeneration;
- Utilising flowering and fruiting species are useful to attract wildlife and result in introduction of seeds;
- Diverse vegetation layers (trees, shrubs, groundcovers); and
- Species availability from seed propagation and or local nurseries.

Sourcing Plant Material

There are several options for sourcing plant material for infill planting purposes. Propagation from site seed is a good outcome however is often limited by required timing of works. Sourcing planting from local nurseries is the commonly chosen option and has the following benefits:

- Awareness of genetic considerations when collecting seed;
- Experience with breaking dormancy mechanisms in hard to germinate seeds;
- Highly successful propagation techniques;
- Ability to provide high quality stock to order; and
- Draw on industry resources.

Timing of Planting

The timing of planting should ideally be aligned with the wet season in SEQ (summer and autumn). This minimises the need for intensive watering to establishment planting. Planting between February to May is the most beneficial as it also seeks to avoid intense heat periods of summer. Despite this, it is understood planting may occur at various times within rehabilitation areas due to development timing needs.

Site Preparation

Site or planting preparation includes:

- Fencing to exclude grazing animals and people (if required);
- Pre-spraying of exotic grasses and other weeds to planting areas;
- Consideration of source of water for new planting (access tracks, temporary irrigation);
- Arranging delivery of mulch, jute netting and tree guards (if required);
- Treatment of heavily compacted soils by ripping and or application of gypsum; and
- Soil amelioration as required.

Planting Density

Plant density is calculated on a zone-by-zone basis to cater for various requirements including infill only requirements such as canopy trees at low densities.

Planting Installation

The following outlines the preferred installation methodology for revegetation works within the rehabilitation areas. It has been designed to maximise plant establishment success rates and minimise plant mortality. Revegetation works shall be either undertaken or directly supervised by an experienced and qualified contractor. All works shall be in accordance with the provisions of this Offset Management Framework, and local government policies and Australian Standards.

Plant installation methods shall include:

- Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of having been restricted or damaged. The landscape coordinator has the right to inspect and reject stock prior to planting.
- Plants are to be planted immediately after delivery to the planting site.

- Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In areas where planting substrate is deemed to be very poor (compacted, nutrient deficient, hydrophobic etc.) and above areas of potential frequent inundation and waterflow, topsoil may be used.
- Pre-water plant hole, if soil is dry, to decrease root stress upon planting and assess the infiltration of water through the soil.
- Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered in any less than 10 mm or any more than 20 mm of planting medium.
- Plants are to be watered thoroughly immediately after planting (ensure deep irrigation) and thereafter as required during the construction phase of the development depending on climatic conditions. Creation of a concave hollow around the base of each plant will aid water infiltration to the plant roots.
- A complete, slow-release fertiliser is recommended, and is to be administered appropriately during planting. Topdressing with slow-release fertiliser is preferred to avoid toxic levels of fertiliser accumulating in the plant hole around the plant roots.
- To ensure successful establishment, all planting surfaces must be covered in:
 - a 100 mm layer of high-quality weed-free composted chip mulch (site mulch)- Note: to avoid possible stem rot in some 'drier' species ensure mulch is 'dished' and not covering plant stem by more than 20 mm. Where available, mulch material to be sourced from cleared vegetation material if adequately seasoned, or
 - Suitable individual anchored natural fibre weed mat (jute netting).
- A long-term slow release fertiliser, such as Nutricote or similar product should be used for all plantings after initial plant establishment.
- A minimum 90% survival rate should be achieved.

Regeneration monitoring

Once, weed removal/control has been completed, the engaged suitably qualified environmental consultant will be notified to monitor natural regeneration. Photo point monitoring and GPS locational and extent survey will be utilised.

The coordinates of the initial photo monitoring will be recorded using the handheld GPS which will assist to locate the monitoring point when undertaking subsequent monitoring. Photo point monitoring is to be undertaken annually at the same time of the year, post the rehabilitation works.

The photos provide the baseline imagery to compare future photo point monitoring and to ensure the integrity of the fence. A record of the photos will be maintained which includes:

- GPS coordinates of the photo point.
- Date, time and number of each photo.
- Direction in which the photo was taken (north, south, east and west).
- After each photo monitoring event, a GPS waypoint of the location of the rehabilitation and a GPS polyline of the extent will be recorded.

If natural regeneration should fail, infill planting is to be implemented. Following infill planting, monitoring will commence in the same manner outlined above.

The following elements will be noted on a field datasheet:

- The presence of weeds within the extent.
- Natural regeneration of native species.

If required:

- the planted stock (a physical count of alive plants in the ground).
- The average health of the planted stock.
- The average height of the planted stock.

Annual monitoring and reporting

Rehabilitation works progress reports will be prepared by the suitably qualified regeneration contractor and included in the Offset Area Annual Report.

The suitably qualified regeneration contractor will complete annual monitoring tasks until establishment of plantings is achieved (typically after five years):

Photo monitoring

To monitor management action 5, photo point monitoring and GPS locational and extent survey will be utilised. The coordinates of the initial photo monitoring will be recorded using the handheld GPS. Photo point monitoring is to be undertaken annually at the same location and time of the year, before and after planting has commenced. If natural regeneration should fail, infill planting is to be implemented. Following infill planting, monitoring will commence.

The photos provide the baseline imagery to compare future photo point monitoring. A record of the photos will be maintained which includes:

- GPS coordinates of the photo point.
- Date, time and number of each photo.
- Direction in which the photo was taken (north, south, east and west).
- After each photo monitoring event, a GPS waypoint of the location of the rehabilitation and a GPS polyline of the extent will be recorded.

Rehabilitation and regeneration survey

The following elements will be noted on a field datasheet:

- The success of the rehabilitation stock (a physical count of alive plants in the ground).
- The average health of the rehabilitation stock.
- The average height of the rehabilitation stock.
- The presence of weeds within the rehabilitation extent.
- Natural regeneration of native species.

Infill planting records (if required)

The following elements will be noted on a field datasheet:

- The success of the rehabilitation stock (a physical count of alive plants in the ground).

- The average health of the rehabilitation stock.
- The average height of the rehabilitation stock.
- The presence of weeds within the rehabilitation extent.
- Natural regeneration of native species.

Milestone monitoring

The suitably qualified person as appointed by the Proponent will complete MHQA surveys before the end of Years 5, 10, 15 and 20 of the offset to assess against the interim milestones and environmental outcomes (see **Table 6 to Table 15**).

This will include:

- MHQA transects at baseline sampling locations; and
- direct and indirect surveys to target Koala presence, including Spot Assessment Technique surveys, motion triggered camera trapping and spotlighting.

9.8. Management Action 6 – Fencing and Signage

The offset area is to be suitably fenced and marked with signage to discourage trespass and keep out unmanaged cattle grazing. Gates leading to the subject offset area will have signage installed for added protection.

In addition, cattle will be managed in and adjoining the offset area as specified in this AOMP via a combination of temporary and existing paddock fencing and, in time, the temporary fencing may be upgraded to permanent or removed when the broader offset property, surrounding the subject offset area, is secured as an offset and managed under approval.

Internal fences that include barbed wire will also be retrofitted to further reduce threats to the grey-headed flying-fox. Barbed wire should be removed from the top strand or covered with poly pipe (refer Bat Conservation & Rescue Qld Inc. (2022)) or tagged to reduce potential impacts to the threatened species.

Refer to **Plan 18** for proposed offset area fencing and signage. The plan shows existing barbed-wire fencing proposed to be retrofitted and existing fauna friendly fencing. Fauna friendly fencing are based on the following specifications:

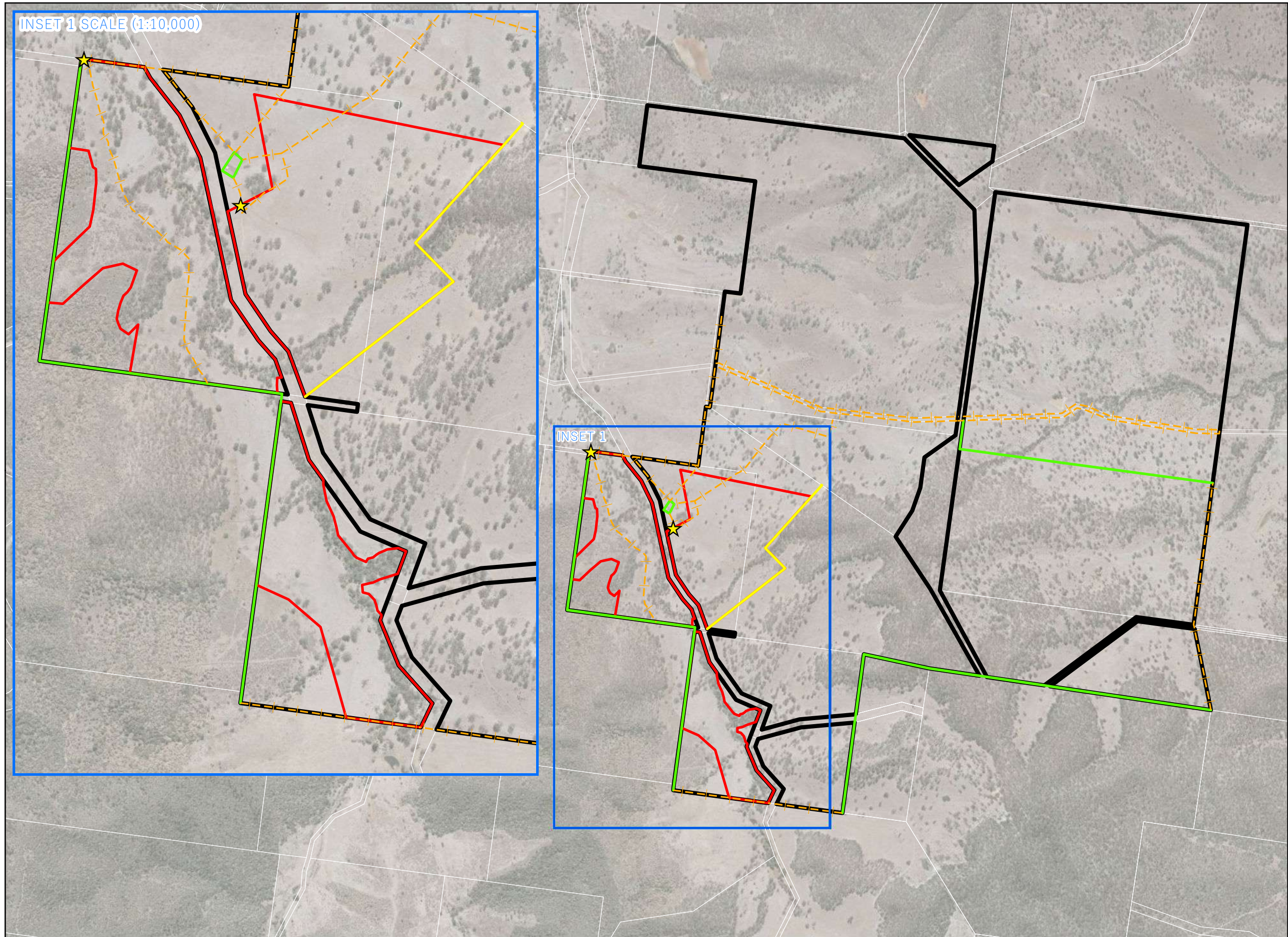
- Top strand plain wire, and
- Bottom strand either plain wire, or barbed wire set at a minimum 300 mm above ground.

18. Proposed Offset Area Fencing and Signage

Legend

- Offset Area
- Little Kipper Creek Offset Property
- QLD DCDB
- ★ Proposed Offset Signage
- Existing Fauna Friendly Fencing
- Proposed New Fauna Friendly Fencing
- Existing Fencing to be Retrofitted to Fauna Friendly Design

Layer Sources
© State of Queensland (Department of Resources) 2024
Updated data available at
<http://qldspatial.information.qld.gov.au/catalogue/>



DISCLAIMER:
This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose.

Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land.

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9.9. Reporting requirements

Multiple annual reporting mechanisms are proposed to demonstrate compliance with **Condition 1A (g)** of the approval variation.

An **Offset Area Annual Report (OAAR)** will be prepared by the Offset Provider for each year of the offset detailing management activities undertaken in accordance with the Management Framework and provides clear details on how performance targets specified in **Table 5** are being addressed and any adaptive management measures implemented. The OAAR will be provided to the Proponent and suitably qualified person preparing the Annual Compliance Report one (1) month after each year of the offset.

A **Milestone Report** is proposed to be completed by a suitably qualified person before the end of Years 5, 10, 15 and 20 of the offset detailing how the offset is progressing against the interim milestones, key performance indicators and environmental outcomes specified in **Section 3** and **Table 6 to Table 15**. This will include an assessment of whether each environmental outcomes have been, or are likely to be achieved and provide advice of any circumstance/s which they consider is/are affecting the achievement of each outcome. The findings of each assessment must be documented and should be published within 3 months of the end of the relevant year of the offset in which the assessment is undertaken.

An **Annual Compliance Report (ACR)** is required to be prepared under Condition 13 of the EPBC approval. The OAAR and Milestone Reports will be included as part of the Annual Compliance Reports. The action commenced on 17 October 2016 therefore the reporting period for the action is 17 October to 16 October of the following year.

The ACR will be prepared by a qualified environmental person as directed by the Proponent and published on the project website each year by the conditioned date. The report will address the compliance with each of the conditions of approval, including any incident reports of undesirable impacts upon koalas/GHFF (including koala/GHFF habitat) and any monitoring and management milestones achieved during the previous 12 months, including progress on key management measures, attainment of performance targets and completion criteria, and adaptive implementation outcomes. The compliance report will also address the effectiveness of the management measures and how the offset area is progressing against performance and completion criteria.

Documentary evidence providing proof of the date of publication of the ACR and non-compliance with any of the conditions of the approval will be provided to DCCEE at the time of publishing the compliance report if the action is approved.

Section 4 provides a monitoring and reporting schedule for the AOMP. This includes the management action, monitoring actions, corrective action trigger, corrective action, reporting action and responsible person/party.

9.10. Data Management

The Proponent, Offset Provider and engaged suitably qualified person appointed by the Proponent and/or Offset Provider will be responsible for the management of data, including interpretation, reporting and presentation. The Proponent will be responsible for the ownership, distribution and availability of data to the Department.

10. Adaptive Management

An adaptive implementation program will be used to ensure uncertainty is reduced over time, and that completion criteria are attained and maintained for the life of the offset. As more information becomes available following ongoing performance monitoring, the management and monitoring regime will be reviewed and revised to maximise the likelihood of attaining and maintaining the outcomes to be achieved by implementing the AOMP. If material amendments likely to alter the environmental outcomes, or performance and completion criteria are proposed to the AOMP, the amendments and justification for the contingency measures will be provided to DCCEE in writing. Additionally, for any updates made to the AOMP that do not affect the environmental outcomes or performance and completion criteria, DCCEE will be notified of the changes and a copy provided.

Adaptive management will be used to incorporate changes in any of the following areas:

1. Assimilation of new data or information - such as, updates to conservation advice or new threat abatement plans relevant to the koala and/or the GHFF.
2. Project coordination and scheduling – to manage unforeseen disruptions to schedule such as inclement weather on contractor works for management actions and environmental consultant monitoring events.
3. Annual review of risks – to refresh the mitigation measures should new threats be identified or stochastic events such as unplanned fires or floods occur.
4. Annual review of management measure effectiveness – to increase the frequency or change the method of management actions where monitoring performance criteria are not met.
5. Contingency for unplanned incidents – such as stochastic events including unplanned fires or floods.

An audit of AOMP is to be completed every five (5) years with consideration to the areas identified above and is to be directed by the Offset Provider (KFF1) and an appointed suitably qualified person.

10.1. Uncertainty

The plan identifies and manages uncertainty. To this end the plan specifies:

- a) key data/information used to formulate the plan;
- b) the limitations and/or uncertainty associated with the use of that data/information;
- c) the risks that limitation and/or uncertainty represents for plan failure; and
- d) how limitations and/or uncertainty, and associated risks, are mitigated during plan implementation. For example, where a margin of safety is applied to management measures until uncertainty is reduced to an acceptable level or performance targets/completion criteria are attained/maintained.

To identify and manage uncertainty, the AOMP used regulatory and policy context to formulate the plan, listed below.

Regulatory and policy context

This document has been prepared taking into account the following technical guidelines and legislation:

- Former EPBC Act referral guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DoEE, 2014);

- National Recovery Plan for the Koala *Phascolarctos cinereus* (combined populations of Queensland, New South Wales and the Australian Capital Territory) (DAWE 2022);
- The National Recovery Plan for the Grey-headed Flying-fox *Pteropus poliocephalus* (DAWE, 2021);
- *EPBC Act Survey guidelines for Australia's threatened bats* (Department of the Environment, Water, Heritage and the Arts, 2010);
- EPBC Act environmental offsets policy (Department of Sustainability, Environment, Water, Population and Communities, 2012);
- EPBC Act Environmental Management Plan Guidelines (DoEE, 2014);
- Policy Statement: Advanced environmental offsets under the *Environment Protection and Biodiversity Conservation Act 1999*;
- *Vegetation Management Act 1999* (legally securing the offset through a Voluntary Declaration under Section 19F);
- Queensland *Environmental Offsets Act 2014*; and
- Queensland *Environmental Offsets Regulation 2014*.

10.2. Risk of Failure

The plan assesses the risk of failure to achieve the plan's performance targets and/or completion criteria. To this end the plan:

- a) states the plan's performance targets and/or completion criteria;
- b) identifies events or circumstances that prejudice attainment/maintenance of performance targets and/or completion criteria. The events or circumstances must address scientific/ecological uncertainty, stochastic events and legal/land use planning factors that may represent risks;
- c) includes a qualitative assessment of the likelihood and consequence of those events or circumstances, and the residual risk of failure to achieve those criteria due to identified events or circumstances (*assuming management measures will be implemented*);
- d) characterises risk as low, medium, high or severe, and derived from likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical); and
- e) outlines how consequence, likelihood and risk level for each risk have been determined.

To identify the risk of failure, **Table 63** states the management action, completion criteria, corrective action triggers and corrective actions. In addition, a risk assessment has been completed in **Appendix H**.

Table 63: Risk of Failure Table and Corrective Actions

Action	Completion Criteria	Corrective Action Trigger	Corrective Action
Legally secure the offset area	<ul style="list-style-type: none"> The offset area is legally secured for conservation via a Voluntary Declaration (VDEC) process administered under the Queensland <i>Vegetation Management Action 1999</i> prior to the additional impacts occurring (Condition 1B) <i>i.e.</i>, clearing more than 255 ha within the project site. Subsequently, the offset area is legally secured in perpetuity within 12 months of the implementation of the AOMP via a covenant under the <i>Land Act 1994</i> or <i>Land Titles Act 1994</i> The Department is notified of the legal securement via VDEC within 5 business days of commencing the implementation of the AOMP <i>i.e.</i>, the date from which the offset area is legally secured (Condition 1C and 1D). The Department is notified within 5 business days of being legally secured via covenant. The offset area is not used for other purposes – site access is restricted. 	Offset area is not legally secured.	The offset area is legally secured prior to any additional impacts occurring.
Non Native Vertebrate Pest Management	<ul style="list-style-type: none"> No recorded injury or death of koala from non-native predator attacks within the offset area. 	Pest management is not implemented and/or evidence of predation on koalas is observed.	Implement supplementary control measures, increase frequency of control events or other management actions must be implemented as recommended by suitably qualified pest contractor within 6 months of a monitoring event where

Action	Completion Criteria	Corrective Action Trigger	Corrective Action
	<ul style="list-style-type: none"> Non-native vertebrate pests and evidence of pests are suppressed within the offset area. 	<p>Monitoring actions and OAARs identify ongoing presence of predator pest species.</p> <p>Monitoring actions and OAARs detect increase in non-native predator detection from previous survey or relative to the baseline. The reduction in the number of non-native predators, relative to the baseline results have not been maintained from the time that it is first achieved, for the remainder of the life of the offset.</p>	<p>non-native predator detection has not decreased from baseline.</p> <p>Where there is evidence of non-native predator activity trapping or baiting program by a suitably qualified contractor will be conducted within 6 months of detection.</p> <p>Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events.</p> <p>If key milestones and performance criteria is not achieved by the timeframes outlined, the corrective actions will continue until achieved, extending the management period.</p>
<p>WONS management</p>	<ul style="list-style-type: none"> The management actions must reduce the extent of or maintain WONS weed cover below 5% of baseline levels by the end of Year 10 and be maintained for the life of the offset (20 years). 	<p>Weed cover has increased or remained constant, relative to the previous monitoring event.</p> <p>The extent of weed cover has not been reduced as required to reach the environmental outcome as identified in the OAARs and Milestone Reports.</p>	<p>Weed control program to be expanded/adapted to improve outcomes within 6 months following a monitoring event where the weed extent has not decreased or been maintained.</p> <p>Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events.</p> <p>If key milestones and performance criteria is not achieved by the timeframes outlined in Table 6 to Table 15, the corrective actions will continue until achieved, extending the management period.</p>

Action	Completion Criteria	Corrective Action Trigger	Corrective Action
Bushfire management	<ul style="list-style-type: none"> No record of high intensity fires in the offset area. No record of koala injury or death from fire. Vegetation composition and restoration regime is not negatively affected by prescribed fire regimes. 	<p>Bushfire management measures not implemented and/or a high intensity bushfires impact the offset area.</p> <p>Unexpected bushfire event and resurgence of weeds/decrease habitat.</p>	<p>Undertake audit to inspect impacts within 2 weeks following an event (if deemed safe).</p> <p>Following annual monitoring of fuel loads, implement actions as directed by the local authority which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade to manage fuel loads within 6 months or as soon as appropriate (<i>i.e.</i>, consider weather conditions).</p> <p>If required, recovery actions including weed control and management and/or infill planting may be undertaken to ensure the habitat quality performance criteria are achieved within the management period within 6 months following an audit if favourable weather conditions.</p> <p>Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events.</p>
Habitat creation and regeneration management	<ul style="list-style-type: none"> Rehabilitated areas are established, regenerated and mapped as remnant vegetation under Queensland’s VMA successor legislation by Year 20 which requires 70% of canopy height and 50% of expected cover according to the relevant Regional Ecosystem benchmark to be reached. 	<p>Regeneration measures not implemented as proposed; site condition metrics do not improve according to proposed environmental outcomes.</p> <p>OAARs indicate that the rate of plant stock failure is greater than 10%.</p>	<p>Infill planting will be implemented if required within 12 months following MHQA survey intervals. Monitoring of infill planting to occur regularly after initial planting in accordance with watering schedules determined by the bush regeneration contractor and dependent on weather.</p>

Action	Completion Criteria	Corrective Action Trigger	Corrective Action
	<ul style="list-style-type: none"> Site condition metrics for koala and grey-headed flying-fox improves in accordance with environmental outcomes (see Table 6 to Table 15). 	<p>Habitat does not achieve performance criteria as identified in Milestone Reports within the management period, implement corrective actions.</p>	<p>Monitoring will be undertaken regularly by the Offset Provider or appointed suitably qualified regeneration contractor after planting in accordance with watering schedules (depending on rainfall) of infill planting and supplementary direct seeding, planting, weed control, fertiliser, amelioration or other management actions will be implemented as required to enhance success rate and stimulate tree growth and establishment.</p> <p>Risk management, corrective actions and adaptive management are to be integrated as required throughout the offset management period in response to changes or natural events.</p> <p>The management period may be extended to ensure environmental outcomes are able to be achieved.</p>
<p>Fencing and Signage</p>	<ul style="list-style-type: none"> There are no mortalities or injury to koala or grey-headed flying-fox recorded as a result of barbed-wire fencing. There are no stock breaches or unauthorised access recorded. 	<p>Fencing or signage not installed or retrofitted as proposed causing GHFF entanglement or stock breaches.</p> <p>Fencing disrepair causes stock breaches or other unauthorised access.</p>	<p>Fencing is repaired and alternative signage and fencing solutions are considered if needed.</p>

10.3. Limitations

Although an adaptive management plan will be implemented across the offset area for life of the offset (20 years), potential limitations to achieving these include:

- Associated risks and uncertainty in predicting the occurrence and extent of natural disasters or extreme weather events, including drought and flooding.
- Uncertainty of the rate at which vegetation will re-establish.
- The ability of native fauna (*i.e.*, koala and GHFF) to recognise and utilise the site for habitat requirements.
- Uncertainty of future predator occurrence and the effectiveness of the pest management measures.
- Coordinated approaches between local governments and the offset area holder to ensure effective implementation of management plans.

The implementation of adaptive management measures will ensure that identified limitations are avoided and/or the subsequent impacts are mitigated where possible. The promotion of suitable habitat on-site through implementing the various management actions, along with the continuous monitoring of abundance, will assist in species utilisation of the site.

Further, the regular review of this Additional Offset Management Plan, inclusive of the management actions and monitoring methodologies detailed within it, will assist in identifying areas requiring improvement, and conversely, will identify methodology that has been successful. The success or required amendments to the management plans or works on-site will be assessed during the completion of the ACR as required under the EPBC Approval.

To ensure progress towards environmental outcomes and completion criteria is assessed correctly the baseline surveys have been developed to be repeatable and gather the data required for comparison against the completion criteria. Surveys are to be repeated in the same manner and location throughout the management period to ensure a consistent approach and accurate representation of the conservation values within the offset area.

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12. Appendices

- Appendix A – EPBC Approval and Variation 2013/7057
- Appendix B – Offset Assessment Guide Calculator Results and Justification
- Appendix C – Curriculum vitae of suitably qualified ecologists
- Appendix D – Additional impact area – MHQA raw data
- Appendix E – Offset area – koala MHQA baseline scoring
- Appendix F – Offset area – baseline raw data
- Appendix G – Offset area – grey-headed flying-fox FHA baseline scoring
- Appendix H – Risk Assessment

Appendix A

EPBC Approval and Variation
2013/7057



Approval

Spring Mountain Mixed Use Master Planned Community Development, Queensland (EPBC 2013/7057)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

Person to whom the approval is granted Lend Lease Communities (Springfield) Pty Limited

Proponent's ACN (if applicable) ACN 087 876 864

Proposed action To construct a mixed use development (including residential, commercial and community developments and associated infrastructure) on a 387ha site at Spring Mountain, Queensland [See EPBC Act referral 2013/7057].

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approved

Conditions of approval

This approval is subject to the conditions specified below.

Expiry date of approval

This approval has effect until 31 December 2040.

Decision-maker

Name and position Deb Callister
Acting First Assistant Secretary
Environment Standards Division

Signature

Date of decision 23 December 2015

CONDITIONS

1. The approval holder must not clear more than 255 hectares of **MNES habitat**.
2. To minimise adverse impacts to **koalas** from **vegetation clearing and construction activities** there must be no **koala** injury or mortality as a result of **vegetation clearing and construction activities** at the **project site**.
3. To minimise adverse impacts to **koalas** from vehicle strike and in order to maintain safe **koala** movement opportunities through the **project site** the approval holder must:
 - a. implement the measures specified in Table 3-3 of the **Fauna Management Plan** prior to **operation**, and maintain these measures for the life of the approval;
 - b. ensure **koala road crossings** are placed in the locations specified at Figure 3-1 of the **Fauna Management Plan** prior to **operation**, and maintain these measures for the life of the approval;
 - c. implement measures sufficient to identify any **koala** injury and mortality at the **project site**; and
 - d. if **koala** injury or mortality occurs, then revise management measures in consultation with a **suitably qualified person** to reduce the likelihood of adverse impacts to **koalas**; and inform the **Department**, either as part of annual compliance reporting required under condition 13 or as a separate notification in writing.
4. To minimise adverse impacts to **koalas** from domestic dog attack and to exclude **koalas** from entering residential areas within the **project site**, the approval holder must:
 - a. implement measures to prevent domestic dog attacks on **koalas**, including limiting the movement of domestic dogs, creating dog exclusion zones and **signage** as specified at section 3.4 of the **Fauna Management Plan**; and
 - b. ensure **koala exclusion fencing** is constructed and located as specified at section 3.4 of the **Fauna Management Plan** prior to **operation**, and maintained for the life of the approval.
5. To minimise adverse impacts to **Plectranthus habrophyllus**, there must be no net loss of **P. habrophyllus** at the **project site** as a result of the proposed action, as defined by the following milestones:
 - a. by six months after the **commencement of the action** and annually for three years thereafter, there must be 0% cover of **weeds of national significance** in the **on-site conservation areas** and **buffer areas**;
 - b. by one year after the **commencement of construction** there must be 80% survival of planted **P. habrophyllus**;
 - c. by three years after the **commencement of construction**, there must be an increase in the number of mature **P. habrophyllus** in the **on-site conservation areas** that is greater than the number of **P. habrophyllus** removed during **construction**; and
 - d. by three years after the **commencement of construction**, there must be evidence of recruitment from planted **P. habrophyllus** individuals.

6. The approval holder must undertake a monitoring program. The monitoring program must be planned and undertaken so that the data gathered is adequate to: inform adaptive management; and demonstrate whether milestones and outcomes described in conditions 2, 5 and 8 have been met. The monitoring program must:
 - a. include daily surveys for injured or dead koalas during **vegetation clearing and construction activities**;
 - b. include pre-clearance surveys of all areas that will be cleared to establish the number of mature *P. habrophyllus* that will be lost as a result of the proposed action;
 - c. establish quadrats within each of the **on-site conservation areas** where *P. habrophyllus* has been planted and at **control sites** that contain remnant *P. habrophyllus* populations where supplemental planting has not occurred; and
 - d. be undertaken by a **suitably qualified person**.
7. To compensate for the loss of **koala habitat** and **grey-headed flying-fox foraging habitat** the approval holder must:
 - a. **secure**, prior to the **commencement of the action**, the **offset** containing 293 hectares of **MNES habitat** within the offset area at **Annex 1**;
 - b. provide the Department with the **offset attributes, shapefile** and map(s) clearly defining the location and boundaries of each offset, within 2 weeks of lodgement of the offset with the **Titles Office**; and
 - c. ensure the **Agreement** is registered on the title on which each offset is located, and provide the Department with evidence of lodgement with the **Titles Office**, within 2 weeks of lodgement. Provide a copy of the signed **agreement** within 2 weeks of receipt from the **Titles Office**.

The approval holder must ensure any proposal for alternative offsets is agreed to in writing with the **Department**.

Note: Offsets for different species may overlap where they share the same habitat requirements.

8. To compensate for impacts to **koala habitat** and **grey-headed flying-fox foraging habitat** the approval holder must achieve the following outcomes as compared to baseline **offset** habitat quality and extent, unless agreed in writing with the **Department**:
 - a. by 20 years after the **commencement of construction**, there must be a **gain in habitat quality** across 90% of the **offset**.
9. To mitigate impacts on **koala** and *P. habrophyllus*, the approval holder must develop a fire management strategy for the **project site** and the **offset**, incorporating advice from a **suitably qualified person** regarding the impacts of the fire management strategy on **koala** and *P. habrophyllus*.
10. The approval holder must adaptively manage **koala habitat, grey-headed flying-fox foraging habitat** and *P. habrophyllus* to achieve the outcomes described in conditions 1-9. This must include:

- a. developing and implementing a strategy (or strategies) to achieve the outcomes and milestones outlined in conditions 1-9, in consultation with a **suitably qualified person** (noting that the plan does not require approval by the **Minister** and is not an 'action management plan' under the **EPBC Act**);
- b. a documented process of adaptive management and continual improvement, including using data from monitoring and experimentation trials to inform adaptive management; and
- c. where there is a reasonable risk (or evidence) that outcomes or milestones are not likely to be achieved: revising management measures in consultation with a **suitably qualified person**; increasing the level of effort to achieve the outcomes; and informing the **Department**, either as part of annual compliance reporting required under condition 13 or as a separate notification in writing.

Administrative conditions

11. Within 7 days after the **commencement of the action**, the approval holder must advise the **Department** in writing of the actual date of **commencement of the action**.
12. The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plan, report or strategy required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.
13. Within three months of every 12 month anniversary of the **commencement of the action**, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published, until agreed in writing with the **Department**.
14. The approval holder must notify the **Department** in writing of any non - compliance with conditions as soon as practicable and within no more than 2 business days of becoming aware of the non - compliance.
15. Upon the direction of the **Minister**, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.
16. The approval holder may choose to revise a management plan, program or strategy approved by the **Minister** under conditions 1 - 9 without submitting it for approval under section 143A of the **EPBC Act**, if the taking of the action in accordance with the revised plan, program or strategy would not be likely to have a **new or increased impact**. If the approval holder makes this choice they must:

- a. notify the **Department** in writing that the approved plan, program or strategy has been revised and provide the **Department** with an electronic copy of the revised plan, program or strategy;
 - b. implement the revised plan, program or strategy from the date that the plan, program or strategy is submitted to the **Department**; and
 - c. for the life of this approval, maintain a record of the reasons the approval holder considers that taking the action in accordance with the revised plan, program or strategy would not be likely to have a **new or increased impact**.
17. The approval holder may revoke their choice under condition 16 at any time by notice to the **Department**. If the approval holder revokes the choice to implement a revised plan, program or strategy, without approval under section 143A of the Act, the plan, program or strategy approved by the **Minister** must be implemented.
18. Condition 16 does not apply if the revisions to the approved plan, program or strategy include changes to environmental offsets provided under the plan, program or strategy in relation to a matter protected by a controlling provision for the action, unless otherwise agreed in writing by the **Minister**. This does not otherwise limit the circumstances in which the taking of the action in accordance with a revised plan, program or strategy would, or would not, be likely to have **new or increased impacts**.
19. If the **Minister** gives a notice to the approval holder that the **Minister** is satisfied that the taking of the action in accordance with the revised plan, program or strategy would be likely to have a **new or increased impact**, then:
- a. Condition 16 does not apply, or ceases to apply, in relation to the revised plan, program or strategy; and
 - b. The approval holder must implement the plan, program or strategy approved by the **Minister**.

To avoid any doubt, this condition does not affect any operation of conditions 16, 17 and 18 in the period before the day the notice is given.

At the time of giving the notice the **Minister** may also notify that for a specified period of time that condition 16 does not apply for one or more specified plans, programs or strategies required under the approval.

20. Conditions 16, 17, 18 and 19 are not intended to limit the operation of section 143A of the **EPBC Act** which allows the approval holder to submit a revised plan, program or strategy to the **Minister** for approval.
21. If, at any time after five years from the date of this approval, the approval holder has not **substantially commenced the action**, then the approval holder must not **substantially commence the action** without the written agreement of the **Minister**.
22. Unless otherwise agreed to in writing by the **Minister**, the approval holder must publish all management plans, reports or strategies referred to in these conditions of approval on their website. Each management plan, report or strategy must be published on the website within 1 month of being approved by the **Minister** or being submitted under condition 1 – 9.

DEFINITIONS

Agreement - the executed agreement between the approval holder and the relevant landowner, to secure the land for long-term protection.

Buffer areas means 20 metre buffers around areas containing remnant or planted *P. habrophyllus*.

Commencement of the action means the date **construction** is first undertaken, excluding fences and signage, associated with the proposed action.

Construction includes any preparatory works required to be undertaken including clearing vegetation, the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for buildings or infrastructure including any works for the creation of vegetation buffers.

Control sites means sites to be monitored concurrently with a **project site** or **offset site**, to provide evidence of the relative impacts or improvements as a result of the proposed action.

Department means the Australian Government Department or any other agency administering the **EPBC Act** from time to time.

EPBC Act means the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth).

EPBC Act Environment Offsets Policy (October 2012) is the Policy guiding the use of offsets under the *Environment Protection and Biodiversity Conservation Act 1999*, published by the then Department of Sustainability, Environment, Water, Population and Communities, October 2012.

Fauna Management Plan means the document titled *Saunders Havill Group's Spring Mountain Fauna Management Plan 17 July 2015* (FMP).

Gain in habitat quality means an improvement in the quality and extent of **koala habitat** and **grey-headed flying-fox foraging habitat** in comparison to baseline environmental conditions at the **offset** and compared with an unmanaged control site.

Grey-headed flying-fox means the native species *Pteropus poliocephalus*, protected under the **EPBC Act**.

Grey-headed flying-fox foraging habitat means the known native food trees, including eucalypts (genera *Eucalyptus*, *Corymbia* and *Angophora*), melaleucas and banksias that are the primary food for the species.

Koala means the native species *Phascolarctos cinereus* (combined populations of Qld, NSW and the ACT), protected under the **EPBC Act**.

Koala habitat means any forest or woodland containing species that are known **koala** food trees or shrubland with emergent food trees. This can include remnant and non – remnant vegetation in natural, agricultural, urban and peri-urban environments and is defined by the vegetation community present and the vegetation structure; **koalas** do not necessarily have to be present.

Koala exclusion fencing is fencing constructed and located to prevent access by **koalas** to residences within the **project site**.

Koala road crossings are road crossings, including underpasses, which are specifically designed to facilitate the movement of **koalas**.

Minister means the Minister administering the EPBC Act and includes a delegate of the Minister.

MNES means matters of national environmental significance.

MNES habitat means **koala habitat** and **grey-headed flying-fox foraging habitat**.

New or increased impact means a new or increased impact on any matter protected by the controlling provisions for the action, when compared to the plan, program or strategy that has been approved by the **Minister**.

Offset attributes means a '.xls' file capturing relevant attributes of the **offset** site, including the EPBC reference ID number, the physical address of the **offset** site, coordinates of the boundary points in decimal degrees, the **EPBC Act** protected matters that the **offset** compensates for, any additional **EPBC Act** protected matters that are benefiting from the **offset**, and the size of the **offset** in hectares.

On-site conservation areas means areas containing remnant or planted *P. habrophyllus* that are managed primarily for conservation.

Operation means the date of commencement of functioning as a residential development.

Plectranthus habrophyllus or *P. habrophyllus* means the native species protected under the **EPBC Act**.

Project site is the area defined as 'referral area' in the map at **Annex 2**.

Secure means long-term protection under a legal mechanism that is either establishing a covenant on the title as a voluntary declaration under the *Vegetation Management Act 1999* (Qld), or establishing a Nature Refuge under the *Nature Conservation Act 1992* (Qld).

Shapefile means an ESRI Shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes including at least the EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.

Signage is appropriately located signs designed to raise awareness of the presence of **Koalas** within the **project site** or mitigate against impacts to **Koalas**.

Substantially commence (d) the action means commencement of clearing the land and construction of infrastructure (i.e. sewerage, power, water, stormwater) associated with the action. This does not include preparatory works.

Suitably qualified person means a person with qualifications in environmental science, ecology or biology from a recognised institute and a minimum of 5 years field experience in flora and fauna management, or as agreed in writing by the **Department**.

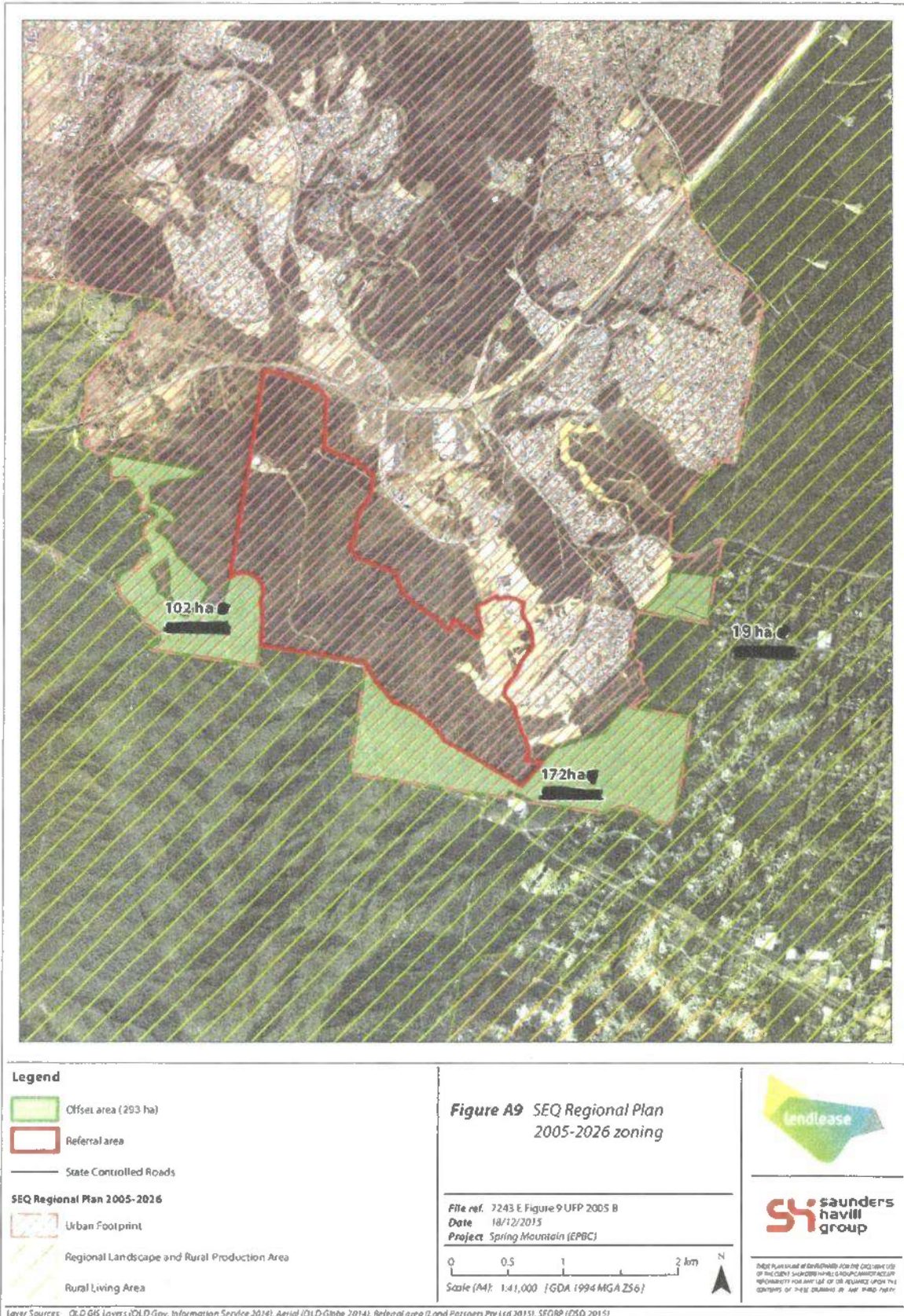
Titles Office means the relevant authority responsible for registering the land title transaction.

Vegetation clearing and construction activities means any activities that destroy, modify or remove vegetation within the **project site**, and those activities required during the construction of infrastructure for the duration of the approval.

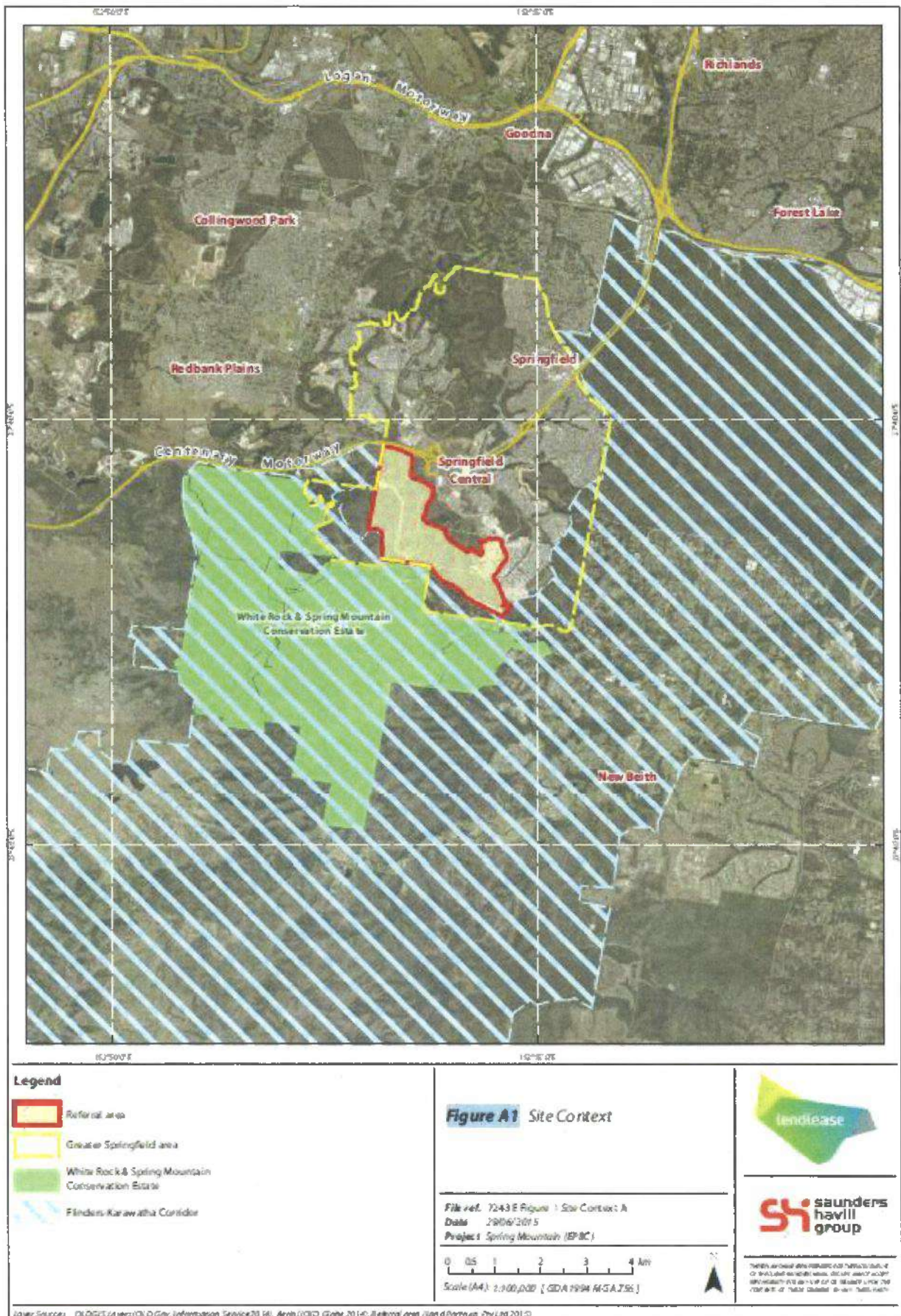
Weeds of national significance means the thirty two weeds that have been agreed by Australian governments, based on an assessment process that prioritised these weeds based

on their invasiveness, potential for spread and environmental, social and economic impacts, available at: <http://www.weeds.org.au/docs/WoNS/>.

Annex 1



Annex 2





Australian Government

Department of Climate Change, Energy,
the Environment and Water

Variation of conditions attached to approval

Spring Mountain Mixed Use Master Planned Community Development, Queensland (EPBC 2013/7057)

This decision to vary conditions of approval is made under section 143 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Approved action

approval holder	Lendlease Communities (Springfield) Pty Limited ACN 087 876 864
approved action	To construct a mixed use development (including residential, commercial and community developments and associated infrastructure) on a 387ha site at Spring Mountain, Queensland. See EPBC Act referral 2013/7057

Variation

variation of conditions attached to approval	<p>The variation is:</p> <p>Delete condition 1 attached to the approval and substitute with the condition specified in the table below.</p> <p>Add conditions 1A, 1B, 1C and 1D specified in the table below.</p> <p>Add definitions of Clear/Clearing/Cleared, Conservation advice/s, recovery plans and threat abatement plans, Environmental Management Plan Guidelines, Mapping guidelines and Offset.</p> <p>Delete definitions of Secure or secured and Weeds of national significance and substitute with the definition specified in the table below.</p> <p>Delete Annex A and Annex B and substitute with the annexures specified in the table below.</p>
date of effect	This variation has effect on the date this instrument is signed.

Person authorised to make decision

name and position	Natasha Amerasinghe Acting Branch Head Environment Assessments (Vic, Tas) and Post Approvals Branch
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signature



date of decision

18 September 2024

date of decision

conditions attached to approval

As varied on the date this instrument was signed

- 1) The approval holder must not clear:
 - a) outside the **project site**
 - b) more than 274.6 hectares (ha) of **MNES habitat**.
-

As varied on the date this instrument was signed

- 1A) To compensate for the **clearing** of 19.6 ha of **koala habitat** and **grey-headed flying-fox foraging habitat** enabled by this variation decision, additional to the **clearing** allowed by the approval decision made on 23 December 2015, the approval holder must submit an Additional Offset Management Plan (AOMP) to the **department** for the **Minister's** approval. The AOMP must specify how a direct offset to compensate for the impacts to the 19.6 ha of **MNES habitat** will be provided. The approval holder must not **clear** more than 255ha within the **project site** until the AOMP has been approved by the **Minister** in writing.

The AOMP must be prepared a **suitably qualified person**, be in accordance with the **Environmental Management Plan Guidelines** and the **EPBC Act Environmental Offsets Policy (October 2012)** to the satisfaction of the **Minister** and include:

- a) a description of the proposed direct offset, including location, size, condition, environmental values present, adjacent land uses and a map of the proposed offset that meets the [mapping guidelines](#);
 - b) details to demonstrate how the proposed offset will compensate for the additional clearance of 19.6 ha of **MNES habitat** enabled by this variation decision;
 - c) details of how the proposed offset will provide connectivity with other habitats and biodiversity corridors and/or will contribute to a larger strategic offset for **MNES**;
 - d) maps and **shapefiles**, prepared in accordance with the **mapping guidelines**, to clearly specify the location and boundaries of the proposed offset, accompanied by **offset attributes**.
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- e) mitigation and management measures to achieve the outcomes required under these conditions;
 - f) an assessment of the risks to achieving the outcomes committed to in the AOMP and risk management strategies that will be applied;
 - g) an annual monitoring program that measures the progress of achieving the outcomes required under these conditions and includes:
 - i. results of baseline surveys of the **habitat quality** of the proposed offset;
 - ii. measurable, timebound performance indicators, including milestones to be achieved within 5, 10 and 15 years after the date of commencement of implementing the AOMP;
 - iii. completion criteria to determine when and how the habitat quality improvements committed to in the AOMP have been fully achieved;
 - iv. trigger values and proposed corrective actions to be implemented, if the trigger values are reached; the timing, methods and frequency of monitoring capable of detecting trigger values and changes in the performance indicators; and
 - v. reporting and review mechanisms.
 - h) Evidence of how management measures and corrective actions for the proposed offset consider and are consistent with **conservation advice/s, recovery plans and threat abatement plans** for **MNES**;
 - i) Details of how the proposed offset and AOMP meet the principles of the **EPBC Act Environmental Offsets Policy (October 2012)**; and
 - j) Details of the mechanism and timing proposed to legally **secure** the proposed offset.

As varied on the date this instrument was signed

1B) The approval holder must not **clear** more than 255 ha within the **project site** until the offset site proposed in the approved AOMP has been legally **secured**. The approval holder must ensure that the offset site proposed in the approved AOMP remains **secured** at least until the expiry date of this approval.

As varied on the date this instrument was signed

1C) The approval holder must commence implementing the approved AOMP no later than the date on which the offset site proposed in the approved AOMP is legally **secured** and

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	continue to implement the AOMP until the expiry date of this approval.
As varied on the date this instrument was signed	1D) The approval holder must, within 5 business days of commencing implementation of the AOMP, notify the department of the date on which implementation of the AOMP commenced.
Original dated 23/12/2015	2) To minimise adverse impacts to koalas from vegetation clearing and construction activities there must be no koala injury or mortality as a result of vegetation clearing and construction activities at the project site .
Original dated 23/12/2015	3) To minimise adverse impacts to koalas from vehicle strike and in order to maintain safe koala movement opportunities through the project site the approval holder must: a) implement the measures specified in Table 3-3 of the Fauna Management Plan prior to operation , and maintain these measures for the life of the approval; b) ensure koala road crossings are placed in the locations specified at Figure 3-1 of the Fauna Management Plan prior to operation , and maintain these measures for the life of the approval; c) implement measures sufficient to identify any koala injury and mortality at the project site ; and d) if koala injury or mortality occurs, then revise management measures in consultation with a suitably qualified person to reduce the likelihood of adverse impacts to koalas ; and inform the Department , either as part of annual compliance reporting required under condition 13 or as a separate notification in writing.
Original dated 23/12/2015	4) To minimise adverse impacts to koalas from domestic dog attack and to exclude koalas from entering residential areas within the project site , the approval holder must: a) implement measures to prevent domestic dog attacks on koalas , including limiting the movement of domestic dogs, creating dog exclusion zones and signage as specified at section 3.4 of the Fauna Management Plan ; and b) ensure koala exclusion fencing is constructed and located as specified at section 3.4 of the Fauna Management Plan prior to operation , and maintained for the life of the approval.

Original dated 23/12/2015

- 5) To minimise adverse impacts to *Plectranthus habrophyllus*, there must be no net loss of *P. habrophyllus* at the **project site** as a result of the proposed action, as defined by the following milestones:
- a) by six months after the **commencement of the action** and annually for three years thereafter, there must be 0% cover of **weeds of national significance** in the **on-site conservation areas** and **buffer areas**;
 - b) by one year after the **commencement of construction** there must be 80% survival of planted *P. habrophyllus*;
 - c) by three years after the **commencement of construction**, there must be an increase in the number of mature *P. habrophyllus* in the **on-site conservation areas** that is greater than the number of *P. habrophyllus* removed during **construction**; and
 - d) by three years after the **commencement of construction**, there must be evidence of recruitment from planted *P. habrophyllus* individuals.

Original dated 23/12/2015

- 6) The approval holder must undertake a monitoring program. The monitoring program must be planned and undertaken so that the data gathered is adequate to: inform adaptive management; and demonstrate whether milestones and outcomes described in conditions 2, 5 and 8 have been met. The monitoring program must:
- a) include daily surveys for injured or dead koalas during **vegetation clearing and construction activities**;
 - b) include pre-clearance surveys of all areas that will be **cleared** to establish the number of mature *P. habrophyllus* that will be lost as a result of the proposed action;
 - c) establish quadrats within each of the **on-site conservation areas** where *P. habrophyllus* has been planted and at **control sites** that contain remnant *P. habrophyllus* populations where supplemental planting has not occurred; and
 - d) be undertaken by a suitably qualified person.

Original dated 23/12/2015

- 7) To compensate for the loss of **koala habitat** and **grey-headed flying-fox foraging habitat** the approval holder must:
- a) **secure**, prior to the **commencement of the action**, the **offset** containing 293 hectares of **MNES habitat** within the offset area at **Annex 1**;

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- b) provide the Department with the **offset attributes, shapefile** and map(s) clearly defining the location and boundaries of each offset, within 2 weeks of lodgement of the offset with the **Titles Office**; and
 - c) ensure the **Agreement** is registered on the title on which each offset is located, and provide the Department with evidence of lodgement with the **Titles Office**, within 2 weeks of lodgement. Provide a copy of the signed **agreement** within 2 weeks of receipt from the **Titles Office**.

The approval holder must ensure any proposal for alternative offsets is agreed to in writing with the **Department**.

Note: Offsets for different species may overlap where they share the same habitat requirements.

Original dated 23/12/2015

- 8) To compensate for impacts to **koala habitat and grey-headed flying-fox foraging habitat** the approval holder must achieve the following outcomes as compared to baseline **offset** habitat quality and extent, unless agreed in writing with the **Department**:
 - a) by 20 years after the **commencement of construction**, there must be a **gain in habitat quality** across 90% of the **offset**.

Original dated 23/12/2015

- 9) To mitigate impacts on **koala** and ***P. habrophyllus***, the approval holder must develop a fire management strategy for the **project site** and the **offset**, incorporating advice from a **suitably qualified person** regarding the impacts of the fire management strategy on **koala** and ***P. habrophyllus***.

Original dated 23/12/2015

- 10) The approval holder must adaptively manage **koala habitat, grey-headed flying-fox foraging habitat** and ***P. habrophyllus*** to achieve the outcomes described in conditions 1-9. This must include:
 - a) developing and implementing a strategy (or strategies) to achieve the outcomes and milestones outlined in conditions 1-9, in consultation with a **suitably qualified person** (noting that the plan does not require approval by the **Minister** and is not an 'action management plan' under the **EPBC Act**);
 - b) a documented process of adaptive management and continual improvement, including using data from
-

monitoring and experimentation trials to inform adaptive management; and

- c) where there is a reasonable risk (or evidence) that outcomes or milestones are not likely to be achieved: revising management measures in consultation with a **suitably qualified person**; increasing the level of effort to achieve the outcomes; and informing the **Department**, either as part of annual compliance reporting required under condition 13 or as a separate notification in writing.

administrative conditions

Original dated 23/12/2015

- 11) Within 7 days after the **commencement of the action**, the approval holder must advise the **Department** in writing of the actual date of **commencement of the action**.

Original dated 23/12/2015

- 12) The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plan, report or strategy required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.

Original dated 23/12/2015

- 13) Within three months of every 12 month anniversary of the **commencement of the action**, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published, until agreed in writing with the **Department**.

Original dated 23/12/2015

- 14) The approval holder must notify the **Department** in writing of any non - compliance with conditions as soon as practicable and within no more than 2 business days of becoming aware of the non - compliance.

Original dated 23/12/2015

- 15) Upon the direction of the **Minister**, the approval holder must ensure that an independent audit of compliance with the
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conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.

Original dated 23/12/2015

- 16) The approval holder may choose to revise a management plan, program or strategy approved by the **Minister** under conditions 1 - 9 without submitting it for approval under section 143A of the EPBC Act, if the taking of the action in accordance with the revised plan, program or strategy would not be likely to have a **new or increased impact**. If the approval holder makes this choice they must:
- a) notify the **Department** in writing that the approved plan, program or strategy has been revised and provide the **Department** with an electronic copy of the revised plan, program or strategy;
 - b) implement the revised plan, program or strategy from the date that the plan, program or strategy is submitted to the **Department**; and
 - c) for the life of this approval, maintain a record of the reasons the approval holder considers that taking the action in accordance with the revised plan, program or strategy would not be likely to have a **new or increased impact**.
-

Original dated 23/12/2015

- 17) The approval holder may revoke their choice under condition 16 at any time by notice to the **Department**. If the approval holder revokes the choice to implement a revised plan, program or strategy, without approval under section 143A of the Act, the plan, program or strategy approved by the **Minister** must be implemented.
-

Original dated 23/12/2015

- 18) Condition 16 does not apply if the revisions to the approved plan, program or strategy include changes to environmental offsets provided under the plan, program or strategy in relation to a matter protected by a controlling provision for the action, unless otherwise agreed in writing by the **Minister**. This does not otherwise limit the circumstances in which the taking of the action in accordance with a revised plan, program or strategy would, or would not, be likely to have **new or increased impacts**.
-

Original dated 23/12/2015

- 19) If the **Minister** gives a notice to the approval holder that the **Minister** is satisfied that the taking of the action in accordance
-

with the revised plan, program or strategy would be likely to have a **new or increased impact**, then:

- a. Condition 16 does not apply, or ceases to apply, in relation to the revised plan, program or strategy; and
- b. The approval holder must implement the plan, program or strategy approved by the **Minister**.

To avoid any doubt, this condition does not affect any operation of conditions 16, 17 and 18 in the period before the day the notice is given.

At the time of giving the notice the **Minister** may also notify that for a specified period of time that condition 16 does not apply for one or more specified plans, programs or strategies required under the approval.

Original dated 23/12/2015 20) Conditions 16, 17, 18 and 19 are not intended to limit the operation of section 143A of the **EPBC Act** which allows the approval holder to submit a revised plan, program or strategy to the **Minister** for approval.

Original dated 23/12/2015 21) If, at any time after five years from the date of this approval, the approval holder has not **substantially commenced the action**, then the approval holder must not **substantially commence the action** without the written agreement of the **Minister**.

Original dated 23/12/2015 22) Unless otherwise agreed to in writing by the **Minister**, the approval holder must publish all management plans, reports or strategies referred to in these conditions of approval on their website. Each management plan, report or strategy must be published on the website within 1 month of being approved by the **Minister** or being submitted under condition 1 – 9.

date of decision

definitions attached to approval

Original dated 23/12/2015 **Agreement** - the executed agreement between the approval holder and the relevant landowner, to secure the land for long-term protection.

Original dated 23/12/2015 **Buffer areas** means 20 metre buffers around areas containing remnant or planted *P. habrophyllus*.

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As varied on the date this instrument was signed	Clear/Clearing/Cleared means the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of vegetation excluding Weeds of national significance .
Original dated 23/12/2015	Commencement of the action means the date construction is first undertaken, excluding fences and signage, associated with the proposed action.
As varied on the date this instrument was signed	Conservation advice/s, recovery plans and threat abatement plans means conservation advice/s (including listing advice/s), recovery plans and threat abatement plans for MNES approved by the Minister .
Original dated 23/12/2015	Construction includes any preparatory works required to be undertaken including clearing vegetation, the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for buildings or infrastructure including any works for the creation of vegetation buffers.
Original dated 23/12/2015	Control sites means sites to be monitored concurrently with a project site or offset site, to provide evidence of the relative impacts or improvements as a result of the proposed action.
Original dated 23/12/2015	Department means the Australian Government Department or any other agency administering the EPBC Act from time to time.
As varied on the date this instrument was signed	Environmental Management Plan Guidelines means the <i>Environmental Management Plan Guidelines, Commonwealth of Australia 2024</i> , as published at the following webpage address: Environment Management Plan Guidelines
Original dated 23/12/2015	EPBC Act means the <i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i> .
Original dated 23/12/2015	EPBC Act Environment Offsets Policy (October 2012) is the Policy guiding the use of offsets under the Environment Protection and Biodiversity Conservation Act 1999, published by the then Department of Sustainability, Environment, Water, Population and Communities, October 2012.
Original dated 23/12/2015	Fauna Management Plan means the document titled <i>Saunders Havill Group's Spring Mountain Fauna Management Plan 17 July 2015 (FMP)</i> .
Original dated 23/12/2015	Gain in habitat quality means an improvement in the quality and extent of koala habitat and grey-headed flying-fox foraging habitat

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	in comparison to baseline environmental conditions at the offset and compared with an unmanaged control site.
Original dated 23/12/2015	Grey-headed flying-fox means the native species <i>Pteropus poliocephalus</i> , protected under the EPBC Act .
Original dated 23/12/2015	Grey-headed flying-fox foraging habitat means the known native food trees, including eucalypts (genera <i>Eucalyptus</i> , <i>Corymbia</i> and <i>Angophora</i>), melaleucas and banksias that are the primary food for the species.
Original dated 23/12/2015	Koala means the native species <i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT), protected under the EPBC Act .
Original dated 23/12/2015	Koala habitat means any forest or woodland containing species that are known koala food trees or shrubland with emergent food trees. This can include remnant and non – remnant vegetation in natural, agricultural, urban and peri-urban environments and is defined by the vegetation community present and the vegetation structure; koalas do not necessarily have to be present.
Original dated 23/12/2015	Koala exclusion fencing is fencing constructed and located to prevent access by koalas to residences within the project site .
Original dated 23/12/2015	Koala road crossings are road crossings, including underpasses, which are specifically designed to facilitate the movement of koalas .
As varied on the date this instrument was signed	Mapping guidelines means <i>Guide to providing maps and boundary data for EPBC Act projects (2021)</i> , as published at the following webpage address: Maps and boundary data for EPBC Act projects
Original dated 23/12/2015	Minister means the Minister administering the EPBC Act and includes a delegate of the Minister.
Original dated 23/12/2015	MNES means matters of national environmental significance.
Original dated 23/12/2015	MNES habitat means koala habitat and grey-headed flying-fox foraging habitat .
Original dated 23/12/2015	New or increased impact means a new or increased impact on any matter protected by the controlling provisions for the action, when compared to the plan, program or strategy that has been approved by the Minister .
As varied on the date this instrument was signed	Offset means 293 hectares of MNES habitat located where represented in the map at Annex 1 by the three green shaded zones, each enclosed by a green solid line designated 'Offset area (293 ha)'.

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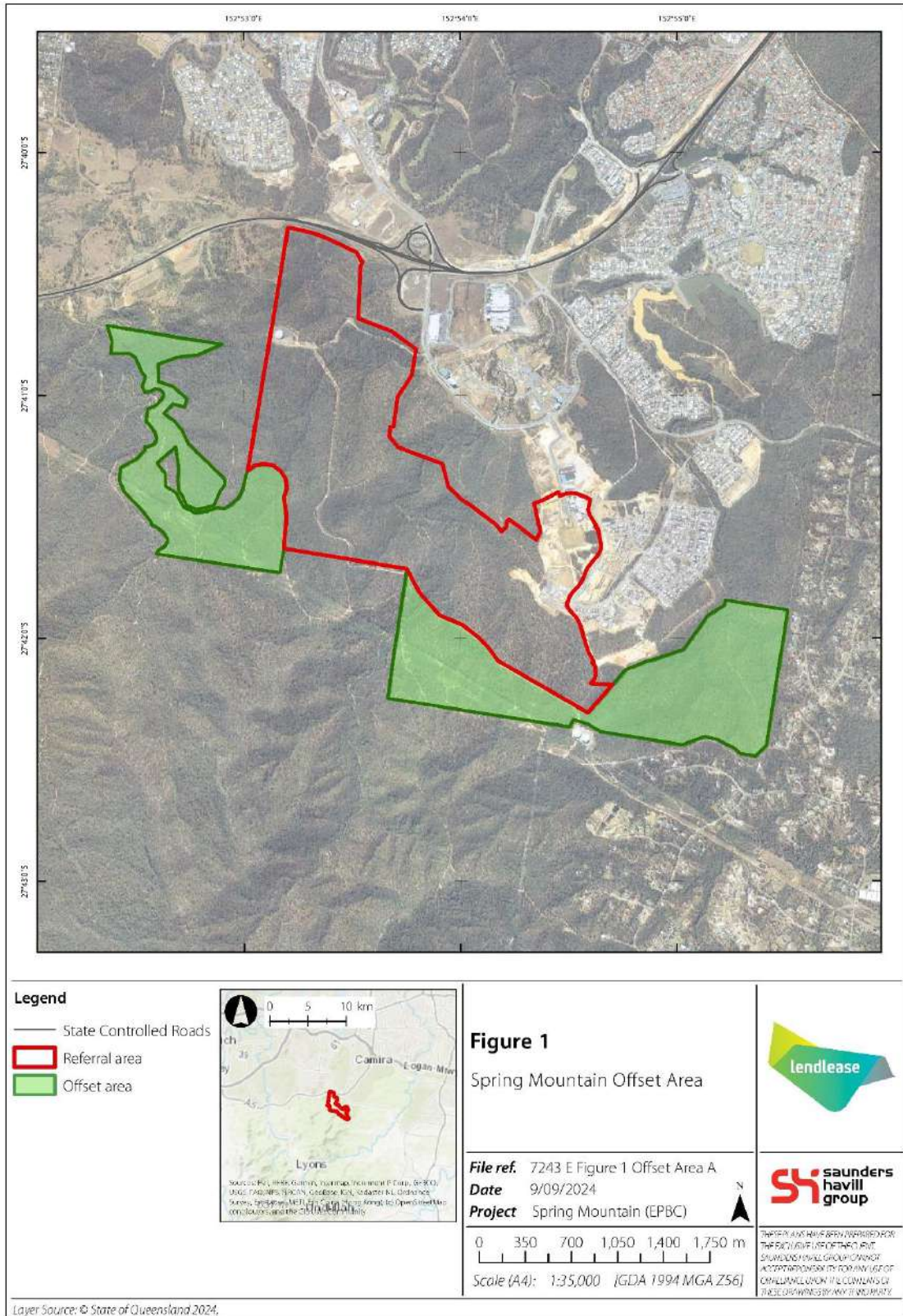
Original dated 23/12/2015	Offset attributes means a '.xls' file capturing relevant attributes of the offset site, including the EPBC reference ID number, the physical address of the offset site, coordinates of the boundary points in decimal degrees, the EPBC Act protected matters that the offset compensates for, any additional EPBC Act protected matters that are benefiting from the offset , and the size of the offset in hectares.
Original dated 23/12/2015	On-site conservation areas means areas containing remnant or planted <i>P. habrophyllus</i> that are managed primarily for conservation.
Original dated 23/12/2015	Operation means the date of commencement of functioning as a residential development.
Original dated 23/12/2015	<i>Plectranthus habrophyllus</i> or <i>P. habrophyllus</i> means the native species protected under the EPBC Act .
Original dated 23/12/2015	Project site is the area defined as 'referral area' in the map at <u>Annex 2</u> .
As varied on the date this instrument was signed	Secure or secured means to provide enduring conservation protection on the title of land under relevant Queensland legislation, or another enduring protection mechanism agreed to in writing by the department to provide protection for the site against development incompatible with conservation.
Original dated 23/12/2015	Shapefile means an ESRI Shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes including at least the EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.
Original dated 23/12/2015	Signage is appropriately located signs designed to raise awareness of the presence of Koalas within the project site or mitigate against impacts to Koalas .
Original dated 23/12/2015	Substantially commence (d) the action means commencement of clearing the land and construction of infrastructure (i.e. sewerage, power, water, stormwater) associated with the action. This does not include preparatory works.
Original dated 23/12/2015	Suitably qualified person means a person with qualifications in environmental science, ecology or biology from a recognised institute and a minimum of 5 years field experience in flora and fauna management, or as agreed in writing by the Department .
Original dated 23/12/2015	Titles Office means the relevant authority responsible for registering the land title transaction.

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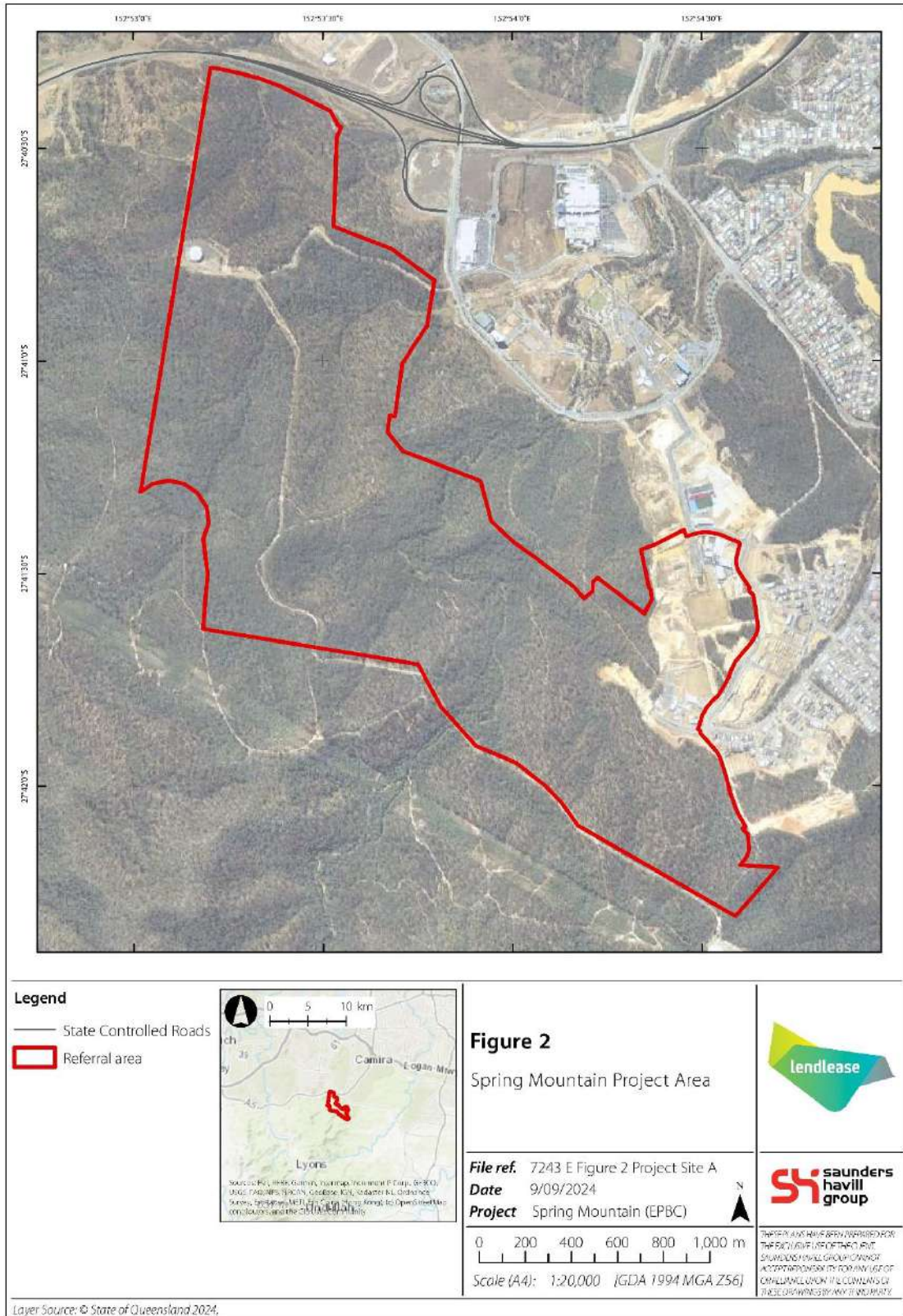
Original dated 23/12/2015	Vegetation clearing and construction activities means any activities that destroy, modify or remove vegetation within the project site , and those activities required during the construction of infrastructure for the duration of the approval.
As varied on the date this instrument was signed	Weeds of national significance means the 32 weed species listed in Appendix B of the <i>Australian weeds strategy 2017 to 2027</i> , Australian Commonwealth of Australia 2017, which, at the time of this decision, is published at the following webpage address: Australian Weeds Strategy 2017-2027 (agriculture.gov.au)

date of decision	annexures
As varied on the date this instrument was signed	<u>Annex A</u> – Spring Mountain offset area
As varied on the date this instrument was signed	<u>Annex B</u> – Spring Mountain project site

Annex A - Spring Mountain offset area



Annex B - Spring Mountain project site



Appendix B

Offset Assessment Guide Calculator Results and Justifications

Appendix C

Curriculum vitae of suitably qualified ecologists

Curricula Vitae

Principal Ecologist - David Havill



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 spanning over 20 years.

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 (2019)

Bachelor of Applied Science (Natural Systems and Wildlife Management), The University of Queensland (1998)

Short Courses

Snake Handling Course, Geckoes Wildlife Pty Ltd ATF Fingland/Roberts Family Trust (2014)

Business Etiquette Training, pd Training (2011)

Senior Ecologist - Amy Westman



Amy is a Senior Ecologist with six year's experience as an ecologist and environmental consultant specialising in conducting ecological surveys and preparing technical reports. Amy has a strong understanding of Local, State and Federal legislation triggers and has worked on a diverse range of development projects across South East Queensland and manages a portfolio of major development projects and post approvals projects with specific experience in annual compliance monitoring, reporting and auditing under the *Environmental Protection and Biodiversity Act 1999*.

Amy has a varied skillset which includes flora and fauna surveys in accordance with State and Federal survey guidelines, impact assessment and analysis, auditing, technical report writing, compiling offset management plans and compliance.

Qualifications

Bachelor of Science with Honours Class I in the Field of Ecology, The University of Queensland (2018)

Bachelor of Science with a Major in Zoology, The University of Queensland (2016)

Short Courses

BioCondition v2.2 - Application, Assessment and Scoring, Oberonia Botanical Services (2019)

Appendix D

Additional impact area –MHQA raw
data

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	1	Job Number / Property	7243/7522
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Part B - Site Data

Recorders	David Havill & Josephine Geffen	Date	30.08.2023
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.9-10.2	

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

Village 16 Springfield. Plot alignment: 94° east. Composite RE 12.9-10.2 / 12.9-10.7 / 12.9-10.19. Dominant regional ecosystem is Least Concern RE12.9-10.2. Some dead stags with hollows present. Dense shrub layer of Acacia species. Weeds dominant in adjacent overland flow.

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

Tree species richness:			
Total number of species	9		EDL / Dom / R
Scientific Name	<i>Corymbia citriodora</i>	Common Name	Spotted Gum
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark
Scientific Name	<i>Eucalyptus moluccana</i>	Common Name	Gum-topped Box
Scientific Name	<i>Alphitonia excelsa</i>	Common Name	Soap Tree
Scientific Name	<i>Acacia fimbriata</i>	Common Name	Brisbane Wattle
Scientific Name	<i>Acacia disparrima</i>	Common Name	Hickory Wattle
Scientific Name	<i>Acacia leiocalyx</i>	Common Name	Early-flowering Black Wattle
Scientific Name	<i>Eucalyptus siderophloia</i>	Common Name	Grey Ironbark
Scientific Name	<i>Angophora leiocarpa</i>	Common Name	Smooth-barked Apple
Scientific Name		Common Name	
Scientific Name		Common Name	

Shrub species richness:			
Total number of species	1		
Scientific Name	<i>Acacia falcata</i>	Common Name	Sickle Leaf Wattle
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	6		
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass
Scientific Name	<i>Aristida calycina</i>	Common Name	Dark Wiregrass
Scientific Name	<i>Eragrostis brownii</i>	Common Name	Brown's Lovegrass
Scientific Name	<i>Cymbopogon refractus</i>	Common Name	Barbed Wire Grass
Scientific Name	<i>Panicum decompositum</i>	Common Name	Native Millet
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	7		
Scientific Name	<i>Lomandra longifolia</i>	Common Name	Long-leaved Matrush
Scientific Name	<i>Cayratia clematidea</i>	Common Name	Slender Grape Vine
Scientific Name	<i>Eremophila debilis</i>	Common Name	Winter Apple
Scientific Name	<i>Sida cordifolia</i>	Common Name	Flannel Weed
Scientific Name	<i>Cyperus gracilis</i>	Common Name	Slender Sedge
Scientific Name	<i>Eustrephus latifolius</i>	Common Name	Wombat Berry
Scientific Name	<i>Dianella caerulea</i>	Common Name	Blue Flax-lily
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot			
	40.00%		
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Rat's Tail Grass
Scientific Name	<i>Opuntia tomentosa</i>	Common Name	Velvet Tree Pear
Scientific Name	<i>Stachytarpheta cayennensis</i>	Common Name	Snakeweed
Scientific Name	<i>Passiflora suberosa</i>	Common Name	Corky Passion Vine
Scientific Name	<i>Lantana montevidensis</i>	Common Name	Creeping Lantana
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Course Woody Debris (Meters per hectare)	244.00	
1	4.70	26
2	3.30	27
3	5.10	28
4	2.30	29
5	6.20	30
6	2.80	31
7		32
8		33
9		34
10		35
11		36
12		37
13		38
14		39
15		40
16		41
17		42
18		43
19		44
20		45
21		46
22		47
23		48
24		49
25		50

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10%	15%	0%	20%	20%	13%
Native other grass						
Native forbs and other species	0%	0%	0%	5%	0%	1%
Native shrubs						
Non-native grass						
Non native forbs and shrubs	0%	0%	0%	0%	10%	2%
Litter	90%	85%	100%	75%	70%	84%
Rock						
Bare Ground						
Cryptogram						
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	<i>Eucalyptus maluccana</i> - 420, 450, 400, 780, 410, 380, 420, 410, 520, 380; <i>Corymbia citriodora</i> - 400, 470, 490, 440, 380, 460
Non- Eucalypt Large tree DBH benchmark used:	200	Number of large non eucalypt trees:	0
Total number of large trees recorded:	16		
Total Number Large Trees per ha:	32		

Median Tree Canopy Height Measurements	Canopy:	23	Sub-canopy:	11	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating: 60.00

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	64.2%	Sub-canopy:	25.80%	Emergent:	NA
Shrub canopy cover %	54.30%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	9.2	9.2	T2	11.1	14.1	3.0
T1	9.2	18.5	9.3	T2	33.8	39.3	5.5
T1	21.1	28.2	7.1	T2	51.0	53.5	2.5
T1	30.2	40.2	10.0	T2	75.0	79.5	4.5
T1	54.5	62.0	7.5	T2	85.1	87.0	1.9
T1	65.0	72.0	7.0	T2	87.0	93.4	6.4
T1	76.0	90.1	14.1	T2	96.0	97.0	1.0
T1			0.0	T2	99.0	100.0	1.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	2.4	4.8	2.4	Shrub	40.5	42.1	1.6
Shrub	5.2	7.9	2.7	Shrub	42.9	46.7	3.8
Shrub	8.4	10.1	1.7	Shrub	47.0	48.1	1.1
Shrub	12.6	13.1	0.5	Shrub	48.1	49.6	1.5
Shrub	15.2	17.5	2.3	Shrub	52.2	57.6	5.4
Shrub	21.1	24.4	3.3	Shrub	62.0	64.0	2.0
Shrub	27.0	30.1	3.1	Shrub	68.3	75.0	6.7
Shrub	30.1	31.9	1.8	Shrub	79.1	80.2	1.1
Shrub	33.8	35.1	1.3	Shrub	84.4	94.0	9.6
Shrub	37.5	39.9	2.4	Shrub			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
<i>Corymbia citriodora</i>	27
<i>Eucalyptus moluccana</i>	23
<i>Eucalyptus siderophloia</i>	1
<i>Acacia disparima</i>	1
<i>Eucalyptus crebra</i>	1
Total Stem Count (100 * 20m)	53
Total Stem Count per hectare	265

Part J: SAT Survey Results

SAT Survey ID	1			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	<i>Corymbia citriodora</i>	Spotted Gum	580	N
2	<i>Eucalyptus moluccana</i>	Gum-topped Box	390	N
3	<i>Corymbia citriodora</i>	Spotted Gum	190	N
4	<i>Eucalyptus moluccana</i>	Gum-topped Box	320	N
5	<i>Eucalyptus moluccana</i>	Gum-topped Box	460	N
6	<i>Corymbia citriodora</i>	Spotted Gum	220	N
7	<i>Eucalyptus moluccana</i>	Gum-topped Box	300	N
8	<i>Corymbia citriodora</i>	Spotted Gum	100	N
9	<i>Corymbia citriodora</i>	Spotted Gum	120	N
10	<i>Corymbia citriodora</i>	Spotted Gum	190	N
11	<i>Angophora leiocarpa</i>	Smooth-barked Apple	160	N
12	<i>Corymbia citriodora</i>	Spotted Gum	220	N
13	<i>Eucalyptus moluccana</i>	Gum-topped Box	180	N
14	<i>Eucalyptus moluccana</i>	Gum-topped Box	250	N
15	<i>Eucalyptus moluccana</i>	Gum-topped Box	220	N
16	<i>Eucalyptus moluccana</i>	Gum-topped Box	650	N
17	<i>Eucalyptus moluccana</i>	Gum-topped Box	320	N
18	<i>Eucalyptus moluccana</i>	Gum-topped Box	200	N
19	<i>Corymbia citriodora</i>	Spotted Gum	210	N
20	<i>Eucalyptus moluccana</i>	Gum-topped Box	380	N
21	<i>Eucalyptus moluccana</i>	Gum-topped Box	220	N
22	<i>Corymbia citriodora</i>	Spotted Gum	420	N
23	<i>Corymbia citriodora</i>	Spotted Gum	230	N
24	<i>Corymbia citriodora</i>	Spotted Gum	180	N
25	<i>Corymbia citriodora</i>	Spotted Gum	260	N
26	<i>Eucalyptus moluccana</i>	Gum-topped Box	130	N
27	<i>Eucalyptus moluccana</i>	Gum-topped Box	180	N
28	<i>Eucalyptus moluccana</i>	Gum-topped Box	180	N
29	<i>Eucalyptus moluccana</i>	Gum-topped Box	300	N
30	<i>Eucalyptus moluccana</i>	Gum-topped Box	260	N
Total				0

Attach Landscape Photos Here

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	2	Job Number / Property	7243/7522
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Part B - Site Data

Recorders	David Havill & Josephine Geffen	Date	30.08.2023
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.9-10.2	

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

Village 16 Springfield. Plot alignment: 162° South. Mapped as remnant composite Of Concern Regional Ecosystem community containing 65% Least Concern RE12.9-10.2, 20% Of Concern RE12.9-10.7 and Least Concern RE12.9-10.19. Dominant regional ecosystem is RE12.9-10.2 with some elements of Of Concern RE12.9-10.3. Open understorey including very sparse shrub layer. Limited weeds.

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

Tree species richness:				
Total number of species	7	EDL / Dom / R		
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	
Scientific Name	<i>Corymbia citriodora</i>	Common Name	Spotted Gum	EDL / R
Scientific Name	<i>Eucalyptus moluccana</i>	Common Name	Gum-topped Box	EDL / Dom / R
Scientific Name	<i>Alphitonia excelsa</i>	Common Name	Soap Tree	R
Scientific Name	<i>Acacia leiocalyx</i>	Common Name	Early-flowering Black Wattle	R
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark	
Scientific Name	<i>Corymbia tessellaris</i>	Common Name	Moreton Bay Ash	R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:				
Total number of species	2	EDL / Dom / R		
Scientific Name	<i>Acacia falcata</i>	Common Name	Sickle Leaf Wattle	
Scientific Name	<i>Acacia disparrima</i>	Common Name	Hickory Wattle	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Grass species richness:				
Total number of species	6	EDL / Dom / R		
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo Grass	
Scientific Name	<i>Cymbopogon refractus</i>	Common Name	Barbed Wire Grass	
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass	
Scientific Name	<i>Aristida calycina</i>	Common Name	Dark Wiregrass	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass	
Scientific Name	<i>Eragrostis brownii</i>	Common Name	Brown's Lovegrass	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Forbs and others (non grass ground) species richness:				
Total number of species	5	EDL / Dom / R		
Scientific Name	<i>Lomandra longidolia</i>	Common Name	Long-leaved Matrush	
Scientific Name	<i>Dianella caerulea</i>	Common Name	Blue Flax-lily	
Scientific Name	<i>Lomandra multiflora</i>	Common Name	Many-flowered Matrush	
Scientific Name	<i>Eustrephus latifolius</i>	Common Name	Wombat Berry	
Scientific Name	<i>Lobelia purpurascens</i>	Common Name	White Root	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

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

Total percentage cover within plot	5.00%	EDL / Dom / R		
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana	
Scientific Name	<i>Chloris gayana</i>	Common Name	Rhodes Grass	
Scientific Name	<i>Lantana montevidensis</i>	Common Name	Creeping Lantana	
Scientific Name	<i>Passiflora suberosa</i>	Common Name	Corky Passion Vine	
Scientific Name	<i>Opuntia tomentosa</i>	Common Name	Velvet Tree Pear	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

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

Total Length of Course Woody Debris (Meters per hectare)	5.00	
1	0.50	26
2		27
3		28
4		29
5		30
6		31
7		32
8		33
9		34
10		35
11		36
12		37
13		38
14		39
15		40
16		41
17		42
18		43
19		44
20		45
21		46
22		47
23		48
24		49
25		50

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10%	15%	48%	8%	3%	17%
Native other grass						
Native forbs and other species	0%	0%	0%	2%	2%	1%
Native shrubs	2%	5%	0%	0%	0%	1%
Non-native grass	0%	0%	0%	5%	0%	1%
Non native forbs and shrubs						
Litter	83%	70%	50%	85%	95%	77%
Rock						
Bare Ground	5%	10%	2%	0%	0%	3%
Cryptogram						
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	<i>Corymbia citriodora</i> - 430, 490, 380; <i>Eucalyptus crebra</i> - 430; <i>Eucalyptus moluccana</i> - 420, 450, 470, 380, 430, 510, 660, 800, 530
Non- Eucalypt Large tree DBH benchmark used:	200	Number of large non eucalypt trees:	0
Total number of large trees recorded:	13		
Total Number Large Trees per ha:	26		

Median Tree Canopy Height Measurements	Canopy:	23	Sub-canopy:	12	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating: 60.00

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	77.5%	Sub-canopy:	32.60%	Emergent:	NA
Shrub canopy cover %	11.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	10.1	10.1	T2	4.2	6.1	1.9
T1	10.3	16.1	5.8	T2	20.0	23.5	3.5
T1	21.2	30.4	9.2	T2	27.3	32.0	4.7
T1	36.5	45.0	8.5	T2	39.6	47.3	7.7
T1	47.3	57.1	9.8	T2	53.7	57.1	3.4
T1	62.0	74.0	12.0	T2	74.0	80.7	6.7
T1	74.0	80.1	6.1	T2	83.8	86.7	2.9
T1	83.0	97.6	14.6	T2	95.6	97.4	1.8
T1	98.6	100.0	1.4	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	3.6	4.1	0.5	Shrub	57.6	59.1	1.5
Shrub	5.0	5.5	0.5	Shrub	59.7	60.4	0.7
Shrub	18.1	19.0	0.9	Shrub	67.5	68.1	0.6
Shrub	27.3	28.1	0.8	Shrub	70.5	71.3	0.8
Shrub	52.9	55.8	2.9	Shrub	95.0	96.8	1.8

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
<i>Corymbia citriodora</i>	21
<i>Eucalyptus moluccana</i>	37
<i>Eucalyptus crebra</i>	7

<i>Corymbia tessellaris</i>	4
<i>Eucalyptus tereticornis</i>	2
Total Stem Count (100 * 20m)	71
Total Stem Count per hectare	355

Part J: SAT Survey Results

SAT Survey ID	2			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	<i>Corymbia citriodora</i>	Spotted Gum	230	N
2	<i>Eucalyptus moluccana</i>	Gum-topped Box	330	N
3	<i>Eucalyptus tereticornis</i>	Forest Red Gum	190	N
4	<i>Eucalyptus moluccana</i>	Gum-topped Box	300	N
5	<i>Eucalyptus tereticornis</i>	Forest Red Gum	260	N
6	<i>Eucalyptus moluccana</i>	Gum-topped Box	160	N
7	<i>Eucalyptus tereticornis</i>	Forest Red Gum	300	N
8	<i>Eucalyptus moluccana</i>	Gum-topped Box	460	N
9	<i>Eucalyptus moluccana</i>	Gum-topped Box	300	N
10	<i>Eucalyptus tereticornis</i>	Forest Red Gum	160	N
11	<i>Corymbia citriodora</i>	Spotted Gum	100	N
12	<i>Eucalyptus moluccana</i>	Gum-topped Box	200	N
13	<i>Eucalyptus moluccana</i>	Gum-topped Box	210	N
14	<i>Corymbia citriodora</i>	Spotted Gum	120	N
15	<i>Corymbia citriodora</i>	Spotted Gum	140	N
16	<i>Eucalyptus moluccana</i>	Gum-topped Box	310	N
17	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	130	N
18	<i>Eucalyptus moluccana</i>	Gum-topped Box	370	N
19	<i>Eucalyptus moluccana</i>	Gum-topped Box	300	N
20	<i>Corymbia citriodora</i>	Spotted Gum	200	N
21	<i>Corymbia citriodora</i>	Spotted Gum	310	N
22	<i>Eucalyptus moluccana</i>	Gum-topped Box	110	N
23	<i>Eucalyptus moluccana</i>	Gum-topped Box	220	Y
24	<i>Eucalyptus moluccana</i>	Gum-topped Box	200	N
25	<i>Eucalyptus moluccana</i>	Gum-topped Box	320	N
26	<i>Corymbia citriodora</i>	Spotted Gum	100	N
27	<i>Eucalyptus moluccana</i>	Gum-topped Box	420	N
28	<i>Eucalyptus moluccana</i>	Gum-topped Box	480	N
29	<i>Eucalyptus moluccana</i>	Gum-topped Box	300	N
30	<i>Eucalyptus moluccana</i>	Gum-topped Box	190	N
Total				1

Attach Landscape Photos Here

North



South



East



West



Appendix E

Offset area – koala MHQA baseline scoring

Assessment Unit - Regional Ecosystem	AU 1 - Non-remnant paddock with scattered trees and Lantana pre-clear 12.12.5					
	RE12.12.5 Benchmark	Transect 4	Transect 5	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	0	100	50	50	3
Native plant species richness - trees	5	2	2	2	40.00	2.5
Native plant species richness - shrubs	9	0	5	2.5	27.78	2.5
Native plant species richness - grasses	11	5	3	4	36.36	2.5
Native plant species richness - forbs	17	2	4	3	17.65	0
Tree canopy height (Canopy)*	22	18	20	19	86.36	5
Tree canopy height (Sub-canopy)*	9	9	0	4.5	50.00	3
				*Average tree canopy height		4
Tree canopy cover (Canopy)**	41	5.4	0	2.7	6.59	0
Tree canopy cover (Sub-canopy)**	10	0	0	0.00	0.00	0
				**Average tree canopy cover		0
Shrub canopy cover	3	0	0	0.00	0.00	0
Native grass cover*	35	35	21	28.00	80.00	3
Organic litter*	35	18	0	9.00	25.71	3
Large trees (euc plus non-euc) (per ha)	29	2	2	2.00	6.90	5
Coarse woody debris (per ha)	578	62	0	31.00	5.36	0
Non-native plant cover	0	55	90	72.50	72.50	0
Quality and availability of food and foraging habitat	NA	1	1	1.00	-	1
Quality and availability of shelter	NA	1	1	1.00	-	1
				Site Condition Score (/100)		27.5
				Overall Site Condition Score - out of 3		0.83
SITE CONTEXT						
Size of patch	10	10	10	10		10
Connectedness	5	2	2	2		2
Context	5	4	4	4		4
Ecological Corridors	6	6	6	6		6
Role of site location to species overall population in the state	5	5	5	5		5
Threats to the species	15	7	7	7		7
Species mobility capacity	10	7	7	7		7
				Site Context Score (/56)		41
				Overall Site Context Score - out of 3		2.20
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	20	20	20		20
				Species Stocking Rate Score (/70)		20.00
				Overall Species Stocking Rate Score - out of 4		1.14
Overall Assessment Unit Score						4.16

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
				Breeding
Approximate density (per ha)	Score	0	10	20
		0% low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
				40 - 45
Total SRR score (out of 70)		20		
SRR Score (out of 4)	1.142857143			

10 | Koala observed on-site
5 | Dispersal
0 | Not enough trees to complete SAT = 0%
5 | See below

*SSR Supplementary Table				
*Key source population for breeding	Score	0	10	0
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Assessment Unit - Regional Ecosystem	AU 2 - Remnant 12.3.7 Waterway					
	RE12.3.7 Benchmark	Transect 1	Transect 6	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	100	50	75	75	3
Native plant species richness - trees	6	5	9	7	116.67	5
Native plant species richness - shrubs	8	4	6	5	62.50	2.5
Native plant species richness - grasses	6	7	4	5.5	91.67	5
Native plant species richness - forbs	17	13	14	13.5	79.41	2.5
Tree canopy height (Canopy)*	22	23	21	22	100.00	5
Tree canopy height (Sub-canopy)*	12	8	11	9.5	79.17	5
				*Average tree canopy height		5
Tree canopy cover (Canopy)**	31	41.3	63.4	52.35	168.87	5
Tree canopy cover (Sub-canopy)**	23	16.6	31.6	24.10	104.78	5
				**Average tree canopy cover		5
Shrub canopy cover	22	4.2	2.2	3.20	14.55	3
Native grass cover*	8	16	26	21.00	262.50	5
Organic litter*	27	30	12	21.00	77.78	5
Large trees (euc plus non-euc) (per ha)	60	14	35	24.50	40.83	5
Coarse woody debris (per ha)	667	254	35	144.50	21.66	2
Non-native plant cover	0	55	90	72.50	72.50	0
Quality and availability of food and foraging habitat	NA	10	10	10.00	-	10
Quality and availability of shelter	NA	10	10	10.00	-	10
						Site Condition Score (/100)
						68
						Overall Site Condition Score - out of 3
						2.04
SITE CONTEXT						
Size of patch	10	10	10	10		10
Connectedness	5	2	2	2		2
Context	5	4	4	4		4
Ecological Corridors	6	6	6	6		6
Role of site location to species overall population in the state	5	5	5	5		5
Threats to the species	15	7	7	7		7
Species mobility capacity	10	7	7	7		7
						Site Context Score (/56)
						41
						Overall Site Context Score - out of 3
						2.20
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	40	40	40		40
						Species Stocking Rate Score (/70)
						40.00
						Overall Species Stocking Rate Score - out of 4
						2.29
Overall Assessment Unit Score						6.52

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
				Breeding
Approximate density (per ha)	Score	0	10	20
		0% low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
				40 - 45
Total SRR score (out of 70)		40		
SRR Score (out of 4)	2.285714286			

10 | Koala observed on-site

15 | Foraging/breeding

10 | Low density - no scats recorded at SATs

5 | See below

*SSR Supplementary Table				
*Key source population for breeding	Score	0	10	0
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Assessment Unit - Regional Ecosystem	AU 3 - Remnant 12.12.5 with Lantana					
	RE12.12.5 Benchmark	Transect 2	Transect 12	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	33	100	66.5	66.5	3
Native plant species richness - trees	5	7	6	6.5	130.00	5
Native plant species richness - shrubs	9	11	10	10.5	116.67	5
Native plant species richness - grasses	11	4	8	6	54.55	2.5
Native plant species richness - forbs	17	6	12	9	52.94	2.5
Tree canopy height (Canopy)*	22	25	24	24.5	111.36	5
Tree canopy height (Sub-canopy)*	9	9	9	9	100.00	5
				*Average tree canopy height		5
Tree canopy cover (Canopy)**	41	49.9	73.5	61.7	150.49	5
Tree canopy cover (Sub-canopy)**	10	46.6	23.9	35.25	352.50	3
				**Average tree canopy cover		4
Shrub canopy cover	3	4.5	11.5	8.00	266.67	3
Native grass cover*	35	2	24	13.00	37.14	1
Organic litter*	35	32	41	36.50	104.29	5
Large trees (euc plus non-euc) (per ha)	29	18	30	24.00	82.76	10
Coarse woody debris (per ha)	578	346	115	230.50	39.88	2
Non-native plant cover	0	90	80	85.00	85.00	0
Quality and availability of food and foraging habitat	NA	10	10	10.00	-	10
Quality and availability of shelter	NA	10	10	10.00	-	10
					Site Condition Score (/100)	68
					Overall Site Condition Score - out of 3	2.04
SITE CONTEXT						
Size of patch	10	10	10	10		10
Connectedness	5	2	2	2		2
Context	5	4	4	4		4
Ecological Corridors	6	6	6	6		6
Role of site location to species overall population in the state	5	5	5	5		5
Threats to the species	15	7	7	7		7
Species mobility capacity	10	7	7	7		7
					Site Context Score (/56)	41
					Overall Site Context Score - out of 3	2.20
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	40	40	40		40
					Species Stocking Rate Score (/70)	40.00
					Overall Species Stocking Rate Score - out of 4	2.29
Overall Assessment Unit Score						6.52

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
				Breeding
Approximate density (per ha)	Score	0	10	20
		0% low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
				40 - 45
Total SRR score (out of 70)		40		
SRR Score (out of 4)	2.285714286			

10 Koala observed on-site

15 Foraging/breeding

10 Low-medium density (average of two SATs = low)

5 See below

*SSR Supplementary Table				
*Key source population for breeding	Score	0	10	0
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Assessment Unit - Regional Ecosystem	AU 4 - Regrowth RE12.12.5			
	RE12.12.5 Benchmark	Transect 3	% Benchmark	Score
SITE CONDITION				
Recruitment of woody perennial species in EDL	100	100	100.00	5
Native plant species richness - trees	5	6	120.00	5
Native plant species richness - shrubs	9	4	44.44	2.5
Native plant species richness - grasses	11	6	54.55	2.5
Native plant species richness - forbs	17	9	52.94	2.5
Tree canopy height (Canopy)*	22	18	81.82	5
Tree canopy height (Sub-canopy)*	9	9	100.00	5
			*Average tree canopy height	5
Tree canopy cover (Canopy)**	41	26.5	64.63	5
Tree canopy cover (Sub-canopy)**	10	28.2	282.00	3
			**Average tree canopy cover	4
Shrub canopy cover	3	11.9	396.67	3
Native grass cover*	35	2	5.71	0
Organic litter*	35	9	25.71	3
Large trees (euc plus non-euc) (per ha)	29	6	20.69	5
Coarse woody debris (per ha)	578	171	29.58	2
Non-native plant cover	0	55	55.00	0
Quality and availability of food and foraging habitat	NA	5	-	5
Quality and availability of shelter	NA	5	-	5
			Site Condition Score (/100)	49.5
			Overall Site Condition Score - out of 3	1.49
SITE CONTEXT				
Size of patch	10	10		10
Connectedness	5	2		2
Context	5	4		4
Ecological Corridors	6	6		6
Role of site location to species overall population in the state	5	5		5
Threats to the species	15	7		7
Species mobility capacity	10	7		7
			Site Context Score (/56)	41
			Overall Site Context Score - out of 3	2.20
SPECIES STOCKING RATE				
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	40		40
			Species Stocking Rate Score (/70)	40.00
			Overall Species Stocking Rate Score - out of 4	2.29
Overall Assessment Unit Score				5.97

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10
		Not habitat	Dispersal	Foraging
				Breeding
Approximate density (per ha)	Score	0	10	20
				30
		0% low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
				15
		0	5 - 15	20 - 35
				40 - 45
Total SRR score (out of 70)		40		
SRR Score (out of 4)				2.285714286

- 10 | Koala observed on-site
- 15 | Foraging/breeding
- 10 | Low usage - no evidence at SAT
- 5 | See below

*SSR Supplementary Table				
*Key source population for breeding	Score	0	10	0
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Assessment Unit - Regional Ecosystem	AU 5 - Non-remnant open paddock pre-clear 12.9-10.2					
	RE12.9-10.2 Benchmark	Transect 13	Transect 14	Average of Transect(s)	% Benchmark	Score
SITE CONDITION						
Recruitment of woody perennial species in EDL	100	33	0	16.5	16.5	0
Native plant species richness - trees	6	3	0	1.5	25.00	2.5
Native plant species richness - shrubs	7	1	1	1	14.29	0
Native plant species richness - grasses	7	4	3	3.5	50.00	2.5
Native plant species richness - forbs	13	4	3	3.5	26.92	2.5
Tree canopy height (Canopy)*	21	18	0	9	42.86	3
Tree canopy height (Sub-canopy)*	12	0	0	0	0.00	0
				*Average tree canopy height		1.5
Tree canopy cover (Canopy)**	64	9	0	4.5	7.03	0
Tree canopy cover (Sub-canopy)**	20	0	0	0.00	0.00	0
				**Average tree canopy cover		0
Shrub canopy cover	6	0	0.8	0.40	6.67	0
Native grass cover*	21	65	63	64.00	304.76	5
Organic litter*	48	0	0	0.00	0.00	0
Large trees (euc plus non-euc) (per ha)	38	10	0	5.00	13.16	5
Coarse woody debris (per ha)	506	0	29	14.50	2.87	0
Non-native plant cover	0	20	60	40.00	40.00	3
Quality and availability of food and foraging habitat	NA	1	1	1.00	-	1
Quality and availability of shelter	NA	1	1	1.00	-	1
						Site Condition Score (/100)
						24
						Overall Site Condition Score - out of 3
						0.72
SITE CONTEXT						
Size of patch	10	10	10	10		10
Connectedness	5	2	2	2		2
Context	5	4	4	4		4
Ecological Corridors	6	6	6	6		6
Role of site location to species overall population in the state	5	5	5	5		5
Threats to the species	15	7	7	7		7
Species mobility capacity	10	7	7	7		7
						Site Context Score (/56)
						41
						Overall Site Context Score - out of 3
						2.20
SPECIES STOCKING RATE						
Koala Stocking Rate (utilising SSR & SSR Supplementary Table(s))	70	20	20	20		20
						Species Stocking Rate Score (/70)
						20.00
						Overall Species Stocking Rate Score - out of 4
						1.14
Overall Assessment Unit Score						4.06

Species Stocking Rate (SSR)				
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10
		No	Yes - adjacent	Yes - on site
Species usage of the site (habitat type & evidenced usage)	Score	0	5	15
		Not habitat	Dispersal	Foraging
				Breeding
Approximate density (per ha)	Score	0	10	30
		0% low	med	high
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10
		0	5 - 15	20 - 35
				40 - 45
Total SRR score (out of 70)		20		
SRR Score (out of 4)		1.142857143		

10 | Koala observed on-site

5 | Dispersal

0 | Not enough trees to complete SAT = 0%

5 | See below

*SSR Supplementary Table				
*Key source population for breeding	Score	0	10	0
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Appendix F

Offset area – MHQA baseline raw data

Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T1	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	AW/KR	Date	28/02/2024
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.3.7	

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

Remnant 12.3.7, Large *E. tereticornis*, *A. subvelutina* with understory of *C. tessellaris* and *L. suaveolens*. Heavy *Lantana* infestation in gully.

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

Tree species richness:				
Total number of species	5			EDL / Dom / R
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	EDL / Dom / R
Scientific Name	<i>Corymbia tessellaris</i>	Common Name	Moreton Bay Ash	EDL
Scientific Name	<i>Lophostemon suaveolens</i>	Common Name	Swamp Box	EDL / R
Scientific Name	<i>Corymbia intermedia</i>	Common Name	Pink Bloodwood	
Scientific Name	<i>Angophora subvelutina</i>	Common Name	Broad-leaved Apple	EDL / R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:				
Total number of species	4			EDL / Dom / R
Scientific Name	<i>Acacia salicina</i>	Common Name	Sally Wattle	
Scientific Name	<i>Carissa ovata</i>	Common Name	Currant Bush	
Scientific Name	<i>Lophostemon suaveolens</i>	Common Name	Swamp Box	
Scientific Name		Common Name	Unknown shrub	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Grass species richness:				
Total number of species	7			EDL / Dom / R
Scientific Name	<i>Cymbopogon refractus</i>	Common Name	Barbed Wiregrass	
Scientific Name	<i>Cynodon dactylon</i>	Common Name	Green Couch	
Scientific Name	<i>Entolasia stricta</i>	Common Name	Wiry Panic	
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass	
Scientific Name	<i>Panicum decompositum</i>	Common Name	Native Millet	
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo grass	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Forbs and others (non grass ground) species richness:				
Total number of species	13			EDL / Dom / R
Scientific Name	<i>Adiantum atroviride</i>	Common Name	Maidenhair Fern	
Scientific Name	<i>Cheilanthes distans</i>	Common Name	Bristle Cloak Fern	
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons	
Scientific Name	<i>Desmodium rhytidophyllum</i>	Common Name	Hairy trefoil	
Scientific Name	<i>Eustrephus latifolius</i>	Common Name	Wombat Berry	
Scientific Name	<i>Glycine clandestina</i>	Common Name	Twining Glycine	
Scientific Name	<i>Goodenia rotundifolia</i>	Common Name	Star Goodenia	
Scientific Name	<i>Juncus usitatus</i>	Common Name	Common Rush	
Scientific Name		Common Name	Yellow Pea Flower	
Scientific Name	<i>Lobelia purpurascens</i>	Common Name	White Root	
Scientific Name	<i>Maclura cochinchinensis</i>	Common Name	Cockspur Vine	
Scientific Name	<i>Schoenoplectiella mucronata</i>	Common Name	Triangular Club Rush	
Scientific Name	<i>Persicaria decipiens</i>	Common Name	Slender knotweed	
Scientific Name		Common Name		

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

Total percentage cover within plot				
Total percentage cover within plot	55.00%			EDL / Dom / R
Scientific Name	<i>Conyza sumatrensis</i>	Common Name	Tall Fleabane	
Scientific Name	<i>Cuphea carthagenensis</i>	Common Name	Colombian Waxweed	
Scientific Name	<i>Cyperus polystachyos</i>	Common Name	Bunchy Sedge	
Scientific Name	<i>Emilia sonchifolia</i> var. <i>javanica</i>	Common Name	Emilia	
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana	
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass	
Scientific Name	<i>Passiflora suberosa</i>	Common Name	Corky Passion Vine	
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Giant Rat's Tail Grass	
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purpletop vervain	

<i>Eucalyptus tereticornis</i>	7
<i>Lophostemon suaveolens</i>	15
Total	27
Total stems per hectare	135

Part J: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	<i>E. tereticornis</i>	Forest Red Gum	670	N
2	<i>E. tereticornis</i>	Forest Red Gum	450	N
3	<i>E. tereticornis</i>	Forest Red Gum	330	N
4	<i>A. subvelutina</i>	Broad-leaved Apple	520	N
5	<i>E. tereticornis</i>	Forest Red Gum	580	N
6	<i>L. suaveolens</i>	Swamp Box	250	N
7	<i>E. tereticornis</i>	Forest Red Gum	330	N
8	<i>C. tessellaris</i>	Moreton Bay Ash	120	N
9	<i>E. tereticornis</i>	Forest Red Gum	800	N
10	<i>E. tereticornis</i>	Forest Red Gum	320	N
11	<i>A. subvelutina</i>	Broad-leaved Apple	160	N
12	<i>E. tereticornis</i>	Forest Red Gum	120	N
13	<i>L. suaveolens</i>	Swamp Box	180	N
14	<i>E. tereticornis</i>	Forest Red Gum	980	N
15	<i>A. subvelutina</i>	Broad-leaved Apple	150	N
16	<i>E. tereticornis</i>	Forest Red Gum	1050	N
17	<i>E. tereticornis</i>	Forest Red Gum	480	N
18	<i>E. tereticornis</i>	Forest Red Gum	680	N
19	<i>E. tereticornis</i>	Forest Red Gum	450	N
20	<i>C. intermedia</i>	Pink Bloodwood	180	N
21	<i>C. tessellaris</i>	Moreton Bay Ash	200	N
22	<i>E. tereticornis</i>	Forest Red Gum	580	N
23	<i>E. tereticornis</i>	Forest Red Gum	800	N
24	<i>E. tereticornis</i>	Forest Red Gum	430	N
25	<i>E. tereticornis</i>	Forest Red Gum	360	N
26	<i>E. tereticornis</i>	Forest Red Gum	560	N
27	<i>E. tereticornis</i>	Forest Red Gum	850	N
28	<i>E. tereticornis</i>	Forest Red Gum	520	N
29	<i>E. tereticornis</i>	Forest Red Gum	460	N
30	<i>E. tereticornis</i>	Forest Red Gum	650	N
Total				0

Attach Landscape Photos Here

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T2	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	AW/KR	Date	28/02/2024
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.12.5	

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

Remnant 12.12.5, Located on an eroded gully. C. citriodora dominant with E. crebra and E. tereticornis. Heavily infested with Lantana. Contains elements of dry rainforest.

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

Tree species richness:					
Total number of species				7	EDL / Dom / R
Scientific Name	<i>Acacia concurrens</i>	Common Name	Black Wattle		
Scientific Name	<i>Corymbia citriodora</i>	Common Name	Spotted Gum	EDL / Dom / R	
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark	EDL / Dom	
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	EDL	
Scientific Name	<i>Melia azedarach</i>	Common Name	White Cedar		
Scientific Name	<i>Petalostigma pubescens</i>	Common Name	Quinine Bush		
Scientific Name		Common Name	Dark leaved rainforest tree		
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			

Shrub species richness:					
Total number of species				11	
Scientific Name	<i>Acacia concurrens</i>	Common Name	Black Wattle		
Scientific Name	<i>Acacia salicina</i>	Common Name	Sally Wattle		
Scientific Name	<i>Carissa ovata</i>	Common Name	Current Bush		
Scientific Name	<i>Elaeocarpus sp.</i>	Common Name			
Scientific Name	<i>Melia azedarach</i>	Common Name	White Cedar		
Scientific Name	<i>Petalostigma pubescens</i>	Common Name	Quinine Bush		
Scientific Name	<i>Alyxia ruscifolia</i>	Common Name	Chain fruit		
Scientific Name	<i>Breynia oblongifolia</i>	Common Name	Coffee Bush		
Scientific Name		Common Name	Large leaf rainforest species		
Scientific Name		Common Name	Dark green leaved shrub parallel venation		
Scientific Name		Common Name	Serrated leaf		

Grass species richness:					
Total number of species				4	
Scientific Name	<i>Entolasia stricta</i>	Common Name	Wiry Panic		
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass		
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass		
Scientific Name	<i>Panicum decompositum</i>	Common Name	Native Millet		
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			

Forbs and others (non grass ground) species richness:					
Total number of species				6	
Scientific Name	<i>Adiantum atroviride</i>	Common Name	Maidenhair Fern		
Scientific Name	<i>Eustrephus latifolius</i>	Common Name	Wombat Berry		
Scientific Name	<i>Labelia purpurascens</i>	Common Name	White Root		
Scientific Name	<i>Melichrus procumbens</i>	Common Name	Jam Tarts		
Scientific Name	<i>Pittosporum multiflorum</i>	Common Name	Orange Thorn		
Scientific Name	<i>Maclura cochinchinensis</i>	Common Name	Cockspur Vine		
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			
Scientific Name		Common Name			

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

Non-Native Plant Cover: (*list species below)					
Total percentage cover within plot				90.00%	
Scientific Name	<i>Desmodium intortum</i>	Common Name	Greenleaf desmodium		
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Balloon Cotton Bush		
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana		
Scientific Name	<i>Megathyrsus maximus var. maximus</i>	Common Name	Guinea Grass		
Scientific Name	<i>Sida cordifolia</i>	Common Name	Flannel Weed		
Scientific Name	<i>Sida rhombifolia</i>	Common Name	Arrowleaf Sida		
Scientific Name	<i>Solanum seafortianum</i>	Common Name	Brazilian Nightshade		
Scientific Name	<i>Solanum nigrum</i>	Common Name	Blackberry Nightshade		
Scientific Name		Common Name			
Scientific Name		Common Name			

Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Coarse Woody Debris (Meters per hectare)	346.00		
1	1.10	26	
2	2.00	27	
3	4.00	28	
4	3.00	29	
5	4.00	30	
6	3.00	31	
7	1.00	32	
8	1.00	33	
9	1.00	34	
10	3.00	35	
11	5.00	36	
12	5.00	37	
13	1.50	38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0%	0%	0%	10%	0%	2%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	10%	0%	0%	25%	7%
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	0%	0%	0%	0%	0%	
Non native forbs and shrubs	5%	80%	90%	35%	70%	56%
Litter	95%	10%	10%	40%	5%	32%
Rock	0%	0%	0%	0%	0%	
Bare Ground	0%	0%	0%	15%	0%	3%
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	100%	100%	100%	100%

Part G - Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	410	Number of large eucalypt trees:	9
Non- Eucalypt Large tree DBH benchmark used:	N/A	Number of large non eucalypt trees:	0
Total number of large trees recorded:	9		
Total Number Large Trees per ha:	18		

Median Tree Canopy Height Measurements	Canopy:	25	Sub-canopy:	9	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating:	30%
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Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	49.9%	Sub-canopy:	46.60%	Emergent:	
Shrub canopy cover %	4.50%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	2.5	2.5	T2	4.7	6.9	2.2
T1	10.6	42.0	31.4	T2	8.4	14.9	6.5
T1	51.0	53.0	2.0	T2	29.0	32.4	3.4
T1	66.0	80.0	14.0	T2	34.0	35.0	1.0
T1			0.0	T2	42.5	46.0	3.5
T1			0.0	T2	48.5	50.0	1.5
T1			0.0	T2	53.5	54.0	0.5
T1			0.0	T2	67.0	70.0	3.0
T1			0.0	T2	73.0	83.0	10.0
T1			0.0	T2	85.0	100.0	15.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	27.1	28.0	0.9	Shrub	65.0	66.0	1.0
Shrub	30.7	31.2	0.5	Shrub	74.6	75.0	0.4
Shrub	35.0	35.5	0.5	Shrub	85.0	85.5	0.5
Shrub	45.3	46.0	0.7	Shrub			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
<i>Corymbia citriodora</i>	33
<i>Eucalyptus crebra</i>	19

<i>Eucalyptus tereticornis</i>	2
Total	54
Total per hectare	270

Part J: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	<i>C. citriodora</i>	Spotted Gum	290	N
2	<i>C. citriodora</i>	Spotted Gum	290	N
3	<i>C. citriodora</i>	Spotted Gum	270	N
4	<i>C. citriodora</i>	Spotted Gum	480	N
5	<i>E. crebra</i>	Narrow-leaved Ironbark	350	Y
6	<i>C. citriodora</i>	Spotted Gum	360	N
7	<i>C. citriodora</i>	Spotted Gum	380	N
8	<i>C. citriodora</i>	Spotted Gum	190	N
9	<i>C. citriodora</i>	Spotted Gum	190	N
10	<i>E. crebra</i>	Narrow-leaved Ironbark	100	N
11	<i>L. suaveolens</i>	Swamp Box	320	N
12	<i>C. citriodora</i>	Spotted Gum	150	N
13	<i>E. crebra</i>	Narrow-leaved Ironbark	380	N
14	<i>E. crebra</i>	Narrow-leaved Ironbark	370	Y
15	<i>E. crebra</i>	Narrow-leaved Ironbark	350	Y
16	<i>E. tereticornis</i>	Forest Red Gum	300	N
17	<i>L.confertus</i>	Brush Box	150	N
18	<i>L.confertus</i>	Brush Box	150	N
19	<i>C. citriodora</i>	Spotted Gum	100	N
20	<i>C. citriodora</i>	Spotted Gum	170	N
21	<i>E. crebra</i>	Narrow-leaved Ironbark	160	N
22	<i>C. citriodora</i>	Spotted Gum	250	N
23	<i>C. citriodora</i>	Spotted Gum	440	N
24	<i>E. crebra</i>	Narrow-leaved Ironbark	450	N
25	<i>E. crebra</i>	Narrow-leaved Ironbark	260	N
26	<i>E. crebra</i>	Narrow-leaved Ironbark	450	N
27	<i>C. citriodora</i>	Spotted Gum	220	N
28	<i>C. citriodora</i>	Spotted Gum	190	N
29	<i>E. crebra</i>	Narrow-leaved Ironbark	340	N
30	<i>E. crebra</i>	Narrow-leaved Ironbark	320	N
Total				3

Attach Landscape Photos Here

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T3	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	KFB/KR	Date	29/02/2024
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.12.5	

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

High value Regrowth on slope, ground layer dominated by native and pastoral grass. *Lantana* scattered.

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

Tree species richness:			
Total number of species	6		EDL / Dom / R
Scientific Name	<i>Corymbia citriodora</i>	Common Name	Spotted Gum
Scientific Name	<i>Corymbia tessellaris</i>	Common Name	Moreton Bay Ash
Scientific Name	<i>Erythrina vespertilio</i>	Common Name	Bat Wing Coral Tree
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark
Scientific Name	<i>Eucalyptus melanophloia</i>	Common Name	Silver-leaved Ironbark
Scientific Name	<i>Eucalyptus siderophloia</i>	Common Name	Grey Ironbark
Scientific Name	<i>Petalostigma pubescens</i>	Common Name	Quinine Bush
Scientific Name		Common Name	
Scientific Name		Common Name	

Shrub species richness:			
Total number of species	4		
Scientific Name	<i>Breytia oblongifolia</i>	Common Name	Coffee Bush
Scientific Name	<i>Corymbia citriodora</i>	Common Name	Spotted Gum
Scientific Name	<i>Eucalyptus melanophloia</i>	Common Name	Silver-leaved Ironbark
Scientific Name	<i>Grewia latifolia</i>	Common Name	Dog's Balls
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	6		
Scientific Name	<i>Capillipedium spicigerum</i>	Common Name	Scented Tops
Scientific Name	<i>Cymbopogon refractus</i>	Common Name	Barbed Wire Grass
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass
Scientific Name	<i>Panicum decompositum</i>	Common Name	Native Millet
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo Grass
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	9		
Scientific Name	<i>Cheilanthes distans</i>	Common Name	Bristle Cloak Fern
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons
Scientific Name	<i>Cyperus gracilis</i>	Common Name	Slender Sedge
Scientific Name	<i>Dianella caerulea</i>	Common Name	Blue Flax-lily
Scientific Name	<i>Glycine clandestina</i>	Common Name	Twining Glycine
Scientific Name	<i>Glycine tabacina</i>	Common Name	Slender Glycine
Scientific Name	<i>Wahlenbergia stricta</i>	Common Name	Australian Bluebell
Scientific Name	<i>Evolvulus alsinoides</i>	Common Name	Dwarf Morning Glory
Scientific Name	<i>Cyperus haspan</i>	Common Name	Flat Sedge
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot			
	55.00%		
Scientific Name	<i>Crotalaria lanceolata subsp. lanceolata</i>	Common Name	Lanced-leaved Rattlepod
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Balloon Cotton Bush
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Megathyrsus maximus var. maximus</i>	Common Name	Guinea Grass
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass
Scientific Name	<i>Macroptilium lathyroides</i>	Common Name	Phasey Bean
Scientific Name	<i>Oxalis corniculata</i>	Common Name	Creeping Oxalis
Scientific Name	<i>Rhaphiolepis indica</i>	Common Name	Indian Hawthorn
Scientific Name	<i>Sida rhombifolia</i>	Common Name	Arrowleaf Sida
Scientific Name	<i>Solanum seafortianum</i>	Common Name	Brazilian Nightshade
Scientific Name	<i>Tagetes minuta</i>	Common Name	Stinking Roger
Scientific Name	<i>Stylosanthes guianensis</i>	Common Name	Common Stylo
Scientific Name	<i>Euphorbia hirta</i>	Common Name	Asthma Plant

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

Total Length of Coarse Woody Debris (Meters per hectare)	171.00	
1	3.00	26
2	0.50	27
3	0.80	28
4	0.50	29
5	2.40	30
6	2.50	31
7	3.20	32
8	4.20	33
9		34
10		35
11		36
12		37
13		38
14		39
15		40
16		41
17		42
18		43
19		44
20		45
21		46
22		47
23		48
24		49
25		50

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0%	0%	0%	0%	10%	2%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	0%	0%	
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	85%	60%	60%	75%	70%	70%
Non native forbs and shrubs	5%	10%	20%	10%	0%	9%
Litter	0%	20%	10%	5%	10%	9%
Rock	5%	5%	5%	0%	5%	4%
Bare Ground	5%	5%	5%	10%	5%	6%
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	410	Number of large eucalypt trees:	3
Non- Eucalypt Large tree DBH benchmark used:	N/A	Number of large non eucalypt trees:	0
Total number of large trees recorded:	3		
Total Number Large Trees per ha:	6		

Median Tree Canopy Height Measurements	Canopy:	18	Sub-canopy:	9	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating: 100%

Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	26.5%	Sub-canopy:	28.20%	Emergent:	
Shrub canopy cover %	11.90%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	24.2	34.3	10.1	T2	0.0	2.5	2.5
T1	34.3	37.1	2.8	T2	26.6	29.1	2.5
T1	37.1	42.1	5.0	T2	29.9	32.2	2.3
T1	74.9	77.3	2.4	T2	45.7	48.3	2.6
T1	84.0	87.4	3.4	T2	48.3	51.9	3.6
T1	94.5	97.3	2.8	T2	62.9	66.0	3.1
T1			0.0	T2	66.5	68.3	1.8
T1			0.0	T2	71.8	74.7	2.9
T1			0.0	T2	79.0	80.0	1.0
T1			0.0	T2	82.8	83.9	1.1
T1			0.0	T2	84.0	88.8	4.8
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub - <i>Lantana camara</i>	7.9	9.3	1.4	Shrub - <i>L. camara</i>	75.6	77.7	2.1
Shrub - <i>Lantana camara</i>	14.9	16.3	1.4	Shrub - <i>L. camara</i>	79.4	82.1	2.7
Shrub - <i>Grewia latifolia</i>	16.3	16.8	0.5	Shrub - <i>L. camara</i>	93.5	94.0	0.5
Shrub - <i>C. citriodora</i>	28.9	29.4	0.5	Shrub - <i>E. melanophloia</i>	84.5	95.4	10.9
Shrub - <i>Lantana camara</i>	68.4	70.1	1.7	Shrub - <i>L. camara</i>	98.5	100.0	1.5
Shrub - <i>Lantana camara</i>	72.7	74.9	2.2	Shrub			0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
<i>Corymbia citriodora</i>	25

<i>Eucalyptus crebra</i>	5
<i>Eucalyptus melanophloia</i>	5
<i>Eucalyptus siderophloia</i>	2
<i>Corymbia tessellaris</i>	3
Total	40
Total per hectare	200

Part J: SAT Survey Results

SAT Survey ID	Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
	1	<i>C. tessellaris</i>	Moreton Bay Ash	150	N
	2	<i>E. melanophloia</i>	Silver-leaved Ironbark	240	N
	3	<i>E. tereticornis</i>	Forest Red Gum	200	N
	4	<i>C. citriodora</i>	Spotted Gum	215	N
	5	<i>C. citriodora</i>	Spotted Gum	220	N
	6	<i>C. citriodora</i>	Spotted Gum	150	N
	7	<i>C. citriodora</i>	Spotted Gum	225	N
	8	<i>C. citriodora</i>	Spotted Gum	270	N
	9	<i>C. citriodora</i>	Spotted Gum	150	N
	10	<i>C. citriodora</i>	Spotted Gum	150	N
	11	<i>C. citriodora</i>	Spotted Gum	320	N
	12	<i>C. citriodora</i>	Spotted Gum	190	N
	13	<i>E. crebra</i>	Narrow-leaved Ironbark	220	N
	14	<i>C. citriodora</i>	Spotted Gum	200	N
	15	<i>E. melanophloia</i>	Silver-leaved Ironbark	230	N
	16	<i>C. citriodora</i>	Spotted Gum	380	N
	17	<i>C. citriodora</i>	Spotted Gum	150	N
	18	<i>C. tessellaris</i>	Moreton Bay Ash	195	N
	19	<i>C. citriodora</i>	Spotted Gum	125	N
	20	<i>E. crebra</i>	Narrow-leaved Ironbark	160	N
	21	<i>E. crebra</i>	Narrow-leaved Ironbark	230	N
	22	<i>C. citriodora</i>	Spotted Gum	380	N
	23	<i>C. citriodora</i>	Spotted Gum	180	N
	24	<i>C. citriodora</i>	Spotted Gum	180	N
	25	<i>C. citriodora</i>	Spotted Gum	260	N
	26	<i>C. citriodora</i>	Spotted Gum	100	N
	27	<i>E. melanophloia</i>	Silver-leaved Ironbark	430	N
	28	<i>C. citriodora</i>	Spotted Gum	740	N
	29	<i>C. citriodora</i>	Spotted Gum	340	N
	30	<i>C. citriodora</i>	Spotted Gum	110	N
	Total				0

Attach Landscape Photos Here

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T4	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	KFB/KR	Date	29/02/2024
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		Pre-clear 12.12.5/12.12.13	

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

Open paddock dominated by pastoral grass, Balloon Cotton Bush with *Lantana*.

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

Tree species richness:				
Total number of species	2			EDL / Dom / R
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	EDL
Scientific Name	<i>Corymbia tessellaris</i>	Common Name	Moreton Bay Ash	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:				
Total number of species	0			
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Grass species richness:				
Total number of species	5			
Scientific Name	<i>Aristida leptopoda</i>	Common Name	White Spear Grass	
Scientific Name	<i>Capillipedium spicigerum</i>	Common Name	Scented Tops	
Scientific Name	<i>Cynodon dactylon</i>	Common Name	Green Couch	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass	
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo Grass	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Forbs and others (non grass ground) species richness:				
Total number of species	2			
Scientific Name	<i>Amyema sp.</i>	Common Name	Mistletoe Species	
Scientific Name	<i>Cyperus difformis</i>	Common Name	Dirty Dora	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

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

Total percentage cover within plot				
		55.00%		
Scientific Name	<i>Centella asiatica</i>	Common Name	Pennywort	
Scientific Name	<i>Chloris gayana</i>	Common Name	Rhodes Grass	
Scientific Name	<i>Eleusine indica</i>	Common Name	Crowsfoot Grass	
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Balloon Cotton Bush	
Scientific Name	<i>Heliotropium amplexicaule</i>	Common Name	Blue Heliotrope	
Scientific Name	<i>Lantana Camara</i>	Common Name	Lantana	
Scientific Name	<i>Onopordum acanthium</i>	Common Name	Scotch Thistle	
Scientific Name	<i>Opuntia</i>	Common Name	Prickly Pear	
Scientific Name	<i>Setaria sphacelata</i>	Common Name	Small Seteria	
Scientific Name	<i>Sida cordifolia</i>	Common Name	Flannel Weed	
Scientific Name	<i>Sida rhombifolia</i>	Common Name	Arrowleaf Sida	
Scientific Name	<i>Solanum seafortianum</i>	Common Name	Brazilian Nightshade	

South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T5	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	KFB/KR	Date	29/02/2024
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		Pre-clear 12.12.5/12.12.13	

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

Open paddock dominated by weeds and pastoral grass

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

Tree species richness:				
Total number of species	2			EDL / Dom / R
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	R
Scientific Name	<i>Eucalyptus siderophloia</i>	Common Name	Grey Ironbark	R
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Shrub species richness:				
Total number of species	5			
Scientific Name		Common Name	Shrub sp.	
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	
Scientific Name	<i>Jagera pseudorhus</i>	Common Name	Foambark	
Scientific Name	<i>Mallotus philippensis</i>	Common Name	Red Kamala	
Scientific Name	<i>Trema tomentosa</i>	Common Name	Poison Peach	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Grass species richness:				
Total number of species	3			
Scientific Name	<i>Themeda triandra</i>	Common Name	Kangaroo Grass	
Scientific Name	<i>Capillipedium spicigerum</i>	Common Name	Scented Tops	
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Forbs and others (non grass ground) species richness:				
Total number of species	4			
Scientific Name	<i>Amygema congener</i>	Common Name	Mistletoe	
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons	
Scientific Name	<i>Glycine tabacina</i>	Common Name	Slender Glycine	
Scientific Name	<i>Maclura cochinchinensis</i>	Common Name	Cockspur Vine	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

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

Total percentage cover within plot				
		90.00%		
Scientific Name	Green amaranth	Common Name	Green Amaranth	
Scientific Name	<i>Bidens pilosa</i>	Common Name	Cobbler's Pegs	
Scientific Name	<i>Centella asiatica</i>	Common Name	Pennywort	
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Balloon Cotton Bush	
Scientific Name	<i>Heliotropium amplexicaule</i>	Common Name	Blue Heliotrope	
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana	
Scientific Name	<i>Macroptilium atropurpureum</i>	Common Name	Siatro	
Scientific Name	<i>Microlaena stipoides</i>	Common Name	Weeping Grass	
Scientific Name	<i>Megathyrsus maximus var. maximus</i>	Common Name	Guinea Grass	
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass	
Scientific Name	<i>Onopordum acanthium</i>	Common Name	Scotch Thistle	
Scientific Name	<i>Paspalum dilatatum</i>	Common Name	Paspalum	

Scientific Name	<i>Passiflora suberosa</i>	Common Name	Corky Passion Vine
Scientific Name	<i>Rhaphiolepis indica</i>	Common Name	Indian Hawthorn
Scientific Name	<i>Sida cordifolia</i>	Common Name	Flanel Weed
Scientific Name	<i>Sida rhombifolia</i>	Common Name	Arrowleaf Sida
Scientific Name	<i>Solanum mauritianum</i>	Common Name	Tobacco Bush
Scientific Name	<i>Solanum seafortianum</i>	Common Name	Brazilian Nightshade
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Giant Rat's Tail Grass
Scientific Name	<i>Tagetes minuta</i>	Common Name	Stinking Rodger
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purpletop vervain
Scientific Name	<i>Lepidium sativum</i>	Common Name	Garden Cress

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

Total Length of Coarse Woody Debris (Meters per hectare)		
1	Nil	26
2		27
3		28
4		29
5		30
6		31
7		32
8		33
9		34
10		35
11		36
12		37
13		38
14		39
15		40
16		41
17		42
18		43
19		44
20		45
21		46
22		47
23		48
24		49
25		50

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	0%	20%	50%	25%	10%	21%
Native other grass	0%	0%	0%	0%	0%	
Native forbs and other species	0%	0%	0%	0%	0%	
Native shrubs	0%	0%	0%	0%	0%	
Non-native grass	30%	40%	0%	25%	40%	27%
Non native forbs and shrubs	70%	40%	100%	50%	50%	62%
Litter	0%	0%	0%	0%	0%	
Rock	0%	0%	0%	0%	0%	
Bare Ground	0%	0%	0%	0%	0%	
Cryptogram	0%	0%	0%	0%	0%	
Total	100%	100%	150%	100%	100%	110%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	410	Number of large eucalypt trees:	1
Non- Eucalypt Large tree DBH benchmark used:	NA	Number of large non eucalypt trees:	0
Total number of large trees recorded:	1		
Total Number Large Trees per ha:	2		

Median Tree Canopy Height Measurements	Canopy:	20	Sub-canopy:	0	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating:	100
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Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	0.0%	Sub-canopy:	0.00%	Emergent:	
Shrub canopy cover %	0.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub - <i>Lantana camara</i>	94.6	100.0	5.4	Shrub			0.0
Shrub - <i>Lantana camara</i>	86.1	86.2	0.1	Shrub			0.0

South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T6	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	KFB/KR	Date	1/03/2024
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.3.7	

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

Remnant 12.3.7. Shrub layer dominated by *Lantana* and Poison Peach. Rainforest influence in end of Transect.

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

Tree species richness:			
Total number of species	9	EDL / Dom / R	
Scientific Name	<i>Angophora subvelutina</i>	Common Name	Broad-leaved Apple
Scientific Name	<i>Corymbia intermedia</i>	Common Name	Pink Bloodwood
Scientific Name	<i>Casuarina cunninghamiana</i>	Common Name	River She-oak
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum
Scientific Name	<i>Glochidion ferdinandi</i>	Common Name	Cheese Tree
Scientific Name	<i>Lophostemon confertus</i>	Common Name	Brush Box
Scientific Name	<i>Lophostemon suaveolens</i>	Common Name	Swamp Box
Scientific Name	<i>Melia azedarach</i>	Common Name	White Cedar
Scientific Name	<i>Polyscias elegans</i>	Common Name	Celerywood

Shrub species richness:			
Total number of species	6	EDL / Dom / R	
Scientific Name	<i>Breytia oblongifolia</i>	Common Name	Coffee Bush
Scientific Name	<i>Boronia heterophylla</i>	Common Name	Native Hibiscus
Scientific Name	<i>Cyathea cooperi</i>	Common Name	Tree Fern
Scientific Name	<i>Hamalanthus populifolius</i>	Common Name	Bleeding Heart
Scientific Name	<i>Mallotus philippensis</i>	Common Name	Red Kamala
Scientific Name	<i>Trema tomentosa</i>	Common Name	Poison Peach

Grass species richness:			
Total number of species	4	EDL / Dom / R	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass
Scientific Name	<i>Opismenus hirtellus</i>	Common Name	Basket Grass
Scientific Name	<i>Ottolochloa gracillima</i>	Common Name	Graceful Grass
Scientific Name	<i>Panicum decompositum</i>	Common Name	Native Millet

Forbs and others (non grass ground) species richness:			
Total number of species	14	EDL / Dom / R	
Scientific Name	<i>Adiantum atroviride</i>	Common Name	Maidenhair Fern
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons
Scientific Name	<i>Cheilanthes distans</i>	Common Name	Bristle Cloak Fern
Scientific Name	<i>Desmodium rhytidophyllum</i>	Common Name	Hairy trefoil
Scientific Name	<i>Dianella caerulea</i>	Common Name	Blue Flax Lily
Scientific Name	<i>Geitonoplesium cymosum</i>	Common Name	Scrambling Lily
Scientific Name	<i>Glycine clandestina</i>	Common Name	Twining Glycine
Scientific Name	<i>Hybanthus stellarioides</i>	Common Name	Spade Flower
Scientific Name	<i>Lobelia purpurascens</i>	Common Name	White Root
Scientific Name	<i>Maclura cochinchinensis</i>	Common Name	Cockspur Vine
Scientific Name	<i>Pteridium esculentum</i>	Common Name	Bracken Fern
Scientific Name	<i>Rubus parvifolius</i>	Common Name	Native Raspberry
Scientific Name	<i>Smilax australis</i>	Common Name	Barbed-wire vine
Scientific Name	<i>Stephania japonica</i>	Common Name	Tape Vine

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

Total percentage cover within plot	90.00%	EDL / Dom / R	
Scientific Name	<i>Bidens pilosa</i>	Common Name	Cobbler's Pegs
Scientific Name	<i>Crotalaria beddomeana</i>	Common Name	Rattlepod
Scientific Name	<i>Gnaphalium calviceps</i>	Common Name	Cudweed
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Balloon Cotton Bush
Scientific Name	<i>Heliotropium amplexicaule</i>	Common Name	Blue Heliotrope
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Passiflora subpeltata</i>	Common Name	White Passionflower
Scientific Name	<i>Passiflora suberosa</i>	Common Name	Corky Passion Vine
Scientific Name	<i>Solanum mauritianum</i>	Common Name	Tobacco Bush

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

Total Length of Coarse Woody Debris (Meters per hectare)	35.00	EDL / Dom / R	
1	1.30	26	
2	2.20	27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	

9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	50%	40%	35%	5%	0%	26%
Native other grass	0%	0%	0%	0%	0%	0%
Native forbs and other species	5%	10%	25%	30%	25%	19%
Native shrubs	0%	0%	0%	0%	0%	0%
Non-native grass	0%	0%	0%	0%	20%	4%
Non native forbs and shrubs	40%	35%	20%	45%	55%	39%
Litter	5%	15%	20%	20%	0%	12%
Rock	0%	0%	0%	0%	0%	0%
Bare Ground	0%	0%	0%	0%	0%	0%
Cryptogram	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	510	Number of large eucalypt trees:	15
Non- Eucalypt Large tree DBH benchmark used:	360	Number of large non eucalypt trees:	2
Total number of large trees recorded:	17		
Total Number Large Trees per ha:	34		

Median Tree Canopy Height Measurements	Canopy:	21	Sub-canopy:	11	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating:	50%
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Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	63.4%	Sub-canopy:	31.60%	Emergent:	
Shrub canopy cover %	2.20%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	3.3	3.3	T2	9.6	10.4	0.8
T1	12.8	15.4	2.6	T2	10.9	17.0	6.1
T1	15.4	22.5	7.1	T2	27.0	29.4	2.4
T1	32.5	34.9	2.4	T2	29.4	31.8	2.4
T1	44.9	50.0	5.1	T2	33.8	36.3	2.5
T1	51.0	59.3	8.3	T2	52.4	62.5	10.1
T1	59.4	65.7	6.3	T2	68.0	71.6	3.6
T1	66.0	74.0	8.0	T2	96.3	100.0	3.7
T1	76.3	82.3	6.0	T2			0.0
T1	85.7	100.0	14.3	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub - Lantana camara	5.7	6.4	0.7	Shrub - Poison Peach	43.3	44.3	1.0
Shrub - Lantana camara	8.6	8.9	0.3	Shrub - L. camara	47.7	48.3	0.6
Shrub - Lantana camara	9.7	12.8	3.1	Shrub - L. camara	49.0	50.0	1.0
Shrub - Lantana camara	14.6	16.7	2.1	Shrub - L. camara	51.0	56.0	5.0
Shrub - Species 1.	17.4	17.6	0.2	Shrub - L. camara	56.7	60.0	3.3
Shrub - White Cedar	19.8	20.1	0.3	Shrub - L. camara	61.5	65.0	3.5
Shrub - Lantana camara	20.4	21.0	0.6	Shrub - L. camara	57.0	71.7	14.7
Shrub - Lantana camara	21.6	21.9	0.3	Shrub - L. camara	73.2	75.7	2.5
Shrub - Lantana camara	22.9	25.5	2.6	Shrub - L. camara	76.0	76.5	0.5
Shrub - Lantana camara	27.0	29.4	2.4	Shrub - L. camara	77.7	78.6	0.9
Shrub - Lantana camara	31.7	31.9	0.2	Shrub - L. camara	79.3	79.8	0.5
Shrub - Lantana camara	32.3	32.5	0.2	Shrub - Poison Peach	79.8	80.0	0.2
Shrub - Lantana camara	33.7	34.4	0.7	Shrub - Coffee Bush	84.2	84.4	0.2
Shrub - Cheese tree	35.3	35.6	0.3	Shrub - L. camara	85.0	86.6	1.6
Shrub - Lantana camara	35.6	35.9	0.3	Shrub - L. camara	87.8	91.0	3.2
Shrub - Lantana camara	38.2	41.0	2.8	Shrub - L. camara	94.6	100.0	5.4

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
Angophora subvelutina	20
Casuarina cunninghamiana	9
Corymbia intermedia	6
Eucalyptus tereticornis	8
Lophostemon confertus	5
Lophostemon suaveolens	4
Melia azedarach	3
Total	43
Total per hectare	215

Part J: SAT Survey Results

SAT Survey ID				
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	<i>C. intermedia</i>	Pink Bloodwood	180	N
2	<i>A. subvelutina</i>	Broad-leaved Apple	370	N
3	<i>E. tereticornis</i>	Forest Red Gum	300	N
4	<i>M. azedarach</i>	White Cedar	240	N
5	<i>E. tereticornis</i>	Forest Red Gum	520	N
6	<i>C. intermedia</i>	Pink Bloodwood	360	N
7	<i>A. subvelutina</i>	Broad-leaved Apple	250	N
8	<i>C. cunninghamiana</i>	River She-oak	200 & 140	N
9	<i>A. subvelutina</i>	Broad-leaved Apple	350	N
10	<i>A. subvelutina</i>	Broad-leaved Apple	140	N
11	<i>C. cunninghamiana</i>	River She-oak	330	N
12	<i>A. subvelutina</i>	Broad-leaved Apple	210	N
13	<i>A. subvelutina</i>	Broad-leaved Apple	265	N
14	<i>C. cunninghamiana</i>	River She-oak	230	N
15	<i>A. subvelutina</i>	Broad-leaved Apple	130	N
16	<i>C. cunninghamiana</i>	River She-oak	240	N
17	<i>E. tereticornis</i>	Forest Red Gum	220	N
18	<i>A. subvelutina</i>	Broad-leaved Apple	500	N
19	<i>A. subvelutina</i>	Broad-leaved Apple	400	N
20	<i>C. cunninghamiana</i>	River She-oak	180	N
21	<i>C. cunninghamiana</i>	River She-oak	160	N
22	<i>A. subvelutina</i>	Broad-leaved Apple	160	N
23	<i>E. tereticornis</i>	Forest Red Gum	400	N
24	<i>A. subvelutina</i>	Broad-leaved Apple	110	N
25	<i>A. subvelutina</i>	Broad-leaved Apple	265	N
26	<i>A. subvelutina</i>	Broad-leaved Apple	180	N
27	<i>A. subvelutina</i>	Broad-leaved Apple	220	N
28	<i>M. azedarach</i>	White Cedar	200	N
29	<i>A. subvelutina</i>	Broad-leaved Apple	230	N
30	<i>A. subvelutina</i>	Broad-leaved Apple	180	N
Total				0

Attach Landscape Photos Here

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T12	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	XGJ / AW	Date	15/03/2023
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.12.5	

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

Open woodland banked area dominated by *Lantana* in shrub layer. Dominated by *C. citriodora* with *E. crebra* and *E. tereticornis* scattered throughout. Adjoining gully line. Remnant area lots of large trees with hollows.

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

Tree species richness:				
Total number of species	6			EDL / Dom / R
Scientific Name	<i>Alphitonia excelsa</i>	Common Name	Soap Tree	
Scientific Name	<i>Corymbia citriodora</i>	Common Name	Spotted Gum	EDL / Dom / R
Scientific Name	<i>Corymbia intermedia</i>	Common Name	Pink Bloodwood	EDL
Scientific Name	<i>Elaeocarpus reticulatus</i>	Common Name	Blueberry Ash	
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark	EDL / R
Scientific Name	<i>Eucalyptus tereticornis</i>	Common Name	Forest Red Gum	EDL

Shrub species richness:				
Total number of species	10			EDL / Dom / R
Scientific Name	<i>Acacia salicina</i>	Common Name	Sally Wattle	
Scientific Name	<i>Alphitonia excelsa</i>	Common Name	Soap Tree	
Scientific Name	<i>Banksia integrifolia</i>	Common Name	Coastal Banksia	
Scientific Name	<i>Brachyhiton populneus</i>	Common Name	Kurrajong Tree	
Scientific Name	<i>Carissa ovata</i>	Common Name	Current Bush	
Scientific Name	<i>Ficus coronata</i>	Common Name	Sandpaper Fig	
Scientific Name	<i>Pultenaea sp.</i>	Common Name		
Scientific Name	<i>Hibiscus heterophyllus</i>	Common Name	Native Rosella	
Scientific Name	<i>Trema tomentosa</i>	Common Name	Poison Peach	
Scientific Name	<i>Bursaria spinosa</i>	Common Name	Blackthorn	

Grass species richness:				
Total number of species	8			EDL / Dom / R
Scientific Name	<i>Aristida vagans</i>	Common Name	Threeawned Speargrass	
Scientific Name	<i>Brachyachne convergens</i>	Common Name	Native Couch	
Scientific Name	<i>Cymbopogon refractus</i>	Common Name	Barbed Wiregrass	
Scientific Name	<i>Echinopogon nutans</i>	Common Name	Nodding Hedgehog Grass	
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass	
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass	
Scientific Name	<i>Panicum decompositum</i>	Common Name	Native Millet	
Scientific Name	<i>Entolasia stricta</i>	Common Name	Wiry Panic	

Forbs and others (non grass ground) species richness:				
Total number of species	12			EDL / Dom / R
Scientific Name	<i>Adiantum atroviride</i>	Common Name	Maidenhair Fern	
Scientific Name	<i>Cassytha glabella</i>	Common Name	Slender Devil's Twine	
Scientific Name	<i>Cheilanthes distans</i>	Common Name	Bristle Cloak Fern	
Scientific Name	<i>Chrysocephalum apiculatum</i>	Common Name	Yellow Buttons	
Scientific Name	<i>Cammelia benghalensis</i>	Common Name	Wandering Jew	
Scientific Name	<i>Cyperus gracilis</i>	Common Name	Slender Flat Sedge	
Scientific Name	<i>Desmodium varians</i>	Common Name	Slender Tick Trefoil	
Scientific Name	<i>Eustrephus latifolius</i>	Common Name	Wombat Berry	
Scientific Name	<i>Evolvulus alsinoides</i>	Common Name	Dwarf Morning Glory	
Scientific Name	<i>Glycine clandestina</i>	Common Name	Twining Glycine	
Scientific Name	<i>Sigesbeckia orientalis</i>	Common Name	St Paul's Wort	
Scientific Name	<i>Maclura cochinchinensis</i>	Common Name	Cocksbur Vine	
Scientific Name		Common Name		
Scientific Name		Common Name		

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

Total percentage cover within plot	80.00%		
Scientific Name	<i>Ageratum houstonianum</i>	Common Name	Blue Billygoat Weed
Scientific Name	<i>Asclepias curassavica</i>	Common Name	Annual Milkweed
Scientific Name	<i>Cuphea carthagenensis</i>	Common Name	Colombian Waxweed
Scientific Name	<i>Lantana Camara</i>	Common Name	Lantana
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass
Scientific Name	<i>Centella asiatica</i>	Common Name	Pennywort
Scientific Name	<i>Heliotropium amplexicaule</i>	Common Name	Blue Heliotrope
Scientific Name	<i>Lantana montevidensis</i>	Common Name	Creeping Lantana
Scientific Name	<i>Mimosa pudica</i>	Common Name	Common Sensitive Plant
Scientific Name	<i>Passiflora suberosa</i>	Common Name	Corky Passion Vine
Scientific Name	<i>Sida cordifolia</i>	Common Name	Flannel Weed
Scientific Name	<i>Sida rhombifolia</i>	Common Name	Arrowleaf Sida
Scientific Name	<i>Solanum mauritianum</i>	Common Name	Tobacco Bush
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Giant Rat's Tail Grass
Scientific Name	<i>Tagetes minuta</i>	Common Name	Stinking Roger
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purpletop vervain

Scientific Name		Common Name	Red flowered weed
Scientific Name	<i>Cirsium brevistylum</i>	Common Name	Indian Thistle
Scientific Name	<i>Gnaphalium calviceps</i>	Common Name	Cudweed
Scientific Name		Common Name	

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

Total Length of Coarse Woody Debris (Meters per hectare)	115.00	
1	5.00	26
2	2.00	27
3	1.50	28
4	3.00	29
5		30
6		31
7		32
8		33
9		34
10		35
11		36
12		37
13		38
14		39
15		40
16		41
17		42
18		43
19		44
20		45
21		46
22		47
23		48
24		49
25		50

Part F - Native perennial grass cover, organic litter: (*provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	10%	30%	75%	5%	0%	24%
Native other grass	0%	0%	0%	0%	0%	0%
Native forbs and other species	5%	5%	2%	0%	40%	10%
Native shrubs	0%	0%	0%	0%	0%	0%
Non-native grass	0%	0%	0%	0%	0%	0%
Non native forbs and shrubs	20%	0%	0%	85%	20%	25%
Litter	65%	65%	23%	10%	40%	41%
Rock	0%	0%	0%	0%	0%	0%
Bare Ground	0%	0%	0%	0%	0%	0%
Cryptogram	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%

Part G- Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	410	Number of large eucalypt trees:	15
Non- Eucalypt Large tree DBH benchmark used:	NA	Number of large non eucalypt trees:	0
Total number of large trees recorded:	15		
Total Number Large Trees per ha:	30		

Median Tree Canopy Height Measurements	Canopy:	24	Sub-canopy:	9	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating:	100
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Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	73.5%	Sub-canopy:	23.90%	Emergent:	
Shrub canopy cover %	11.50%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	0.0	6.2	6.2	T2	3.1	4.2	1.1
T1	16.4	26.6	10.2	T2	6.2	7.7	1.5
T1	27.7	47.2	19.5	T2	12.2	19.7	7.5
T1	58.0	73.8	15.8	T2	29.1	36.8	7.7
T1	78.2	100.0	21.8	T2	38.5	42.2	3.7
T1			0.0	T2	68.4	70.8	2.4
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0
T1			0.0	T2			0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub	2.7	3.2	0.5	Shrub	66.2	72.3	6.1
Shrub	4.1	4.9	0.8	Shrub	73.5	75.2	1.7
Shrub	36.2	36.6	0.4	Shrub	80.0	80.4	0.4
Shrub	37.3	37.7	0.4	Shrub	83.5	83.7	0.2
Shrub	38.4	38.7	0.3	Shrub	93.7	94.4	0.7

Note: Only assess emergent (e) or sub-canopy (s) layers if the benchmark dominant strata/stratum that layers are present. If trees are in the same layer and continuous along the transect you can group them.

Part I: GHFF Stem Count

Species Name	Stem Count
<i>Corymbia citriodora</i>	26
<i>Eucalyptus tereticornis</i>	7
<i>Eucalyptus crebra</i>	7

Total	40
Total per hectare	200

Part J: SAT Survey Results

SAT Survey ID				
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	<i>Corymbia citriodora</i>	Spotted Gum	630	Y
2	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	170	Y
3	<i>Corymbia citriodora</i>	Spotted Gum	310	N
4	<i>Corymbia citriodora</i>	Spotted Gum	150	N
5	<i>Corymbia citriodora</i>	Spotted Gum	680	N
6	<i>Corymbia citriodora</i>	Spotted Gum	420	N
7	<i>Corymbia citriodora</i>	Spotted Gum	380	N
8	<i>Corymbia citriodora</i>	Spotted Gum	420	N
9	<i>Corymbia citriodora</i>	Spotted Gum	150	N
10	<i>Corymbia citriodora</i>	Spotted Gum	220	N
11	<i>Eucalyptus tereticornis</i>	Forest Red Gum	200	N
12	<i>Eucalyptus tereticornis</i>	Forest Red Gum	580	N
13	<i>Corymbia citriodora</i>	Spotted Gum	140	N
14	<i>Corymbia citriodora</i>	Spotted Gum	100	N
15	<i>Corymbia citriodora</i>	Spotted Gum	180	N
16	<i>Corymbia citriodora</i>	Spotted Gum	170	N
17	<i>Corymbia citriodora</i>	Spotted Gum	210	Y
18	<i>Corymbia citriodora</i>	Spotted Gum	500	N
19	<i>Eucalyptus tereticornis</i>	Forest Red Gum	560	N
20	<i>Corymbia citriodora</i>	Spotted Gum	310	Y
21	<i>Corymbia citriodora</i>	Spotted Gum	830	N
22	<i>Corymbia citriodora</i>	Spotted Gum	320	N
23	<i>Corymbia citriodora</i>	Spotted Gum	870	Y
24	<i>Corymbia citriodora</i>	Spotted Gum	170	N
25	<i>Corymbia citriodora</i>	Spotted Gum	120	Y
26	<i>Eucalyptus tereticornis</i>	Forest Red Gum	510	Y
27	<i>Eucalyptus tereticornis</i>	Forest Red Gum	340	N
28	<i>Eucalyptus tereticornis</i>	Forest Red Gum	280	N
29	<i>Corymbia citriodora</i>	Spotted Gum	120	N
30	<i>Corymbia citriodora</i>	Spotted Gum	420	N
Total				7

Attach Landscape Photos Here

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T13	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	AW/DC	Date	8/08/2024
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.9-10.2	

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

Non-remnant pre-clear RE12.9-10.2. Comprised mostly of cleared paddock with a stand of scattered mature eucalypt trees. Scattered lantana and balloon cotton bush.

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

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

Shrub species richness:				
Total number of species	1			
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

Grass species richness:				
Total number of species	4			
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass	
Scientific Name	<i>Entolasia stricta</i>	Common Name	Wiry Panic	
Scientific Name	<i>Cynodon dactylon</i>	Common Name	Green couch	
Scientific Name	<i>Eragrostis brownii</i>	Common Name	Brown's lovegrass	
Scientific Name		Common Name		
Scientific Name		Common Name		

Forbs and others (non grass ground) species richness:				
Total number of species	4			
Scientific Name	<i>Glycine tabacina</i>	Common Name	Slender Glycine	
Scientific Name	<i>Dichondra repens</i>	Common Name	Kidney Weed	
Scientific Name	<i>Einadia trigonos</i>	Common Name	Fishweed	
Scientific Name	<i>Eustrephus latifolius</i>	Common Name	Wombat berry	
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		
Scientific Name		Common Name		

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

Total percentage cover within plot	20.00%		
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Balloon Cotton Bush
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Hydrocotyle acutiloba</i>	Common Name	Pennywort
Scientific Name	<i>Sporobolus pyramidalis</i>	Common Name	Giant rats tail grass
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass
Scientific Name	<i>Sida cordifolia</i>	Common Name	Flannel weed
Scientific Name	<i>Sida rhombifolia</i>	Common Name	Common sida
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purple top verbena
Scientific Name		Common Name	

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

Total Length of Coarse Woody Debris (Meters per hectare)			
1	0.00	26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (* provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	95%	0%	62%	80%	90%	65%
Native other grass						
Native forbs and other species	0%	85%	0%	0%	0%	17%
Native shrubs						
Non-native grass						
Non native forbs and shrubs	5%	10%	35%	20%	5%	15%
Litter						
Rock						
Bare Ground	0%	5%	3%	0%	5%	3%
Cryptogram						
Total	100%	100%	100%	100%	100%	100%

Part G - Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	5
Non- Eucalypt Large tree DBH benchmark used:	NA	Number of large non eucalypt trees:	NA
Total number of large trees recorded:	5		
Total Number Large Trees per ha:	10		

Median Tree Canopy Height Measurements	Canopy:	18	Sub-canopy:	NA	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating:	33%
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Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	9.0%	Sub-canopy:	0.00%	Emergent:	
Shrub canopy cover %	0.00%					

Layer	Start	End	Interval	Layer	Start	End	Interval
T1	2.2	11.2	9.0	T2 - nil			0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Nil			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
<i>Corymbia intermedia</i>	2
<i>Corymbia citriodora</i>	1
<i>Eucalyptus crebra</i>	1
Total	4
Total per hectare	20

Part J: SAT Survey Results

SAT Survey ID	Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
	1	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	390	N
	2	<i>Corymbia citriodora</i>	Spotted Gum	330	N
	3	<i>Corymbia citriodora</i>	Spotted Gum	340	N
	4	<i>Corymbia citriodora</i>	Spotted Gum	340	N
	5	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	550	N
	6	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark	390	N
	7	<i>Corymbia intermedia</i>	Pink Bloodwood	450	N

8	<i>Corymbia citriodora</i>	Spotted Gum	540	N
9	<i>Corymbia intermedia</i>	Pink Bloodwood	480	N
10	<i>Corymbia citriodora</i>	Spotted Gum	150	N
11	<i>Corymbia citriodora</i>	Spotted Gum	510	N
12	<i>Corymbia citriodora</i>	Spotted Gum	400	N
13	<i>Corymbia citriodora</i>	Spotted Gum	100	N
14	<i>Corymbia citriodora</i>	Spotted Gum	460	N
15	<i>Corymbia citriodora</i>	Spotted Gum	100	N
16	<i>Corymbia citriodora</i>	Spotted Gum	110	N
17	<i>Corymbia citriodora</i>	Spotted Gum	340	N
18	<i>Corymbia citriodora</i>	Spotted Gum	370	N
19	<i>Corymbia citriodora</i>	Spotted Gum	730	N
20	<i>Corymbia citriodora</i>	Spotted Gum	480	N
21	<i>Corymbia intermedia</i>	Pink Bloodwood	490	N
22	<i>Corymbia citriodora</i>	Spotted Gum	470	N
23	<i>Corymbia citriodora</i>	Spotted Gum	510	N
24	<i>Corymbia citriodora</i>	Spotted Gum	290	N
25	<i>Corymbia citriodora</i>	Spotted Gum	470	N
26	<i>Corymbia citriodora</i>	Spotted Gum	430	N
27	<i>Eucalyptus tereticornis</i>	Forest Red Gum	290	N
28	<i>Corymbia citriodora</i>	Spotted Gum	460	N
29	<i>Corymbia citriodora</i>	Spotted Gum	640	N
30	<i>Corymbia citriodora</i>	Spotted Gum	820	N
Total				0

Attach Landscape Photos Here

North



South



East



West



Habitat Quality Assessment Unit Score Sheet

Part A - Administrative

Transect ID	T14	Job Number / Property	7243 - Little Kipper Offset Site
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Part B - Site Data

Recorders	AW/DC	Date	8/08/2024
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Assessment Unit:	Assessment Unit Area (ha)	RE	Bioregion Number
na		12.9-10.2	

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

Non-remnant open paddock adjoining waterway corridor with dense patches of lantana. Mix of native and non-native grass species. No trees present within transect except for one regenerating *E. crebra*.

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

Tree species richness:			
Total number of species	0	EDL / Dom / R	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Shrub species richness:			
Total number of species	1		
Scientific Name	<i>Eucalyptus crebra</i>	Common Name	Narrow-leaved Ironbark
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Grass species richness:			
Total number of species	3		
Scientific Name	<i>Imperata cylindrica</i>	Common Name	Blady Grass
Scientific Name	<i>Heteropogon contortus</i>	Common Name	Black Speargrass
Scientific Name	<i>Cynodon dactylon</i>	Common Name	Green couch
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

Forbs and others (non grass ground) species richness:			
Total number of species	3		
Scientific Name	<i>Glycine tabacina</i>	Common Name	Slender Glycine
Scientific Name	<i>Lomandra multiflora</i>	Common Name	Many-flowered matrush
Scientific Name	<i>Dichondra repens</i>	Common Name	Kidney weed
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total percentage cover within plot	60.00%		
Scientific Name	<i>Lantana camara</i>	Common Name	Lantana
Scientific Name	<i>Gomphocarpus physocarpus</i>	Common Name	Balloon Cotton Bush
Scientific Name	<i>Hydrocotyle acutiloba</i>	Common Name	Pennywort
Scientific Name	<i>Urochloa decumbens</i>	Common Name	Signal grass
Scientific Name	<i>Melinis repens</i>	Common Name	Red Natal Grass
Scientific Name	<i>Verbena bonariensis</i>	Common Name	Purple top verbena
Scientific Name		Common Name	
Scientific Name		Common Name	
Scientific Name		Common Name	

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

Total Length of Coarse Woody Debris (Meters per hectare)	29.00		
1	0.50	26	
2	0.40	27	
3	2.00	28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	

12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Part F - Native perennial grass cover, organic litter: (* provide percentage cover within each quadrat, and provide average cover)

Ground Cover	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5	Average
Native perennial grass cover	77%	67%	87%	0%	85%	63%
Native other grass						
Native forbs and other species						
Native shrubs						
Non-native grass	5%	15%	0%	0%	0%	4%
Non native forbs and shrubs	15%	15%	10%	100%	10%	30%
Litter						
Rock						
Bare Ground	3%	3%	3%	0%	5%	3%
Cryptogram						
Total	100%	100%	100%	100%	100%	100%

Part G - Number of large trees , tree canopy height, recruitment of woody perennial species:

Eucalypt Large tree DBH benchmark used :	380	Number of large eucalypt trees:	0
Non- Eucalypt Large tree DBH benchmark used:	NA	Number of large non eucalypt trees:	0
Total number of large trees recorded:			0
Total Number Large Trees per ha:			0

Median Tree Canopy Height Measurements	Canopy:	NA	Sub-canopy:	NA	Emergent:	NA
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Percentage of ecologically dominant layer species regenerating:	0%
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Part H - Tree canopy cover, Shrub canopy cover

Tree canopy cover %	Canopy:	0.0%	Sub-canopy:	0.00%	Emergent:	
Shrub canopy cover %						0.80%

Layer	Start	End	Interval	Layer	Start	End	Interval
T1- nil			0.0	T2 - nil			0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0

Layer	Start	End	Interval	Layer	Start	End	Interval
Shrub - <i>E. crebra</i>	66.1	66.9	0.8				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0
			0.0				0.0

Note: Only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along the transect you can group them

Part I: GHFF Stem Count

Species Name	Stem Count
Nil	
Total	0
Total per hectare	0

Part J: SAT Survey Results

SAT Survey ID	NA			
Tree Number	Scientific Name	Common Name	DBH	Scat (Y/N)
1	Not enough trees in area to perform SAT			
2				
3				
4				
5				
6				
7				
8				
9				
10				

11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
Total				

Attach Landscape Photos Here

North



South



East



West



Appendix G

Offset area – grey-headed flying-fox
FHA baseline scoring

Assessment Unit - Regional Ecosystem	AU 1 - Non-remnant paddock with scattered trees pre-clear RE12.12.5				
Site Reference	Transect 4	Transect 5	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	5.0	5.0	5.00	5	20
Species Richness	2.0	2.0	2.00	5	20
Flower Score	0.515	0.720	0.6175	8	10
Timing of Biological Shortages	10	8.5	9.25	9.25	10
Quality of Foraging Habitat	1	2	1.50	5	20
Non-native Plant Cover	55.00	90.00	72.50	1	20
Site Condition Score				33.25	X
MAX Site Condition Score				100	X
Site Condition Score - out of 4				1.33	X
Size of patch	10	10	10	10	10
Connectedness	3	3	3	3	10
Context	6	6	6	6	10
Ecological Corridors	10	10	10	10	10
Role of site location to species overall population in the state	6	6	6	6	10
Threats to the species	5	5	5	5	10
Site Context Score				40	X
MAX Site Context Score				60	X
Site Context Score - out of 3				2.00	X
GHFF Foraging Tree Density - Recorded	1	1	1.00		
GHFF Foraging Tree Density - per hectare	5	5	5.00	2	10
Species Stocking Rate Score				2	X
MAX Species Stocking Rate Score				10	X
Species Stocking Rate Score - out of 3				0.60	X
Total				3.93	

5
5
8
9.25
5
1
33.25

>200 ha
2 GHFF roosts
40% habitat
within a corridor
1 Level 3 roost
Moderate - barbed wire fencing

Site Condition

Vegetation Description	Score
Cat X	5
Cat C	10
Cat B	20

Canopy Species Richness	Score
0 GHFF Foraging Species	0
1 - 3 GHFF Foraging Species	5
4 - 6 GHFF Foraging Species	10
> 6 GHFF Foraging Species	20

Quality of Foraging Species	Score
0 Significant Foraging Species	0
1 - 3 Significant Foraging Species	5
4 - 6 Significant Foraging Species	10
> 6 Significant Foraging Species	20

Scores:	Flower Score	Timing of Shortages						Quality of Foraging habitat (1 = Wt p*r ≥0.65)	
		Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating & conception Dec-May	Migration paths All year		
		2.5	1.5	1.5	1.5	1.5	1.5	1.5	10
T4									
<i>Eucalyptus tereticornis</i>	0.63	x	x	x		x	x	1	
<i>Corymbia tessellaris</i>	0.4			x	x		x		
Average	0.515	Yes	Yes	Yes	Yes	Yes	Yes	1	
Total Species:									
GHFF Species:	2								
Important Species:	1								

Scores:	Flower Score	Timing of Shortages						Quality of Foraging habitat (1 = Wt p*r ≥0.65)	
		Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating & conception Dec-May	Migration paths All year		
		2.5	1.5	1.5	1.5	1.5	1.5	1.5	8.5
T5									
<i>Eucalyptus tereticornis</i>	0.63	x	x	x		x	x	1	
<i>Eucalyptus siderophloia</i>	0.81	x	x			x	x	1	
Average	0.720	Yes	Yes	Yes	No	Yes	Yes	2	
Total Species:									
GHFF Species:	2								
Important Species:	2								

Listed as a Significant Food Tree
Listed under the recovery plan

Site Context

Size of Patch	
< 5 hectares	0
5-25 hectares	2
26-100 hectares	5
101-200 hectares	7
> 200 hectares	10

Connectedness	
Active GHFF camps within 20 km	
<1 camps	0
1 - 3 camps	3
4 - 6 camps	6
> 6 camps	10

Context	
% GHFF Foraging habitat within 20km	
<10%	0
10 - 30%	3
31 - 75%	6
> 75%	10

Site Context	
Size of patch	10
Connectedness	3
Context	6
Ecological Corridors	10
Role of site to species overall population	6
Threats to the species	5

Ecological Corridors	
Not within ecological corridor	0
Sharing a common boundary	6
Within an ecological corridor	10

Threats to species	
High level threat	1
Moderate Level Threat	5
Low Level Threat	10

Role of site location to overall population	
Active Lvl 3 GHFF Camp within 20km	
<1 camp	0
1 - 3 camps	6
> 3 camps	10

Species Stocking Rate

Stem Density Scoring		
RE: 12.12.5	Density:	680
Score	Lower	Upper
2	0	85
4	86	368
6	369	623
8	624	666
10	667	694
8	695	737
6	738	992
4	993	1275
2	1276	

T1 280 T2 400

Assessment Unit - Regional Ecosystem	AU 2 - Remnant RE12.3.7				
Site Reference	Transect 1	Transect 6	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	20.0	20.0	20.00	20	20
Species Richness	5.0	5.0	5.00	10	20
Flower Score	0.528	0.540	0.5340	8	10
Timing of Biological Shortages	10	10	10.00	10	10
Quality of Foraging Habitat	2	2	2.00	5	20
Non-native Plant Cover	55.00	90.00	72.50	1	20
Site Condition Score				54	X
MAX Site Condition Score				100	X
Site Condition Score - out of 4				2.16	X
Size of patch	10	10	10	10	10
Connectedness	3	3	3	3	10
Context	6	6	6	6	10
Ecological Corridors	10	10	10	10	10
Role of site location to species overall population in the state	6	6	6	6	10
Threats to the species	5	5	5	5	10
Site Context Score				40	X
MAX Site Context Score				60	X
Site Context Score - out of 3				2.00	X
GHFF Foraging Tree Density - Recorded	27	43	35.00		
GHFF Foraging Tree Density - per hectare	135	215	175.00	4	10
Species Stocking Rate Score				4	X
MAX Species Stocking Rate Score				10	X
Species Stocking Rate Score - out of 3				1.20	X
Total				5.36	

20
10
8
10
5
1
54

>200 ha
2 GHFF roosts
40% habitat
within a corridor
1 Level 3 roost
Moderate - barbed wire fencing

Site Condition

Vegetation Description	Score
Cat X	5
Cat C	10
Cat B	20

Canopy Species Richness	Score
0 GHFF Foraging Species	0
1 - 3 GHFF Foraging Species	5
4 - 6 GHFF Foraging Species	10
> 6 GHFF Foraging Species	20

Quality of Foraging Species	Score
0 Significant Foraging Species	0
1 - 3 Significant Foraging Species	5
4 - 6 Significant Foraging Species	10
> 6 Significant Foraging Species	20

Site Context

Size of Patch	Score
< 5 hectares	0
5-25 hectares	2
26-100 hectares	5
101-200 hectares	7
> 200 hectares	10

Connectedness	Score
Active GHFF camps within 20 km	
<1 camps	0
1 - 3 camps	3
4 - 6 camps	6
> 6 camps	10

Context	Score
% GHFF Foraging habitat within 20km	
<10%	0
10 - 30%	3
31 - 75%	6
> 75%	10

Ecological Corridors	Score
Not within ecological corridor	0
Sharing a common boundary	6
Within an ecological corridor	10

Threats to species	Score
High level threat	1
Moderate Level Threat	5
Low Level Threat	10

Role of site location to overall population	Score
Active Lvl 3 GHFF Camp within 20km	
<1 camp	0
1 - 3 camps	6
> 3 camps	10

Species Stocking Rate

Stem Density Scoring		
RE: 12.3.7	Density:	406
Score	Lower	Upper
2	0	51
4	52	220
6	221	372
8	373	398
10	399	414
8	415	440
6	441	592
4	593	761
2	762	

T1 233 T2 173

Scores:	Flower Score	Timing of Shortages							Quality of Foraging Quality of foraging habitat (1 = Wt p*r ≥0.65)	10
		Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating & conception Dec-May	Migration paths All year	Fruit industries Aug-Mar		
T1			2.5	1.5	1.5	1.5	1.5	1.5		
<i>Eucalyptus tereticornis</i>	0.63	x	x	x		x	x	1		
<i>Corymbia intermedia</i>	0.86			x	x		x	1		
<i>Corymbia tessellaris</i>	0.4			x	x		x			
<i>Angophora subvelutina</i>	0.35			x			x			
<i>Lophostemon suaveolens</i>	0.4				x		x			
Average	0.528	Yes	Yes	Yes	Yes	Yes	Yes	2		
Total Species:										
GHFF Species:	5									
Important Species:	2									

Site Context	Score
Size of patch	10
Connectedness	3
Context	6
Ecological Corridors	10
Role of site to species overall population	6
Threats to the species	5

Scores:	Flower Score	Timing of Shortages							Quality of Foraging Quality of foraging habitat (1 = Wt p*r ≥0.65)	10
		Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating & conception Dec-May	Migration paths All year	Fruit industries Aug-Mar		
T6			2.5	1.5	1.5	1.5	1.5	1.5		
<i>Eucalyptus tereticornis</i>	0.63	x	x	x		x	x	1		
<i>Corymbia intermedia</i>	0.86			x	x		x	1		
<i>Angophora subvelutina</i>	0.35			x			x			
<i>Lophostemon suaveolens</i>	0.4				x		x			
<i>Lophostemon confertus</i>	0.46				x		x			
Average	0.540	Yes	Yes	Yes	Yes	Yes	Yes	2		
Total Species:										
GHFF Species:	5									
Important Species:	2									

Listed as a Significant Food Tree
Listed under the recovery plan

Assessment Unit - Regional Ecosystem	AU 3 - Remnant RE12.12.5				
Site Reference	Transect 2	Transect 12	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	20.0	20.0	20.00	20	20
Species Richness	3.0	4.0	3.50	5	20
Flower Score	0.643	0.698	0.6705	8	10
Timing of Biological Shortages	8.5	10	9.25	9.25	10
Quality of Foraging Habitat	2	3	2.50	5	20
Non-native Plant Cover	90.00	80.00	85.00	1	20
Site Condition Score				48.25	X
MAX Site Condition Score				100	X
Site Condition Score - out of 4				1.93	X
Size of patch	10	10	10	10	10
Connectedness	3	3	3	3	10
Context	6	6	6	6	10
Ecological Corridors	10	10	10	10	10
Role of site location to species overall population in the state	6	6	6	6	10
Threats to the species	5	5	5	5	10
Site Context Score				40	X
MAX Site Context Score				60	X
Site Context Score - out of 3				2.00	X
GHFF Foraging Tree Density - Recorded	54	40	47.00		
GHFF Foraging Tree Density - per hectare	270	200	235.00	4	10
Species Stocking Rate Score				4	X
MAX Species Stocking Rate Score				10	X
Species Stocking Rate Score - out of 3				1.20	X
Total				5.13	

20
5
8
9.25
5
1
48.25

>200 ha
2 GHFF roosts
40% habitat
within a corridor
1 Level 3 roost
Moderate - barbed wire fencing

Site Condition

Vegetation Description	Score
Cat X	5
Cat C	10
Cat B	20

Canopy Species Richness	Score
0 GHFF Foraging Species	0
1 - 3 GHFF Foraging Species	5
4 - 6 GHFF Foraging Species	10
> 6 GHFF Foraging Species	20

Quality of Foraging Species	Score
0 Significant Foraging Species	0
1 - 3 Significant Foraging Species	5
4 - 6 Significant Foraging Species	10
> 6 Significant Foraging Species	20

Scores:	Flower Score	Timing of Shortages							Quality of Foraging Quantity of foraging habitat (1 = Wt p*r ≥0.65)
		Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating & conception Dec-May	Migration paths All year	Fruit industries Aug-Mar	
		2.5	1.5	1.5	1.5	1.5	1.5	1.5	8.5
T2									
<i>Eucalyptus tereticornis</i>	0.63	x	x	x		x	x	1	
<i>Corymbia citriodora</i>	0.65	x	x					1	
<i>Eucalyptus crebra</i>	0.65	x	x					1	
Average	0.643	Yes	Yes	Yes	No	Yes	Yes	3	
Total Species:									
GHFF Species:	3								
Important Species:	2								

Scores:	Flower Score	Timing of Shortages							Quality of Foraging Quantity of foraging habitat (1 = Wt p*r ≥0.65)
		Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating & conception Dec-May	Migration paths All year	Fruit industries Aug-Mar	
		2.5	1.5	1.5	1.5	1.5	1.5	10	
T12									
<i>Eucalyptus tereticornis</i>	0.63	x	x	x		x	x	1	
<i>Corymbia citriodora</i>	0.65	x	x					1	
<i>Eucalyptus crebra</i>	0.65	x	x					1	
<i>Corymbia intermedia</i>	0.86			x	x		x	1	
Average	0.698	Yes	Yes	Yes	Yes	Yes	Yes	4	
Total Species:									
GHFF Species:	4								
Important Species:	3								

Listed as a Significant Food Tree
Listed under the recovery plan

Site Context

Size of Patch	Score
< 5 hectares	0
5-25 hectares	2
26-100 hectares	5
101-200 hectares	7
> 200 hectares	10

Connectedness	Score
Active GHFF camps within 20 km	
<1 camps	0
1 - 3 camps	3
4 - 6 camps	6
> 6 camps	10

Context	Score
% GHFF Foraging habitat within 20km	
<10%	0
10 - 30%	3
31 - 75%	6
> 75%	10

Site Context	Score
Size of patch	10
Connectedness	3
Context	6
Ecological Corridors	10
Role of site to species overall population	6
Threats to the species	5

Ecological Corridors	Score
Not within ecological corridor	0
Sharing a common boundary	6
Within an ecological corridor	10

Threats to species	Score
High level threat	1
Moderate Level Threat	5
Low Level Threat	10

Role of site location to overall population	Score
Active Lvl 3 GHFF Camp within 20km	
<1 camp	0
1 - 3 camps	6
> 3 camps	10

Species Stocking Rate

Stem Density Scoring	Density:	Score
RE: 12.12.5	680	
Score	Lower	Upper
2	0	85
4	86	368
6	369	623
8	624	666
10	667	694
8	695	737
6	738	992
4	993	1275
2	1276	

T1 280 T2 400

Assessment Unit - Regional Ecosystem	AU 4 - Regrowth RE12.12.5			
Site Reference	Transect 3	Average	AU Score	OUT OF
	Raw Data	Data		(X/X)
Vegetation Condition	10.0	10.00	10	20
Species Richness	5.0	5.00	10	20
Flower Score	0.600	0.6000	8	10
Timing of Biological Shortages	10	10.00	10	10
Quality of Foraging Habitat	2	3.00	5	20
Non-native Plant Cover	55.00	55.00	1	20
Site Condition Score			44	X
MAX Site Condition Score			100	X
Site Condition Score - out of 4			1.76	X
Size of patch	10	10	10	10
Connectedness	3	3	3	10
Context	6	6	6	10
Ecological Corridors	10	10	10	10
Role of site location to species overall population in the state	6	6	6	10
Threats to the species	5	5	5	10
Site Context Score			40	X
MAX Site Context Score			60	X
Site Context Score - out of 3			2.00	X
GHFF Foraging Tree Density - Recorded	40	40.00		
GHFF Foraging Tree Density - per hectare	200	200.00	4	10
Species Stocking Rate Score			4	X
MAX Species Stocking Rate Score			10	X
Species Stocking Rate Score - out of 3			1.20	X
Total			4.96	

10
10
8
10
5
1
44

>200 ha
2 GHFF roosts
40% habitat
within a corridor
1 Level 3 roost
Moderate - barbed wire fencing

Site Condition

Vegetation Description	Score
Cat X	5
Cat C	10
Cat B	20

Canopy Species Richness	Score
0 GHFF Foraging Species	0
1 - 3 GHFF Foraging Species	5
4 - 6 GHFF Foraging Species	10
> 6 GHFF Foraging Species	20

Quality of Foraging Species	Score
0 Significant Foraging Species	0
1 - 3 Significant Foraging Species	5
4 - 6 Significant Foraging Species	10
> 6 Significant Foraging Species	20

Flower Scores	Scores:		Timing of Shortages					Quality of Foraging	10
	Flower Score	Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating and conception Dec-May	Migration paths All year	Fruit industries Aug-Mar	
			2.5	1.5	1.5	1.5	1.5	1.5	
T3									
<i>Eucalyptus siderophloia</i>	0.81	x	x				x	x	1
<i>Corymbia tessellaris</i>	0.4			x	x			x	
<i>Eucalyptus melanophloia</i>	0.49	x	x	x	x	x	x	x	
<i>Eucalyptus crebra</i>	0.65	x	x						1
<i>Corymbia citriodora</i>	0.65	x	x						1
Average	0.6000	Yes	Yes	Yes	Yes	Yes	Yes	Yes	1
Total Species:									
GHFF Species:	5								
Important Species:	2								

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Site Context

Size of Patch	Score
< 5 hectares	0
5-25 hectares	2
26-100 hectares	5
101-200 hectares	7
> 200 hectares	10

Connectedness	Score
Active GHFF camps within 20 km	
<1 camps	0
1 - 3 camps	3
4 - 6 camps	6
> 6 camps	10

Context	Score
% GHFF Foraging habitat within 20km	
<10%	0
10 - 30%	3
31 - 75%	6
> 75%	10

Site Context	Score
Size of patch	10
Connectedness	3
Context	6
Ecological Corridors	10
Role of site to species overall population	6
Threats to the species	5

Ecological Corridors	Score
Not within ecological corridor	0
Sharing a common boundary	6
Within an ecological corridor	10

Threats to species	Score
High level threat	1
Moderate Level Threat	5
Low Level Threat	10

Role of site location to overall population	Score
Active Lvl 3 GHFF Camp within 20km	
<1 camp	0
1 - 3 camps	6
> 3 camps	10

Species Stocking Rate

Stem Density Scoring	Density per ha:	Score
RE: 12.12.5		680
	Lower value	Upper Value
2	0	85
4	86	368
6	369	623
8	624	666
10	667	694
8	695	737
6	738	992
4	993	1275
2	1276	

T1 280 T2 400

Assessment Unit - Regional Ecosystem	AU 5 - Non-remnant paddock pre-clear RE12.9-10.2				
Site Reference	Transect 13	Transect 14	Average	AU Score	OUT OF
	Raw Data	Raw Data	Score		(X/X)
Vegetation Condition	5.0	5.0	5.00	5	20
Species Richness	3.0	0.0	1.50	5	20
Flower Score	0.640	0.000	0.3200	5	10
Timing of Biological Shortages	8.5	0	4.25	4.25	10
Quality of Foraging Habitat	3	0	1.50	5	20
Non-native Plant Cover	20.00	60.00	40.00	5	20
Site Condition Score				29.25	X
MAX Site Condition Score				100	X
Site Condition Score - out of 4				1.17	X
Size of patch	10	10	10	10	10
Connectedness	3	3	3	3	10
Context	6	6	6	6	10
Ecological Corridors	10	10	10	10	10
Role of site location to species overall population in the state	6	6	6	6	10
Threats to the species	5	5	5	5	10
Site Context Score				40	X
MAX Site Context Score				60	X
Site Context Score - out of 3				2.00	X
GHFF Foraging Tree Density - Recorded	4	0	2.00		
GHFF Foraging Tree Density - per hectare	20	0	10.00	2	10
Species Stocking Rate Score				2	X
MAX Species Stocking Rate Score				10	X
Species Stocking Rate Score - out of 3				0.60	X
Total				3.77	

5
5
5
4.25
5
5
29.25

>200 ha
2 GHFF roosts
40% habitat
within a corridor
1 Level 3 roost
Moderate - barbed wire fencing

Site Condition

Vegetation Description	Score
Cat X	5
Cat C	10
Cat B	20

Canopy Species Richness	Score
0 GHFF Foraging Species	0
1 - 3 GHFF Foraging Species	5
4 - 6 GHFF Foraging Species	10
> 6 GHFF Foraging Species	20

Quality of Foraging Species	Score
0 Significant Foraging Species	0
1 - 3 Significant Foraging Species	5
4 - 6 Significant Foraging Species	10
> 6 Significant Foraging Species	20

Scores:	Flower Score	Timing of Shortages						Quality of Foraging	8.5
	Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating & conception Dec-May	Migration paths All year	Fruit industries Aug-Mar	Quality of foraging habitat (1 = Wt p*r ≥0.65)	
T13		2.5	1.5	1.5	1.5	1.5	1.5		
<i>Eucalyptus crebra</i>	0.65	x	x					1	
<i>Corymbia citriodora</i>	0.65	x	x					1	
<i>Corymbia intermedia</i>	0.86			x	x		x	1	
Average	0.720	Yes	Yes	Yes	Yes	No	Yes	1	
Total Species:									
GHFF Species:	3								
Important Species:	3								

Scores:	Flower Score	Timing of Shortages						Quality of Foraging	0
	Wt p*r	Food shortages Jul-Sep	Pregnancy Jul-Nov	Lactation Oct-Mar	Mating & conception Dec-May	Migration paths All year	Fruit industries Aug-Mar	Quality of foraging habitat (1 = Wt p*r ≥0.65)	
T14		2.5	1.5	1.5	1.5	1.5	1.5		
Nil	0								
Average	0.000	No	No	No	No	No	No	0	
Total Species:									
GHFF Species:	0								
Important Species:	0								

Listed as a Significant Food Tree
Listed under the recovery plan

Site Context

Size of Patch	Score
< 5 hectares	0
5-25 hectares	2
26-100 hectares	5
101-200 hectares	7
> 200 hectares	10

Connectedness	Score
Active GHFF camps within 20 km	
<1 camps	0
1 - 3 camps	3
4 - 6 camps	6
> 6 camps	10

Context	Score
% GHFF Foraging habitat within 20km	
<10%	0
10 - 30%	3
31 - 75%	6
> 75%	10

Site Context	Score
Size of patch	10
Connectedness	3
Context	6
Ecological Corridors	10
Role of site to species overall population	6
Threats to the species	5

Ecological Corridors	Score
Not within ecological corridor	0
Sharing a common boundary	6
Within an ecological corridor	10

Threats to species	Score
High level threat	1
Moderate Level Threat	5
Low Level Threat	10

Role of site location to overall population	Score
Active Lvl 3 GHFF Camp within 20km	
<1 camp	0
1 - 3 camps	6
> 3 camps	10

Species Stocking Rate

Stem Density Scoring	Density:	Score
RE: 12.9-10.2		240
Score	Lower	Upper
2	0	30
4	31	130
6	131	220
8	221	235
10	236	245
8	246	260
6	261	350
4	351	450
2	451	

T1 110 T2 130

Appendix H

Risk Assessment

Risk assessment for offset area

A qualitative risk assessment which considers the risks of achieving the objectives and outcomes for the offset area is presented in the table below. The risk assessment is completed in accordance with the EPBC Act Environmental Management Plan Guidelines (2014) and characterises risk as low, medium, high or severe, as derived from the likelihood (highly likely, likely, possible, unlikely, rare) and consequence (minor, moderate, high, major and critical) risk matrix.

The risk analysis assesses the risk of failure to achieve the AOMP management objectives. It is necessary to re-evaluate and modify the risk analysis and contingency measures throughout the period of EPBC Act approval, particularly if any unforeseen risks emerge or any negative outcomes identified are greater than expected.

During the first five (5) years of monitoring and Annual Compliance Reporting, **KFF1 and/or The Proponent** will review management commitments in this Offset Management Framework, and if the review results in the need to revise the framework it will be revised and submitted for approval. It is noted that events are only addressed once in the risk assessment under the most relevant management objective, however, some events are likely to impact on multiple management objectives.

Note, potential impacts from the occurrence of cyclones have been included within the risk analysis table. Cyclones, if to occur proximal to the offset area, are likely to result in indirect impacts only, including increased rainfall and wind events. Whilst the pathway of and occurrence of cyclones can change easily, becoming difficult to determine, an assessment of the potential associated risks has been completed. According to BoM (2019), cyclones have not traversed inland SEQ for at least the last 20 years, with the exception of Cyclone Debbie in 2017. While the risk of cyclones occurring south of 25°S has increased in more recent years, it is unlikely a formed cyclone would occur at the offset area location, nor proximal to them. This is due to a range of factors, including surrounding changes in topography, modified urban environment and lack of warm open water to provide continued energy generation¹.

¹ Bureau of Meteorology 2019, *Past Tropical Cyclones*, BoM, Australian Government, accessed at <http://www.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/history/past-tropical-cyclones/>
EPBC 2013/7057

Risk framework

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

Likelihood and consequence

Qualitative measure of likelihood (how likely is it that this event/circumstances will occur after management actions have been put in place/are being implemented)	
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances
Qualitative measure of consequences (what will be the consequence/result if the issue does occur)	
Minor	Minor risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing low cost, well characterised corrective actions.
Moderate	Moderate risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing well characterised, high cost/effort corrective actions.
High	High risk of failure to achieve the plan's objectives. Results in medium-long term delays to achieving plan objectives, implementing uncertain, high cost/effort corrective actions.
Major	The plan's objectives are unlikely to be achieved, with significant legislative, technical, ecological and/or administrative barriers to attainment that have no evidenced mitigation strategies.
Critical	The plan's objectives are unable to be achieved, with no evidenced mitigation strategies.

Risk assessment and management

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
To legally secure approved offset properties for conservation.	Failure to legally secure approved offset area. Legislative reform prejudices proposed tenure arrangements for offset properties.	Management action 1: <ul style="list-style-type: none"> Legally secure the offset area via a suitable method including a voluntary declaration under the <i>Vegetation Management Act 1999</i> and covenant under the <i>Land Act 1994</i> or <i>Land Titles Act 1994</i>. 	R	Mod	Low	Clearing of the 19.6 ha additional impact area cannot occur without legally securing the offset area.	N/A
Pest management	Failure to reduce the threat of introduced predators.	Management Action 2: <ul style="list-style-type: none"> Conduct baseline surveys and determine relative abundance index. Implement predator control program. Conduct follow-up monitoring and implement further control. 	U	Mod	Low	Monitoring of the presence of introduced predators through the use of remote motion-activated cameras; Survey the site to record the presence / absence of signs of introduced predator (sightings, killings and/or scats and tracks).	<ul style="list-style-type: none"> Should the initial and ongoing introduced predator control measures not result in a reduction of introduced predator numbers (compared to baseline survey), introduced predator program to be expanded/adapted to improve outcomes. Any incidence of injury/mortality resulting from introduced predator attack will initiate supplementary monitoring and control measures. <p>In the event that an offset species is found injured, transport immediately to a local vet, or suitably</p>

Additional Offset Management Plan

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
							qualified and experienced wildlife carer.
WONS management	Failure to control WONS.	<p>Management Action 3:</p> <ul style="list-style-type: none"> Develop and implement a weed strategy, with a particular focus on weeds listed with particularly ability to impact on movement and structural vegetation composition (predominantly <i>Lantana camara</i>), and under the <i>Biosecurity Act 2014</i>, to reduce weed cover to target thresholds. Undertake weed management in accordance with the AOMP. 	U	Mod	Low	<p>Annual (photo monitoring and mapping of weed infestations) and 5-year Targeted transects and MHQA) surveys of non-native plant cover to ensure reduction across offset area.</p> <p>Surveys in-line with weed management strategy.</p> <p>Repeated surveys of baseline data including 5 yearly habitat monitoring data as part of the framework.</p>	If weed survey indicates weed cover is not reduced since previous survey, weed control program to be expanded/ adapted to improve outcomes.
High intensity fire	A high intensity uncontrolled fire occurs within the offset area/s which causes loss of habitat.	<p>Management Action 4:</p> <p>Actions as directed by the local authority which may include prescribed burning or other techniques undertaken in consultation with the Queensland Rural Fire Brigade and controlled grazing to manage fuel loads.</p>	P	M	Med	<p>Annual monitoring requirements to review access tracks, fire breaks, fuel loads and outcomes of controlled burns or other management techniques such as use of livestock.</p>	<p>If a wildfire occurs in the offset area, the following actions will be undertaken:</p> <ul style="list-style-type: none"> Implement fire control Repair any fire breaks and access tracks. Stay informed through the Rural Fire Service.

Additional Offset Management Plan

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
							<ul style="list-style-type: none"> Assess damage caused by the wildfire and monitor for natural regeneration. Monitoring to occur 3-6 months post event or after the next wet weather event (whichever is sooner). Where natural regeneration is failing to thrive, assist natural regeneration through direct seeding and planting
Achieve performance targets and completion criteria for habitat	Landowner-approval holder agreements fail to adequately address management commitments in the offset plan.	<p>Management Action 1-5:</p> <ul style="list-style-type: none"> The offset area has been legally secured for conservation purposes. The development of this framework outlines specific management actions to achieve performance criteria. 	U	Mod	Low	Scheduled monitoring/surveys and Annual Compliance Reports	<ul style="list-style-type: none"> Review Offset Management Framework Implement adaptive management and corrective actions

Additional Offset Management Plan

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
	The offset area fails to naturally regenerate.	<p>Management Action 3:</p> <ul style="list-style-type: none"> Remove incompatible land uses. WONS management (refer Management Action 3). Sufficient rest period. 	U	Mod	Low	After a sufficient rest period the repeat MHQA will indicate progress towards performance criteria.	<ul style="list-style-type: none"> infill planting/ revegetation to be implemented after sufficient rest period.
	Failure to increase habitat for offset species.	<p>Management Action 1:</p> <ul style="list-style-type: none"> legally secure offset area and remove incompatible land uses. <p>Management Action 3:</p> <ul style="list-style-type: none"> Reduce the extent of weed as per criteria; and Implement infill planting if required. 	U	Mod	Low	<p>Annual surveys (photo monitoring & audit of revegetation works) of revegetation area to ensure plant survival.</p> <p>Repeated surveys of baseline data including 5 yearly MHQA habitat monitoring data and annual observational data as part of the AOMP.</p>	<p>If MHQA transects indicate habitat less than performance indicators, implement infill planting in weed control areas.</p> <p>Should plant stock fail supplementary planting, direct seeding, weed control, fertiliser, amelioration or other management actions necessary to stimulate tree growth.</p>

Additional Offset Management Plan

Management objective/desired outcome	Event or circumstance	Relevant management actions/measures	Residual risk			Trigger detection and monitoring activity/ies	Feasible/effective corrective actions
			L	C	RL		
	If infill planting is required and there is high plant stock failure.	Management Action 3: <ul style="list-style-type: none"> Adhere to planting method and watering schedule. 				Annual plant stock audit (first 5 years). Planting and monitoring event schedules by the qualified bush regenerator.	If there is a high rate of plant stock failure adaptive management and corrective actions will be implemented and may include, additional supplementary planting, direct seeding, weed control, fertiliser, water spike, mulching, tree guards, etc.